

CRITICAL LITERACY FOR SUSTAINABLE CONSUMPTION IN EARLY
CHILDHOOD EDUCATION CONTEXT: PRE-SERVICE TEACHERS'
EXPERIENCES

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ABSTRACT

CRITICAL LITERACY FOR SUSTAINABLE CONSUMPTION IN EARLY CHILDHOOD EDUCATION CONTEXT: PRE-SERVICE TEACHERS' EXPERIENCES

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This study aimed to investigate early childhood education teacher candidates' experiences of Professional Development Training (PDT) which is designed to inform them about sustainable consumption via critical literacy during their practice teaching. This investigation included understandings and practices of teacher candidates as citizens and as teachers. Among qualitative research designs case study approach is employed in the present study. It was a single case study conducted in the context of a public university with a green campus in Turkey. The participants of the study were six senior students of the early childhood education undergraduate program who volunteered and received PDT. Data reflecting the experiences of teacher candidates in terms of understanding and practice were collected through pre- and post-interviews before and after PDT, and document analysis of reflective journals and activity plans after PDT. The findings of the study indicated that teacher candidates' understandings of sustainable consumption were enhanced both in the citizen role and the educator role, and teacher candidates engaged in deepened

critical reflection and informed action in their daily practice and teaching practice regarding sustainable consumption in response to PDT.

Keywords: Early Childhood Education, Sustainable Consumption, Critical Literacy, Pre-service Teachers, Professional Development Training



ÖZ

OKUL ÖNCESİ EĞİTİMDE SORUMLU TÜKETİM İÇİN ELEŞTİREL OKURYAZARLIK: ÖĞRETMEN ADAYLARININ DENEYİMLERİ

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Doktora, Temel Eğitim, Okul Öncesi Eğitimi Bölümü

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Bu çalışma Okul Öncesi öğretmen adaylarının öğretmenlik uygulaması dersine devam ederken katıldıkları eleştirel okuryazarlık temelli sorumlu tüketim mesleki gelişim eğitimi kapsamında deneyimlerini incelemeyi amaçlamıştır. Bu incelemenin odağı katılımcıların yurttaş ve öğretmen olarak sorumlu tüketim anlayışları ve uygulamalarında odaklanmıştır. Nitel araştırma yöntemlerinden, tek durum deseni durum çalışması yaklaşımıyla sürdürülen bu çalışma, Türkiye’de yeşil kampüslü bir devlet üniversitesinde gerçekleştirilmiştir. Çalışmanın örneklemi gönüllü olarak mesleki gelişim eğitimine katılan altı son sınıf okul öncesi öğretmenliği öğrencilerinden oluşmuştur. Öğretmen adaylarının anlayış ve uygulamalar kapsamında deneyimlerini yansıtan bu çalışmanın verileri mesleki gelişim eğitimi öncesinde ve sonrasında görüşme tekniği kullanılarak, mesleki gelişim eğitimi sonrasında etkinlik planlarının ve yansıtıcı günlüklerin doküman incelemesi yapılarak toplanmıştır. Çalışmanın bulguları, öğretmen adaylarının sorumlu tüketim anlayışının hem yurttaş hem de eğitimci rolü içinde geliştiğini ve öğretmen adaylarının sürdürülebilir tüketimle ilgili günlük uygulamalarında ve öğretmenlik uygulamalarında eleştirel yansıtma ve eylemde bulunduklarına işaret etmiştir.

Anahtar Kelimeler: Okul Öncesi Eğitim, Sorumlu Tüketim, Eleştirel Okuryazarlık, Öğretmen Adayları, Mesleki Gelişim Eğitimi



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LIST OF ABBREVIATIONS

ECE	Early Childhood Education
ICT	Information and Communication Technologies
MONE	Ministry of National Education
NGO	Non-Governmental Organization
PDT	Professional Development Training
SDG	Sustainable Development Goals
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization

CHAPTER 1

INTRODUCTION

1.1. Background of the Study

According to the synthesis report of the Intergovernmental Panel on Climate Change ([IPCC], 2023) global warming is 1.1°C and is expected to be arrived at 1.5°C by 2030 which is the tipping point for Earth. Irresponsible usage of natural sources, unsustainable lifestyle habits, and consumption production chains at local, national, and international levels lead to drastic weather and climate events thus threatening people and nature (IPCC, 2023). Living in the 21st century is accompanied by multiple crises as conflicts occur, species endanger, emissions of green gasses and pollution increase, and COVID-19 pandemic brings yielding effects on economy, well-being, health, and education (Guterres, 2023). A call of emergency has been issued again and again for making the planet a better habitat for all humans and non-humans via involvement in commitment, financing, solidarity and action towards more sustainable future (Independent Group of Scientists, 2023). This immediate involvement has become a critical topic for education for a considerable amount of time (Organisation Mondiale pour L'Éducation Préscolaire [OMEP], 2011).

In 1972, The report of the International Commission on Education entitled as Learning to be: The world of education today and tomorrow proposed reforming education with a perspective of lifelong learning for democracy, equity, social justice, and environmental protection (UNESCO, 2017). Same year, Stockholm Declaration suggested the education of students and adults in environmental issues in order to conserve and complement human environment (United Nations Environment Program [UNEP], 1972). Following, the Belgrade Charter (UNEP, 1975) and then Tbilisi Declaration (UNEP, 1978) drew attention to the potential role

of environmental education in terms of offering insight into human nature interconnections and responses to environmental problems (Davis & Elliot, 2014). Ten years after, *Our Common Future*, the report was published by World Commission on Environment and Development ([WCED], 1987), as a worldwide proposal for sustainability to lessen hazardous effects on lives on Earth. Sustainable Development (SD) is defined as “the development that meet the needs of the present without compromising the ability of future generations to meet their needs” (WCED, 1987, p.24). As referred in *Earth Summit* (UNESCO, 1992) it has three interrelated pillars: The social pillar refers to local, national, and international concerns in political, cultural and societal bases which influence the quality and maintenance of humanity. The environmental pillar includes awareness and sense of responsibility towards maintaining biological diversity, protection of the environment and prioritizing human-nature interaction for continuity of life. Lastly, the economic pillar addresses sustainable consumption referring consumption in a way that limits the negative effects on environment and natural resources in product and materials usage, energy use and meeting of basic needs (Siraj-Blatchford et al., 2010). Culture is remarked as an important aspect affecting sustainability as it affects the background of humanity (UNESCO, 2010). Apart from that, governance or political pillar is another important factor which manifests democracy, active citizenship and access to facilities as quality education (UNESCO, 2017). At the abovementioned report of WCED (1987) educators were mentioned as the critical actors in supporting societal change aimed at sustainability. The call towards sustainability echoed year by year along with the emphasis on education for societal change. Recently, the 2030 Agenda which is a global pact towards transformation for sustainability manifested 17 Sustainable Development Goals (SDGs) (UN, 2015). They target major challenges to sustainability such as “inequality, unsustainable consumption patterns, weak institutional capacity and environmental degradation” (UNESCO, 2017, p 6).

Education for sustainability has emerged as embedding interrelated pillars of sustainability into formal, non-formal and informal education. It has been built on the objective that education is the key for achieving sustainability (UNESCO, 1992) and it stands on involvement of people in sustainability concerns, enhancing their capability to enrich sustainability and benefiting from diversity to bring about

generative resolution to the sustainability crisis (Wals, 2009). Education for sustainability addresses learning content, setting and outcomes as well as pedagogy with a holistic perspective and embrace transformational education (UNESCO, 2014). It has centered around the basis of “critical inquiry, empowerment, participation, democratic decision-making and taking action that supports sustainable living and aims for social change” (Davis & Elliot, 2024, p18).

Sustainability has been a part of early childhood education ever since it is reflected in the foundational ideas of Froebel, Montessori, Steiner, Freire, and Malaguzzi as a means of promoting children’s engagement with nature, building respect and adoration towards the natural world (OMEP, 2019). The workshop “The role of early childhood education for a sustainable society” (2007) pointed up the children’s agency for overcoming the crisis resulting from unsustainable living habits. It was put emphasis on the recommendations that young children are capable actors who are both influenced social and ecological problems around them and qualified to be involved with them (Davies et al., 2009). Beginning from early childhood children experience environmental matters and develop their early values and attitudes in response (Davis, 2010; Didonet, 2008; Prammling Samuelson & Kaga, 2008; Siraj-Blatchford et al. 2010) that this early engagement may become a base for better understanding those challenging issues (Spearman & Eckhoff, 2012). Furthermore, many examples exhibit young children’s capacity to examine socio-cultural and environmental topics (Siraj-Blatchford et al. 2010). For instance, studies focusing on sustainability in early childhood illustrated that young children obtained positive perceptions towards sustainability (Burke & Mackenzie, 2011; Cengizoglu, 2013; Hsiao & Shih, 2015; Kahrman-Öztürk, Olgan & Güler, 2012; Spearman & Eckhoff, 2012) and exhibit sustainable behaviors (Alıcı, 2013; Bradbery, 2013; Davis, 2009; Siraj-Blatchford et al., 2010; Simeonsdotter Svensson, 2013). As related literature confirms embedding sustainability in early childhood education is of paramount importance. It features the possibility to achieve social, cultural and ecological resilience depending on critical thinking and interconnections within humans and human-nature relations while pursuing respect for self, others and the environment. Therefore, each attempt to cultivate education for sustainability needs to be assessed

with its alliance with early childhood education and the value of their work to young children regardless of the focused level of age (Davis et al 2009).

What kind of education empowers all students from each level to become social agents for development? How can students be committed to ensuring equity and respect for diversity and caring for the environment can be created? Janks (2013) argues that the answer is an education utilizing critical literacy. Critical literacy has emerged from the early works of Paolo Freire (2000) while teaching adults to read and write in Brazil. It is a skill for comprehension of how power positions people as accepted, alienated, or privileged at the expense of some, through reading the world that accompanies reasoning and inspiration for transformational efforts (Janks, 2017). Inequalities generated by social orders in autocratic bases do not happen simply, instead, they are built by collective and individual actions or failures that a critical perspective towards education works to identify and examine actions in order to transform them (Janks, 2014). Literacy is evaluated in process in terms of whether it contributes to current social patterns or cultural practices that encourage democratic and emancipatory transformation (Freire & Macedo, 1987). Critical literacy partakes in critical reflection, active participation, real-life experiences, and transformative action as guided by the dialogic approach of Freire (2000). In this approach, learners bring their culture and real-life matters to the classroom and teachers use this in pursuit of generative themes which are daily life issues and interests of learners, to guide the learning environment. Generative themes are topics that create arguments and reflection towards the reality of learners (Vittoria, 2018). The dialogue between co-learners (teachers and learners) that utilize generative themes proposes to reach critical thinking (conscientization) and action. Freire (2000, p.92) explains critical thinking as “thinking which perceives reality as process, as transformation, rather than as a static entity”. It refers to one’s inquiry about one’s position in society and using the consciousness derived from this inquiry to shape and gain control over one’s life (Wallerstein, 1987). Freirean approach to learning sees the world as an item to be understood and recognized by learners own work inspired and situated in their own conditions, experiences, needs and interests (Lankshear & Mc Laren, 1993). When experiencing a challenge, learners study it to understand, detect possibilities to react and undertake action. This exploration of

learners accompanies transformative action contrary to silence and passiveness if results in critical consciousness (Freire, 2005).

The pedagogical model to build respect for nature, for self and others, and agency to move toward a more justice-oriented and eco-friendly society needs to be transformative, learner-centered and action-oriented (Rieckmann, 2018). Therefore, education for sustainability necessitates a move towards a learning-oriented perspective from a teaching-oriented perspective (UNESCO, 2017). At this point, a critical literacy approach to education might promote education for sustainability to engage in that needed shift towards transformative education as fostering critical thinking and agency of learners. Critical literacy is based on active participation and critical reflection. Students bring their culture and previous experiences while taking part in critical analysis (Quintero, 2004). Any topic that has a connection with the learners' lives needs to be and can be used as texts to base a developmentally sensitive curriculum in the scope of critical literacy practices (Vasquez & Felderman, 2013). Referring to the multiple crisis era we live in, these topics may cover from climate crisis, endangered species to poverty and access to education etc. which portray a critical perspective to education for sustainability.

It is believed that early childhood is a sensitive period for pre-conceptions and pre-attitudes (Davis, 2010; Didonet, 2008; Prammling Samuelson & Kaga, 2008; Siraj-Blatchford et al. 2010) that misconceptions and stereotypes may be developed due to experiences at home, school and the larger community and socialization with peers, and media (Boutte et al., 2011; Husband, 2014). Facilitating young children with critical reasoning is of paramount importance considering consumerism is a high trend and market-driven politics has been challenging sustainable living. Therefore, critical analysis of information is intriguing for not only higher engagement with school activities but also for creating conscious individuals (Winograd, 2015). Moreover, studies undertaken in early childhood suggest that using critical literacy facilitates young children to engage with challenging concerns of society such as social justice and equity as well as to develop critical thinking abilities (Callow, 2017; Chafel et al., 2007; Husband, 2014; Kim, 2012; Kim, 2016; Stribling, 2014). Initially these studies focus was critical literacy usage in order to critically engage

with everyday problems of society, however, they imply an attitude formation against conservative norms. At this point, critical literacy could be utilized to challenge stereotypic attitudes and reform pre-attitudes towards issues such as respecting human rights, embracing culture, valuing diversity, caring nature and protecting community sources (Quintero, 2004; Vasquez, 2005; Vasquez, 2017; Vasquez & Felderman, 2013). This process might feed children's agency and creativity and reflect that their ideas are valued and respected which corresponds to the foundations of education for sustainability in early childhood education.

Education only focusing on economic progress and achievements may contribute to unsustainable consumption habits (UNESCO, 2017). Jickling et al. (2018) argue mainstream educational practices do not challenge the unsustainable ways of living, rather they directly or indirectly feed into those ways. Similarly, the International Commission on the Futures of Education (2021) confirmed the requirement of a shift in the content and methods of teaching for cultivated learning opportunities towards best interest of all. The challenge of environmental and sustainability education is to engage learners and instruct them participatively as well as to transform mainstream instructional policies and practices to be agent instead obstacle to sustainability (Sterling et al, 2017). Position of teachers and teacher education would be critical considering they are the agents who integrate education for sustainability into curriculum and equip learners to cope with the rising social and environmental concerns (Fischer et al., 2022). Additionally, Orr (2020) highlights that contributions of educators do not meet century's need; mostly because of the inclination of discounting the effect of politics on sustainability, namely 'who gets what, when and how'. The critical perspective towards sustainability with its focus on injustice and power dynamics would meet this need. Using critical pedagogy as engaging educational practices with experiences and expectations of local cultural, environmental, economic and social settings are strongly recommended (Manteaw, 2012) due to integrating learning into local sustainability background by establishing better connections between educational organizations and communities (Lotz-Sisitka, 2013). At this sense, critical pedagogy responds to one of the challenging targets of education for sustainability within the scope of pre-service teacher education which is facilitating teacher candidates to comprehend social, economic and environmental

interrelated dimensions took part in sustainability and reflect this comprehension both on their teaching practice and daily practice as member of the society (UNESCO, 2005)

Critical pedagogy or an education addressing critical literacy provides pre-service teachers to become more conscious regarding critical issues and enrich their curriculum with meaningful learning opportunities addressing daily life issues in social and environmental bases (Noris et al, 2012; Souto-Manning, 2017). It is pivotal for the case of pre-service teachers working with young children considering early childhood education needs to be enriched with pedagogical patterns that include the daily experience of children brought to the classroom and engagement with sustainable living based on these experiences via critical inquiry (Davis et al 2009). As more popular culture boosts everyday life, today's teachers and students need to foster skills for identifying correct information. Teachers need to challenge this tiny bit of information together with their students in order to collaborate with sustainability and universal aims of education and critically reconstructing media text may serve as an introduction to this crucial task (Souta-Manning, 2017; Souta-Manning & Price-Dennis, 2012; Vasquez, 2015).

Teachers who experience the utilization of critical literacy in their student years may more easily adopt the technique and contribute to culturally and developmentally responsive learning environments of young children (Noris et al., 2012; Souto-Manning & Price-Dennis, 2012; Souto-Manning, 2017). In conclusion, critical literacy in teacher education has a promising notion of transformation from individual to society (Freire, 2000) that many challenging issues of equity, justice, respecting diversity, living sustainable, and environment friendly may be covered in the light of the critical literacy and produce possible outcomes for society.

1.2. Need for the Study

Recent data illustrates that with the expected increase in population for 2050, keeping today's lifestyle would require almost three planets in order to meet the needs of the people and other species. In order to decrease this burden on Earth,

consumers may manage their waste, reflect on what to buy, and prefer more tenable alternatives in terms of sustainable consumption (UN, 2019). Achievement of developmental objectives of modern life and environmental protection may appear as contradictory yet what contradicts are the assertive ways used to reach this development. Technological and economic development goes hand in hand with protecting the environment through achieving sustainability (Tanner & Horn-Phathanothai, 2014). Sustainable and responsible consumption can yield a positive outcome in terms of climate change effects by decreasing the burden on natural resources and the contamination of air, land, and water (UN Environment, 2018). Therefore, the present study particularly focuses on sustainable consumption orienteering sustainability.

Sustainable consumption and production is one of the Sustainable Development Goals and defined as “promoting resource and energy efficiency, sustainable infrastructure, and providing access to basic services, green and decent jobs and a better quality of life for all” (UNECE & UN Environment, 2018, p1). In the pursuit of this goal active citizenship and change agency is critical. Citizens empowered with higher levels of awareness and knowledge can affect production and consumption patterns by choosing products with low lifecycle impacts and making use of their consumer power as well as contributing to the transformation of policies and practices for sustainability (UNESCO, 2005). Regardless of their socio-economic conditions, all participants of society need to be aware of strong structures that manipulate public information since as information about our primary source in daily life, for instance about fossil fuel may be distributed in a misleading way favoring the companies’ interests which result in damages of natural resources and negatively affecting life in our planet (Gove & Still, 2014). Critical literacy could be helpful in terms of creating higher level of awareness and knowledge towards sustainable consumption by challenging the underlying reasons that cause ignorance or misconception and may result in taking informed and cautious action. As Janks (2014) refers critical literacy creates a possibility for change since regardless of how small the action would be its effect on somewhere else may result in transformation in an interrelated world such as taking individual considerations regarding energy saving in terms of decreasing the individual carbon footprint contributes to

sustainable living and saving the environment. It is an important possibility considering the effects of contemporary consumption patterns of individuals on our planet (UN, 2018).

Young children's engagement with sustainable consumption is crucial considering their agency. First of all, early childhood has the greatest potential in terms of overall development and learning (Davis et al., 2009). Therefore, this capacity of young children stands for a great opportunity for awareness and learning related to sustainability. In addition, their early experiences become a base for future behaviors and attitudes (Didonet, 2008; Prammling Samuelson & Kaga, 2008; Siraj-Blatchford et al. 2010). Apart from that, young children's active participation to the social and economic situations which they encounter in their everyday lives and enabling their agency to their parents and grandparents to behave in more sustainable ways underlies the role of education for sustainability in early childhood (Davis et al., 2009). This becomes a starting point for societal change (Ärlemalm-Hagsér & Davis, 2014; Davis & Elliot, 2014; Weldemariam & Wals, 2020). Thus, this study engages with sustainable consumption in early childhood education context.

A teacher education that facilitates this engagement of young children is needed to contribute transformation of society towards sustainability (Davis & Davis, 2020; Ferreira et al 2014). Therefore, the current study focuses on pre-service teachers' engagement with critical literacy within their training and teaching practice with young children. As teachers are the primary facilitators, guides, and planners of the curriculum together with the children, they have a key role in providing sustainable consumption engagement. Therefore, teacher education needs to be oriented in terms of modeling learner-centered, action-oriented education with content addressing sustainability (Davis & Davis, 2020; UNESCO, 2005). Furthermore, teachers as well as education settings are strongly suggested to be relevant to ecofriendly living as means of serving as examples instead of teaching about sustainability. What education for sustainability needs is a change toward learning together approach from teaching approach (UNESCO, 2017). At this perspective, pre-service teachers' engagement with sustainable consumption in their higher education through critical literacy could be a good way to meet this need. As related literature illustrates critical

literacy provides pre-service teachers to become more conscious regarding critical issues and enrich their curriculum with meaningful learning opportunities addressing daily life issues in social and environmental bases (Noris et al., 2012; Souto-Manning, 2017; Souto-Manning & Price-Dennis, 2012).

Studies of sustainable consumption have been a focus of sustainability research for a considerable amount of time. Although there is improvement in learners' perception and motivation regarding sustainable consumption; there is inadequacy in behavioral aspects (Merritt et al, 2019; Schoolman et al, 2016; Wuest et al, 2014). Interest in the change in consumer behavior is dominant in literature yet is highly criticized for its tendency to ignore or underestimate sociocultural, political and structural aspects causing unsustainable practices (Araújo et al, 2021; Chappels & Trentmann, 2015; Ficher & Barth, 2014). As Kemmis (2009) suggests, this study focuses on critically reflecting and exploring different ways to think, to relate and to act for sustainable consumption orienting education for sustainability. It is focused on emancipation and development of all learners through praxis, an unending cycle of action and reflection. Starting with a reflection process prior to action which formulates the action, and again it continues with reflection upon the outcomes of taken action which bring new understanding thus a new action (Ada, 2007). Thus, this study addresses transformation of practices as well as the building perception and motivation and questioning underlying factors for sustainable practices which shape practices in return.

Sustainable consumption is an area where private life practices overlap with more global issues that learners may discover how their lifestyle choices and everyday practices make an impact on overall sustainability considering educators and learners are consumers as well as citizenry (Sahakian & Seyfang, 2018). A sustainable consumption learning experience for teacher candidates needs to extend a direction addressing their professional life and daily life in order to sustain their motivations toward sustainability (João & Silva, 2022). Therefore, the current study defines two aspects for each participant as citizen role and teacher candidate role while focusing on their understanding and practice for sustainable consumption. The citizen role is defined as actions, reflections, and interactions carried out in everyday life related to

sustainable consumption referring to engaging with responsible consumption and production, making informed choices in the market, researching to solve problems of unsustainable consumption, using agency to motivate other participants of society and policy-makers to take action towards sustainable consumption (UNEP, 2010). The teacher role focuses on the educator perspective that is supporting individuals to acquire sustainability competencies via facilitating various teaching moments and learning opportunities (Rickman, 2018) and is defined within the context of early childhood education settings including any consumption-related experiences, activities, interaction with colleagues, staff, children and parents, etc. based on strengthening and sustaining sustainable consumption. Therefore, scrutinizing teacher candidates' understandings and practices is twofoldly important considering their educational and civic roles in the transformation of society (Alici & Alan, 2022; Ärlemalm-Hagsér, 2017; João & Silva, 2022).

1.3. Significance of Study

The present study is significant for several reasons. Firstly, this study could make a contribution to education for sustainability studies particularly for addressing agency, critical thinking and transformative education (Davis & Elliot, 2024; Evans et al., 2017). Today's unsustainable living habits have been associated with a particular inadequacy in the education system which is the absence of providing learners to think critically about their own living habits (UNESCO, 2014). Teacher education in sustainability is a growing research field (Fischer et al., 2022) and it is mentioned as a gap in early childhood education for sustainability (Alici, 2020; Ärlemalm-Hagsér & Sandberg, 2011; Davis & Davis, 2020; Elliott & McCrea, 2015; Ferreira et al., 2014). Particularly for the case of consumption it is generally reported to be difficult to change via intervention (Alvarez-García et al., 2018; Nolet, 2009; Schoolman et al., 2016). The current study would meet this gap via utilizing a critical literacy approach to teacher education which also addressed the educational critique that current instructional practices failed to address this transformation and challenge unsustainable practices and frame of minds (Jickling et al., 2018; Sterling et al., 2017); mostly because of the inclination of discounting the effect of politics on sustainability (Orr, 2020). Students who participate in critical literacy activities

earlier are more prone to commit to a fair world through making informed decisions about power and domination (Vasquez, 2017) that this critical stance would employ as motivation to transform challenging issues. Through engagement with critical literacy, this lacking point is addressed in this study through problem-posing technique for sustainable consumption. Therefore, this study aims to add into Education for sustainability literature sharing practices and methods of pre-service early childhood teachers.

The present study used the dialogic approach of Freire (2000) within the Professional Development Training and engages teacher candidates with problem-posing of multimodal media such as animations, videos, picture books, research articles, brochures etc. This engagement consists of the abovementioned generative text orienting sustainable consumption in terms of empowering learners as active citizens who are knowledgeable about consumption and production and taking informed action. Moreover, it also entails guiding teacher candidates to plan and implement activities with young children about sustainable consumption with critical literacy throughout their practice teaching. At this point, pre-service teachers' critical literacy usage is critical not only being educated and good citizen who is responsive to nature and society but also being influential on education of young children. For instance, studies conducted with young children included negotiation of young children on advertising and consumption via critical literacy shed light on the young children's ability to analyze marketing and effects on everyday text on consumption (O'Brien, 1994; Vasquez, 2006). Facilitating young children to do critically analysis is pivotal since the world is becoming more market driven and consumerism has been permeated in every level of society. Unless gaining the critical perspective people tend to engage in context-bounding acts that will hinder sustainable consumption (Winograd, 2015). Therefore, the current study could contribute related literature with demonstrating an example of Professional Development training focusing on both teacher role and citizen role of pre-service teachers. Besides, this study presents a professional development program for empowering teacher candidates which built on holistic view of sustainability covering interactions between social, economic and environmental dimensions, using participative methods with a situated and collaborative approaches to learning and teaching and utilizing sustainable materials

such as reused papers and digital documents which reflects integration of sustainability into program rather than see it as a topic to be addressed.

Lastly, the present study could be an example of critical literacy engagement in the Turkish teacher education context for early childhood education. In accessible literature, there is no study available in the Turkish context which addresses undergraduate students of early childhood education department, although there are studies conducted with in-service early childhood teachers focusing on Education for sustainability via critical media literacy (Alicı & Şahin, 2023) and with foreign language education pre-service teachers addressing the potential of teacher education for critical learners (Balıkçı, 2012; Tezgiden Cakcak, 2015). Considering the importance of transformative and action-oriented pedagogy in teacher education particularly for accomplishing social justice and sustainable living this study aims to fill this gap. Similarly, universal literature seems to be lacking in terms of addressing early childhood teacher education. There are a few studies focusing on pre-service teachers' critical literacy engagement (Noris et al, 2012; Souto-Manning & Price-Dennis, 2012; Souto-Manning, 2017). The results of the studies conducted with pre-service early childhood teachers demonstrated the potential of critical literacy involvement in teacher education in terms of integrating diversity, social justice and sensitive topics for young children. Thus, this study could contribute critical literacy literature exemplifying a different context in terms of Turkish teacher education and a different focus in terms of sustainable consumption.

1.4. Purpose of the Study

The aim of this study is to investigate ECE teacher candidates' experiences of Professional Development Training (PDT) which designed to inform them about sustainable consumption via critical literacy during their practice teaching. This investigation includes understandings and practices of teacher candidates as citizens and as teachers. The following research questions were investigated:

1. To what extent have ECE teacher candidates' understanding of sustainable consumption changed in response to Professional Development Training (PDT)?

- a. To what extent have ECE teacher candidates' understanding of sustainable consumption changed in response to PDT as citizens?
 - b. To what extent have ECE teacher candidates' understanding of sustainable consumption changed in response to PDT as teachers?
2. To what extent have ECE teacher candidates' practices changed regarding sustainable consumption in response to Professional Development Training (PDT)?
 - a. To what extent have ECE teacher candidates' daily practices changed regarding sustainable consumption in response to PDT?
 - b. To what extent have ECE teacher candidates' teaching practices changed regarding sustainable consumption in response to PDT?
3. How do ECE teacher candidates' understanding and practice within the citizen role and teacher role intersect?

1.5. Researcher's Standpoint and Motivation for the Study

Having been born in the same year *Our Common Future* was published, the researcher was one of the members of future generations that the report raised concerns about the well-being, health, and facilities to meet their needs in addition to other living beings and ecosystems. As a grown-up, the researcher experienced similar and growing concerns for people and other living beings on the planet. She tries to contribute to the protection of nature, continuity of life, human dignity, peace, and democracy for the present and the future within the roles of researcher, educator, and citizen. She feels strong respect for nature, justice, and diversity, and adopts a critical perspective towards sustainability.

Previously, the researcher studied sustainability in picture storybooks as a teaching source within the scope of her master's thesis. This experience helped her to locate her perspective in the field of sustainability. From that point on, her academic interests broadened to include education for sustainability, children's literature, and critical literacy. The researcher had ten years of experience as a research assistant in

the field of early childhood education. While assisting the practice teaching course, she noticed a lack of knowledge regarding sustainability and its educational implications as well as the difficulty in embedding it in their activities. Her dialogue and experience with pre-service teachers have become the motivation for the researcher to focus on the current study's topic.

1.6. Definition of the Important Terms

Critical literacy: is “reading the word and the world” (Freire & Macedo, 1987, p23). It is realizing the effect of language use and actions in the formulation of self and society and seeking ways to “redefine self and remake society” through critically analyzing power structures, language use and identities for overcoming injustice (Shor, 2009).

Early childhood education: UNESCO (2024) defines Early Childhood Education and Care as the education of young children from birth to 8 years old. In Turkey, it is defined as the education provided for children from 0-66 months-old (MONE, 2014).

Pre-service early childhood teacher: In scope of this study, it is defined as an undergraduate student of department of early childhood education. It is also referred to as a teacher candidate.

Education for sustainability: It is a progressing concept which encompasses interrelated pillars of sustainability while creating a place for criticism on social and political bases and engagement with action (Davis & Elliot, 2024). “It offers an educational vision that seeks to empower people to assume responsibility for creating sustainable futures” (Davis & Elliott, 2024, p18).

Education for sustainable development: It is the commonly used term in Europe following UNESCO's perspective (Davis & Elliot, 2024). It “empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations, while respecting cultural diversity. It is about lifelong learning, and is an integral part of

quality education. ESD is holistic and transformational education which addresses learning content and outcomes, pedagogy and the learning environment. It achieves its purpose by transforming society” (UNESCO, 2014. p.12).

Sustainable consumption and production: “Sustainable consumption and production is about promoting resource and energy efficiency, sustainable infrastructure, and providing access to basic services, green and decent jobs and a better quality of life for all. It aims at doing more and better with less” (UNECE & UN Environment, 2018, p.1).

Generative texts: “Generative text sets emerge from thematic investigations of the tensions experienced by learners and provide multiple entryways to topics about which learners may not know much or may have varying degrees of experience or expertise” (Souta-Manning, 2017, p.79).

Problem-posing approach to education: “an approach in which the relationship of students to teacher is, without question, dialogical, each having something to contribute and receive. Students learn from the teacher; teachers learn from the students. Hence, the actual lived experiences cannot be ignored nor relegated to the periphery in the process of coming to know. Instead, they must be actively incorporated as part of the exploration of existing conditions and knowledge, in order to understand how these came to be and to consider how they might be different” (Darder et al., 2009, pp.13-14).

Sustainable consumption understanding: In the scope of the current study, it addresses naming concepts, themes and concerns related to sustainable consumption; relating to issues of sustainable consumption in terms of experience, knowledge, and feelings; and critically reflecting on consumption and its consequences.

Sustainable consumption practices: Within the scope of the current study, it is defined as taking informed action towards sustainable consumption.

CHAPTER 2

LITERATURE REVIEW

This chapter includes the theoretical background of the current study. Firstly, sustainability, education for sustainability, and sustainable consumption are revisited. Following, critical pedagogy and critical literacy are explained. Teacher education as the focus of the current study is reviewed. Lastly, related studies are summarized and discussed.

2.1. Sustainability

2.1.1. Background of the Sustainability

Beginning in the 1970s, a number of important international conferences took place with the objective of reinforcing a conscious community that would take action toward saving and sustaining a diverse, pleasant and fertile planet for its next inhabitants (Tanner, 1998). Tbilisi conference (1977) draws attention as a worldwide conference highlighting the importance of environmental education to reduce Earth-related concerns. Following, the World Commission on Environment and Development (WCED) (1987) brought attention to sustainable development which is “the development that meets the needs of the present without compromising the ability of future generations to meet their needs” (WCED, 1987, p.24). As the UN Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil, also referred to as the Earth Summit, (1992) remarked sustainability is grounded on the interaction of social, cultural, ecological and political dimensions. Conservation or ecological dimension addresses securing ecological systems to save their ability to meet the needs of all living beings and to sustain as well as maintaining resources necessary for economic well-being (UNESCO, 2002). Peace and Equity or social

dimension includes promoting solidarity and harmony within communities and providing access to basic needs on the basis of justice, equity and dignity (UNESCO, 2002). Appropriate Development or economic dimension confirms long-lasting sustenance for people while acknowledging the linkage between the economy, society, nature and policy (UNESCO, 2002). Democracy or political dimension safeguards that power is distributed in a fair and democratic way therefore people have an equal voice over decisions on regulating the use of economic, social and environmental systems (UNESCO, 2002).

2.1.1.1. Critical Perspective on Sustainability

Generally formed based on the viewpoint of natural sciences there are various and debated perspectives on sustainability (Davis & Elliott, 2024; Evans, 2015; Rose & Cachelin, 2018). Among those, critical perspective reflects that justice and equity are integral to sustainability of the planet with all inhabitants whereas not denying viewpoints of natural sciences (Rose & Cachelin, 2018). Rose and Cachelin (2018) argue that traditional sustainability with its vague definition is more prone to preserve and support unsustainable practices via offering ‘green capitalism’ without uncovering the real damages of this way of consumption, breaking sustainability into an individualized act focusing on individual benefit for forthcoming years and/or insurance for next generations, putting the responsibility on the individual even positioning citizen as a private consumer rather than challenging the role of governance and power dynamics on unsustainable lifestyles and systemic structures and doing so denies the relation of urgent tangible issues as meeting basic needs to survive and effects of the poisonous outcome of hazardous industries. Against this understanding of sustainability, Cachelin et al. (2015) suggest the term critical sustainability. Critical sustainability is defined within the perception that there are material and environmental requirements to preserve all beings on the planet and those requirements are strongly connected to social and political standpoints maintaining respect and justice as well as preservation of rights for all inhabitants (Rose & Cachelin, 2018). Cachelin et al. (2016) state that the concept should be considered as in plural terms rather than stoic single being since it is contextually bounded and should be responsive to cultural, ecological and political characteristics

of local settings. Similarly, Evans (2015) highlights the interplay of societal and environmental factors in the catastrophe faced today and defines sustainability as bounded to place. In other words, a sustainable practice for a place might not be sustainable for another place considering the different economic, environmental, sociocultural and political settings reflected in the place. Mutual point is the construction of sustainable lifestyles at the basis of justice between generations in a future-oriented perspective, the security and dignity of both human world and non-human world (Evans, 2015). Davis and Elliott (2024) contribute to the discussion about the sustainability perspectives as defining sustainability as social justice and fairness. It reflects the interconnectedness of all natural systems, humans and non-humans emphasizing the injustice of humans' distribution of resources and harming the environment (Davis & Elliott, 2024).

This study adopts the critical perspective toward sustainability as borrowing from the abovementioned perspectives of scholars. Sustainability consists of actions taken by states, institutions and citizens that protect and respect nature, ensure equity in society and better people's lives (Schoolman et al., 2016). It is about equity and justice considering some humans are privileged with developed technologies, economic prosperity and opportunities of modernization as some humans and nonhumans experience consequences of unsustainable practices (Davis, 2010).

2.1.2. Education for Sustainability

The international action plan of Agenda 21 compromised by the Earth Summit Conference (1992) announced the significant position of education in chapter 36 which originates the education for sustainability. Education for sustainability is the involvement of interrelated pillars of sustainability into methods, content and process of formal, informal, and non-formal education at all levels. Its objective is to build individuals' skills to assess their actions considering their influence on recent and futures conditions in economic, social, cultural, and environmental bases at local and global levels. Moreover, individuals need to be motivated to exhibit sustainable behaviors in intricate situations that they may require to behave in more determined ways towards new directions and to be part of socio-political progress bringing their

community to sustainable growth thanks to education for sustainability (UNESCO, 2017). It stands on the involvement of people in sustainability concerns, enhancing their capability to enrich sustainability and benefiting from diversity to bring about a generative resolution to the sustainability crisis (UNESCO, 2009).

As mentioned before, education for sustainability should foster particular competencies for achieving sustainable living that are defined in terms of pertinence to the goals of sustainability and the needs of today's citizenry to overcome the composite confrontation resulting from unsustainable living (UNESCO, 2017). It requires particular competencies as systems thinking competency referring abilities to comprehend relationships, complicated systems and the ways the systems links with various fields; anticipatory competency addressing the abilities to generate potential and desirable outcomes for situations to assess the outcomes of actions; normative competency indicating the competency to notice and analyze the values and patterns that leads somebody's action and discuss and mediate sustainability in context of dispute on interests and ambiguous knowledge; strategic competency meaning the competency to cooperative work and coordination in establishing activities to promote sustainability beginning from local level to further levels; Collaboration competency including skills using empathy in relationship with others and in leadership and pursuing collaboration and collective problem-solving; critical thinking competency representing skills of questioning actions, norms and values and assessing one's own behaviors, views and opinions with a focus on sustainability discourse, self-awareness competency implying one's reflection on the her role in the community in local and global setting while pursuing her feelings and desires; integrated problem-solving competency involving integrating all mentioned competencies while problem solving and figuring out solutions that are reasonable, inclusive and impartial. Apart from that the objectives of education for sustainability are planned according to 17 Sustainable Development Goals (SDG) which are namely no poverty, zero hunger, good health and well-being, quality education, gender equality clean water and sanitation affordable and clean energy, decent work and economic growth, industry, innovation and infrastructure, reduced inequalities, sustainable cities and communities, responsible consumption and production, climate

action, life below, life on land, justice and strong institutions , partnerships for the goals (UN SDG, 2019).

2.1.2.1. Early Childhood Education for Sustainability

As in Agenda 21 (1992), at chapter 36, it was referred the essential role of education at every level, UN declared that the period between 2005 and 2014 would become a decade of Education for Sustainable Development (ESD) and proposed that the methods, the implementation process and the content of sustainable development should be involved in all facets and stages of the education in a way addressing three pillars (UNESCO, 2005). Following, a workshop named “The role of early childhood education for a sustainable society” was held in Gothenburg in 2007 (Pramling Samuelsson & Kaga, 2008) and published a recommendation report demonstrating the place of early childhood. Gothenburg Recommendations (2007) emphasized that early childhood years provide required potential to contribute to and comprehend the sustainable development (Davis et al., 2009). It is believed that young children experience environmental issues and develop their primary values and attitudes within this period (Didonet, 2008; Prammling Samuelson & Kaga, 2008; Siraj-Blatchford et al. 2010) that children will attain greater comprehension of that challenging issue via using the base of this early conception (Spearman & Eckhoff, 2012). Moreover, there is evidence that they are suited to think about socio-environmental points (Siraj-Blatchford et al. 2010). Apart from that, problem solving, creative thinking, active learning, values education and storytelling are common characteristics of education for sustainability and early childhood education which make it easier to embed education for sustainability into daily routine of education (Davis, 2009).

Beside abovementioned, early childhood has specific significance for two reasons. Firstly, these years hold the greatest potential to develop and learn compared to following levels of human age (Davis et al., 2009). Various studies of cognitive science support this claim as well (Berk, 2007). Therefore, this capacity of young children could be great opportunity for ESD and may result in innovative solutions for todays and futures problems. Secondly, the agency of young children is of

paramount importance. Young children are not only actors on the issues exhibiting sustainable behaviors but also they usually influence their family so that their parents and grandparents move towards sustainability (Davis et al., 2009). This characteristic is unique considering the opportunity for societal change.

2.1.3. Education for Sustainability in Early Childhood Teacher Education

Considering abovementioned significance of early childhood period the responsibility and importance of teachers and pre-service teachers came into prominence. Therefore institutions for teacher education play a key role in reorienting the education towards sustainability through providing in-service trainings and professional development opportunities, enriching curriculum and conducting research (UNESCO, 2010). Similar with this claim studies conducted with early childhood educators (Alici, 2018; Dymont, Davis, Nailon, Emery, Getenet, McCrea & Hill, 2014; Gezer, 2010; Gove & Still, 2014) and pre-service teachers (Akyol, Kahriman-Pamuk & Elmas, 2018; Chin, Munip, Miyadera, Thoe, Ch'ng, Promsing, 2019, Güner, 2013;) illustrated positive outcomes for their awareness and practice towards sustainability with respect to implementation of a training.

Early childhood education has a strong influence on lifelong learning that the need for developing the potential of educators as well as other members of the communities to facilitate safe and fruitful environment for young children is compelling (Davis et al 2009). Along with primary caregivers and other members of the society teachers Therefore teacher education should be updated in a way that it enrich teacher candidates with potential to create inclusive curriculums that nourished by daily life and cultural background of young children and develop them as actors pursuing sustainable citizenry (Davis et al 2009). Lastly, current lifestyles of citizens continue to be unsustainable. This unfortunate trend is correlated with the lack of the education system in terms of facilitating people to think critically about their daily actions (UNESCO, 2014). Reorienting the education would only be effective if it encourages teachers to reconstruct their schools and community environment as well as teaching practices (Qablan, 2018).

2.1.4. Sustainable Consumption

Considerations about possible outcomes of humans' actions on the continuation of resources for tomorrow, in other words, sustainability is not a novice idea (Chappells & Trentmann, 2015). So are the concerns of consumption. It seems that unsustainable practices date back to the early times of civilizations (Jackson, 2005); however, the eighteenth century with the emergence of industrial society has become a turning point for humans' effect on the planet with increased levels of coal utilization and mining operations (Chappells & Trentmann, 2015). In the following times, reports of consumption critiques appeared in national and international realms and thereafter consumption has been a determining factor for the concept of sustainability as it was referred to in the Brundtland Report (1987) (Jackson, 2005). United Nations Conference on Environment and Development held in Rio (1992) produced a principal report for sustainability, education and sustainable consumption, called Agenda 21. In Chapter 4 of Agenda 21, "Changes in consumption patterns" highlighted the need for international collaboration to achieve sustainable consumption patterns, including changes in lifestyles less dependent on finite natural resources. Following, in Oslo Principles (1994) sustainable consumption was reemphasized as "use of goods and services that respond to basic needs and bring a better quality of life, while minimizing the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardize the needs of future generations" (Norwegian Ministry of the Environment, 1994).

Sustainable Development Goal 12 responsible consumption and production is establishing sustainable pattern for consumption and production that will curtail economic, social and environmental expenses, diminish poverty and promoting economic bettering. It includes advocating effective usage of resource and energy, sustainable foundation, and facilitating access to basic services, respectable and sustainable jobs and higher quality of life for all. This goal addresses business and consumers. The scope of this study covers the consumers' responsibilities. Some suggestions include using a reusable bag for supplies instead of plastics bags, reducing usage of plastics, recycling, shopping from local and sustainable stores, etc.

(UN, 2019). Controversies of sustainable consumption related to meeting of basic needs, energy use, product and materials usage as practice of daily life which may diminish the burden on environment and natural sources are the center of this study (Siraj-Blatchford et al., 2010).

The role of education was clarified in United Nations Decade of Education for Sustainable Development (2005–2014): International implementation scheme. The emphasis on informed action and higher level of awareness reflected in the following statement: “citizens can become knowledgeable consumers who purchase goods with low lifecycle impacts and who use their purchasing power to support corporate social and environmental responsibility and sustainable business practices. An informed citizenry can help communities and governments enact sustainability measures and move towards more sustainable societies” (UNESCO 2005, p29). This document also stressed the active citizenship and change agency towards a sustainable world. Therefore, basic learning outcomes of education for sustainable consumption can be defined as attitudes, knowledge, skills and behavior leading to “critical awareness, ecological responsibility, social responsibility, action and involvement and global solidarity” (UNEP, 2011, p.24). The value of education for social transformation was emphasized strongly (UNESCO, 2020) particularly for the goal of responsible consumption and production: “Education can make a critical difference to production patterns (e.g. with regard to the circular economy) and to consumer understanding of more sustainably produced goods and prevention of waste” (UNESCO, 2018, p.31). Sustainable consumption is appreciated to be a compelling way for teachers to advance education for sustainability (UNESCO, 2017).

Sahakian and Seyfang (2018) stress that sustainable consumption is an area of study where connections between personal actions, society and organizational circumstances are more apparent while aiming for sustainability. Considering students’ and teachers’ roles as members of society and purchasers of goods and sources, universal and individual conditions crisscross. Similar to this idea, education for sustainable consumption at higher education level needs to position learners as consumer citizens considering their purchaser role as green products buyers and affecting demand and supply as well as their active citizen role participating in

demonstrations and influencing governance according to Fischer and Barth (2013). At this point, competence-based approach that remarked the abovementioned roles of learners gains importance for education for sustainable consumption.

2.1.5. Key Competencies for Sustainable Consumption

The educational competencies for sustainable consumption developed in three yearlong BINK project conducted in six educational institutions (two secondary schools, two vocational schools and two higher education institutions) by Fischer and Barth (2014a). They are conceptualized considering the debate over reasonable and efficient method in education for sustainable consumption based on the transdisciplinary and interdisciplinary arguments of educational practitioners and researchers. The competencies are sustainability oriented. They should be seen as interconnected and dependent on each other rather than distinct entities (Fischer & Barth, 2014a). They focus on capacity of a person to answer the demands of given situation rather than a certain type of action or decision to be made in a given condition. The framework aims to develop capabilities of citizens to reach effective and informed reaction against influential strategies and to contribute to careful planning and executive processes; to rethink the normative background that reinforce their own desire to consumption and to anticipate the possible results of choice and action of those consumption while accepting compound roles as consumers and political agents (Fischer & Barth, 2014b). Key competencies for sustainable consumption provide guidance for a learning process proposing to promote 'individuals' self-reflectivity that is their capacity to deliberately act upon their values, motivations and knowledge' (Frank, Sundermann & Fischer, 2018, p1004).

Competency to reflect on individual needs and cultural orientations: This competency addresses people's capacity to analyze how their needs are becoming increasingly commoditized within the current economic system through fulfillment by the market goods and reflect on this process in terms of comparison of their conceptualization of sustainability. This requires having the courage and skill to investigate and critically question one's needs and desires, requirements, and established habits and behaviors observed in the satisfaction of those. It also includes

deconstruction of collective cultural orientations towards consumption as well as political background affect consumption and production system (Fischer & Barth, 2014a). For example, in scope of BINK project, participant students reused a deserted room as a swap shop where people share or borrow used goods free of charge. The rationale behind was to motivate people towards exchange and reuse rather than buying and owing. That is given as example to reflect on individual needs and cultural orientations (Fischer & Barth, 2014b).

Competency to plan, implement, and evaluate consumption-related activities: This refers to the sustainable acts within the role of private consumers in terms of purchasing goods or services, using customer services etc. and the role of active citizens in terms of having influence on and involvement in decision making process related to consumption and production chain in the public context. Planning activities requires knowledge for assessing usage of resources, alliances and anticipating possible outcomes in terms of economic, environmental and social perspectives, implementing involves both practical expertise and cognitive background on the planned activities; and evaluate addresses controlling whether the objective of the activity acquired (Fischer & Barth, 2014a). To demonstrate, in the context of the project participants implemented small case intervention tasks in their educational organizations. In one case, the student initiative created a student-led company that offers organic snacks and fair trade coffee during school breaks. This is an example to plan, implement, and evaluate consumption-related activities (Fischer & Barth, 2014b).

Competency to critically take on one's role as an active stakeholder in the market: It is related to change agency and necessitates the competency to communicate sustainable consumption to others. Consumers hold more comprehensive roles other than private consumer whose influence on market determined trade. It necessitates knowledge regarding consumption and production chain and being aware of people's roles and effects on the chain as well as the process from extraction to the disposal of a good. It includes collaboration for systemic change (Fischer & Barth, 2014a). An example of this competency is reflected as students in the project group were participated in decision-making in terms of affecting consumption at the institutional level such as catering, procurement, etc. It necessitates adopting other consumer

roles different from private consumer that is given examples as to critically take on one's role as an active stakeholder in the market (Fischer & Barth, 2014b).

Competency to communicate sustainable consumption: As it reflects, this competency focuses on sharing information, values and conceptual knowledge related to sustainable consumption. It entails engaging with various communication partners via various arrangements and formats (Fischer & Barth, 2014a). This competency reflected in the project via probing participants with a media intervention in terms of using audio visual content and seeking novice and engaging ways to communicate sustainable consumption messages which are example of to communicate sustainable consumption and to use information and communication technology (ICT) (Fischer & Barth, 2014b).

Competency to use, edit, and share different forms of knowledge: It refers to engagement with and organization of various forms of information such as academic reports, practical experiences, tables and figures. This competency necessitates critical reflection on the validity and reliability of information sources and handling contradictory information (Fischer & Barth, 2014a). Fischer and Barth (2014b) present examples of this competency referring to their project which aims to support sustainable consumption in higher education units in which participants were asked *to use, edit, and share different forms of knowledge*, that was also supplemented by the scientific information by academics working on the project and eligible resources such as research papers, etc.

Competency to use information and communication technology (ICT): Similar to the previous competency it requires reflecting on validity and reliability of information and enthusiasm for sharing it with others. Different from previous competency, it entails usage of ICT in organization of knowledge, building interactive content and evaluating factors that might result from dissemination of the content (Fischer & Barth, 2014a). The example for this competency is shared with the competency of communicating sustainable consumption to others. In terms of supporting this competency, participants were invited to use audio-visual content and seek alternative ways to share sustainable consumption (Fischer & Barth, 2014b).

Competency to think visionary and to consider interrelatedness: It basically considers justice between generations and inter generations. This competency engages with future-oriented thinking and thus requires reflecting on consumption consequences for present and future. It acknowledges interconnectedness of systems and accept future as undetermined and subject to change (Fischer & Barth, 2014a). As means of an example to think visionary and to consider interrelatedness the project group establish the goals for the institutions they work toward sustainable consumption and, observe and assess the process pursuing particular goal that integrates reflection of the interrelatedness of independent intervention measures and unanticipated outcomes (Fischer & Barth, 2014b).

Throughout BINK project participants engaged with service providers and carried out projects as partners. The project reports with reflections and presentations of their works were analyzed to see development in competencies as well as evaluation of their work (Barth et al., 2014). Another research uses this frame of competencies in order to study mindfulness training's contribution to introspection and sustainable consumption competencies. Two different case findings explained based on data driven from interviews and reflective diaries (Frank, Sundermann & Fischer, 2018).

2.2. Foundations of Critical Literacy

2.2.1. Critical Theory and Critical Pedagogy

Having roots on critical theory which is a philosophical movement created between first world war and second world war as a battle against *exploitation*, *repression*, and *alienation* entrenched in Western culture (Bronner, 2011), critical pedagogy has educational goals for creating justice and equality in the community (Kincheloe, 2008). As it has been adopted by various approaches in social sciences field, it is hard to give a clear-cut definition for a critical pedagogy. The shared opinion is that democratization of the education (Dardel et al, 2017). Although it associates with many, particular forerunners are Dewey, Vygotsky and Freire as they are well-known educators. The Brazilian educator, Freire is the leader of this school of thought.

Therefore, this proposal pays specific effort to bring information about his approach and contribution.

Critical pedagogy as a term seems to first appear in Giroux's (1983) writing as means of a pedagogy that has roots in radical social thought and progressive approaches to education which pursued embedding democratic values of society and 'transformative social action in the interest of oppressed groups to educational practices. The current study adopts Freirean approach to critical pedagogy. This pedagogy proposes to make connections between personal development and society via promoting competencies, academic knowledge, tendency to question and critical interest regarding power, change, inequality and community (Shor, 1992). Freirean approach to learning sees the world as an item to be understood and recognized by learners own work; inspired and situated in their own conditions, experiences, needs and interest (Lankshear & Mc Laren, 1993). As individuals face with a challenge, they understand it, identify possibilities to react and engage in action toward it, in other words each understanding accompanies by an action eventually (Freire, 2005). As those referred to social problems it means that a naïve consciousness which refers 'oversimplifying an issue and lack of interest in investigation' (Freire, 2005) brings distortion to the issue at hand and misinterpretation of the roots of the problem that offer responses for consequences rather than reasons which does not help to solve the problem or pass the responsibility to unfit people or place (Lankshear & Mc Laren, 1993). Whereas, critical consciousness results in critical act (Freire, 2005).

2.2.1.1. Values of Critical Pedagogy

These values belong to an emancipatory approach using problem-posing method for critical literacy.

Participatory: A participatory learning environment appreciates and feeds students' natural desire to learn new things (Shor, 1992). According to Dewey (1963) participation in school as well as community is essential to democracy and learning. Shor (1988) states that learners communicate with each other and the teacher and collaborate in problem-solving ('work out problems together') instead of passively

attending the lecture of teacher, in a participatory learning environment. Teacher pays attention to this interaction in order to find out knowledge, interest and expressions of the learners and blend those into teaching material.

Affective: The affective value of critical pedagogy might be described as provoking positive feelings towards learning. The education is a social interaction having cognitive and affective bases (Shor, 1992). The learning environment inviting participation, joy and interest give such a message to learners that their ideas and values are important and they are capable of transforming themselves and society (Shor, 1992). Moreover, this opportunity builds sense of belonging and care that are vital for ideal learning environment since it welcomes learners' own reality to classroom (Ada & Campoy, 2004).

Situated: It refers to 'integrating bodies of knowledge into student language and experience' (Shor, 1992, p45) that might be associated with learner-centered curriculum. The teacher observes students' talk, interests, language use and social, cultural and intellectual information they bring to learning environment in order to situate those into learning process (Shor, 1988). An authentic learning environment as Freire (2000) refers increases the participation of learners. This could be either selecting a problem theme from student's culture or conditions, or situating an academic theme or concept into students' expressions and practice (Shor & Freire, 1987). In both cases, it heavily necessitates the observation role of the teacher.

Problem-posing: The learning process in critical pedagogy invites learners to become 'critical actors who make meaning' rather than 'passive receivers of official knowledge' (Shor, 1988). Freire proposed problem-posing as democratic participation of learners on constructing knowledge and society. It is not rediscovering any concept or information of subject matter or ignoring the teacher's content knowledge. It is presenting those as information to be analyzed deeply together in a situated manner on learner experience and culture, from a multiple standpoint rather than expecting learners to accept this information as fixed reality and memorize without questioning (Shor, 1992).

Multicultural: As critical pedagogy integrates learning material into student's background and invites them to bring their experience and culture to learning environment it welcomes multiculturalism. Moreover, the principle of critical education is positioning curriculum towards equity and diversity (Shor, 1992). It identifies diversity as indispensable part of existence and prioritizes dissolve prejudices and stereotypes (Ada & Campoy, 2004).

Democratic: Dewey (1966) stated that education is a social practice which may create alteration in learning and behavior of learners according to values proposed by curriculum or how the curriculum put into practice. Democratic education targets increasing the involvement of learners in curriculum in order to foster intellectual interests, cooperative learning, rational thinking (scientific thinking), social routines and self-discipline (Dewey, 1966). That kind of education environment would be promising for change agency (Shor, 1992). Democracy in learning environment relates to hearing the voice of the learners and creating an atmosphere for participation (Shor, 1988). Dialogue between learners and teacher portrays respecting each other's views instead of hearing only the people in power; in other words democracy in practice (Ada & Campoy, 2004). What's more, the democratic value takes place not only hearing the voice of learners but also not forcing them to speak if they do not have anything to say (Shor & Freire, 1987).

Dialogic: Dialogue brings an opportunity to classroom for hearing multiple viewpoints thus guides learners to explore and challenge their own reasoning (Ada & Campoy, 2004). It is a teaching method based on the inborn tendency of humans to talk and learn about their surroundings and perform on it collectively (Shor, 1988). Dialog builds on mutual terms that is not dictated by teacher nor unstructured informal chat but it is both creative and concurrently organized (Shor, 1992). Teacher brings the knowledge and expertise to the learning environment, never implies not knowing the object but presents the nature of science as 'new knowledge arrives when old knowledge no longer answers the current questions' (Shor & Freire, 1987). Therefore, it begins with teacher's knowledge of the subject matter and goals of the lecture, but it will be enriched with the voice and background of learners (Shor & Freire, 1987). The idea is creating the open discussion environment.

Desocializing: As teachers pursue problem-posing and democratic dialogue in learning environments they question ‘socialization into values, myths and relations of dominant culture’ together with learners (Shor, 1992). In other words, they together critically rethink about their socialization up to now which is defined as desocialization (Shor, 1992). The outcomes of socialization in school and daily life are critically analyzed such as desocializing from indifference to involvement or desocialization from degenerating values assimilated via mass media and daily life like consumerism, racism, etc. (Shor, 1988).

Researching: Critical learning environment uses cooperative learning and critical inquiry. It identifies the role of learners as researchers who make meaning out of their experiences, while analyzing the received information, values, themes etc. (Shor, 1992). Teachers are initially defined as researcher as well. They observe learners in order to situate curriculum into their cultural, social and intellectual background; with learners they study learning materials, public life, local conditions and learning process itself (Shor, 1992). Thus classroom and community research is one of the focus of critical pedagogy.

Interdisciplinary: Learning environment for critical pedagogy do not set clear-cut boundaries for field of study (Shor, 1992). It considers needs and interests of learners when enriching the learning process that it integrates disciplines with different methods (Shor, 1992). In other words, it uses diverse approaches towards subject matter and multiple ways of information depending on the reaction of learners. This perspective to learning environment supports curriculum to be holistic (Shor, 1992).

Activist: Enthusiastic involvement of learners depends on their awareness of their ideas and concerns being influential over decisions shaping their environment (Ada & Campoy, 2004). The activist character of critical learning demonstrates its link to history and daily life. It may help reorienting cognitive effort from the perspective of learners (Shor & Freire, 1988). The critical education asks learners in a democratic way to construct their education, to question their situations and experiences to deliberate acting in society in response to their reflection (Shor, 1992). The change-agency here is defined as gaining knowledge and experience and taking action for

the democratic transformation of self and society. Examples of change-agency is praxis at the classroom level that providing learners rethinking ideas and activities such as excessive consumerism, etc. (Shor, 1992). In learning environment, it is making space for learners to participate in decision-making about their own settings or problem-solving about concerns part of their life (Ada & Campoy, 2004).

2.2.2. Critical Literacy

Critical literacy emerges from the work of Paulo Freire in Brazil while he engages with adult literacy. His book of *Pedagogy of oppressed* (2000) explains this experience and illustrates how adult learners acknowledge themselves as actors who can reconstruct the social issues they encounter while learning to read to words and the world critically. Quintero (2004) defines critical literacy as a process of building perception and critically engaging with language tools of our lives as well as others as means of verbalization, comprehension and transformation. The link between power and the language is focus of the critical literacy (Winograd, 2015). As Freire and Maccedo (1998) remarked, language is a collective construct and thus never unbiased. Discourse is more than a tool for dialogue between people; it also includes action and cognition enriched by one's freedom of expression which is the essence of critical literacy (Freire, 2000). Comber (2011) states that it is a repetitive inquiry of wording in pursue of answering questions as 'how do particular texts work, what effects do they have, who has produced the text, under what circumstances, and for which readers, what's missing from this account, how could it be told differently' in order to embellish life in schools and society. Different from traditional text reading comprehension which includes teacher asking the content of the story and what they remember about the story, critical literacy engagement consist of uncovering the author's purpose, bringing in their life experiences and assessing the ideas presented by the author (Gove & Still, 2014). Last but not least, critical literacy does not mean necessarily opposing instead reconsidering points in questions from different perspectives and hopefully result in suggestion for transformation or advancement (Vasquez, 2015).

Freire's dialogical approach (2000) referring that all participants of a learning community are co-learners independent from their role in the community as teacher,

learner, educator, community member, etc. constitutes critical literacy. This dialogue between co-learners aims for critical thinking (conscientization) and action. Critical thinking is 'thinking which perceives reality as process, as transformation, rather than as a static entity' (Freire, 2000,p 92). It includes one's inquiry about own position in community in through considering the social, economic, political and historical reasons for this position and back up this perception derived from the inquiry to shape and gain control over own life (Wallerstein, 1987). The focus is challenging power issues, whether decisions made consciously, and the role of text/media on actions. The decisions and actions carried out in response to getting awareness through critical thinking becomes the transformative act. The iteration in the cycle of critical thinking and action is important. In classroom it is utilized as bringing variable texts and engaging with the issues of power and agency via questioning these texts (Patel Stevens & Bean, 2007). In addition to texts the classroom ambience in which these texts are put into examination is also a field for critical literacy (Patel Stevens & Bean, 2007). Problem-posing (Freire, 1970; Quintero, 2004) also referred as critical questioning (Weissman, 2018) becomes a base for the critical literacy approach in learning environment. This technique is explained with the engagement with generative text which are defined as multiple sources of media created by interests, concerns and daily experiences of learners (Souta Manning, 2017). In other words, everyday media would be positioned as generative text. They are dissimilar to conventional texts since they are particularly constructed for integrity and equitableness (Souta Manning, 2017). Generative media arise from particular analysis of learners' concerns and stands for various entries to concepts learners may not have adequate knowledge or experience (Freire, 1970). Those bring generative themes which are 'sociological situations rose up during the group reflections on images or words' (Vittoria, 2018, p41).

The literacy is evaluated in process in terms of whether it contributes to current social patterns or contributes to cultural practices that encourage democratic and emancipatory transformation (Freire & Macedo, 1987). Critical literacy partakes in critical reflection, active participation, real life experiences and transformative action as guided by dialogic approach of Freire (2000). Learners bring their culture and real life matters to classroom and teachers use this in pursue of generative themes

which are daily life issues and interests of learners, to guide learning environment. Generative themes are topics that creates arguments and reflection towards the reality of learners (Vittoria, 2018). The dialogue between co-learners (teachers and learners) that utilize generative themes proposes to reach critical thinking (conscientization) and action. Critical literacy is neither a topic nor a unit; instead it is a critical perspective taken (Vasquez, 2017). As abovementioned highlight critical literacy heavily founded on the learners' daily life and ability to challenge tensions. It is a learner-centered, transformative pedagogy.

2.2.2.1. Critical Creative Literacy

Critical creative literacy is used as forms of guiding critical literacy within the scope of the current study. This methodology essentially formed based on the work of Alma Flor Ada (1986) whose research interests are critical pedagogy, bilingual education and children's literature. Ada (2007) declares that praxis in educational setting starts with past as means of reflection on earlier actions and historical background which she defines as preparation for action of today. It continues with present upon reflecting on the recent, intended action; there fore a cycle is formed. Ada (1986) states that she follows views of Freire, Aronowitx and Giroux that claim educational practices offer possibility of critical questioning and rebuild social realities via dialogic approach pursued by learners and educators as means of transformative education. Reading, thinking and action are so intertwined that decision-making processes through all dialogue. As new information is processed people determine how to relate an issue, whether to search and learn about more or engage in critical reflection, how to communicate or not with others and how to alter actions upon new insights (Ada & Campoy, 2004). The critical creative literacy and/or dialogue (Ada & Campoy, 2004) describes those process in terms of 4 phases, namely descriptive, personal/interpretive, critical/multicultural/anti-bias and creative/transformative phases.

Descriptive Phase: to develop an understanding of the content: Learners always meet new information with a background with previous knowledge and experiences and sometimes with an expectation regarding the content. This meeting with new

information starts the dialogue (Ada & Campoy, 2004). The first phase in dialogue is simply includes finding out what the content presents. This phase is guided by typical reading comprehension questions of “Who? When? Where? How? Why?”.

The answers to these questions can be found in the text, are known by the teacher, and indicate whether or not the students have understood and can recall the information. These questions may be a starting point to the dialogue. They are important, but they are not enough. Should the discussion remain at this level it would suggest that reading is a passive, receptive, and in a way, domesticating process.

(Ada & Campoy, 2017, p 119).

Personal Interpretative Phase: to encourage the expression of feelings and emotions elicited by the text and to relate the book content to the reader's experiences.

Learners bring some unique factors as engages with reading such as character traits, prior knowledge and experience (Ada, 2003). The reader owing those unique characteristics reacts to reading. This reaction includes feelings and emotions of reader back up with prior knowledge and experience (Ada & Campoy, 2004). Routinely, learners are asked to share if they liked the information or which part they like. But this step is different from this point of view (Ada & Campoy, 2017).

It brings the reading process to the students' grasp and makes it more meaningful. It also helps develop the students' self-esteem by showing that their feelings, emotions, and experiences are valued by both the teacher and their classmates. Moreover, it helps students understand that the true learning occurs when the information received is analyzed in the light of one's own previous experiences and knowledge.

(Ada & Campoy, 2017, pp 119).

Critical/Multicultural/Anti-bias Phase: to promote higher-thinking skills. To encourage reflection about the themes of equality, inclusion, respect, and justice leading to peace. Up to this phase the learners are informed about the content and weigh it against their knowledge and experiences. The dialogue continues with reflection (Ada & Campoy, 2004). This phase is named as critical/multicultural/anti-bias phase in order to emphasis that ‘an empowered reader or listener will not only ponder the intentions of the writer/speaker, the consequences of ideas presented, and who would benefit or suffer from those consequences, but also how people of

different cultures might relate to the text and what hidden biases it sustains' (Ada & Campoy, 2004, p42). If the standpoint of reader includes justice and equality or universality the questions will urge to discover whether what read is reasonable, rationale, fair, inclusive etc. (Ada, 2003).

Creative/Transformative Phase: to encourage creative, constructive action toward greater understanding and respect. To encourage taking responsibility for bringing about positive changes in our own reality. Reading can bring joy, enrichment and awareness yet its value is beside that it also improves one's self awareness and facilitates means to choose and pursue decisions for bettering or enriching lifestyles (Ada & Campoy, 2017). The critical analysis in previous phase brings a critical awareness that they will sense their agency. At this phase, learners are advised through dialogue to explore facets of daily life they can develop and inspired to use their agency and bringing the action (Ada, 1988).

Ada & Campoy (2004) state that those phases in dialogue do not always appear in linear format. But this categorization seems beneficial for identification of the progressive process and guidance towards praxis. What's more, discussions in classrooms usually stay at the descriptive level and sometimes critical reflection is included if particular attempt takes place. Most of the time, learner's personal reactions, experiences and feelings towards to topic at hand are not regarded as valid and learners are rarely encouraged to think through the understanding reached by the process and put this reflection into action that forms tomorrow's world (Ada & Campoy (2004). Surely, learners or children as means of younger students are not meant to transform the whole world but transform theirs by starting to accept responsibility for their lives and for their relations with others (Ada & Campoy, 2017).

2.2.3. Critical Literacy in Early Childhood Education

Education of the early years incorporates language development, socialization, conflict resolution between peers and etc. as means of intellectual and socio-emotional objectives (Winograd, 2014) which are the focus of critical literacy.

Comber (2011) proposes that critical literacy practices of young children in a developmentally appropriate manner must start with their ordinary actions such as regular texts and books they come across, and issues they face within a classroom or a playing field. As Vasquez (2014) explains, a curriculum which engage young children with critical literacy needs to be flexible and responsive to significant daily life experiences of young children as well as respecting diversity. The curriculum evolves with the teachers' and children's engagement in critical questioning for inclusion, justice and equality (Vasquez, 2014). As it is reflected above there is no fixed curriculum within a critical literacy consistent with the nature of early childhood education referring to the needs and interests of the children. Persistent observation of young children, caring for their discussion, involving their cultural and social backgrounds becomes the bases of critical literacy. The focus is on interests and topics which grab children's attention and have relevance to their life when creating the curriculum (Vasquez, 2017).

Türkiye's early childhood education aims at young children to become democratic, respectful for human rights, collaborative, open to cooperation and solidarity, confident and creative. Similarly, the curriculum is expected to be flexible, responsive, child-centered, enriched with cultural and universal values, inviting for parental involvement and derived from daily life experiences, (MONE, 2024). This kind of curriculum could be addressed with critical literacy enrichment since teaching with problem-posing invites culturally sensitive and developmentally meaningful learning via engaging with literature and complementary activities that promote integrated curriculum (Quintero, 2004). Young children flourish in socio-emotional and cognitive bases in a setting which interact them with substantial and meaningful issues of daily life that affect them (Winograd, 2015).

2.2.3.1. Reflection of Critical Literacy on Early Childhood Education Research Studies

In the following section, related literature on international and national bases is revisited. More specifically, the critical literacy studies conducted in the early childhood education context are reviewed and summarized according to the focus.

Studies addressing young children: A number of studies focusing on young children's critical literacy involvement are available in the related literature, yet this number is insufficient (Harwood, 2008; Kim, 2016; Kim & Cho, 2017; Quintero, 2009; Vasquez, 2004). The research studies are diverse due to their focus. To illustrate, considering on the availability of apps and programs for early age one of the studies demonstrated that digital tools were also a way to involvement of young children with critical literacy (Vasquez, 2013). Usage of a children's book was quite preferred. Callow, (2017), Husband (2014) and Kim (2016) utilized children's books in order to discuss diversity and alienation with young children in classroom settings and reported their conception of discrimination. Similarly, Chafel et al (2007) and Labadie et al (2013) used books for problematizing economic diversity with young children and mentioned young children's capacity to notice prejudices. Apart from that, Kim (2016) challenged gender stereotypes in books and reconstructed gender roles with bilingual preschoolers while Stribling (2014) and Ruiz (2013) used children's book in negotiating social justice. Different from above mentioned studies some reflected on everyday text. O'Brien (1994) used catalogues while Vasquez, (2006) used snack package as means of challenging consumerism. Their studies findings were quite influential in terms of the current study since they shed light on the negotiation of young children on advertising and consumption. The review of those studies illustrated that critical literacy technique creates a place for enhancing young children's critical thinking abilities and associating young children with challenging issues of society. Although the scope of these studies centered on how critical literacy may be employed in order to challenge everyday problems of society, they also imply an attitude formation against conventional norms. That is to say that critical literacy could be a method to deconstruct attitudes and reform pre-attitudes regarding the issues of respecting the rights of the others, valuing cultural differences, protecting nature and saving community sources.

Studies addressing educators: In terms of reflecting the process of teachers critical literacy practice Weismann (2018) studied perceptions and experiences of seven preschool teachers who employ critical literacy in their early childhood classroom. The results demonstrated that teachers use read-aloud and critical questioning as methods and engaged with various genres and addressed social justice as means of

challenging discrimination of race, gender, social status, disability, sexual orientation; social-environmental justice and environmentalism. They reported challenges as parents, teachers, self, others and structural constraints; developmental characteristics of young children, constructivist or progressivist curriculum need and assessment of critical literacy. Gove and Still (2014) conducted a particular study within a professional development effort on critical literacy for environment and social justice. This study focuses on a veteran teacher's experience. The teacher reflected that training influenced her instruction with practicing social and environmental issues in terms of what worked and what would be done to work it better and she felt supported during the training thanks to the collaboration. She also noted the importance of critical literacy and possibility of usage in the existing curriculum. Considering the focus of the current study it is a good example to analyze. Similarly, study of Alıcı (2018) is very important for this review considering it is the only study conducted in context of Türkiye. Furthermore, it addresses sustainability related activities of teachers while using critical media literacy. According to the findings, teachers gained knowledge regarding critical literacy with respect to the training presented in scope of the study. Teachers' awareness of critical media literacy and education for sustainability has increased and they conducted sustainability activities with young children through critical media literacy. Moreover, they reported that young children's engagement with sustainability increased as well. The review of the results of abovementioned studies demonstrated that teachers benefit from critical literacy while addressing challenging issues such as respecting and taking action towards social diversity, environmental responsibility and care for nature with young children.

Studies addressing pre-service teachers: There are only three studies available in the accessible literature. All of them were conducted within a compulsory course context and varied based on their focus. In the study conducted by Noris, Lucas & Prudhoe, (2012) 27 pre-service teachers experienced usage of critical literacy in scope of a must course addressing diversity in early childhood education. Within the course they prepared critical literacy plans for young children and implemented a social project. Based on this experience they reported that critical literacy provided children to learn about different cultures and challenging problems like hunger and majority

of them (20) stated the appropriateness of the usage of critical literacy with young children although mentioning challenges as fear of offending parents in sensitive topics, strict curriculum, limited resources and time. Similarly, Souto-Manning (2017) carried a study with pre-service teachers in scope of a compulsory course yet language and literacy methods enriched with critical literacy usage on generative texts for equity and multicultural learning. In terms of their observation in practice teaching, notes on their reflexive journals and recordings of the course sessions it was seen that there was a shift towards critical literacy. Pre-service teachers broadened their definition of literacy and literacy activities, and engaged with topics of discrimination, prejudice and privilege. Slightly, different from others, Souto-Manning and Price-Dennis (2012) addressed social justice and equity within a compulsory literacy and language course using popular culture texts (cartoon). As they engaged with critical literacy and observe young children and carried critical literacy practices with them, pre-service teachers reported the potential of media as introducing difficult concepts to young children as well as a safe way for their self-reflection on beliefs, labeling and questioning injustice.

The result of the studies demonstrated that critical literacy involvement in terms of teacher education have quite potential yet as it is reflected in a review of literature there is limited study addressing teacher education and none for context of Türkiye. Considering importance of transformative and action oriented pedagogy in teacher education particularly for accomplishing social justice and sustainable living this study aims to fill this gap via researching pre-service teachers involvement with critical literacy for sustainable consumption.

2.3. Related Studies within the Frame of Sustainable Consumption

The field of sustainable consumption is recently increasing area of research (Adomßent et al., 2014; Araújo et al., 2021; Geiger et al., 2018; Fischer, 2010; Fischer & Barth, 2014a; Sahakian & Seyfang, 2018). Araújo et al. (2021) explored trends of the themes in the sustainable consumption research area through a bibliometric study of articles published between 1999 to 2019. The study investigated 286 articles reached through Web of Science database and listed the

main research topics as *Eco efficiency* (67), *consumer behavior* (59), *social nature of consumption* (50), *dynamic approach to sustainable consumption* (30) and *education for sustainable consumption* (11). Araújo et al (2021) reported the first studies in this area of research focused on alleviating the burden of consumption on environment with technological developments and encouragement on consumption of eco-friendly products according to their analysis. On the other hand, the latest work seems to be addressing the need to alter present consumption habits in addition to the involvement of multiple stakeholders in order to build strategies and policies for sustainable consumption. As the focus of the present study centers on education for sustainable consumption studies within this frame are shared in the following.

2.3.1. Studies Addressing Higher Education

A mixed-method research study conducted by Schoolman et al. (2016) investigated sustainable consumption engagement of university students at a higher education supporting sustainability with related courses and campus facilities. The study used surveys and focus group interviews as data collection tools. Results illustrated that universities are still lacking in terms of affecting attitudes and practice of their students' towards reducing consumption, particularly through buying less and moderately through reusing materials, taking public transport, bicycle or walking, conserving water and electricity. The study also points out that higher education students' consumption practices seem to be affected by contextual settings such as offering accessible recycling facilities, public transformation, etc. at campus life. Another research conducted with university students yielded similar results. Wuest et al. (2014) explored students learning about sustainability, perceived consequences of sustainable consumption, ethical obligation and behavioral intention towards sustainable consumption and compared results based on the type of majors as majoring in family and consumer sciences and others. This comparison was due to the curricular offerings of family and consumer sciences education being established on sustainability. The results indicated that students majoring in this department differed from students majoring in other departments in terms of perceived consequences of sustainable consumption and learning about sustainability yet did not differ on ethical obligation which identified as a predictor of intention to

consume sustainably. Both studies put emphasis on the lack of change in sustainable consumption practices while exemplifying change in attitude and knowledge.

From another perspective, Petersen et al. (2007) engaged in a research study addressing real-time water and electricity consumption of students in dormitories. Within the scope of the study, students participated in a competition among dormitories measuring water and electricity usage that lasted for two weeks and received online feedback. In addition, information sources about the consequences of water and electricity consumption on the environment were posted in the dormitories. This endeavor resulted in a 32% reduction in electricity use and a 3% reduction in water use in total. After the competition, students reported their intention to follow conservation strategies they acquired throughout the process. Although the duration of the study is rather short, the study seems to reach a considerable amount of decrease in electricity use while this decrease did not reflect in water use.

Apart from previous studies, Frank et al. (2019) presented a research study exploring whether mindfulness training supports key competencies of sustainable consumption. Two different studies of mindfulness training were used within the scope of this exploration. One of them was an eight-week-long mindfulness-based intervention study, the other one was a university seminar study integrating mindfulness practice. The data were collected and analyzed separately for those two studies. Results demonstrated that mindfulness training contributes both to acquisition of key competencies of sustainable consumption and introspection abilities. However, introspection seems not equally being related to all competencies and key competencies of sustainable consumption not necessarily be reduced to introspection. Apart from that, both studies demonstrated that competency to reflecting on individual needs and cultural orientations and communicating the idea of sustainable consumption to others were observed more whereas planning, implementing, and evaluating consumption-related activities, critically taking on one's role as an active stakeholder in the market, thinking visionary and considering interrelatedness and using, editing, and sharing different forms of knowledge were lowly observed and using information and communication technologies were not observed at all. Another mindfulness based intervention study conducted in the context of higher education to

address sustainable consumption was administered by Frank and Stanszus (2019). This study investigated the outcome of self-inquiry-based learning seminar and self-experience-based learning seminar on personal competencies for sustainable consumption proposing to transformational, action-oriented and participative learning settings. Findings revealed that students gained awareness of own behavioral patterns, motivation and initiating the change in some cases.

Lastly, the investigation of Mieg et al. (2013) focused on the effect of creating short films on knowledge, commitment and practice on the preferences and involvement in sustainable consumption. Participants of study consisted of university, vocational and secondary school students, 119 of which became experimental group involved in filmmaking while 147 of which became the control group. The findings of the study illustrated that short filmmaking significantly increased the involvement in sustainable consumption while there were no significant differences reported based on preferences. Those who created short films on practices exhibited significantly greater results in both preferences and involvement. Moreover, university students were found to be more involved compared to vocational and secondary school students.

The abovementioned review of studies that focused on sustainable consumption in higher education illustrates that interventions bring change in attitude and knowledge, but it needs development in terms of change in behavior and consumption behavior of university students might be related to facilities offered in campus (Petersen et al., 2007; Schoolman et al., 2016; Wuest et al., 2014). On the other hand, action-oriented transformative pedagogies have the potential to remedy the gap in behavioral change (Mieg et al., 2013; Frank & Stanszus, 2019).

2.3.2. Studies Addressing Pre-service Teacher

Studies addressing the training of pre-service teachers with an action-oriented and participative perspective reported positive outcomes for sustainable consumption. To demonstrate, Alvarez-Suarez et al. (2014) measured 94 teacher candidates' knowledge level regarding effects of consumerism on the environment, attitudes

towards sustainable consumption and behavioral intentions before and after a constructivist and investigative teaching intervention. Findings demonstrated participants enhanced their level of knowledge related to the social and environmental effects of consumerism, increased their level awareness in terms of the need to action, and behavioral intentions towards sustainable consumption. Another example is the four case studies conducted with primary education pre-service teachers, as reported by Albareda-Tiana et al. (2019). All four cases utilized active teaching-learning strategies and were guided by UNESCO Roadmap recommendations for implementing the Global Action Programme. The study used ecological footprint tests and a rubric assessing the level of sustainability competencies in order to evaluate the pre-service teachers' performance before and after training. Findings suggest the acquisition of competencies and a change in consumption practices reflected by lower levels of ecological footprint.

Another noteworthy study in the literature that focus on both practice teaching in addition to sustainability literacy was conducted by Merrit et al (2019) with 91 elementary education preservice teachers. The study demonstrated that significant changes in pre-service teachers' values, motivation, sense of agency and practices toward sustainability were achieved in response to taking a required course of education for sustainability that addressed content knowledge and pedagogical content knowledge based on a flipped learning approach. The results also pointed out that it is lacking in recycling, alternative transportation usage, decreasing waste as consumption practices, and views regarding societal changes that researchers propose to plan a new module that put emphasis on the role of education in change as means of governmental, community-based and societal restructuring based on the findings.

In terms of focusing on practice teaching, Knight (2021) carried out an action research study in a private university context in Spain with 32 first-year preschool and primary education undergraduate students to address sustainable consumption in the English language teaching course. Preservice teachers engaged in a project focused on waste, pollution and energy that consisted of three phases consisted of researching and preparing sources for teaching and learning, creating a task based

plan and a word list of key concepts in Catalan, English and Spanish, implementing the activities in the practice teaching school and sharing prepared materials and resources for teachers via digital means. It was reported in the study that preservice teachers prepared tasks and created and shared a resource cloud for the public, but could not implement it with students.

Abovementioned studies conducted with pre-service teachers that focused on active learning and action-oriented approaches reported positive outcomes for sustainable consumption within their citizen role (Albareda-Tiana et al., 2019; Alvarez-Suarez et al., 2014). However, there is a gap in addressing the teaching role with a transformative and action-oriented training (Knight, 2021; Merrit et al., 2019).

To summarize, this chapter presented sustainability while focusing on the critical perspective and revealed the role of education towards a sustainable world, particularly creating opportunities for pre-service teachers and young children. The principles of critical pedagogy and critical literacy were revisited in this sense. The review of sustainable consumption studies conducted in higher education institutions pointed out that interventions bring positive outcomes in attitude and knowledge, but behavioral change and the consumption behavior of university students might be related to the facilities offered on campus. On the other hand, action-oriented transformative pedagogies have the potential to remedy the gap in behavioral change. Similarly, studies addressing preservice teachers reflected an increase in sustainable daily practices when provided an active and practice-based instruction on sustainable consumption. At this point, the literature indicates a gap in addressing both teacher content knowledge and practice and citizen knowledge and practice preservice teacher education. This study proposes to meet this gap while focusing on citizen role and teacher role of preservice teachers via professional development training based on practice-oriented, participative, situated and transformative pedagogy.

CHAPTER 3

METHODOLOGY

This chapter introduces the design of the current study including the context the study takes place as well as the characteristics of participants. The content, schedule, and rationale of Professional Development Training are explained further. Detailed information regarding data collection tools, data collection and data analysis procedure is given. Trustworthiness of the study and ethical concerns are also discussed. The role of the researcher concludes this chapter.

3.1. Purpose and Research Questions

The present study aims to explore early childhood education (ECE) teacher candidates' experiences of Professional Development Training (PDT) which is designed to inform them about sustainable consumption via critical literacy while they are attending the practice teaching course. This exploration includes understandings and practices of teacher candidates as citizens and as teachers.

1. To what extent have ECE teacher candidates' understanding of sustainable consumption changed in response to Professional Development Training (PDT)?
 - a. To what extent have ECE teacher candidates' understanding of sustainable consumption changed in response to PDT as citizens?
 - b. To what extent have ECE teacher candidates' understanding of sustainable consumption changed in response to PDT as teachers?
2. To what extent have ECE teacher candidates' practices changed regarding sustainable consumption in response to Professional Development Training (PDT)?
 - a. To what extent have ECE teacher candidates' daily practices changed regarding sustainable consumption in response to PDT?

- b. To what extent have ECE teacher candidates' teaching practices changed regarding sustainable consumption in response to PDT?
3. How do ECE teacher candidates' understanding and practice within the citizen role and teacher role intersect?

3.2. Design of the Study

This research follows the qualitative inquiry tradition. Qualitative inquiry is a rigorous data collection and analysis approach based on following five characteristics: naturalistic, descriptive data, concern with process, inductive, and meaning (Bogdan & Biklen, 1998). Qualitative research uses real-life settings while gathering data and the researcher gains an instrumental role in this process (Bogdan & Biklen, 1998). It is situated in the sense of using the naturalistic setting in order to study the phenomena to explore and to interpret (Denzin & Lincoln, 2018). In this context, data is descriptive in nature and rich with details (Bogdan & Biklen, 1998). It includes "series of representations including field notes, interviews, conversations, photographs, recordings, and memos to the self" (Denzin & Lincoln, 2018, p10). In qualitative inquiry, the focus is on the process instead of end results that why and how questions are tried to be answered (Bogdan & Biklen, 1998). Moreover, qualitative researchers are more prone to use inductive data analysis procedure considering their expertise in the phenomena under study gets increased as they spent more time in the field (Bogdan & Biklen, 1998). Lastly, the most distinctive feature of qualitative inquiry is meaning. While inquirers scrutinize the circumstances in the actual context they pursue to figure out and represent the phenomena in light of the comprehensions constructed by people under study (Denzin & Lincoln, 2018).

The present study took place in an actual setting in order to explore sustainable consumption understandings and practices of teacher candidates. This exploration took descriptive forms. Collected data consisted of transcribed interviews, dialogues, notes and reflections of participants and documents of activity plans. It was a process-oriented study that explored participants' understanding and practices not only prior to professional development training but also in response to professional development training. Hence, this exploration included documents and reflections generated throughout the process in

addition to interviews conducted before and after training. Moreover, experiences and meaning-making processes were focused and analyzed in order to thoroughly express mental constructions of participants. This analysis was planned to be conducted inductively. Thus, using a qualitative research design aligned with the purpose and procedure of the present study.

Among qualitative research designs case study approach is employed in the present study. According to Yin (2003), “a case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (p. 15). Stake (2008) claims it is not a decision about method with case study, it is rather about the interest in a unique set of situations in other words interest of research. Within the scope of the present study, the case is a group of teacher candidates who received professional development training during practice teaching course in a green campus university. Case study approach brings in depth exploration into their experience. This method enhances understanding via working on empirical questions on the phenomena and demonstrates the trustworthiness of this understanding with triangulations on categorization and meaning making process throughout all process (Stake, 2008). The case study research methodology is particularly suggested for how or why research question(s) while investigating a situation a researcher cannot shape or have little influence over it (Yin, 2003). The present study focuses on real-life experiences of teacher candidates and aims to study their understandings and practices in response to professional development training they attended. How their understanding and practices are changed within this experience is the focus of the present study. In other words, this is a context specific phenomenon under study. Moreover, this inquiry conducted through interviews, journals and documents directly gathered from participants which also support triangulation of the representations in meanings while addressing a contemporary circumstance. Therefore, the current study is a single case design centering on one unique case and its boundaries (Stake, 2008).

3.2.1. The Context of the Study

As Stake (2008) indicates, “case study concentrates on experiential knowledge of the case and close attention to the influence of its social, political, and other contexts” (p.120). This

case is scrutinized in the context of a public university campus in capital city of Türkiye. The university has a green campus life with a concern for sensitivity towards nature and embracing diversity and humanity as reflected in its core values (University website, 2024). The tradition of a green campus and respect for diversity dates to its foundation. The alumni association, academic staff association, and student clubs influence the university's climate in terms of respect for nature, diversity, democracy, science, and social justice. There are particular student clubs founded on the mission of protecting nature and caring for animals and plants on campus as well as strengthening ecological knowledge and studies (University website, 2024). Time to time some seminars, workshops and activities are organized on campus by student clubs, departments, or administrative units of the university. Along with those activities, the university participates in the Greenmetric IU ranking and the Impact ranking and presents yearly sustainability reports. Nationwide, it was awarded second place in 2023 at a competition between universities on energy efficiency in addition to receiving a certificate of energy efficiency in buildings via reaching 15% energy conservation (University website, 2024). Apart from that there are courses about sustainability and environmental studies from various departments. In the faculty of education, undergraduate program includes mandatory environmental education course for early childhood education teacher candidates.

The study was conducted in the abovementioned settings of the university. It was spring semester, when the study took place. Senior students including the participants of the study were making preparations for graduation. These preparations included application for graduate schools and interviews for job applications as well as social events like graduation ceremonies. Specific to teacher candidates, it included application to the Public Personnel Selection Exam - Teaching Field Knowledge Test (Republic of Türkiye Centre for Assessment, Selection and Placement (OSYM), 2024) for teachers which is conducted nationwide. Upcoming graduation in addition to a green campus and educational facilities of the university might be possible social and political and situational influences on the case.

The researcher and the participants met on campus for both pre-and post-interviews. All except three meetings of professional development training were held on campus as well. Apart from that, two of the training meetings were located in a coffee house's private

meeting room next to the campus, which generally hosts meetings of student clubs and one of the meetings was a field trip to an association. Thus, it may be said that the study is bound by the social, political and environmental contexts offered by the university.

3.3. Participants of the Study

The participants of the study consist of senior students of the Department of Early Childhood Education undergraduate program of a university with a green campus. They are referred to as teacher candidates and/or pre-service teachers within this report. The participants of the study were selected as fourth-year students of the early childhood education undergraduate program considering their level of knowledge in terms of content area and professional development as well as their practice teaching experience which makes it possible to relate their knowledge to practice. This purposeful selection targeted choosing the best subjects specific to the case under study (Creswell, 1994; Merriam, 1998).

Teacher candidates were reached through with the assistance of research assistants and instructors from the university as gatekeepers. With the permission of course instructors, the researcher shared the content and procedure of the study with teacher candidates at the beginning of a course meeting. Upon this sharing, nine teacher candidates from the group voiced their request to participate in the study. An online meeting was organized with this group of volunteers to share further information regarding the research process. As a result of this meeting, six volunteer teacher candidates partook in the study and attended the professional development training.

All of the participants were female senior students and excluding one they were expected to graduate at the end of the Spring 2024 semester. They were similar in age except for one who previously graduated from the Department of Child Development of another university with an associate degree. Two of the participants had minor degrees in other programs (Sociology and Geographical Engineering). Participants had varying experiences in terms of sustainability, sustainable consumption and critical literacy. For sustainability mutual experience was learning about the term from the environmental education course they attended. Internet, social media, articles and academic studies were

the other sources they acquired information regarding sustainability. Apart from that, one participant observed a sustainability project in her practicum school, and another participated in workshops on sustainability. Sustainable consumption and critical literacy were less familiar terms for the participants. Four participants did not know the term sustainable consumption. One participant became aware of the term via social media and friends while another learned about it from the activities of a non-governmental organization. As for critical literacy, one participant had seen the term from social media, and one participant was informed of critical literacy through a literature workshop and creative dramatics training. For the rest of participants, it was an unfamiliar term. Table 1 summarizes participants' demographic characteristics and previous experiences related to sustainability, sustainable consumption and critical literacy.

Table 1. Characteristics of Participants

Participants	Age	Education	Previous experience		
			Sustainability	Sustainable Consumption	Critical Literacy
Mercan	24	Major in ECE	Workshops Social media Cross-curricular Articles	Non-governmental organizations	-
Başak	28	Major in ECE Minor in Geographical Engineering Child Development associate degree	Practice teaching school Internet	-	-
İpek	23	major in ECE	Internet Cross-curricular	Social media Friends	Social media
Kardelen	23	Major in ECE Minor in Sociology	Cross-curricular Social media	-	-
Güneş	23	Major in ECE	Cross-curricular Internet	-	-
Doğa	22	Major in ECE	Social media Academic studies	-	Literature workshops Creative dramatics training

All participants attended professional development training but five completed both theoretical and practical training offered within professional development. One of the

participants followed theoretical training sessions yet missed four practical training sessions attending solely the final wrap-up practical training.

3.4. Critical Literacy-Based Sustainable Consumption Professional Development Training (PDT)

Professional development training is a critical literacy-based sustainable consumption education orienteering sustainability. This training aims to support pre-service early childhood teachers' understanding and practice of sustainable consumption as citizens and as pre-service teachers with a critical perspective. It targets double-loop learning (Argyris and Schön, 1978) with theoretical and practical training focusing on teacher candidates' critical consciousness regarding sustainable consumption in their daily life within the citizen role and their teaching practice within their teacher candidate role during their practice teaching course. This training offers background knowledge and experience of sustainable consumption under the umbrella of sustainability and critical literacy within the early childhood education context for six theoretical training sessions. Afterward, training continues with a practical focus and offers five training sessions addressing activity plan preparation with ongoing support by the researcher. Throughout the training, participants are encouraged to reflect on new learnings and experiences as well as critically analyze underlying values and implications thus their creativity and reflexivity are enhanced.

Professional development training adopts a holistic view of sustainability (interrelatedness of social, cultural, economic, political and environmental components) (UNESCO, 2002) and it regards Sustainable Development Goal:12 Sustainable Consumption and Production (UNESCO, 2019) as an important goal that serves sustainability holistically. It exemplified an education within the sustainability criteria. It is reflected in material choice, sources offered and the content of training. To demonstrate, digital tools were preferred for sharing sources and reused papers were utilized for pen-and-paper activities. Sources were checked based on inclusivity and reflected diversity. In addition, this training was developed to pursue critical pedagogy and education for sustainability. The principles of critical pedagogy which are participatory, affective, situated, problem-posing, multicultural, democratic,

dialogic, desocializing, researching, interdisciplinary and activist (Shor, 1992; Shor & Freire, 1987) were reflected holistically in the educational process while creating this training program. Those principles are also aligned with education for sustainability offering learner centered, transformative, action-oriented and collaborative learning environment (Leicht et al., 2018).

Throughout the training, it is expected to create a learning community with the active role of the participants and the guiding role of the researcher. Additionally, the participants exhibit the role of student-teacher and the researcher exhibits the role of teacher-student (Freire, 2000). It enables both parties to learn and facilitate learning. Therefore, the whole process is dialogic as the researcher shares her knowledge in the field in line with the purpose of the training, and the participants enrich this sharing with their background and comments. This dialogue is democratic that all voices are invited to be heard.

All sessions are designed to be in the form of problem-posing method (Freire, 2000) within the guidance of Critical Creative Literacy framework (Ada & Campoy, 2004). A typical meeting begins with a Sharing Circle based on Freire's (2000) culture circle in which learners and instructor share their feelings, experiences and expectations around generative themes (Freire, 2000). This activity also is referenced from circle time activity of the national early childhood education program (MONE, 2024). Circle time refers to social interaction in a circle at the beginning of a day where teachers and young children talk about review of the previous learning process, plans for the day and daily life issues, their feelings, etc. Sharing Circle in the beginning of each session targets participatory and affective features of the program and contributes to situated and multicultural features as it invites the cultures of the participants into the learning environment. Upon this sharing dialogue processes through problem-posing with generative media around sustainable consumption.

The content was presented with the perspective of problem-posing. Knowledge is positioned as a phenomenon that can be questioned, discussed and collectively reproduced. In this environment, the instructor and the participants reinforce the value of researching through collaborative learning and critical questioning. Via this

critical questioning, it adds into researching feature, while knowledge and terms are defined; it targets situated and affective feature while new knowledge and terms are evaluated in line with previous learning and life experiences; it addresses principles of desocializing and researching in the critical stage, while ideas, values and actions discussed are questioned around justice, equality and power balances, and stereotypes are eliminated; and lastly it shows activist characteristic by making a decision for a purpose with the knowledge and consciousness gained from all previous processes.

As all those considerations reflected on the professional development training, it blends educational sciences, social sciences, natural sciences and sustainability that it is interdisciplinary in nature. It has been ensured that the resources used are multicultural. In addition to including various sources from Türkiye and other countries, participants were also encouraged to share examples from their own cultures throughout the training. Thus, it is aimed to reflect local, national and universal culture.

While developing the content of professional development training several factors were revisited. Initially, the related literature on sustainable consumption was chosen as a route. The content was built with the guidance of Agenda 21 (1992), Oslo Principles (1994) and related literature. Particularly, the educational learning objectives of Sustainable Development Goal 12: Sustainable Consumption and Production and Sustainable Development Goal 4: Quality Education (UNESCO, 2017) were referenced while setting goals for the sessions. Apart from that, a review study related to content for teaching sustainable consumption were influential. The study conducted by Fischer (2010) analyzed the professionally edited teaching sources in terms of sustainable consumption themes. The results of the study pointed out that the contents of the sources generally focus on resource consumption and ecosystem degradation under ecological themes, eco-efficiency under economical themes and sufficient lifestyles under culture and fair trade under social themes. Whereas alternative growth, power, equity and human rights and de-materialization of need satisfaction were lightly touched. Fischer (2010) argues this variation might stem from later themes being related to the need to transform the existing

circumstances. The present study ensured these themes were addressed in dialogue while choosing session topics and generative media. To demonstrate, in the consumption-themed session the video shared as a generative media included the topics of consumption of resources and its effect on the environment at local, national, and global levels as well as social and economic realms through demonstrating the whole consumption and production chain including provision, usage, and disposal of a product. In addition, the video contains the role of media and commodification of needs, perceived obsolescence, demand and supply and the role of governance and big corporations within the system. In response to the video, provoking questions to build dialogue and discussion of above mentioned topics were prepared by the researcher. For instance, criticism towards the linear economic model, roles reflected in the consumption-production chain, who would benefit from adopting/implementing the ideas stated in the video and who would be disadvantaged were inquired. Therefore, the concepts of eco-efficiency, ecosystem degradation, resource consumption as well as alternative growth, power, equity and human rights, and de-materialization of need satisfaction were addressed in the session. Apart from that, a video exhibiting sustainable lifestyle of a family was shared in zero waste themed session of the training and the practices reflected in the video were revisited based on validity, applicability, and sustainability. As another example of this reflection, an animation of a fair-trade cacao producer's daily life was shared and critically examined in terms of outcomes of consumption and production chain based on social justice and environmental protection.

Professional development training was reviewed and reorganized based on the needs and interests of the participants throughout the training process. Pre-interviews conducted before training aimed to collect the participants' cognitive and cultural background, needs, interests and expectations, and reflective journals and sharing cycles conducted through training aimed to reflect their new learning and evaluations regarding the training process served at this point. The researcher used that data as feedback for enriching and reorganizing the content of the training.

Expert Recommendations: Professional Development Training program was shared with experts from the research field of critical pedagogy, education for sustainability

and teacher education in order to be evaluated in terms of consistency of aims and content, appropriateness of the content for the targeted audience, clarity of directions and questions, time duration, appropriateness of the materials to the content and the sustainability considerations, and relevance of application of critical literacy process. The experts reviewed the training content and provided some suggestions related to the clarity of statements, duration of the seminars, and the content. Based on the expert suggestions, the researcher made related adjustments in terms of directions and questions. In terms of duration of the time, seminars were shortened in a way that core activities remained and targeted goals to be addressed. Apart from that, one of the experts recommended that hope should be reinforced in Freiren pedagogy and that participants' faith in transformation should be strengthened. The seminar series originally included this point such as not approaching sustainability as *doom and gloom*, providing real-life examples of zero waste, etc. Nonetheless, based on this suggestion this part was reemphasized particularly with enriching sharing cycles with news, documents etc. from Türkiye and other countries demonstrating positive examples and adding contextual questions to content that reflect on the things already succeeded such as sustainable practices learned from elders. Moreover, this process was revisited in the post-interview via inquiring about inspiring things in the professional development training which is also a suggestion from an expert.

3.4.1. Professional Development Training Sessions

The program of the professional development training was initially planned as a total of five meetings of five theoretical training sessions (critical literacy and sustainability, consumption, zero waste, nongovernmental organizations and civic participation, critical literacy for sustainable consumption and production in early childhood education) and five meetings of five practical training sessions consists of guidance on activity plan preparation. However, this program was extended based on the interests and needs of the participants as seven meetings for six theoretical training sessions and five meetings for practical training sessions. Overall, it included twelve meetings for eleven sessions (See Appendix B for an example session plan). Training meetings were held in several places. Three theoretical training meetings were set on the online platform based on the suggestions of

participants. Participants had earlier experiences of distance education and hybrid learning due to the pandemic in the Spring 2020 and Fall 2021 semesters and due to the earthquake in the Spring 2023 semester. Two theoretical and one practical training meeting took place outdoors while two theoretical and four practical meetings were held indoors. See Appendix A for the summary of each session in terms of topics to be addressed, aims to be targeted, materials, tools and sources to be used, and meeting characteristics.

Prior to professional development training, a communication group for research study was created through a mobile App of instant messages. This group was used for scheduling meetings and confirming the attendance of participants before meetings during the study process. Additionally, this group served as a place for sharing media and information sources by the researcher and teacher candidates that it was an extension of the sharing cycle in a way.

First Session-first meeting: This session was an introduction to critical literacy and sustainable consumption. The researcher and all participants met at a separate meeting room located in a coffee house next to the university campus for this session. Initially, the researcher informed participants about the content and session format. It was communicated that this training was dialogue-based, participative, democratic, and respected multiple viewpoints and diversity. It was announced that all sessions would begin with a sharing cycle in which researcher and teacher candidates are invited to share feelings, opinions, experiences, announcements, etc. At this first sharing cycle, the researcher initially shared her feelings and then encouraged participants to do the same. Later, they talked about establishing rules for the session that would promote dialogues.

Following the sharing cycle, question-answer play activity was implemented. There were six questions and six answers about the following terms: praxis, banking education model, critical consciousness, climate change, life cycle analysis, and global warming. Answers and questions were randomly shared with participants via instant messaging on their mobile phones so that each participant had one question and one answer that did not belong together. The play aimed to find out the true

answer to each question. One volunteer started the activity by reading the question she was given. The participant who thought having the correct answer read the statement and the whole group discussed the match in terms of its correctness. The activity continued with the next question asked by the participants who answered the previous question. After all questions and answers were matched, participants talked about their background knowledge of the terms asked in the questions.

After the end of the play activity, the researcher shared a presentation introducing critical theory and critical pedagogy, Paulo Freire (2000) and his work on problem-posing education and critical literacy. During the presentation following probes were asked in order to strengthen the dialogue:

- Remember a moment when you felt powerful and privileged, how was the experience, what made you feel that way?
- Remember a moment when you felt disadvantaged and powerless, how was the experience, what made you feel that way?
- Can you think of an experience where you found yourself in the position of both oppressor or privileged and oppressed or disadvantaged? Which one is the easiest to relate? What might be the consequences if these experiences are not analyzed from both perspectives? (Ada & Campoy, 2004).
- Remember a moment when you took an action for something you believed in, how would you feel if you did not act on it, what did you learn from this experience, what might you do differently if you again come across same situation? (Ada & Campoy, 2004).
- Did you have similar experiences to problem-posing education (considering formal and informal education)?
- How can it feel to be a student in critical pedagogy, what might be the advantages and disadvantages?

The session ended with a discussion of why this professional training focusing on sustainable consumption might have been prepared in a critical literacy-based way.

First Session-second meeting: This meeting was the continuation of the previous meeting and was held in an online platform. All participants attended the meeting.

Since it was an online meeting, participants were asked to demonstrate how they felt via a smiley face available on the meeting platform as a means of sharing cycle activity. Participants did not offer any announcement or information but the researcher brought a graphic humor book entitled *The Trouble with Women* by Jacky Flemming (2016) referring to participants' interest in gender stereotypes in the previous meeting of training. Discussion about this sharing concluded the cycle.

The researcher resumed the presentation from critical literacy. After the introduction of the critical creative literacy framework of Ada and Campoy (2007) a break was given. Participants sent notes of what they remembered from critical literacy after the break. The session continued with the presentation via introducing topics of sustainability, education for sustainability, sustainable development goals and sustainable consumption. This session was concluded by revisiting the sustainable development definition of WCED (1987). This definition was critically questioned. At the end of the session, a topic of inquiry about the connection between economic welfare and sustainability emerged. The group decided to research countries' negative effects on the environment based on the level of economic welfare. The researcher requested participants to inquire about this topic of interest in addition to computing their level of ecological footprint for the next session.

Second Session-third meeting: The concept of consumption was introduced within the scope of this session. It was an online meeting; unfortunately, one participant could not attend it. The sharing cycle began with the researcher reminding participants of their inquiry about the connection between economic welfare and environmental destruction. Participants did limited research on this topic therefore the discussion started with the ecological footprint analysis computed via <https://www.footprintcalculator.org/home/en>. Firstly, they compared the results and reflected on their consumption practices. They critically questioned the method of ecological footprint analysis as well in terms of its validity on environmental concerns for national and local settings, and its scope for reflecting un/sustainable practices. Then, beginning from Türkiye they searched and examined countries' general profiles for ecological footprint and compared the results obtained. The welfare states in European countries, the USA, Latin American countries, South African countries, China and Russia were explored. They discovered unexpected ranks in ecological footprint across countries as a means of the connection between

economic welfare and negative effects on the environment. The researcher concluded this part by sharing the news about Senior Women of Climate Protection winning a landmark climate case at The European Court of Human Rights against the Swiss government. The group discussed this news from a right-based approach towards sustainability. The relation between human rights and sustainability, intergenerational justice, the right to a clean environment and rights of animals and non-humans were revisited in this discussion.

Later, the Story of Stuff video which explains the whole consumption and production chain beginning from the usage of raw materials, processing, and provision to the usage and disposal of products was shared. The role of media, advertisements and culture, place of people, waste and toxins as the outcomes within contemporary consumption and production systems as well as the linear and circular economic models are reflected in the video. After the video, without any direction from the researcher, the participants initially explained the most influential moments and challenging ideas from the video and reflected on their own experiences with affective expressions. Later, the researcher deepened this dialogue with the following questions:

- What are the criticisms reflected in video?
- What are the roles stated in video in terms of consumption-production chain?
What are the roles of media?
- This video was made in the USA, what are the similarities and differences if we think about Türkiye?
- What are the things you might say about demand and supply considering the content of video?
- What are the things you do not like about video?
- Who could have produced this video? What might be the purpose of the video?
- What are the solutions you remember from the video?
- What is the criticism towards linear economic model that stated in video?
- Who would benefit from adopting/implementing the ideas stated in video?
Who would be disadvantaged?

- Have you found the information shared in the video reliable and why?
- Who would you like to see this video?
- Is there anything you would like to change in this video? How this video can be enriched or bettered to be more inclusive, more reliable, etc.?

The session ended with an evaluation of each participant probed by the following questions: ‘What was the most influential thing you learned today?’ and ‘What will you do with this knowledge?’

Third Session- Fourth meeting: This session was the last online meeting of the whole training. All teacher candidates participated in the session. The theme of the meeting was zero waste. A children’s song about the water cycle and plastic bottles was listened to while all participants were waiting to join the meeting. This song was shared in the study’s communication group afterward. The sharing cycle included statements of feelings and recent events related to sustainable consumption. One of the participants shared that she worked in a preschool as a part-time worker and this school planned to design composting areas for young children in the school garden. The participants also expressed their experience of journal writing and suggested sharing it in the form of a digital document to avoid the sense of doing homework.

After the sharing cycle, the Story of Solutions video which focuses on sustainable and inclusive solutions to environmental, economic and societal concerns derived from unsustainability was watched. The content of the video was inquired in terms of suggested solutions and the categorization of solutions being game-changing and old-school. Following, two videos from Belize and England demonstrating zero waste practices were watched and examined based on solution categories stated in the first video. After participants shared their opinions on the matter a break was given. After the break a video from Australia exemplifying zero waste life practices were watched and compared with the previous suggestions. The discussion continued with the following questions:

- In terms of sustainable consumption and production what might be things you learned from your family?
- What might be things your family learned from you in terms of sustainable consumption and production?

The sessions ended with participants creating a slogan about sustainable consumption as a means of evaluation.

Fourth Session- Fifth Meeting: This session was a face-to-face meeting with the full participation of teacher candidates. It was an outdoor meeting located on the university campus. The focus of the meeting was critical literacy in early childhood education for sustainable consumption. Participants shared recent experiences of their daily lives such as applications to exams. Then discussion moved to sustainable consumption upon the researcher sharing a document for sustainable practices called *Lazy Person's Guide to Saving the World* (UNESCO, 2024) referring to previous reflective journal entries of participants. They examined recommended activities based on their concerns and daily life habits.

After the sharing cycle, an animation exemplifying a fair-trade cacao farmer's typical day was watched and critically analyzed using the iceberg approach. A curve representing an iceberg was drawn on a piece of paper. The space above the curve represented what is manifested, participants wrote there what they saw and heard on the video. The space under the curve represented what is latent in the video therefore they wrote down their feelings about the video. They were asked what the relation of this animation with sustainable consumption might be, why this animation might have been produced, how this animation could be used with young children, how they would use it, and what might be the other sources to use with young children. Then it was communicated that it was an example of critical literacy and participants were asked to categorize phases based on critical creative literacy framework (Ada & Campoy, 2004). Finally, they were encouraged to give examples of questions they may ask young children while watching this animation. Later, the researcher shared a research article about critical literacy usage of 3–5-year-olds about consumption and the role of advertising. The study was briefly summarized and then shared in the study's communication group. Additionally, a video of a 4-year-old making a presentation about waste management, the effects of waste on the environment and examples of reuse, reduce and reuse was watched. This video was analyzed based on the following questions:

- What might be the relation between young children and consumption? Is it fair to experience consequences of previous generations' practices?
- What might be the relation between sustainable consumption and children's rights?
- What might be the role of young children and their agency?

Fifth Session- Sixth Meeting: The theme of this session was civic participation and nongovernmental organizations (NGO). This meeting was organized as a field trip to an NGO engaged with activities on environment, education and diversity in the neighborhood. The association has a compost area, organic garden, second-hand goods shop, repair workshop, recycling bins, and halls for educational and cultural events. The group met in the educational hall of the association for this session. In the sharing cycle participants talked about their experiences and background knowledge related to NGOs. Further, the researcher shared a document published by an NGO expressing sustainable practices on our consumption and production and a piece of news about teacher candidates' projects related to sustainable consumption and their cooperation with the municipality.

After sharing time, the participants visited the site of NGO and observed their activities. This process became an examination with the guidance of an online document with directions on it. This online document was prepared by the researcher in order to enrich explorations of the association based on sustainability and sustainable consumption. During their solitary examination, the participants took notes on the examples and prepared questions to ask representatives of NGO. They also took photos of the places they liked or related to. Later, the representatives presented the missions, projects, activities and the next plans of the association and gave a tour of the library, repair room and storage room where stuff is sorted for reuse and recycling. Participants asked representatives questions and took notes. Representatives gave small gifts to participants: a cloth bag with 'no to plastics for clean tomorrow' slogan on it, a brochure exploring ecology practices and a booklet called 'sensitive dictionary' prepared by the association for inclusive communication. During the exploration one of the participants offered to give a name to the study group and another offered this suggestion to be a topic for the next sharing cycle.

After the exploration with representatives group met in a circle and shared their reflections regarding the process. This reflection was centered around the following questions on the online document to be filled:

- Clues you find about sustainability (social, environmental, economic)
- Things you would like to ask
- Photo of the place you most liked
- If you were a participant in this association, what would you be doing here in terms of sustainable consumption and production?
- What did you like and dislike among the things you examined at the association? Why?
- Who do you think might want to join this association? Who does this association appeal to? Who may not want to join this association?
- Are the activities in the association inclusive? Do they address every participant (various age groups, cultures, abilities and special needs)?
- Do the activities in the association support sustainability, sustainable consumption and production? How?
- When you think about what you have examined, who might benefit from the activities here? Who might be disadvantaged?
- In what other ways can we contribute to this association?
- Is there anything you would like to change in activities of association?
- If you were to think of the section you have created so far as a newspaper article, what would be the headline of this article?

Following, the group revisited their learning up to this session and created a concept map for Sustainable Consumption in early childhood education. They listed and wrote down their ideas under the categories of what and how.

Sixth Session-Seventh Meeting: This session's focus was activity plan preparations and creating a framework for guidance for participants to use while planning an activity addressing sustainable consumption with critical literacy. Therefore, participants were needed to arrive at general ideas for activities to compose for this particular session. One of the participants had limited time for this meeting. She

reached out to the researcher beforehand communicating the time limit she had; thus they met one-on-one earlier than the session's time. The participant came to the meeting with ideas. They together revisited the critical creative literacy framework and sustainable consumption within the scope of an activity plan. The researcher directed guiding questions for each phase for the critical creative literacy framework for sustainable consumption and the participant composed her plan.

The researcher and the rest of the group met one hour after this meeting. Four participants joined this face-to-face session. One other than the participant who met earlier with the researcher could not attend the session. The sharing cycle began with finding a name for the study group as they suggested in the previous session. A couple of ideas were offered such as 'green warriors' but the group needed more time and ideas to make a final decision. Therefore, they decided to resume this topic in the next meeting. Sharing Cycle continued with participants sharing regular things from daily life such as how a coffee house on campus caused extra plastic waste since it puts coffee in a plastic cup with a plastic straw and a plastic cap and organic waste thrown in the grass of the stadium. Moreover, they talked about young children's activities related to sustainable consumption and production, which they observed during their practice teaching such as a ceramic activity, an activity about mushrooms, etc.

This meeting was initially planned for revisiting a framework of critical literacy and sustainable consumption for activity plan preparation and creating a plan. But participants stated being not ready for this process, and not making preparations for composing a plan. Therefore, this session was transformed into a wrap-up session. It began with a brainstorming activity about the criteria for a good activity plan for young children. The group wrote down features to be considered and characteristics of a good plan. Then this activity further deepened orienting these considerations towards sustainable consumption with examples. Lastly, all those were integrated with critical literacy phases. As a result, a framework for activity plan preparation has emerged via concept mapping activity by participants. This framework was shared within the communication group of the study in order to use it as a guide for the next activity plan preparation processes.

Seventh Session- Eight Meeting: This was the first guidance session for activity plan preparation. Five participants attended the session, and it took place indoors. The sharing cycle typically included communication of feelings and reflections from daily life. After that, they moved to finding a name for a study group. More sophisticated suggestions of names were stated, and it was decided to have more than one name as hunters and hive. Following, the researcher shared three picture books; *Where's the elephant* and *Where's the starfish* by Barroux (2021) and *If the world were a village: A book about the world's people* by David. J. Smith (2021). Sharing cycle ended with the examination of those books.

After the sharing cycle, the framework for the activity plan which was previously constructed by the study group was shared and revisited. New points have been added to the framework based on the participants' ideas and suggestions and the updated version was shared in the study's communication group. After that, participants started to work on their ideas to plan an activity through the following guiding questions:

- What is this activity about? What is the starting point?
- How can children relate to this topic? How can you relate this topic to children's experiences and feelings?
- How and what children might question within this learning process?
- How can children demonstrate their new learning or put it into action?

After participants finished their planning, they shared it with the group. All participants and the researcher gave feedback and offered suggestions. Within this process, participants voiced difficulties regarding simplifying or creating concrete examples or experiences with young children in terms of issues like limitations of natural sources. Thus, the researcher introduced them to a play. There is a blank paper in the middle of the room. Players carry on activities like walking, exploring around the room, etc. while music is on. When the music is off, any player should touch the paper to continue playing. After each round, the paper is folded in two, so it gets smaller in size. As the researcher introduced the game and engaged participants to play, they easily made connections to the limitations of the sources and proposed alternatives to play.

Eighth Session- Ninth Meeting: Four participants attended this session. One of the participants contacted the researcher a day before the routine time of the session and stated that she would be competing in the tournament during that week and that's why she could not attend that session. The participant had preparations for planning the activity, but a group meeting was not possible. Therefore, the researcher and the participant came together for a one-on-one session. In this meeting, this participant shared her ideas and the researcher gave feedback concerning the guidance framework. The rest of the four participants and the researcher met in the ordinary session time and place.

Initially, participants and the researcher talked about their previous activity plans and implementations. Participants showed pictures and documents about their implementations and reflected on the process. Later, they shared experiences and opinions about sustainable consumption and daily life. Following, participants worked on their ideas with the previous guiding questions which is a routine for the session. Different from the previous session, participants worked in pairs and each pair presented her partner's plan within the scope of the 'advertise it' activity. This activity was conducted to strengthen collaborative work and interaction. Although each participant prepared the learning process of their own activity plan, their peer presented it to the group. The session ended after they all participated, received feedback and reflected on the 'advertise it' activity.

Ninth Session- Tenth Meeting: Five participants joined in this session. In the sharing cycle, the researcher shared three picture books with the participants: *Journey of a Plastic Bottle* by Suzanne Slade (2019), *Victor's Pumpkins* by Leyla Aslan and Misra Karahan (2023) and *Welcome* by Barroux (2021). The group briefly examined the first two, and then they read aloud the last book. Lastly, three participants shared their application to a youth initiative competition as a group. The competition was preparing a project proposal orienting sustainability. They mentioned that they were shortlisted for their proposal of creating a digital platform for early childhood teachers. They declared getting inspired by this professional development training to develop a research proposal.

Following, the participants shared how they conducted their previous activity plans, whether they made any modifications, and reflected on the implementation process. The session typically continued with the participants preparing plans with respect to the guidance framework, sharing ideas, and offering feedback.

Tenth Session- Eleventh Meeting: Five teacher candidates participated in this session, which took place in the regular meeting place of the study, a classroom in the faculty. In the sharing cycle, three participants talked about their experience of sustainability-themed youth initiative competition and workshop. They reflected on unsustainable practices in the competition venue such as food waste and overuse of plastics. The researcher shared a picture book entitled *Protest* by Eduarda Lima (2021). The group reviewed the book and explored it in terms of its connection to sustainable consumption and production.

After the cycle, one of the teacher candidates who already planned her activity presented it with the guidance framework. As a group, the researcher and participants gave feedback. After her presentation, the meeting was adjourned for a coffee break and this teacher candidate left the session. After the break, four participants continued to session with planning and sharing their activities. All participants listened to each other and gave suggestions. Lastly, the group decided on the time and place of the final meeting of the training.

Eleventh Session- Twelfth Meeting: All six participants attended the final session. This session emerged as a reflection of the participants related to the sixth session. In that session, they were supposed to bring ideas to prepare a plan, but they could not get ready for the process therefore that session was adjusted to be a wrap-up. At the previous session, they talked about that and the researcher offered to do an extra session, and all participants agreed to the idea. They decided the time and place of the final session. The session took place outdoors on the university campus. It was later than their last submission of the activity plan assignment within the scope of the practice teaching course since there was no other time. Therefore, it was not possible to implement this session's activity plan. It was a drawback. However, participants claimed that the mentor teachers in practicum schools had limited their preferences

for planning activity thus the extra session would be a greater opportunity to plan without limitations by mentor teachers.

In the sharing cycle, two participants brought picture books about the diversity and commodification of animals, the life of Caretta Caretta, reusing materials, and the compost-making process. The first book was read by the participant and the rest of the books were examined individually. The researcher also shared a picture book named *A Thousand Cows* by Adele Tariel and Julie de Terssac (2022). This book was read aloud part by part by the participants. After reading it they critically analyzed the book in terms of its theme, plot and illustrations.

The cycle ended with the sharing of news by a participant. The news was about fight footage in a company's store during a discount sale in Türkiye. The group shared negative feelings about this news. Later, all the participants worked on their activity plans without a need for a guide framework. After they finished, each participant shared their activities and provided feedback to each other.

3.5. Research Process

The current study uses interviews and document analysis of reflection journals and activity plans as core data collection methods. Table 2 illustrates the use of these methods in relation to the research question of the study.

All data collection tools and professional development training were developed specifically for the current study with the guidance of related literature. After that, they were presented to experts. Five experts in fields of education for sustainability, critical pedagogy and early childhood teacher education reviewed and evaluated instruments and content of professional development training. They offered opinions and suggestions according to the purpose of the study. After receiving expert opinions interview protocol and activity coding form were piloted. This finalized the instrumentation. Following this, the researcher entered the field and selected participants. Then data collection and professional development training took place.

Table 2. Data Collection Methods

Research Questions	Data Collection Methods
1-To what extent have ECE teacher candidates' understanding of sustainable consumption changed in response to Professional Development Training (PDT)? a-To what extent have ECE teacher candidates' understanding of sustainable consumption changed in response to PDT as citizens? b-To what extent have ECE teacher candidates' understanding of sustainable consumption changed in response to PDT as teacher candidates?	Pre-Interview & Post-Interview Document Analysis of Reflective Journals
2-To what extent have ECE teacher candidates' practices changed regarding sustainable consumption in response to Professional Development Training (PDT)? a-To what extent have ECE teacher candidates' daily practices changed regarding sustainable consumption in response to PDT? b-To what extent have ECE teacher candidates' teaching practices changed regarding sustainable consumption in response to PDT?	Pre-Interview & Post-Interview Document Analysis of Reflective Journals Document Analysis of Activity Plans
3-How do ECE teacher candidates' understanding and practice within the citizen role and teacher role intersect?	Pre-Interview & Post-Interview Document Analysis of Reflective Journals Document Analysis of Activity Plans

3.5.1. Data Collection Tools

3.5.1.1. Semi-structured Interview Protocol

Interviews are frequently used in many forms of qualitative inquiry (Merriam, 2009) and are essential to reflect multiple views of depictions and explanations in case study research (Stake, 1995). Within the scope of this study, interviews were conducted in a one-to-one appointment which is often encountered format for interviews (Merriam, 2009). Interview questions were prepared by the researcher in order to describe sustainable consumption understanding and practices of pre-service teachers. While questions formed Key Competencies for Sustainable Consumption (Fischer & Barth, 2014), the Critical Creative Literacy Model (Ada & Campoy, 2004) and related literature were referred to as guidance. Two interview protocols addressing pre- and post-interviews were prepared in the current study. Pre-interview protocol addressed demographic information of participants, previous

knowledge and experience of participants, sustainable consumption understanding as citizen and as teacher candidate, daily practices and teaching practices related to sustainable consumption, and expectations of the participants before participating in professional development training. Similarly, the post-interview protocol addressed sustainable consumption understanding as citizen and daily practices, sustainable consumption understanding as teacher candidate and teaching practices and evaluation of participants' themselves and experiences of the training program after participating in professional development training. Table 3 demonstrates sample questions from the interview protocol.

Table 3. Sample questions from interview protocol

Previous knowledge and experiences		Have you heard about the concept of sustainability? If yes, where have you heard about it? Have you heard about the concept of education for sustainability? If yes, where have you heard about it?
Understanding as citizen	Naming concepts, themes, concerns related sustainable consumption Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings Critically reflecting on consumption and its consequence	What do you think sustainability means? What do you think sustainable consumption means? Is sustainability important for you? Do you think you are a sustainable consumer?
Understanding as teacher candidate	Naming concepts, themes, concerns related sustainable consumption Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings Critically reflecting on consumption and its consequence	Why is sustainability important/not important for you? Why do you think you are a sustainable consumer/ not a sustainable consumer? What do you think education for sustainability means? What do you think sustainability in early childhood education can include? In your opinion, is sustainability important in early childhood education? In your opinion, can sustainability be introduced in early childhood education? Why is sustainability important/not important in early childhood education? Why can/cannot sustainability be introduced in early childhood education?

Table 3. (Continued)

Daily Practice Taking informed action towards sustainable consumption	In your opinion, do you think you contribute to sustainability as a citizen? If yes, how? What kind of contribution do you think you make? Considering your monthly consumption and daily life, which categories of following do you consume the most? energy, water, shopping, food, transportation? Could you please list them?
Teaching Practice Taking informed action towards sustainable consumption	In your opinion, do you think you contribute to sustainability as a teacher candidate? If yes, how? What kind of contribution do you think you make? Have you ever planned/implemented activities targeting sustainability within the scope of teaching practice?
Voice to participants Expectations Evaluations	What are your expectations from critical literacy based sustainable consumption PDT? Has the training you attended met your expectations? Could you explain in which aspects? What inspired you through the training and at the end of it?

Experts reviewed pre- and post-interview protocols in terms of clarity of questions, relevance of questions to the categories and appropriateness of the protocol to the research purpose. There were some suggestions based on the clarification of some statements and addition of new questions. Those suggestions have been incorporated into the final design of protocols. Two new questions were added to the pre-interview protocol. 'How did you decide to participate in this study?' which aims to uncover their motivation and related experiences was added as an opening question to the interview. 'How do you relate sustainability and sustainable consumption' was included in order to gather deeper data regarding the sustainable consumption understanding of the participants. Apart from that, questions addressing participants' understanding as teacher have been expanded. For instance, the question of 'In your opinion, can sustainability be introduced in early childhood education, why?' deepened with a sub-question of 'What do you think sustainability in early childhood education can include and how can you teach/introduce it?'. Similarly, previous adjustments were also reflected in the post-interview protocol. Apart from that, a new question as 'What inspired you through the training and at the end of it?' was included in order to address the hope in addition to strengthening the voice of the participants in the research study.

Prior to the main study, two pre-service early childhood education teachers were contacted and informed about the aims of the current research. Those teacher candidates were reached based on their interest and experience in sustainability. Their instructor who is an expert in the field of education for sustainability in early childhood education provided access to the volunteers. After receiving their consent, the interview was conducted in an online meeting platform. The interviews took approximately 25 minutes for each participant. The interviewing process were recorded and then transcribed verbatim. Piloting interview has assured researcher that the questions probed sought the information needed. Moreover, it provided a place to try out the new questions offered in experts' opinion. After the pilot, the question regarding monthly consumption was reorganized with probes since the respondents had limited answers regarding the precautions they took in their consumption. Therefore, it was decided to use probes for asking their precautions under each theme in this question in the main study.

3.5.1.2. Reflective Journals

Reflection in teacher education dates back to Dewey's work. His approach proposes reflection a form of problem solving that guides experience within an active and intentional intellectual process (Howard, 2003). Similarly, reflective journal keeping is suggested by Shor (1992) as means of empowering education, to think through and clarify values. It presents opportunity to develop both personally and professionally (Schön, 1983). To demonstrate, reflection in preservice teacher education is recommended for it is focused on preservice teachers own experiences and understandings accompanied by those experiences which influence further experiences and decisions for their professional life (Howard, 2003). Similarly, teacher educators are advised to facilitate preservice teachers to voice their difficulties, worries and regret over biased opinions through reflection (Howard, 2003).

As Schön (1983), Smyth (1989), and Shor (1992) proposed, this study position reflection in a critical place that recognizes unity of action and reflection, and observe social, cultural and political layers feed into them. It uses reflective journal

as a data collection tool. In the scope of the current study, reflective journal entries of the teacher candidates were collected as one of the data collection tools after they participated in each professional development training session in order to allow them to engage in self-reflection as means to questioning themselves with respect to new learnings, illustrating their insights through daily life patterns and teaching practice (Gay & Kirkland, 2003).

Reflective Journals were specifically developed for the current study in order to guide pre-service teachers' self-reflection regarding the process during the professional development training they attended. These reflections included sustainable consumption understanding of pre-service teachers within citizen role and teacher candidate role, their daily life practices and teaching practices in terms of sustainable consumption, and evaluation of the sessions as learners. Reflective journals were expected to be filled after each session. Additionally, by using reflective journals as one of the data collection tools, it was also aimed at enabling participants to create their own generative themes while looking at their own experiences and daily lives through sustainable consumption, and to examine their own understandings and practices around these generative themes from a problem-posing, in other words, critical perspective (Shor, 1992; Gay & Kirkland, 2003). It was suggested to prepare journals in a defined frame in order for the self-assessment process to achieve its purpose (Dantas-Whitney et al., 2009; Smyth, 1989; Whipp, 2003). Therefore, reflective journals are structured within the frame of Critical Creative Literacy Model (Ada & Campoy, 2004).

Reflection Journals were prepared in two forms referring to the theoretical training sessions and practical training sessions as activity plan preparation and implementation. These tools were also reviewed by the experts and the categorization and content of reflective journals (reflective journal for theoretical sessions and reflective journal for activity plan preparation & implementation) were found to be consistent with research questions. Only some expression suggestions were offered by two experts to clarify the meaning. To demonstrate: 'Why is it (what you observed) important?' instead of 'Why is it important?' and 'What will you do for sustainable consumption in practicum placement, how, with whom?' instead of

‘what will you do, how, with whom?’. These suggestions were inserted into finalized version.

Table 4 exhibits the reflection journal format used in the theoretical sessions of professional development training. This journal was developed to guide the reflections of teacher candidates during the seminar sessions. It consists of three sections as evaluation on sessions within learner role, reflection on seminar topics based on daily life experiences within citizen role, and reflection on seminar topics based on teaching practice within teacher role.

Table 4. Reflective Journal Entries: Reflection during Theoretical Training Process

Strengthening Voice	Evaluation of the session: Considering your previous experience and your daily life, what do you want to say about this session? Please explain your feelings and role as learner during the session, and the contributions of the session if there is any.
Critical reflection on understanding and practice of sustainable consumption as citizen	Reflection regarding the topics as citizen Please share your ideas in response to current seminar session while referring to following guiding questions: When you consider yourself, your daily life and your own consumption as a citizen; Are there any experiences of you related to topics we discuss? What could be other related examples you may come across? What is your response/reaction to this session? How did you feel? What did you think?
Naming concepts, themes, concerns related sustainable consumption Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings Critically reflecting on consumption and its consequence Taking informed action towards sustainable consumption	Why? Is there anything you would do differently? Please explain
Critical reflection on understanding and practice of sustainable consumption as teacher candidate	Reflection regarding the topics as teacher candidate As a teacher candidate, consider your observation and your own experience with young children and ECE settings with respect to consumption context:
Naming concepts, themes, concerns related sustainable consumption Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings	Are there any similar examples in ECE context? What is your response/reaction to this session as a teacher candidate?

Table 4. (continued)

Critically reflecting on consumption and its consequence	Is there any idea to bring in the classroom? Why?
Taking informed action towards sustainable consumption	How could you use it in the class?

The other format used in the study is illustrated in Table 5. Similar to the previous one, this reflection journals includes three parts as evaluation of the sessions as learner, reflection regarding topics as citizen and reflection regarding practice teaching as teacher. This journal format differs from previous one as it seeks to navigate the reflection during activity plan preparation sessions. Thus, the directions in the reflection regarding the practice teaching section provokes teacher candidates to observe early childhood education context and use their observations as base to their activity plan preparation process in addition to their insight strengthened through professional development training sessions.

Table 5. Reflective Journal Entries-Reflection Regarding Activity Plan Preparation & Implementation Process

Strengthening Voice	Evaluation of the session Considering your previous experience and your daily life, what do you want to say about this session? Please explain your feelings and role as learner during the session, and the contributions of the session if there is any.
Critical reflection on understanding and practice of sustainable consumption as citizen	Reflection regarding the topics as citizen Please share your ideas in response to current seminar session while referring to following guiding questions: When you consider yourself, your daily life and your own consumption as a citizen; Are there any experiences of you related to topics we discuss? What could be other related examples you may come across? What is your response/reaction to this session? How did you feel? What did you think?
Naming concepts, themes, concerns related sustainable consumption Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings Critically reflecting on consumption and its consequence	Why?
Taking informed action towards sustainable consumption	Is there anything you would do differently? Please explain

Table 5. (continued)

Critical reflection on understanding and practice of sustainable consumption as teacher candidate	Reflection regarding the topics as teacher candidate Consider your observation of young children and practicum placement settings, and your practice teaching experience with young children. As teacher candidate please share your reflection relating to planning and implementation process while referring to following guiding questions;
Naming concepts, themes, concerns related sustainable consumption	What did you observe related to sustainable/unsustainable consumption?
Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings	What is your response/reaction based on your observation?
Critically reflecting on consumption and its consequence	Why is it (what you observed) important?
Taking informed action towards sustainable consumption	What will you do for sustainable consumption in practicum placement? How? With whom?

3.5.1.3. Activity Plans Coding Form

Activity plans are weekly assignments of the practice teaching course that participants attended during the study process. This assignment included writing down a plan of a learning process for a group of children teacher candidates were assigned within the scope of the practicum. The plans consist of information of age group, activity type, objectives and indicators, concepts, words to be addressed and materials to be used within the learning process. This format is recommended in the national early childhood education program (MoNE, 2024) for teachers to design daily plan in classrooms. Based on the activity plan format, a coding form was developed to be used in the content analysis in order to examine sustainable consumption understandings and practices reflected in the activity plans prepared by the pre-service teachers within the scope of teaching practice. This examination targeted all characteristics of learning process such as activity type, materials, concepts, etc. To demonstrate; material types are categorized as *recyclable*, *reusable*, *reused*, *disposable*, *natural*; activity types are categorized as *language*, *art*, *movement*, *math*, *drama*, *early literacy*, *play*, *science*, *music*; activity process are

categorized within the framework of critical creative literacy (Ada & Campoy) and corresponding key competencies of sustainable consumption (Fischer & Barth, 2014) as phases of naming concepts, themes, concerns related sustainable consumption, relating to issues of sustainable consumption in terms of experience, knowledge, and feelings, critically reflecting on consumption and its consequence, taking informed action towards sustainable consumption. The coding form is available in Appendix B.

After coding form was developed, expert opinions were consulted. Experts explored the activity plan coding form and approved the format and the content. There were no suggestions on the coding form, whereupon the coding form was piloted. Prior to the study, two early childhood teacher candidates who are not participants of the current study were reached by the recommendations of their instructor because of their interests and experience in the field of sustainability, and their activity plans prepared within the scope of the practice teaching course were requested for piloting the coding form. The coding form was tested with 20 activity plans prepared by those two teacher candidates. Although those plans were not meant to be particularly designed for sustainable consumption, there were plans about sustainability and one activity process related to sustainable consumption. The piloting allowed the researcher to try out items on the form and familiarize with them. The coding form worked with the pilot sample therefore, no changes were made in the coding form after piloting.

3.5.1.4. Field Notes of the Researcher

Field notes are ‘the written account of what the researcher hears, sees, experiences, and thinks in the course of collecting and reflecting on the data in a qualitative study’ (Bogdan & Biklen, 1998, pp.107-108). This research uses field notes as a supplementary tool in data collection as well as strengthening credibility as a means of reflexivity. Reflexivity ‘is a conscious experiencing of the self as both inquirer and respondent as teacher and learner, as the one coming to know the self within the processes research itself.’ (Guba & Lincoln, 2005, p.210). During professional development training, the researcher took notes, reminders, and reflective statements.

The Researcher generally wrote down fieldnotes and only kept voice recordings when time was scarce, and those recordings were written down afterwards. A sample from the field notes is shared in the following:

This session took place in our usual meeting place, Classroom X, with five participants; Kardelen only attended the session after the break, which focused on the activity plan preparation. I brought the books: Journey of a Plastic Bottle, Victor's Pumpkins and Welcome. First, we read aloud the book the welcome; and then the group explored other books. In the cycle, Güneş, İpek and Mercan said they were shortlisted with their project proposal orienting sustainability in a youth association competition. Following, each participant shared implementations of the activities that they prepared in the previous session. They explained how they implemented and what changes they have made with their activity plans. As they explained, I understood that they generally altered the activities and had difficulties in particularly creative-transformative phase. And sometimes in critical phase. New activities were also in need of development at this point. Later, we talked about new activity plans. At this part, Başak criticized sharing too many anthropocentric views with young children in activity plans and she claimed it should not be like this. According to her, these sharings should reflect an idea centered on all living things (ecocentric). Yet she said she did not know how to explain it to young children. I think of a children's song and a book for the next session to give an example. A plot explaining right to all living things and exemplifying ecocentric view.

3.5.2. Data Collection Procedure

The study took place during the 2024 spring semester and approximately lasted for 14 weeks. After receiving necessary official permission from the Ethical Board of university, teacher candidates were invited to research study. This invitation was issued within the practice teaching course meeting with the permission of instructors and teaching assistants of the course. Initially, an online meeting for volunteers to participate in the study were organized and they are informed about research process. A study group of communication was formed via a mobile App for instant messages and other media sharing as well. This communication tool was used throughout whole research process for setting meetings for sessions and interviews, sharing announcements, media and information sources related to sustainable consumption by the researcher and all participants. Once participants were volunteered to be selected and their informed consent was retrieved, pre-interviews were conducted. Based on pre-interviews the content of the professional development training was revisited.

Eleven sessions of professional development training which consist of 12 meetings were offered. Those sessions were recorded, and the researcher took field notes for each session. During professional development training, participants filled out reflective journals and prepared activity plans within the scope of practice teaching course. After professional development training ended, post-interviews were conducted.

3.5.3. Data Analysis

The data analysis process took several steps beginning from preparation and management of data. First, data was sorted based on the source; interview recordings, reflection journals, activity plans, and fieldnotes analyzed separately. Following, data was ordered based on time sequence. Interview recordings were organized as pre- and post, reflective journals, activity plans and fieldnotes were sequenced according to date. For data derived from interviews, it began with transcriptions of recorded interviews word by word. These transcriptions were reviewed in order to avoid any incorrect transcriptions that might be occurred in verbatim writings of the recorded data (Gibbs, 2007). Then, the transcriptions of pre-interviews were read as a whole a few times in order 'getting a sense of the whole database' (Creswell, 2007). Then coding and categorizing process were issued. In the first cycle coding, analysis began with initial coding which is an open-ended perspective to studying data while seeking for possible divisions (Saldana, 2009). It included in-vivo codes and descriptive codes. In the second cycle coding, emerged codes were reorganized within the categories and subcategories with the guidance of literature via focused coding (Saldana, 2009). Later, post-interview transcripts were located for same process as reading the material a few times, engaging with initial coding and focused coding.

Following interview transcripts, reflective journals were analyzed. Similar to the analysis of interview transcripts, reflective journals were initially ordered based on timeline. After, in the first cycle initial coding and in the second cycle focused coding took place. In addition, fieldnotes were used as supplementary data in the current study. Fieldnotes arranged based on the date and then analyzed based on the codes and categories derived from the previous coding process of interviews and reflective journals.

Activity plans were investigated through content analysis with the coding form. The coding frame was built on merging concept-driven and data-driven categories. Based on previous studies and theoretical frame used in the current study main categories were developed, and then based on activity plans' material subcategories emerged (Schreier, 2012). Unit of analysis was theme. The coding frame incorporated several dimensions such as activity type, objectives-indicators, concepts, materials, learning process etc. The data were coded as 'present' and 'not present' in learning process of activity plans whereas the data were coded within subcategories in dimensions like activity type (see Appendix C for the coding form). At the final step, all codes and categories obtained from abovementioned sources compared within the framework of critical creative literacy for sustainable consumption that built on Key competencies of Sustainable Consumption (Fischer & Barth, 2014) and Creative Critical Literacy (Ada & Campoy, 2004) in order to develop a case description (Yin, 2003).

Table 6. Critical Creative Literacy for Sustainable Consumption

Descriptive	Naming concepts, themes, concerns related sustainable consumption		
Personal Interpretive	Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings		
Critical/ Anti-bias	Multicultural/	Critically reflecting on consumption and its consequence	Reflecting on individual needs and cultural orientations
			Thinking visionary and considering interrelatedness
Creative/Transformative		Taking informed action towards sustainable consumption	Reflecting on validity and reliability of knowledge
			Critically taking on one's role as an active stakeholder in the market
			Communicating the idea of sustainable consumption to others
			Planning, implementing and evaluating consumption-related activities in a sustainable way
			Using, editing, and sharing different forms of knowledge
			Using information and communication technology (ICT)

3.6. Ethical Concerns

Primary concern for a case study could be the protection of human subjects considering almost all case studies are about human interactions in a real-world context (Yin, 2018). Researchers should be particularly sensitive towards the privacy and safety of participants considering ‘they are guests in the private spaces of the world’ (Stake, 2003, p154). Before conducting the research, an application was made to Research Center for Applied Ethics of Middle East Technical University and the required official permission for studying with human subjects were attained (see Appendix D). Thus, the research procedure and data collection methods were reviewed by experts in ethics in order to avoid any potential harm to participants. As case studies immersed in private views and circumstances (Stake, 2003) the participants were informed about the purpose and procedure of the study as well as their right to withdrawal from study. There was no deception in the current study. Participants’ written consent regarding to voluntarily participation to the study were taken. All private information that are collected in scope of the study is kept confidential and the participants were represented with pseudonyms.

3.7. Trustworthiness of the study

To reflect the appropriateness of conclusions and interpretations drawn from the study some precautions should be taken. This study follows Lincoln and Guba (1985)’s recommendations for researchers to convince themselves and their readers that the findings are noteworthy and meaningful in a qualitative inquiry, in other words, to represent its trustworthiness: *credibility*, *transferability*, *dependability*, and *conformability*.

3.7.1. Credibility

In a qualitative inquiry, reality is construed as multiple realities that consist of individuals’ mental structures. Therefore, inquirers’ duty is to demonstrate that those set of multiple structures are displayed adequately (Lincoln & Guba ,1985). Firstly, in order to ensure the *credibility* of the study which represents how valid the

conclusions are for the context to be discussed *prolonged engagement*, *persistent observation* and *triangulation* is suggested. Respectably long engagement in the field aims researchers to be familiar with the context and participants, and to build trust among them which provides participants to feel confident about anonymity and provide natural responses (Lincoln & Guba, 1985). The researcher experienced the context and interacted with participants for 12 weeks. This duration was accompanied by constant recording of professional development training sessions, keeping fieldnotes and weekly reflective journals of participants in terms of persistent observation which provides in-depth information regarding the case being studied as analyzing the features and aspects which is most relevant to the research problem under study. Thus, the researcher targeted both prolonged engagement and persistent observation. Triangulation is another method to add into credibility of the study and it means engagement with the data through multiple and different models, investigators, and sources (Stake, 1995). Within the scope of present study, it was ensured through multiple sources of data collection as interviews, recordings of sessions and document analysis of reflection journals and activity plans. Apart from that, *member check* that serves to see whether interpretations and analysis of researcher is meaningful and recognizable for participants in terms of reflecting their reality is stated to be another influential strategy that enhances the credibility of a research study (Lincoln & Guba ,1985). In addition to the abovementioned strategies, member checking strategy was used in the current study.

3.7.2. Transferability

In terms of *transferability* which refers to the data base for a reader to make conclusions about a possibility for a transfer of the study, thick descriptions and purposeful sampling were the strategies suggested (Lincoln & Guba ,1985). The case under study, the characteristics of the subjects, data collection procedure, analysis and professional development training sessions were defined in detailed at this report. Furthermore, teacher candidates were purposefully selected with the criteria of being senior students of ECE undergraduate program and enrolled in practice teaching course in order to answer research questions.

3.7.3. Dependability

Dependability is the term in qualitative inquiry what reliability is in quantitative studies. Apart from reliability, it focuses on changes detected while acknowledging the unstable nature of the phenomena (Lincoln & Guba, 1985). Thus, it aims to demonstrate the consistency of the research. Triangulation in the present study and the other strategies to strengthen credibility served as demonstration of this consistency. Moreover, researcher checked transcriptions for apparent errors that might be occurred in verbatim writings of the recorded data which would alter the codification and interpretation (Gibbs, 2007).

3.7.4. Confirmability

Confirmability is the approach of qualitative inquiry towards objectivity. This research used confirmability audit trial includes the exploration of raw data collected through in research process by an experienced researcher in qualitative inquiry (Lincoln & Guba ,1985). The codes, themes and interpretations were examined in terms of raw data within the scope of research question of current study by the external auditor. Triangulation and reflections on researcher's role were other procedures that took place in the current study that add into the confirmability.

3.8. Researcher's Role

The researcher studied sustainability in picture storybooks as a teaching source in terms of her master's thesis and her academic interests are education for sustainability, children's literature and critical literacy. She feels strong respect for nature, justice and diversity. The researcher previously worked as a research assistant at the Department of Early Childhood Education, where the study took place. In accordance with this position, the researcher assisted in several courses such as practice teaching in early childhood education, children's literature, research methods in early childhood education, etc. She has been acquainted with the participants since she has worked with them as a teaching assistant in three courses

in their earlier academic years. A year before the study was conducted researcher quit working; therefore, she was not a part of the context.

A researcher who engages in a case study exhibits various roles depending on the choices in designing, conducting and reporting the study (Stake, 1995). In the scope of the current study, the researcher gained a teacher role as the planner and leader of the professional development training sessions, she facilitated opportunities and experiences aimed at empowering teacher candidates as citizens and teachers for sustainable consumption. The researcher also took the role of evaluator when exploring pre-service teachers' ideas and plans for integrating sustainable consumption into daily life and teaching practice. Apart from that, the researcher held the role of the biographer as a means of in-depth descriptions of participants' characteristics, understandings and practices. Finally, the researcher acted as an interpreter, which is a pivotal role among all as Stake (1995) stated. The researcher engaged with data for a long amount of time and analyzed and interpreted it within cycles.

3.8.1. Reflexive Notes of the Researcher

The research process has been a great learning journey for the researcher with respect to personal and professional development. The researcher observed new viewpoints and revisited sustainability and sustainable consumption from the learners' perspective. As the researcher and the participants explored sustainable practices learned from family and elders, the researcher gained new knowledge of daily habits such as reusing coffee waste to clean greasy dishes and making soap out of waste olive oil. The researcher added making use of coffee waste as cleaning material to her daily practices. Other than that, the researcher had been thinking about using water filters to be able to use tap water for drinking and cooking. This study accelerated this intention and the researcher acted on her decision. Thus, this experience widened the researcher's understanding and daily practice as a citizen.

Within the scope of training sessions, the researcher experienced leading a participative curriculum that empowered learners who had varying degrees of

knowledge and experience about sustainability and sustainable consumption. Evaluation of the participants noted that training met their expectations and even exceeded them in some cases. Positive feedback from learners regarding this experience increased the self-efficacy of the researcher as a critical educator in the field.

3.9. Limitations of the Study

This case study was conducted on a green campus with early childhood teacher candidates in Türkiye, and their experiences in terms of understanding and practices were scrutinized in response to the professional development they attended. Moreover, the participants of the study consisted of six purposefully selected senior early childhood education undergraduate students. For a case study, the interest of the research is a unique set of situations (Stake, 2005). Therefore, the findings of the study are limited to this abovementioned bounded setting. Different contextual situations in terms of culture, setting and characteristics of participants might have demonstrated different meaning-making. It is not the focus of qualitative case research design to generalize findings to other contexts. Apart from that, the case study is expected to reveal experiential knowledge that reflects human endeavor, and throughout this process, researchers obtain subjective data from participants (Stake, 2008). In this study, self-reported ideas, feelings, reflections, and practices were used as data in addition to activity plans prepared by participants. Moreover, the researcher had an instrumental role (Bogdan & Biklen, 1998) that data gathering and interpretation processes might have been affected by the researcher's standpoint. Through reflexivity, triangulation, and the use of an external auditor and member checking, this point is addressed within the scope of the current study.

CHAPTER 4

FINDINGS

This chapter presents the current study's findings, which focused on the change observed in the understanding and practice of teacher candidates within their citizen and teacher roles in response to the professional development training they participated in.

4.1. Exploration of Change in Understandings and Practices in Response to Professional Development Training: The Story of Mercan

4.1.1. Mercan in Research Context

Mercan was a 24-year-old teacher candidate in her last semester of the Early Childhood Education undergraduate program when she participated in the study. She had been staying in a neighborhood close to the university campus. During her practice teaching, she worked with 49-60-month-old children in a public kindergarten. Mercan participated in all meetings of professional development training exceeding one practical training. At that time, she was to compete in a tournament and this competition overlapped with the training meeting. Therefore, the researcher conducted an individual meeting with Mercan to remedy this session. Throughout the study, Mercan filled nine reflective journals and prepared four activity plans with the guidance of the researcher. Mercan completed all training assignments except for the final week's activity plan which is a voluntary task since the practice teaching course workload had been completed for this assignment.

Motivation for participation in the study and expectations from training: Mercan had a personal and professional interest in sustainability. She expressed that she has been trying to pursue a sustainable lifestyle through reducing plastic consumption and

adopting zero-waste living. She also mentioned having experience in sustainability and environmental studies. Given the scope of the study, she was motivated to become a participant in the study for personal and professional development. She stated her expectations included exploring new viewpoints with other participants, building new perspectives, and gaining knowledge that leads to transformation. She noted topics of theoretical training as interesting and visiting an NGO as a new experience.

Previous knowledge and experience: Mercan had previous knowledge and experience in the field of sustainability. She expressed that her first attempts to learn about sustainable daily life habits sprang from her mother's interest in eco-friendly lifestyle practices. She referred to her high school years as a time when she learned about the damage plastic waste causes to sea life and warned her friends not to use straws to protect living beings, such as sea turtles. She mentioned using social media and reviewing articles to obtain information regarding sustainability in addition to referring to her cross-curricular experience in environmental education course. Moreover, she attended a two-month practice-based workshop on sustainability and sustainability practices for young children at an ecological campus, where she worked for two years as an eco-guide, facilitating workshops for young children. As for sustainable consumption, she learned about the term from the local communities and NGOs she followed. Mercan had no acquaintance with the term critical literacy.

4.1.2. Self-reported Understandings of Mercan as a Citizen

4.1.2.1. Understanding of Mercan Prior to Professional Development Training

Naming concepts, themes and concerns regarding sustainable consumption

Mercan defined sustainability within the phrases of using every kind of source more consciously for future generations, especially for children, awareness regarding contemporary environmental problems such as global warming and limitation of natural resources and reflecting on daily life practices upon these problems. Her definition also included activism and advocacy for intergenerational and social justice in terms of environmental concerns, using social media and technology as means of activism, yet

critically reflecting on the validity and reliability of knowledge. It is a detailed definition reflecting mainly environmental aspects in addition to social and critical aspects. Her sustainable consumption description consisted of questioning one's own consumption based on others' needs, reflecting on ecological footprint and carbon footprint, reflecting on needs and wants in consumption choices and criticism of impulsive and irresponsible consumption which may reflect consumer society. Mercan also commented on the relationship between sustainability and sustainable consumption as follows:

I think the more responsible consumer a person can be, the more sustainable they can live and the more consciously they can approach the concept of sustainability and these economic and environmental factors that come under sustainability.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

Mercan expressed her concern over impulsive and irresponsible consumption and stressed the importance of sustainability. She reported that her interest in sustainability started when she was a high school student with role modeling by her mother and it transformed into a commitment as she gained more knowledge about sustainability during her university years. Mercan stated paying attention to sustainable consumption by critically reflecting on consumption and its consequences and portrayed herself as above the medium-level responsible consumer. She referred to being a tenant and a student as barriers to better integrating sustainability into daily life.

Critically reflecting on consumption and its consequences

Mercan claimed that all need to consider its effect on other people today as well as the future while engaging in consumption. She indicated a rights-based approach focusing on the needs of different people in different places and emphasized the rights and needs of vulnerable groups like children, which referred to interrelatedness in terms of international and intranational justice. She reported evaluating her actions considering their effects due to global warming and seeking ways for zero waste. Mercan also commented on the production and consumption chain, including the

procurement and the effect of chain companies in terms of carbon footprint. These considerations necessitated thinking visionary and considering interrelatedness.

Furthermore, Mercan critically reflected on the validity and reliability of knowledge in terms of information pollution and greenwashing. She referred to social media's sphere of influence when communicating sustainable consumption but also the probability of broadcasting misleading information. She reported that it is important not to be influenced by information pollution while engaging in social media. Similarly, she critically reflected on the labels and packaging of products by criticizing the inconsistency of the content and message in the packaging. She criticized the greenwashing explaining that some companies use cardboard-like packaging and put the word environmentalist on it while selling cling film or fridge bags.

Apart from that, Mercan exhibited the competency of reflecting on individual needs and cultural orientations by mentioning the division of needs and wants in consumption patterns and referring to the steps of decision-making when engaging in need-oriented consumption.

4.1.2.2. Understanding of Mercan in Response to Professional Development Training

Naming concepts, themes and concerns regarding sustainable consumption

Mercan reported her definition of sustainability is broadened in terms of addressing cultural, economic, and social aspects besides environmental aspects. Mercan identified sustainability as a mindset transformed into a lifestyle that focuses on using resources together with others, collaborating with others, the act of solidarity, sharing and responsible consumption. She placed importance on sustainability to minimize the effects of the current lifestyles, for future generations and informed societies, social justice, and solidarity. Her statements reflected a critical and holistic perspective toward sustainability. Similarly, her ideas on sustainable consumption seemed to reflect the same perspective. Mercan stated that sustainable consumption

is an informed act that includes critical questioning, reflections on consumption and its consequences in terms of environment, other people and society, and reflecting on needs and wants, cultural orientations, and validity and reliability of information in consumption choices. Mercan referred to its importance in terms of international and intranational justice and Earth with the following expressions:

I think being a responsible consumer is important for humanity, I mean for the world we live in. Because we don't live here alone. We're not the only ones. There are people who will come after us. There are people living together with us. So leaving them these resources..I mean the way we live as a family..as good as we can call it at that moment, allowing others to experience it. Not allowing but..how can I put into words? I mean make way for.. I mean there are some things, some responsibilities we need to take to enable them to live in the same conditions. And one of them is sustainable consumption.

Lastly, Mercan reported that sustainable consumption is a subtheme of sustainability, and they are interrelated. She explained that knowledge and perspective towards sustainability affect the actions regarding sustainable consumption.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

Mercan's statements stressed the importance of sustainability and sustainable consumption. She acknowledged her commitment to sustainability and sustainable consumption as well. Mercan portrayed herself as above the medium level responsible consumer. She regretted not doing composting and felt remorse due to food waste. She expressed her feelings as follows:

And..about waste for instance..I am cooking dinner. And there are fruits and vegetables scraps. They go to waste. I know what should happen, what to do with them, how to reuse..but doing nothing about it makes me feel awful.

Other than that, she mentioned being a tenant as a barrier to engaging in practices that save energy and water since she cannot make any infrastructure changes in the apartment.

Critically reflecting on consumption and its consequences

When Mercan's statements inquired about consumption and its consequences, it is seen that she engaged in critical reflection in terms of several points. She exhibited the competency of reflecting on individual needs and cultural orientations by mentioning the concept of division of needs and wants in consumption choices, the role of culture referring to Turkish culture in reusing residuals from a meal via cooking another dish, and learnings from family to build consumption habits, reflecting on cultural orientations of consumer society and the role of social media feeding these cultural orientations. Furthermore, she pointed out the effect of advertisements on consumption habits in terms of the efficiency and usefulness of a product which entails critically reflecting on the validity and reliability of knowledge. Mercan stated that she rediscovered the connection between consumption and production systems through critical questioning and reflected on her purchasing based on this insight. She expressed considering interrelatedness in her consumption choices which included checking packaging, content, and trademark. She explained that she checked the content for her health and packaging for environmental friendliness and preferred products in a glass jar while avoiding products doing animal testing. She also addressed checking trademarks for child labor and employers' rights and welfare. Apart from that, she expressed learning about the community of people working together for sustainability in the neighborhood and finding ways for community collaborations due to training which suggested noticing the lack of active citizenship. As Mercan's critical reflection on several points was reviewed she also demonstrated the competency of thinking visionary and considering interrelatedness.

4.1.2.3. Change in the Understanding of Mercan as a Citizen

Mercan had previous knowledge and experience regarding sustainability and sustainable consumption. Therefore, her definitions, statements, and competencies were similar to the beginning of the study, as Table 7 illustrates. However, some changes in her mindset have been observed in response to training. Her definition of sustainability is broadened as Mercan explained as follows:

Earlier, it was a definition that I covered environmental parts..that I focused more on its ecological aspects. But now I can say that it was extended to be both cultural, economic and related to us..humans.

Mercan offered a detailed definition reflecting mainly environmental aspects in addition to social aspects of sustainability with a critical perspective before training. This definition deepened in terms of addressing cultural, economic, and social aspects besides environmental aspects, which suggests a critical and holistic approach towards sustainability. It is also reflected in her definition of sustainable consumption. Mercan expressed commitment and engaged in critical reflection before and after training. Her critical reflection deepened in terms of discovering role of culture on consumption, rediscovering the connection between consumption and production systems noticing the lack of active citizenship. Apart from that, she expressed her intention to support collaborations in the neighborhood.

Table 7. Change in the Understanding of Mercan as a Citizen

Understanding	Prior training	In response to training
Naming concepts, themes and concerns related sustainable consumption		Sustainability
	using every kind of source more consciously for future generations, especially for children, awareness regarding the contemporary environmental problems, and reflecting on daily life practices upon these problems, activism and advocacy for intergenerational and social justice, using social media and technology as means of activism but critically reflecting on the validity and reliability of knowledge.	using resources together with others, collaborating with others, the act of solidarity, not self-centered but considering others, responsible consumption mindset transformed into a lifestyle important for future generations, informed societies, solidarity, social justice and minimizing the effect of lifestyles on Earth holistic and critical perspective towards sustainability
		Sustainable Consumption
	questioning one's own consumption based on others' needs, reflecting on ecological footprint and carbon footprint, reflecting on needs and wants in consumption choices and criticism of impulsive and irresponsible consumption	reflecting on consumption and its consequences on the environment, other people and society, critically questioning, reflecting on needs and wants, cultural orientations in consumption choices, consumption as an informed act important for intergenerational and intragenerational justice, and Earth

Table 7. (continued)

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings	Sustainable consumption as subtheme of sustainability	Sustainable consumption as subtheme of sustainability
	Stressing the importance	Stressing the importance
Critically reflecting on consumption and its consequence	Concern over impulsive and irresponsible consumption	Remorse due to food waste
	Being a tenant and student barrier to practice	Being a tenant barrier to practice
	Commitment	Intention to support collaborations in neighborhood
	Above medium level responsible consumer	Commitment
	Division of needs and wants	Above medium level responsible consumer
	Hierarchy of need satisfaction	Division of needs and wants
	Considering interrelatedness in terms of intragenerational and intergenerational justice	Hierarchy of need satisfaction
	Reflecting on production and consumption chain	Reflecting on the influence of social media
	The effect of chain companies	Role of culture on consumption
	Critically reflecting on information pollution on social media	Considering interrelatedness in terms of intragenerational and intergenerational justice
	Critically reflecting on the label of products-criticism of greenwashing	Considering interrelatedness in consumption choice
		Rediscovering the connection between consumption and production systems
		Noticing the lack of active citizenship
		Effect of advertisement-reflecting on validity and reliability
	Reflecting on individual needs and cultural orientations	Reflecting on individual needs and cultural orientations
	Thinking visionary and considering interrelatedness	Thinking visionary and considering interrelatedness
	Critically reflecting on the validity and reliability of knowledge	Critically reflecting on the validity and reliability of knowledge

4.1.3. Self-reported Understanding of Mercan as Teacher Candidate

4.1.3.1. Understanding of Mercan as Teacher Candidate Prior to Professional Development Training

Naming concepts, themes and concerns regarding sustainable consumption

Mercan defined sustainable and sustainable consumption as important concepts to introduce in early childhood for early conception and attitude formation, building

habits and behavioral patterns in early years and agency of young children. According to Mercan, sustainability in early childhood may present zero waste, reducing plastic waste, compost, agriculture, and recycling through parent involvement and parental education, modeling, critical questioning, use of media, and active participation of young with practice-based, child-centered, and experiential learning. In terms of sustainable consumption in early childhood education, she offered to introduce the use of materials, reuse, and composting with a situated learning process with parent involvement and parental education and collaboration between teacher, family, and administrators.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

Mercan stressed the importance of sustainability and sustainable consumption in early years. She emphasized the role of the teacher in terms of supporting young children engagement in her own words as follows:

I think that after knowing so much information, which I think is the biggest importance of participating in such trainings, it creates a consciousness in us, and you know, apart from writing an activity, for example, we see something in children and we can turn it into an educational conversation in the conversation stage. For example, we choose a light controller when we leave a classroom. The teacher of the class does not actually do this. I have been doing this since I started my internship. One person becomes the light switch-off person and constantly checks and turns off the light if no one is there. Like this. Or I write my activity plans accordingly.

Mercan expressed her commitment to sustainability and sustainable consumption and her intention to address sustainability and sustainable consumption in her teaching practice.

Critically reflecting on consumption and its consequences

Mercan shared her critical reflection in terms of material use in classrooms. She stated that in early childhood education, there are many paper-based activities or overuse of materials in activities. She questioned whether those activities are genuinely needed. She also addressed criticism of paper waste as used papers even

with a little piece of cut thrown in the trash. Her criticism included using food as an activity material while access to food is a concern related to sustainable consumption. She explained her ideas as follows:

For example, there are activities with legumes. We paint them, we make them. But when we look at the objectives/indicators of this, of course, it adds something as an achievement, but couldn't we do it with something else, for example? Because it is food, after all, there are some people who cannot access it. Therefore, it is related to sustainable consumer movement.

Mercan noted the teacher's role in truly communicating the core of sustainability, which entails critically reflecting on the validity and reliability of knowledge. She referred to questioning greenwashing, the misconception of sustainability as recycling and media as a valid and reliable source of knowledge as follows:

...It's a bit like, you know, sustainability is like recycling. But it's not actually recycling. Not recycling, not bringing it to recycling at first. That's why, for example, not buying plastic. Or being in a way that does not produce waste. Emphasizing that recycling is actually something we don't want and that it is the last point. I also think that greenwashing should also be paid attention to. Therefore, if the person who will explain this, who will give this training is knowledgeable about this issue and, as I said, if she does not explain anything with false information about the things brought by media or if she does not give uniform, generalized knowledge, if it is more detailed, not like sustainability is recycling, let's throw this in the green box, then I think it is a more comprehensive training that will achieve its purpose.

As the abovementioned implied, Mercan exhibited the competency of reflecting on individual needs and cultural orientations and the competency of thinking visionary and considering interrelatedness in her teacher understanding.

4.1.3.2. Understanding of Mercan as Teacher Candidate in Response to Professional Development Training

Naming concepts, themes and concerns regarding sustainable consumption

Similar to the before training Mercan reported that sustainability and sustainable consumption are important concepts to introduce in early childhood for early conception and attitude formation, building habits and behavioral patterns in the

early years and agency of young children. She stated that sustainability education should build questioning and critical thinking skills, integrating the idea of sustainability into situated education by taking different perspectives. She offered to address food consumption, energy sources, clothes, culture, livestock farming, social and cultural events, immigration, technological developments, products in the market, product labels, price and values and packaging while teaching sustainability. She claimed that using a child-centered approach, integrating sustainability into daily routine of the classroom, engaging in critical questioning with the use of media, ICT, poetry, dance, creative dramatics, storytelling, science, experimenting, movement and art would be strategies to be used while addressing sustainability in early childhood. As for sustainable consumption, Mercan offered to examine water consumption, toilet paper and tissue use, routine materials, self-care and sense of responsibility, compost, sorting-out waste, light, food, product labels, source of information via play, storytelling, using media, setting rules and routines, preparing reminders for young children, integrating into routine, situated learning, parent involvement and collaboration with community, local governments and NGOs.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

Mercan stressed the importance of sustainable consumption and sustainability in early years and expressed commitment to sustainability and sustainable consumption in her teacher role. She stated that she deepened her knowledge and practice and built a knowledge repository on material usage for sustainable consumption in response to training. Mercan reported her intention to address sustainability and sustainable consumption in her future teaching practice. She explained that she planned to reflect her learning into her teaching practice with young children as well as into her interaction with parents and school administrators. Additionally, she expressed her intention to use environmentally friendly materials, reducing material demand in class by informing parents and school administrators. Similarly, she voiced her intention to collaborate with NGOs, the local community, and the local government to reach second-hand items and reduce material demand. On the other hand, Mercan noted being a pre-service teacher as a barrier to implications as follows:

I mean, I feel like there's not much I can change there [practicum school], because no matter how many times I say it, it becomes 'yes, it's a very good idea, but we don't take it'. So now, when I have my own classroom, I will meet the parents there, I will meet the children. I think I will make a bigger difference, also in terms of school administration.

Critically reflecting on consumption and its consequences

Mercan engaged in critical reflection in terms of material use in early childhood and expressed her criticism of irresponsible tissue use, paper use or routine materials use such as glue, marker pen, etc by young children. She developed ideas to reduce material demand in terms of seeking sustainable alternatives in educational materials such as using second-hand items, putting reminders, and reusing residual materials that challenged unsustainable consumption habits. Furthermore, Mercan shared her critical reflection on sustainability education of young children in terms of thinking visionary. She expressed that young children should not be faced with a doom-and-gloom approach regarding sustainability rather they should be offered ways to consume sustainably and empowered to seek and find what to do for Earth. Additionally, Mercan addressed the critical literacy perspective toward information. She noted empowering young children with critical thinking and questioning and sharing the information sources with young children while addressing sustainability which entails critically reflecting on the validity and reliability of knowledge.

Her critical reflection on consumption and its consequences implied the use of competency of reflection on individual needs and cultural orientations as she referred to need-oriented consumption and challenged the classroom routine with sustainable alternatives. Additionally, she exhibited the competency of thinking visionary and considering interrelatedness as reducing material demand and adopting a no doom and gloom approach towards sustainability education.

4.1.3.3. Change in the Understanding of Mercan as a Teacher Candidate

As Table 8 demonstrates, Mercan's knowledge regarding teaching sustainability and sustainable consumption deepened; she offered more varied strategies and more detailed content for addressing sustainability and sustainable consumption. Her

statements reflected a critical perspective on education in response to training inspired by change agency. Mercan expressed the change in her understanding as a teacher candidate in her own words as follows:

I think, it has helped me to understand sustainability better, especially when we look at a more specific area, namely early childhood education. The concept of sustainability has actually expanded for me in terms of how we can evaluate this sustainability not only from one side or from a single perspective, as we have always talked about in our meetings, but that we can evaluate it from many things, that there are many topics that we need to look at, and how I should apply it.

Table 8. Change in the Understanding of Mercan as a Teacher Candidate

Understanding	Prior training	In response to training
Naming concepts, themes and concerns regarding sustainable consumption	Important to introduce in early childhood for building habits and behavioral patterns in early years, young children's potential preconception pre-attitudes and agency	Important to introduce in early childhood for building habits and behavioral patterns in early years, young children's potential preconception pre attitudes, agency, Building questioning and critical thinking skills, integrating the idea of sustainability into situated education by taking different perspectives
	Sustainability content	
	Zero waste, putting recycling bins in class, reducing plastic waste, compost and agriculture	Food consumption, energy sources, clothes, culture, livestock farming, social and cultural events, immigration, technological developments, products in market, looking into product labels, price and values, packaging
	Strategies to teach sustainability	
	parent involvement and parental education, modeling, practice-based, experiential learning, child-centered, active participation of young, critical questioning, media	Media, poetry, dance, using ICT, creative dramatics, storytelling, modeling, science, experimenting, movement, art, integrating into routine, questioning, child-centered
	Sustainable consumption content	
	reuse, use of materials, composting	Water consumption, toilet paper and tissue use, routine materials, self-care and sense of responsibility, compost, sorting-out waste, light, food, looking into product labels, sharing source of information

Table 8. (continued)

	Strategies to teach sustainable consumption	
	parent involvement and parental education, situated learning, collaboration between teacher, family and administrators	Play, storytelling, using media, setting rules and routines, preparing reminders for young children, integrating into routine, situated learning, parent involvement, collaboration with community, local governments, NGOs
Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings	Stressing the importance Role of teachers Commitment to sustainability and sustainable consumption Intention to address sustainability and sustainable consumption in ECE	Stressing the importance Deepened knowledge and practice, Built a knowledge repository on material usage for sustainable consumption Being a pre-service teacher barrier to implications Commitment to sustainability and sustainable consumption Intention to address sustainability and sustainable consumption in ECE Intention to use environmentally friendly materials and reducing material demand Inspired by critical education and change agency of young children Criticism of irresponsible use of tissue, paper, routine materials Seeking sustainable alternatives in educational material No doom and gloom approach Critical literacy perspective toward information Inspired by change agency Critically reflecting on validity and reliability of knowledge
Critically reflecting on consumption and its consequence	Criticism of overuse of materials Criticism of paper waste Criticism of food use as materials in activities Truly communicating core of sustainability Critically reflecting on validity and reliability of knowledge Reflecting on individual needs and cultural orientations Thinking visionary and considering interrelatedness	Reflecting on individual needs and cultural orientations Thinking visionary and considering interrelatedness

4.1.4. Self-reported Daily Practice of Mercan

4.1.4.1. Daily Practice of Mercan Prior to Professional Development Training

Mercan reported paying attention to being a responsible consumer and engaging in sustainable practices. She explained that she did not claim to have a zero ecological

footprint, but she critically questioned her actions before and after in terms of their effect on sustainability. Her expressions suggested that she took informed action for sustainability and sustainable consumption which entails the competency of planning, implementing, and evaluating consumption-related activities. For instance, she mostly walked or used public transportation, and read labels to choose recyclable, environmentally friendly, local materials or materials with a lower carbon footprint. In addition, Mercan declared engaging in need-oriented purchasing of clothes and voluntary simplicity through a capsule wardrobe, free-cycling and gifting clothes or reusing as cleaning cloth and do-it-yourself activities which reduce consumption. She reported reducing water waste during showering, teeth-brushing, etc, and reducing food waste through need-based purchasing. She also referred to engaging in local food consumption in terms of fruit and vegetable purchases.

Mercan also mentioned some limitations that influence her daily practice in terms of sustainable consumption. She explained that being a tenant and student prevented her from making structural changes in her house that helped save energy and water. Similarly, she reported that she could not use a bicycle for transportation due to safety issues in city traffic.

4.1.4.2. Daily Practice of Mercan in Response to Professional Development Training

Mercan reported that she did not observe a big change in her daily practices due to having awareness and engaging in sustainable practices before training. She expressed paying attention to sustainability and portrayed herself as an over-medium-level responsible consumer. Her daily practices in response to training included reducing water waste via responsible use of water while teeth-brushing, doing the dishes, etc, supporting recycling via sorting out waste, responsible use of energy via bulb choice, reducing light use, and reducing carbon footprint and carbon emissions using public transport, walking, need-oriented purchasing, voluntary simplicity and reducing food waste and preferring local food consumption. Moreover, Mercan expressed reading labels to choose recyclable, environmentally friendly, cruelty-free, healthy materials, and check trademarks for employees' working conditions and social rights. When these activities were reviewed it

suggested that Mercan demonstrated the competency of planning, implementing, and evaluating consumption-related activities.

Mercan commented on the use of taxis for longer public transport routes. This point suggested a macro-level structural barrier in terms of the feasibility of transportation in the city. Another structural barrier was living in an old apartment that lacked heat insulation. Moreover, she cannot make any infrastructure change in the apartment that saves energy and water due to being a tenant.

4.1.4.3. Change in the Daily Practice of Mercan

Mercan noted that she did not observe a big change in her daily practices due to her awareness and engagement in sustainable practices before training. The comparison summarized in Table 9 is consistent with her statement. In terms of competencies, she did not exhibit a change as well.

Table 9. Change in the Daily Practice

Daily Practice	Prior Training	In response to training
Taking informed action	Reusing, free-cycle, gifting, do-it-yourself	use of taxis for longer routes of public transport
	Reducing water waste	Reducing water waste
	Reducing food waste	Reducing food waste
	Reducing carbon footprint	Recycling-sorting out waste
	Using/buying environmentally friendly materials	Reducing carbon footprint
	Using/buying environmentally friendly materials	Using/buying environmentally friendly materials
	Need-oriented purchasing, voluntary simplicity	Responsible use of energy
	Planning, implementing, and evaluating consumption-related activities	Need-oriented purchasing, voluntary simplicity
		Planning, implementing, and evaluating consumption-related activities

4.1.5. Teaching Practice of Mercan

4.1.5.1. Teaching Practice of Mercan Prior to Professional Development Training

Mercan reported that she prepared and implemented activities addressing sustainability before participating in the training. They included making a cat house via reusing boxes

within cross-curricular assignments, a soap-making workshop focusing on zero waste within practice teaching, and eco-guide activities in her workplace. As for sustainable consumption, she stated she did not prepare a learning process addressing sustainable consumption. Her teaching practices before training included composing daily plans addressing sustainability and using daily activities to address sustainability such as choosing a light controller in order to engage young children with responsible electricity use, reducing paper waste by turning materials reusable and durable with plastic lamination, not using food as a material and instead of purchasing educational materials engaging in do-it-yourself and preparing them with less materials. Considering these, Mercan exhibited the competency of planning, implementing, and evaluating consumption-related activities in her teacher role.

As Table 10 illustrates, Mercan prepared five activity plans within the scope of the practice teaching course before training. Analysis of activity plans revealed that none of the activities addressed sustainable consumption in the learning process. As for materials, Mercan's choices included recyclable and reusable materials which is consistent with her expressions regarding material choice.

Table 10. Analysis of Activity Plans Composed Prior to Professional Development Training

Daily plans	Activity Type	Materials	Process	Related Terms
1	Language integrated art	Recyclable Reusable	-	-
2	Science integrated math	Recyclable Reusable	-	-
3	Early literacy integrated movement	Recyclable Reusable	-	-
4	Play integrated language	Recyclable Reusable	-	-
5	Drama integrated language	Reusable	-	-

4.1.5.2. Teaching Practice of Mercan in Response to Professional Development Training

Mercan reported that she paid attention to contributing to sustainability in her teacher role and her expressions suggested she did it through various activities. These activities included supporting young children to use water and energy sources responsibly, reducing paper waste through choosing sustainable alternatives such as using ICT and designing group works, reusing residual materials in activities, and sharing materials with colleagues and friends. Moreover, she assigned young children to check the responsible use of water and electricity and recycling materials by choosing a daily classroom attendant. Apart from her influence on young children, Mercan also exhibited agency in her interaction with her mentor teacher about sustainable consumption. She stated that she built a dialogue with her mentor teacher on sustainable consumption in which both parties share their knowledge and practice. Lastly, she reported that she informed young children about her material choices in later teaching practices in order to increase young children's awareness regarding sustainable consumption. This point is also reflected in her activity plan as follows:

The teacher draws children's attention to the types of materials she has chosen for the activity and states that they are reused from shipping boxes and waste materials at home. In this way, she highlights the sustainable consumption in the activity.

As Table 11 illustrates, Mercan's activity plans prepared during theoretical training did not include sustainable consumption. In her learning process, she generally used recyclable and reusable materials. There were also natural materials used in one activity and reused materials in another activity. Mercan did not use any disposable materials in any of the activities.

Table 11. Analysis of Activity Plans Composed During Theoretical Training

Daily plans	Activity Type	Materials	Process	Related Terms
6	Music integrated art	Recyclable Reused Reusable	-	-
7	Drama integrated movement	Recyclable Reusable	-	-
8	Early literacy integrated art	Recyclable Reusable Natural	-	-

Mercan prepared four integrated activity plans during practical training, three of which addressed sustainable consumption. As Table 12 presented one activity included naming concepts, themes and concerns regarding sustainable consumption and relating to issues of sustainable consumption in terms of experience, knowledge and feelings whereas two included all phases. The 12th activity process focused on reusing while integrating music with science which focused on planning, implementing, and evaluating consumption-related activities. The 9th activity process was exemplified using, editing and sharing different forms of knowledge and critically taking on one's role as an active stakeholder in the market as addressing sustainable consumption in terms of waste generation and waste management in the Olympics. Four task groups are formed in terms of running, gymnastics, swimming, and hockey with waste in each area. Children are tasked to do related sports while generating ideas to eliminate waste. It is reflected in the learning process as follows:

The teacher assists each group as they work together. She observes and takes notes of the children's ideas and questions. Their answers and notes are shared with children through documentation. Each group listens and discusses each group's ideas. After each group is done, the circle is made. The teacher asked the children's solutions and how they felt. She values each child's contribution and suggests children share what they have discussed and learned with their families today. As they found valuable solutions, she says, "Let us suggest to the Olympic Committee how to be more conscious and share what you have thought of." Children and the teacher prepare a brochure that includes children's ideas and drawings. The teacher assists the children in writing their ideas and names. Then, they mail this brochure as a PDF to the committee. This is done as an assessment, and the process ends.

Waste, reducing waste, reused, reusing and recycling were the terms mentioned while addressing sustainable consumption. As for materials, it was observed that reusable materials were preferred the most followed by recyclable materials. Two activities included reused materials while one activity included natural materials.

Table 12. Analysis of Activity Plans Composed During Practical Training- -Activity Plan Preparation Guidance

Daily plans	Activity Type	Materials	Process	Related Terms
9	Movement integrated language	Recyclable Reusable	Naming Relating Critically reflecting Taking Action	Waste, reducing waste,

Table 12. (continued)

10	Science integrated math	Recyclable Reusable Natural	-	-
11	Math integrated play	Recyclable Reused Reusable	Naming Relating	Reused
12	Music integrated science	Reused Reusable	Naming Relating Critically reflecting Taking Action	Recycling, reusing

In conclusion, Mercan exhibited the competency of planning, implementing, and evaluating consumption-related activities considering her endeavors within early childhood settings such as reducing paper waste and water waste, responsible energy use, recycling, reusing and sharing materials, and designing activity plans. She demonstrated the competency of communicating the idea of sustainable consumption to others in terms of her interactions with young children and her mentor teacher. Lastly, she demonstrated the competencies of critically taking on one's role as an active stakeholder in the market and using, editing and sharing different forms of knowledge as she addressed them in the activity process with young children.

4.1.5.3. Change in the Teaching Practice of Mercan

Mercan took informed actions toward sustainable consumption in her teaching practice before and during training, as Table 13 shows. However, she reported that there was a change in her material use in response to training. She expressed reducing paper waste and material use in her late activities via using technology as a sustainable alternative and preparing group work. She explained this change as follows:

At the beginning of the practicum, before I participated in these meetings, I used to print out a lot of visuals for my activities. I mean, more like photocopies, but I always laminate them. To be able to use them longer, for durability. After participating in the meetings, printing out materials, visually presenting them.. For instance, integrating technology came to my mind at that moment. If you wish to show a visual it might be preparing a PowerPoint presentation because that way I do not print out anything. Or designing group activities that necessitate young children to work together. Those were reflected in my last activities.

Apart from that, she pointed out the increase in assigning young children to check for lights, running water, and recycling materials within the classroom's daily routine. She also reported informing young children about material choice in activities and interacting with the mentor teacher and informing her about sustainable consumption teaching practices.

Table 13. Change in the Teaching Practice of Mercan

Teaching Practice	Prior Training	In response to training
Taking informed action	Reducing paper waste, Turning materials reusable-durable Do-it-yourself & reuse Responsible consumption of energy Planning, implementing, and evaluating consumption-related activities	Reducing paper waste, Using sustainable alternative Reducing water waste, Responsible consumption of energy Informing young children about material choice in activities Recycling Reusing sharing materials with colleagues, friends Informing mentor teacher Planning, implementing, and evaluating consumption-related activities Communicating the idea of sustainable consumption to others Critically taking on one's role as an active stakeholder in the market Using, editing and sharing different forms of knowledge

In terms of competencies reflected in teaching practice, there existed a development. Mercan exhibited the competencies of planning, implementing, and evaluating consumption-related activities, communicating the idea of sustainable consumption to others, critically taking on one's role as an active stakeholder in the market and using, editing and sharing different forms of knowledge in response to training while she only exhibited the competency of planning, implementing, and evaluating consumption-related activities before training.

4.1.6. Intersection Between Citizen Role and Teacher Role of Mercan

According to the findings, Mercan demonstrated an enhanced understanding regarding sustainable consumption in both her citizen role and teacher role while

more development in teaching practice compared to daily practice in response to training. Similarly, she exhibited more competencies in her teacher role compared to her citizen role. Competencies of reflecting on individual needs and cultural orientations, thinking visionary and considering interrelatedness and planning, implementing, and evaluating consumption-related activities were common in her citizen role and teacher role. Competencies to communicate the idea of sustainable consumption to others, critically taking on one's role as an active stakeholder in the market and using, editing and sharing different forms of knowledge were reflected only in her teacher role.

Table 14. Summary Of Mercan's Understanding & Practice

	Prior Training	In Response to Training
Citizen Role	Detailed definition Environmental, Social, Critical Commitment Critical Reflection	Detailed definition Holistic, Critical Commitment Deepened Critical Reflection (role of culture, consumption and production chain, lack of active citizenship)
Teacher Role	Informed Action Detailed content and strategy (child competency dimension, participatory and activist dimension, whole school approach) Commitment Intention	Informed Action Developed content and strategy (child competency dimension, participatory and activist dimension, broadly-based right dimension, whole school approach, whole system approach) Commitment Intention, self-efficacy Inspired by critical education and young children's change agency
Teacher Role	Informed Action Critical Reflection Informed Action	Informed Action Deepened Critical Reflection (sustainable alternatives in educational material, no doom and gloom approach, critical literacy) Informed Action Developed teaching practice Developed activity plan process

4.2. Exploration of Change in Understandings and Practices in Response to Professional Development Training: The Story of Başak

4.2.1. Başak in Research Context

Başak was 28 years old and in the last semester of her major in the Department of Early Childhood Education when she participated in the study. She was also pursuing

a minor in Geographical Information and Remote Perception Systems and had previously graduated from the Department of Child Development with an associate degree from another university. She lived in the dormitory on the university campus during the study process and practiced with 36-48-month-old children in a public kindergarten within the scope of the practice teaching course. Başak attended all professional development training sessions exceeding the final theoretical training session that focused on creating a guiding framework for designing activities addressing sustainable consumption for young children. The researcher and Başak met earlier than the study group to remedy this session. Throughout the study, she composed four activity plans with the guidance of the researcher and wrote eight reflective journals in response to training meetings.

Motivation for participation in the study and expectations from training: Başak reported her academic interest in the study topic and expressed that she was motivated to participate in the study for personal development in sustainability. Her expectations from training included gaining knowledge and insight into sustainability, sustainable consumption, and critical literacy in addition to developing competency in her teaching practice in terms of addressing those three concepts.

Previous knowledge and experience: Başak expressed that she observed a project on sustainability in her practicum placement and then she further researched it on the internet. Critical literacy and sustainable consumption were unfamiliar concepts for Başak, and she had no previous experience or knowledge of them.

4.2.2. Self-reported Understanding of Başak as a Citizen

4.2.2.1. Understanding of Başak Prior to Professional Development Training

Naming concepts, themes and concerns regarding sustainable consumption

Başak described sustainability as maintaining a more qualified and sustainable life for future generations. She demonstrated an eco-centric perspective towards sustainability, referring to its significance for human-nature connections and environmental protection as it follows:

First of all, I mean we are... there are so many parts of nature, so many parts of the world, and we are one of them. So we don't have much of an advantage. Yes, we have competencies, but we don't have superiority. I think people should use these competencies in a positive way. I think they should act consciously and pay extra attention to the pieces they share so that they can prevent even one of these pieces from disappearing.

When inquired about sustainable consumption Başak reported that it referred to not wasting, not unnecessary but consciously and balanced consumption. She elaborated on unnecessary consumption as being not need-oriented, having an unnecessary number of items and not choosing alternative consumption methods. Başak also stated sustainable consumption orients sustainability, and they are interrelated concepts.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

Başak expressed having very limited knowledge and her willingness to develop knowledge regarding sustainability and sustainable consumption. She identified herself as generally a responsible consumer as she considered how to and what to consume beforehand based on needs. However, she thought she hardly contributed to sustainability although she stressed the importance of it. She elaborated on her ideas as follows:

I don't know, I don't put a lot of effort into this kind of things [sustainability practices]. I don't think on it but I think it should be considered. But people have priorities in their lives and when they focus on these the rest fall behind. And this causes us not to act on it [sustainability]. In fact, it can be seen as something unconsciously done. So it's not that consciously I don't support sustainability or I don't do it but I think we can't pay attention to it.

Critically reflecting on consumption and its consequences

When inquired about consumption and consumption habits Başak engaged in critical reflection in terms of the division of needs and wants. She referred to the purchasing process as need-oriented that she would not buy anything new unless she needed it. Moreover, she identified having an unnecessary amount of an item as a luxury, not a need.

4.2.2.2. Understanding of Başak in Response to Professional Development Training

Naming concepts, themes and concerns regarding sustainable consumption

Başak's definition of sustainability after training referred to valuing and sustaining resources for future generations, refraining from unnecessary consumption, recycling as much as possible and minimizing irresponsible attitudes. She explicated that obtaining any product necessitated too much resource consumption therefore she advocated reducing consumption, preserving resources, and making sustainable products hence sustainability. Başak described sustainable consumption as consuming consciously and refraining from unnecessary consumption as reflecting on needs and wants in consumption choices. She commented on the relationship between sustainability and sustainable consumption in terms of consumption and production chain. She explained that overconsumption creates higher demand and higher supply therefore negative effects on sustainability.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

According to the statements of Başak, she built a commitment towards sustainability in response to professional development training. She stressed the importance of sustainability and being a responsible consumer. She portrayed herself as a responsible consumer expressing her commitment to need-oriented consumption. She reported contributing to sustainability as best as she can as well as enjoying encouraging others to need-oriented consumption.

Critically reflecting on consumption and its consequences

Başak demonstrated competencies of reflecting on individual needs and cultural orientations, and thinking visionary and considering interrelatedness in response to professional development training. To demonstrate, Başak referred to the division of needs and wants in consumption patterns and commented on the influence of social media over overconsumption. She claimed to be not affected by social media and

reflected on her individual needs while engaged in purchasing. Her statements additionally included a criticism of perceived obsolescence as follows:

..for instance, people buy a model of a mobile phone. Then an advanced model of the same brand is released, and they leave the old one and get the newer one. And another one is released and they leave the previous one. In fact, they don't need it. They buy it due to this unconscious consumption and I think that it has negative impacts on sustainability.

On the other hand, Başak mentioned the effect of consumption and production chains on resources and referred to demand and supply to mitigate its effect. She elaborated on her ideas that as people consume production increases, and as more production arrives more consumption occurs. She offers to decrease the demand in order to influence this cycle.

Lastly, she touched upon her energy consumption in terms of critical reflection. She claimed generally being careful about energy use but mentioned sometimes leaving tools plugged in due to being tired or simply forgetting. She sought a solution during her reflection as setting alarms for reminding the time for plugging out technological devices and trying to reduce the time she spends using mobile phones or computers.

4.2.2.3. Change in the Understanding of Başak as a Citizen

Başak expressed a change in her mindset regarding sustainability stating that she was not used to responsibly acting for sustainability before training but now was labeled as an environmentalist by her friends. The comparison of the citizen understanding of Başak suggests a similar result as reflected in Table 15. Particularly, the change in her understanding is apparent in terms of critical reflection on consumption and its consequences as reflected in her attaining the competencies of reflecting on individual needs and cultural orientations and thinking visionary and considering interrelatedness.

Table 15. Change in the Understanding of Başak as a Citizen

Understanding	Prior training	In response to training
		Sustainability
Naming concepts, themes and concerns regarding sustainable consumption	maintaining a more qualified and more sustainable life for future generations eco-centric view	valuing and sustaining resources for future generations, refraining from unnecessary consumption, recycling as much as possible, minimizing irresponsible attitudes

Table 15. (continued)

	Sustainable consumption	
	not wasting, not unnecessary, consciously and balanced consumption, need-oriented	Consciously consumption, refraining from unnecessary consumption, reflecting on needs and wants in consumption choices
	Sustainable consumption orients sustainability, interrelated	Sustainable consumption orients sustainability in terms of consumption and production chain
Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings	Stressing the importance Difficulty in integrating it into daily life Willingness to develop knowledge Generally, a responsible consumer	Stressing the importance Commitment to sustainability Responsible consumer Likes to encourage others to need-oriented consumption Inspired by NGO field activities
Critically reflecting on consumption and its consequence	Division of needs and wants	Division of needs and wants Reflection on individual needs Reflecting on the influence of social media Criticism of perceived obsolescence Demand and supply Effect of consumption and production chain on energy resources Reflecting on her energy consumption and seeking sustainable alternatives Reflecting on individual needs and cultural orientations Thinking visionary and considering interrelatedness

4.2.3. Self-reported Understanding of Başak as Teacher Candidate

4.2.3.1. Understanding of Başak as Teacher Candidate Prior to Professional Development Training

Naming concepts, themes and concerns regarding sustainable consumption

Başak defined sustainability as an important topic to introduce in early childhood owing to young children's potential preconception preattitudes. She argued it should not be taught like a concept but rather integrated into the curriculum via science education. Başak reported that topics of consumption habits and environmental

protection in terms of practices and knowledge via integration into science activities may be introduced while addressing sustainability in the early years.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

Başak declared that she had no contributions to sustainability as a teacher candidate, but she thought it should be addressed. She explicated that she felt uninformed about sustainability and sustainable consumption which limited her practice. She expressed her willingness to develop knowledge and practice regarding sustainability and sustainable consumption before the training. Other than that, she shared her concern over paper waste based on her impressions of the practicum placement.

Critically reflecting on consumption and its consequences

Başak engaged in critical reflection on consumption and its consequences while expressing her criticism of paper waste in early childhood institutions. She shared that papers were not consumed responsibly in her practicum placement. Although there existed a recycling bin it was not effectively used that neither were residual papers sorted out nor reused. She referred to this criticism with the following statements:

So, there is a box in the name of a recycling box, but it goes to the same place with other garbage. They are never sorted out. I see it in this semester's practicum school. It was not like this before..Even a tiny piece of paper was used to put in the recycling box and keep there. When they make an activity they would use those for decorating. I mean they were used in a way. Now, they cut a tiny piece out of paper, fold the rest, and throw it away. I see that a lot..I mean negatively..

4.2.3.2. Understanding of Başak as Teacher Candidate in Response to Professional Development Training

Naming concepts, themes, concerns related sustainable consumption

Başak reported that sustainability is definitely an important topic to introduce in early childhood for young children's potential preconceptions and preattitudes in

addition to building habits and behavioral patterns in early years. She claimed that sustainability should not be taught like a concept but as building behaviors, attitudes, perceptions, and understanding. Moreover, it should not be a week-long instruction; instead, it should be integrated into the whole process. Başak also commented on the involvement of the teacher when addressing sustainability in early childhood education. She referred to the teacher's role modeling with her sustainable practices in the classroom in addition to teaching.

Başak suggested that consumption habits, energy use, sustainable energy resources, reducing energy consumption, sense of responsibility, organic food consumption, seasonal food consumption, responsible use of materials, reusing, reducing waste, and do-it-yourself activities could be included while teaching sustainability and sustainable consumption in early childhood. She also mentioned that the use of media, experimenting, experiential learning, parent involvement and modeling could be teaching strategies to address this content.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

After training Başak expressed her sense of development in knowledge and practice regarding sustainability and sustainable consumption. She explained that she acquired how to address those in her teaching and increased her creativity in terms of designing activities. She demonstrated a commitment to sustainability and sustainable consumption in her teacher role. Moreover, she expressed her intention to address sustainability and sustainable consumption in her future teaching practice.

Critically reflecting on consumption and its consequences

While referring to her teacher role in terms of sustainability and sustainable consumption Başak critically reflected on consumption and its consequences in terms of material use, paper waste, food waste and material use and purchasing behavior of young children in early childhood institutions. Her critical reflection suggested that she exhibited the competency of reflecting on individual needs and cultural

orientations and thinking visionary and considering interrelatedness. To demonstrate, she explained that she purposely reuses materials and asks for residual materials from parents for her activities with young children instead of buying cartoons and other stuff. Apart from that, she criticized paper waste in classrooms and implementations increasing young children's irresponsible paper use. She stated examples of young children cutting a piece of paper, crumpling the rest, and throwing it away in a dustbin or a recycling bin. She claimed that young children missed learning about reuse and enhancing their creativity this way.

Moreover, she referred to the division of needs and wants in product purchase of young children, reporting reckless use of toys and educational materials and asking parents to buy new ones instead of repairing them. Similarly, she commented on food waste in schools due to offering too big servings or food that young children refuse to eat and throwing it in the dustbin. According to Başak, this practice creates a wrong message for children that causes unsustainable consumption.

4.2.3.3. Change in the understanding of Başak as Teacher Candidate

Başak demonstrated a developed level of knowledge regarding teaching practice in response to training, she offered more detailed content and more varied strategies in terms of sustainability and sustainable consumption. Başak commented on the development in her level of knowledge and creativity in terms of addressing sustainability in early childhood education as follows:

We also planned activities during the process, which increased my creativity on this subject. Because I was in very stereotypical thoughts and I was not very creative about what I could do. And you know, okay, sustainability, we can do it in pre-school, blah blah blah, but how we can do it was not there. I learned this during this training process.

Her statements reflected self-efficacy in her teaching. Additionally, a change in her understanding in terms of integration of sustainability in early childhood appeared in her statements as follows:

It affected me like this. First of all, since we are all models for children, there was a perception that I should first create the background with my own

behavior. Because from the beginning of the training, we were first given a training. Then we learned how to transfer this knowledge, this idea to children. In other words, I learned that we should first change our behaviors, then demonstrate this to children as a model, and then support it with activities and education.

Overall, there appears to be a positive change in understanding of Başak as a teacher candidate as Table 16 summarizes. Başak engaged in critical reflection on consumption and its consequences and demonstrated the competency of reflecting on individual needs and cultural orientations in her teacher role in response to professional development training.

Table 16. Change in the understanding of Başak as Teacher Candidate

Understanding	Prior training	In response to training
Naming concepts, themes and concerns regarding sustainable consumption	Important topic to introduce in early childhood young children's potential preconception preattitudes, not teaching it like a concept	Important topic to introduce in early childhood, building habits, behavioral patterns in early years, young children's potential preconception preattitudes, agency not teaching it like a concept, involvement of teacher and process-oriented
	Sustainability Content consumption habits, environmental protection in terms of practices and knowledge	Sustainable consumption habits, energy use, sustainable energy sources, reducing energy consumption, organic food consumption, seasonal food consumption
Naming concepts, themes and concerns regarding sustainable consumption	Strategies to Teach Sustainability science	Media, doing experiments, project approach, experiential learning, parent involvement, modelling,
	Sustainable Consumption Content -	Energy, responsible use of materials, reducing waste and do it yourself, sense of responsibility, collecting crayons for reuse, reuse, reducing food waste
	Strategies to Teach Sustainable Consumption -	Parent involvement, media use, experiential learning, doing experiments

Table 16. (continued)

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings	Feeling uninformed willingness to develop knowledge and practice Concern over paper waste	Developed level of knowledge regarding practice Self-efficacy Commitment Intention to address sustainability and sustainable consumption in her teaching
Critically reflecting on consumption and its consequence	Criticism of paper waste in ECE	Criticism of paper waste and food waste in ECE Reflecting on material choice Division of needs and wants in product purchase Reflecting on individual needs and cultural orientations Thinking visionary and considering interrelatedness

4.2.4. Self-reported Daily Practice of Başak

4.2.4.1. Daily Practice of Başak Prior to Professional Development Training

Başak stated she engaged in heavy water consumption in terms of frequent showering, toothbrushing, and hand washing, and electricity consumption due to frequent use of her technological tools. In terms of sustainable consumption, she expressed walking regularly for transportation, not engaging in junk food or packaged food consumption and doing need-oriented purchases. When those daily practices are evaluated Başak demonstrated the competency of planning, implementing, and evaluating consumption-related activities via need-based purchasing and reducing carbon emissions and plastic waste.

4.2.4.2. Daily Practice of Başak in Response to Professional Development Training

Başak reported that there have been changes in her daily practice regarding sustainability. She explained that the knowledge and experience she built during the training was reflected in her daily practice. She stated that she contributed to sustainability as best as she could. Her sustainable daily practices included reducing carbon emissions through walking regularly and using public transportation with longer routes for transportation, reducing food waste through her eating habits and

encouraging other family members to consider food purchases based on eating habits and needs, reducing water waste via turning off the tap while teeth-brushing or doing the dishes and reducing energy consumption via turning off lights when there is no use and plugging off the tools when charged. Apart from that, she mentioned that she sometimes leaves power tools in charge when she is tired or forgets as an example of unsustainable consumption. Considering those mentioned above Başak demonstrated the competency of planning, implementing, and evaluating consumption-related activities.

Furthermore, Başak stated her endeavors to encourage others to sustainable consumption. She reported frequently leading her friends to need-oriented purchases by reflecting on needs and wants and warning family members to be careful about lights, water use and food consumption. Those suggested the competency of communicating the idea of sustainable consumption to others.

4.2.4.3. Change in the Daily Practice of Başak

As summarized in Table 17, Başak’s daily practice positively changed as it reflected a decline in unsustainable practices and an increase in sustainable practices. Her reported sustainable practices increased in terms of recycling, second-hand shopping, encouraging family members to use water and energy responsibly and to reduce food waste, and encouraging friends to need-oriented purchases in response to training in addition to reducing carbon emissions, reducing plastic waste and need-oriented purchase which she also reported before training. Similarly, she exhibited the competency of communicating the idea of sustainable consumption to others in response to training in addition to the competency of planning, implementing, and evaluating consumption-related activities.

Table 17. Change in the Daily Practice of Başak

Daily Practice	Prior Training	In response to training
Unsustainable practices	Frequent showering, toothbrushing and hand washing, Frequent charging/using of technological tools	Sometimes leaving power tools on charge

Table 17. (continued)

Taking informed action	Reducing carbon emissions Reducing plastic waste Need-oriented purchase	Reducing carbon emissions Recycling-sorting out waste Need-oriented purchase Second-hand shopping Responsible energy use Reducing water waste Encouraging family members avoiding food waste, reducing energy consumption
	Planning, implementing, and evaluating consumption-related activities	Planning, implementing, and evaluating consumption-related activities Communicating the idea of sustainable consumption to others

4.2.5. Teaching Practice of Başak

4.2.5.1. Teaching Practice of Başak Prior to Professional Development Training

Başak reported not preparing an activity plan addressing sustainability or sustainable consumption before participating in training due to her limited knowledge and experience. She thought she did not contribute to sustainability in her teacher role before the training.

Within the scope of practice teaching, Başak prepared and implemented five integrated activity plans before the training. Analysis of her activity demonstrated that she generally used recyclable and reusable materials in her activities. However, she used disposable materials in two of the five activities. While she used natural materials in one of the activities, she did not reuse any residual materials. As Table 18 illustrates, the activity processes prepared before training did not introduce sustainable consumption or any related terms.

Table 18. Analysis of Activity Plans Composed Prior to Professional Development Training

Daily plans	Activity Type	Materials	Process	Related Terms
1	Language and play integrated math	Recyclable Reusable Disposable Natural	-	-

Table 18. (continued)

2	Language integrated science	Recyclable Reusable Disposable	-	-
3	Play integrated math	Recyclable Reusable	-	-
4	Play integrated language	Recyclable Reusable	-	-
5	Play integrated science	Recyclable Reusable	-	-

4.2.5.2. Teaching Practice of Başak in Response to Professional Development Training

When inquired about her experience in terms of teaching practice Başak explained that this process increased her level of knowledge and creativity therefore teaching practice in terms of addressing sustainability and sustainable consumption. She mentioned that she contributed to sustainability in her teacher role by choosing to reuse materials. She explained that there was no place for collecting residual materials in her practicum placement nor did her mentor teacher have a habit of collecting and reusing residual materials. She instead asked parents to bring residual materials to use in her activities.

Başak prepared three activity plans during theoretical training as it is illustrated in Table 19. They were generally art-integrated activities with recyclable and reusable materials. Başak did not use any natural materials or reuse residual materials while using disposable materials in two of the three activities. None of the activities addressed sustainable consumption in the learning process.

Table 19. Analysis of Activity Plans Composed During Theoretical Training

Daily plans	Activity Type	Materials	Process	Related Terms
6	Art and language integrated drama	Recyclable Reusable Disposable	-	-
7	Art integrated early literacy	Recyclable Reusable Disposable	-	-

Table 19. (continued)

8	Art math	integrated	Recyclable Reusable	-	-
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During practical training, Başak prepared and implemented twelve activity plans addressing sustainable consumption in the learning process as demonstrated in Table 20. Two of the activities introduced sustainable consumption with the level of naming and relating to sustainable consumption while one of the activities engaged in critical reflection and one of the activities reached the level of taking action towards sustainable consumption which is the 11th daily plan. In this activity process, young children were encouraged to prepare warning signs to inform others in school to use water and electricity responsibly. The competency of communicating the idea of sustainable consumption to others is reflected in the learning process as follows:

“Now we will make warning signs that will save money in our school.” and directs the children to the art activity. The teacher has the children choose lamps and water symbols by drawing lots. It gives the visual of that symbol to the child who chooses the symbol. Children color and cut these symbols in original ways. There are children who quickly get bored with artwork and have difficulty completing the task. In order for all children to participate with pleasure and complete the task in accordance with the given instructions, large images that can be completed in a short time are preferred instead of small images with deep lines. The cutout symbols are pasted on colored cardboard and pasted in different areas of the school. For example; Those who make the lamp glue the lamp to the cover cardboard and place it on the sockets. Those who make the water symbol glue it to the close-the-tap cardboard and stick it in the toilets. Thus, the work done by each child is hung on all taps and sockets of the school to raise awareness throughout the school.

During the practical training, Başak presented the terms of recycling, renewable energy sources, nature-friendliness, waste and global warming. As for the material choice, recyclable materials were used in all activities and reusable materials were used in three of them. Two activities utilized reused materials, and one activity process included usage of natural materials. Başak did not use disposable materials in any of the activity plans during practical training.

Table 20. Analysis of Activity Plans Composed During Practical Training-Activity Plan Preparation Guidance

Daily plans	Activity Type	Materials	Process	Related Terms
9	Art integrated science	Recyclable Reused	Naming Relating	Recycling
10	Art and music integrated science	Recyclable Reusable	Naming Relating	Renewable energy sources, nature-friendly
11	Language and art integrated science	Recyclable Reusable	Naming Relating Critically Reflecting Taking Action	Waste, global warming
12	Language and art integrated science	Recyclable Reused Reusable Natural	Naming Relating Critically Reflecting	

When Başak's teaching practice was evaluated it illustrated that she designed and implemented activities introducing sustainable consumption to young children. In addition, she preferred to reuse materials and exemplified reusing in her teaching practice. Considering her teaching practice Başak exhibited the competency of planning, implementing, and evaluating consumption-related activities. Apart from that, she demonstrated the competency of communicating the idea of sustainable consumption to others in the learning process of her activity plan.

4.2.5.3. Change in the Teaching Practice of Başak

As Table 21 demonstrates there has been a development in the teaching practice of Başak. She referred to this development as an increase in creativity and practical knowledge. Before the training, Başak did not reflect an informed action on her teaching practice, however, she engaged in reusing, prepared activity plans addressing sustainable consumption, and informed others via warning signs created by young children. As a result, she exhibited the competencies of planning,

implementing, and evaluating consumption-related activities and communicating the idea of sustainable consumption to others.

Table 21. Change in the Teaching Practice of Başak

Teaching Practice	Prior Training	In response to training
Taking informed action	-	reuse in teaching preparing activity plans addressing sustainable consumption preparing and placing warning signs with young children Planning, implementing, and evaluating consumption-related activities Communicating the idea of sustainable consumption to others

4.2.6. Intersection Between Citizen Role and Teacher Role of Başak

As Table 22 demonstrates, some commonalities and differences in Başak's understanding and practices were observed between the citizen role and the teacher role. Başak engaged in critical reflection and informed action for sustainable consumption both in her citizen role and teacher role. She exhibited the competencies of reflecting on individual needs and cultural orientations, planning, implementing, and evaluating consumption-related activities and communicating the idea of sustainable consumption to others in her citizen role and teacher role while exhibiting the competency of thinking visionary and considering interrelatedness only in her citizen role.

Table 22. Summary of Başak's Understanding & Practice

	Prior Training	In Response to Training
Citizen Role	Limited definition	Detailed definition
	Environmental	Holistic
	Willingness to develop knowledge and practice	Commitment
	Limited Critical Reflection	Inspired by NGO field activities
		Deepened Critical Reflection (influence of social media, criticism of perceived obsolescence, demand and supply, consumption and production chain)
	-	Informed Action
		Private behaviors and encouraging others

Table 22. (continued)

Teacher Role	Limited content and strategy (child competency dimension)	Developed content and strategy (child competency dimension, participatory and activist dimension)
	Willingness to develop knowledge and practice	Commitment Intention, self-efficacy Inspired by concrete examples
	Limited Critical Reflection	Deepened Critical Reflection (criticism of food waste, reflecting on material choice, division of needs and wants)
	-	Informed Action Developed teaching practice Developed activity plan process

4.3. Exploration of Change in Understandings and Practices in Response to Professional Development Training: The Story of İpek

4.3.1. İpek in Research Context

İpek is 23 years old, female teacher candidate. She lived in the dormitories of the university which are located on the campus. She was in the last semester of her undergraduate program and expected to graduate after completing the semester. In the scope of the practice teaching course, she worked with 36-48-month-old children in a public kindergarten. İpek was present at all meetings of professional development training and completed all assignments within training. Throughout the study, she composed five activity plans with the guidance of the researcher and wrote seven reflective journals in response to training meetings.

Motivation for participation in the study and expectations from training: İpek reported her interest in sustainability and sustainable lifestyles, yet she criticized herself for being unable to adapt sustainability into her daily life completely. She noted that she might adapt it with the help of the training. She declared that she expects to deepen her knowledge, create a sustainability mindset, adopt a sustainable lifestyle, change habits with sustainable alternatives, and become a more responsible citizen.

Previous knowledge and experience: İpek reported that sustainability, sustainable consumption, and critical literacy are familiar words to her. She mentioned hearing

about sustainability from the internet and previous cross-curricular instructions, referring particularly to the environmental education course. Whereas she expressed to become aware of sustainable consumption via social media and friends. In terms of critical literacy, she noted having very limited ideas and encountering the term via social media.

4.3.2. Self-reported Understanding of İpek as a Citizen

4.3.2.1. Understanding of İpek Prior to Professional Development Training

Naming concepts, themes and concerns regarding sustainable consumption

İpek defined sustainability within the frame of future availability of resources for future generations. Scarcity of resources, protection of nature and beauty of environment with the efforts of all people appeared in this definition which reflects environmental sustainability. İpek described sustainable consumption as follows:

Sustainable consumption.. Maybe the thing is that we are responsible for everything we buy and we may need to shop more consciously so that we don't go on a consumption spree. It might be an example for minimalist living. Maybe buying one quality product rather than buying ten of the same product. I can say that about (sustainable consumption)

Her explanation of sustainable consumption included voluntary simplicity and criticism of consumerism. It seems her point of view regarding consumption centered on purchasing behavior. Other than that, İpek expressed the connection of sustainability and sustainable consumption with purchasing behavior. She offered voluntary simplicity in purchasing behavior in order to contribute to sustainability as follows:

Sustainable consumption is minimizing the thing we buy etc, and when you do that you contribute to sustainability. You're spending less and this way you support it. The two seem to be connected.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

İpek stressed the importance of sustainability and sustainable consumption and expressed her willingness to develop her level of knowledge and practice for

sustainability and sustainable consumption while categorizing herself as a time-to-time responsible consumer. She explained how she relates to sustainability and sustainable consumption with these words:

Important. It [Sustainability] is something I value. Something I value as a person and as an educator. I really think I need to pay attention to this more. Sometimes, in a rush, we may not pay too much attention to some things. I would like to practice it more. I would...time to time [I am a sustainable consumer].I would certainly like to.. I would like to pay more attention to [being a sustainable consumer]

Critically reflecting on consumption and its consequences

İpek engaged in critical reflection about consumption in terms of the division of needs and wants and the hierarchy of need satisfaction. The competency of *reflecting on needs and cultural orientation* is represented on her critical reflection as follows:

If we don't need it, we never need to buy it. It's like trick of the capitalist system but we sometimes get fooled by it. Afterward, I feel remorse 'was it essential that I bought it'. My fancy fades away. But I really think I have restricted myself nowadays. I think hard before buying something. Whether I really need it. will I really able to use it, how many times can I use it. I really think too much about it, whether it is reasonable. Maybe it's also due to the economic situation.

4.3.2.2. Understanding of İpek in Response to Professional Development

Training

Naming concepts, themes and concerns regarding sustainable consumption

After training, İpek referred to sustainability in a holistic approach addressing culture, society, economy and environment in her definition with a critical perspective. She found sustainability as achievable and feasible also needed for future generations.

I think sustainability is a concept that we can adapt to all areas of our lives, not just a hollow (concept).. not just recycling bins.. upcycling, etc., or we can adapt it to all areas from culture to social, life, economy, in fact, after

creating this mindset, we can adapt it to our lives. It's not very difficult, it's just that we magnify it in our heads as if it's something very big, such as 'I can't adapt it to my life'. In fact, I think it's something that organizes and facilitates our lives, something that we need in order to leave a better world for future generations.

Similarly, her sustainable consumption definition broadened referring to life-cycle perspective of products, need-oriented consumption of all materials, responsible consumption of all things besides materials, emphasis on not wasting and criticism of consumer society. In terms of the connection between sustainability and sustainable consumption, İpek mentioned sustainable consumption as a subtheme of sustainability, sustainable consumption orients sustainability as it addresses critical reflection on consumption (material usage, choices).

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

After training, a strong commitment and ethical obligation towards sustainability and sustainable consumption appeared in the statements of İpek. She reported feeling interested but having limited information about those terms before participating in the study. She stated that the study allowed her to think more about how to adapt sustainability to daily life and realize sustainable practices of herself and her family. She reflected on this discovery and her intentions in the post-interview as follows:

This way..I was not adapting [sustainable practices]a lot in my life, but it made me realize that there were things I was adapting. Both by me..myself and my family. There were things that I had never paid attention to before, but I realized we were actually doing a lot of things without realizing it. I want to keep doing them consciously, not unconsciously. Soon I will rent a house. I will be living by myself. I want to establish a pattern of life there.. So, most probably I will try to pay attention. I even made up a lot of things in my head. Such as how can I make use of materials and stuff, which ways to use them. Or oil, waste oil.. how can I make use of it. I started to think all about them and given a more appropriate setting it feels like I can realize them easier. I think I will pay attention to that from now on.

Similarly, İpek noted her realization of her civic role in sustainability and exhibited a stronger commitment toward sustainable consumption. She defined herself over the

medium level as a responsible consumer. She expressed remorse because she believed she could do better.

Critically reflecting on consumption and its consequences

İpek referred to the division of needs and wants and the hierarchy of needs and reflection on purchasing in terms of need satisfaction while questioning consumption and its consequences. Reflection on the consumption and production chain, criticism of the exploitation of resources and consumer society, and criticism of living without considering others and future generations appeared in her statements.

İpek demonstrated the competencies of reflecting on needs and cultural orientation and thinking visionary and considering interrelatedness in terms of critical reflection on consumption and its consequences. She demonstrated later competency in her reflective journal as follows:

While I encounter positive examples (of sustainable consumption) I saw packaged fruits and vegetables in social media and noticed everyone found it logical. But it made me uncomfortable. I realized that I gained consciousness about this issue and no matter how practical it was I put environment first. As life conditions gets more demanding the alternatives offered to people also varies and people are bringing this kind of packaged food into their lives to get easy access. But they are not aware of its harms.

4.3.2.3. Change in the Understandings of İpek as Citizen

When the analysis of İpek's understanding before and after training was compared, more sophisticated and comprehensive definitions of sustainability and sustainable consumption were observed in the statements of İpek. Before training, she defined sustainability within the boundaries of the environmental dimension focusing on the beauty of the environment, protection of nature, scarcity of resources, and concerns for future generations. After training, this definition included multiple dimensions such as environmental, economic, societal, and cultural that reflect a holistic approach to sustainability. Similarly, the definition of sustainable consumption expressed by İpek was rather limited to voluntary simplicity and criticism of

consumerism over buying products before training. The emphasis on the life-cycle of a product, need-oriented consumption, in everything we consume being considerate in not only material but all areas of consumption and criticism of consumer society, reflected in her understanding in response to the training. Moreover, İpek more elaborately expressed the relationship between sustainability and sustainable consumption as it can be seen in Table 23.

İpek stressed the importance of sustainability and sustainable consumption, expressed willingness to develop knowledge and practice and portrayed herself a time-to-time responsible consumer before training. In response to training, she repeated the importance of sustainability and sustainable consumption. She further expressed a stronger feeling of responsibility and stronger commitment towards sustainability and sustainable consumption through the realization of her civic role which reflects her change agency as follows:

..And our resources are limited, we need to be aware of this and get out of the logic of what will change with just one person, which is what I used to think. I mean, even though I knew that I shouldn't be in that mindset, that mindset was going on inside. Like, what one person will do, blah blah blah. I think I got rid of this thought now because I realized that a lot can change with one person.

İpek portrayed herself as 75% level responsible consumer and expressed feeling remorse about it because she believed she could do better. When compared to her previous condition there is an increase in her relation to sustainable consumption. In addition, she expressed being inspired by educational materials such as videos and picture books used in training. She stated to continue watching those videos and more, following the producer's account.

Lastly, in terms of critical reflection, İpek only exhibited competency of reflecting on individual needs and cultural orientations before training. In response to training, İpek demonstrated the competency of thinking visionary and considering interrelatedness in addition to the competency of reflecting on individual needs and cultural orientations.

Table 23. Change in Understanding of İpek as a Citizen

Understanding	Prior training	In response to training
Naming concepts, themes and concerns regarding sustainable consumption	Scarcity of resources	Sustainability
	Protection of nature	Holistic sustainability, critical, scarcity of resources
	Beauty of environment	Achievable and feasible (no doom and gloom)
	Efforts of all people	For the sake of future generations
		Sustainable Consumption
	Voluntary simplicity	Life-cycle perspective
	Criticism of consumerism	Need-oriented consumption of all materials
	Focus on purchasing	Responsible consumption of all things besides materials
		Emphasis on not wasting
		Criticism of consumer society
	Connection between sustainable consumption and sustainability through voluntary simplicity on purchasing	Sustainable consumption as subtheme of sustainability, critical reflection on consumption (material usage, choices)
	Stressing importance	Stressing importance
Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings	Willingness to develop knowledge and practice	Feeling stronger responsibility
	Time to time responsible consumer	Stronger commitment
		Realization of civic role
		Feeling remorse
		Believing she can do better
		75% level responsible consumer
Critically reflecting on consumption and its consequence	Division of needs and wants	Division of needs and wants
	Hierarchy of need satisfaction	Hierarchy of need satisfaction
		Reflection on purchasing in terms of need satisfaction
		Reflection on consumption and production chain
		Criticism of exploitation and consumer society
		Criticism of living without considering others and the future
	Reflecting on individual needs and cultural orientation	Reflecting on individual needs and cultural orientation
		Thinking visionary and considering interrelatedness

4.3.3. Self-reported Understanding of İpek as Teacher Candidate

4.3.3.1. Understanding of İpek as Teacher Candidate Prior to Professional Development Training

Naming concepts, themes, and concerns regarding sustainable consumption

İpek described both sustainability and sustainable consumption as an important topic to introduce in early childhood years. She commented on early conceptions and interest of young children on nature:

..Because children obtain what we present to them. We need to teach environmental awareness, ecological awareness...children really have an interest on it. It is an effective and critical topic for children.

Other than that, İpek offered reducing water waste, reducing paper waste, reducing plastic waste through need-oriented purchase of toys and materials, responsible usage of energy through topic of light and division of needs and wants as possible topics to address in early childhood education. In addition, she added parental education in terms of informing parents about impulsive shopping. İpek reported using creative dramatics, picture books, experiments and science activities as strategies to address these topics.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

İpek stated the importance of sustainability in her teacher role likewise her civic role. She expressed her willingness to address sustainability in her teacher role within the following statements:

Because I give importance to it (sustainability). I am going to teach future generations eventually.. I would like to raise consciousness..and in order to raise that consciousness first I need to have that consciousness. Because, I think I can teach these topics to my future students.

Critically reflecting on consumption and its consequences

When inquired about consumption in early childhood and topics to cover in early childhood education, İpek reflected on product purchases of children such as clothes and toys and demonstrated the competency of reflecting on individual needs and cultural orientations within these words:

For instance a toy, a non-durable toy which may be used one time only. But not so much..maybe plastic, do you really need it or maybe can you do it residual materials at home really easily? They may serve the same purpose, but you buy it just because it is manufactured. Maybe children could play with wooden toys.

4.3.3.2. Understanding of İpek as Teacher Candidate in Response to Professional Development Training

Naming concepts, themes, concerns related sustainable consumption

İpek noted sustainability and sustainable consumption should be integrated into daily instruction rather than teaching like a concept. In addition, she elaborated on the importance of sustainability and sustainable consumption in early childhood education for early conception, building habits and behavioral patterns and agency of young children. She suggested topics of light as responsible consumption of energy, energy resources, reducing paper waste, reusing papers, shopping, reflecting on consumption patterns, water consumption, division of needs and wants, and young children's sense of responsibility are contents to be addressed in early childhood education. Moreover she stated word choice, material usage as means of modeling, peer learning, presenting concrete examples, field trips, parent involvement, offering sustainable alternatives and creative dramatics as strategies to integrate sustainability and sustainable consumption in daily instruction.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

İpek demonstrated a stronger commitment to sustainability within the teacher role. She declared her intention to integrate sustainability into her future teaching practice and add to the class routine through rules. Moreover, İpek expressed her sense of responsibility towards sustainable lifestyles as follows:

As teachers, I mean teacher candidates, I think that we all need to gain awareness of it[sustainability] and we should give importance. Because we nurture future generations. And leaving a better world is our responsibility as well.

İpek reported her self-efficacy in designing and implementing activity processes for young children as analyzing each activity to better orient towards sustainability within practical training and expressed feeling conscious and competent about her

implications. However, she also noted she needed more development in composing sustainable consumption-oriented activities with three-year-olds.

Critically reflecting on consumption and its consequences

İpek exhibited competency of reflecting on individual needs and cultural orientations while reflecting on consumption and its consequences. She criticized overuse of materials such as plastics and papers in early childhood settings in her journal entries and referred to necessity for young children's division of needs and wants in material usage in order to learn sustainable consumption. Similarly, she expressed necessity for division of needs and wants in product purchase of young children in her post-interview. Moreover, she emphasized role modeling in early childhood education in order to reduce paper waste:

If they observe their teacher doing it they can acquire it better. .for example reusing residual papers in class, not wasting paper. If a center for residual papers created -I think about doing it- maybe children will not use blank paper at their home as well.

Other than that, İpek explained her efforts in material choice in her activity designs and implementation as an example to competency of thinking visionary and considering interrelatedness in her teacher role. She referred to her prior teaching experiences and her heavy stationary shopping as:

I used to buy everything. There was no place in dormitory but still I put them somewhere. I started to rethink that. I started to use natural materials, etc. I started to think what can I do with only one material. If I buy it will I reuse it, I was not careful about it before. I really decreased stationary shopping. Now I take waste materials from stationary.

4.3.3.3. Change in the Understanding of İpek as a Teacher Candidate

As Table 24 suggests there has been some change reflected in İpek's understanding as a teacher candidate. In terms of education for sustainability and sustainable consumption, she offered to integrate it into the daily routine of the classroom rather than teaching as a concept. Moreover, her understanding regarding the strategies to

be used and topics to be discussed while addressing sustainable consumption are broadened. While referring to the importance of sustainability and sustainable consumption in early years İpek mentioned early conception of young children both before and after the professional development training. However, building habits and behavioral patterns and the emphasis on agency of young children is reflected in her understanding in response to professional development training. Similarly, a stronger commitment towards sustainable lifestyles and the realization of her change agency appeared in her teacher role as well as her civic role after the training. She emphasized this role in her words as follows:

..Because we are the people can make the change. We are quite influential (on it), so many children will become our students. That's why I it's a concept I care very much about.

Other than that, she noted finding the creative-transformative phase of critical creative literacy inspiring throughout the training in terms of her teaching as follows:

..creative transformative phase. I hadn't really thought about it. What effect will this have on children, what kind of contribution will it make, etc. It was very difficult for me at first. I hadn't come up with anything. I couldn't come up with anything. But afterwards, after I get a little more used to it, it comes up naturally..as the continuation of the activity children give it to you somehow. It (professional development training) inspired me to think on it.

İpek exhibited both the competency of reflecting individual needs and cultural orientations and thinking visionary and considering interrelatedness after training which suggests a development in her critical reflection.

Table 24. Change in the Understanding of İpek as a Teacher Candidate

Understanding	Prior training	In response to training
Naming concepts, themes, concerns regarding sustainable consumption	Important topic to introduce in early childhood years Early conception Interest of young children on nature	Important topic to introduce in early childhood years Early conception Building habits and behavioral patterns Integrating into daily routine rather than teaching as a concept Agency of young children

Table 24. (continued)

	Sustainability Content	
	Reducing water waste, reducing paper waste, light, environment, forest, plants, overconsumption	Reuse, word choice reflecting sustainable practices, reducing paper waste, reusing paper, compost, material choice
	Strategies to Teach Sustainability	
	Parental education, creative dramatics, experimenting and science activities and picture books	Modelling (word choice, material usage), peer learning, presenting concrete examples, field trip, parent involvement, embedding into class routine and rules, creative dramatics
	Sustainable Consumption Content	
	reducing plastic waste through need-oriented purchase of toys and materials, do-it-yourself	Light as responsible consumption of energy, shopping, energy resources, reflecting on consumption patterns, water consumption, division of needs and wants, young children's sense of responsibility
Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings Critically reflecting on consumption and its consequence	Strategies to Teach Sustainable Consumption	
	Creative dramatics, picture books, science	Parent involvement, offering sustainable alternatives, concrete examples, creative dramatics
	Willingness to teach sustainability	Sense of responsibility as a teacher Stronger commitment to sustainability within the teacher role Self-efficacy in teaching Inspired by creative-transformative phase
	Division of needs and wants in clothes and toy purchase	Division of needs and wants in product purchase Criticism of overconsumption Importance of role-modeling Reflecting on material choice
	Reflecting on individual needs and cultural orientations	Reflecting on individual needs and cultural orientations
		Thinking visionary and considering interrelatedness

4.3.4. Self-reported Daily Practice of İpek

4.3.4.1. Daily Practice of İpek Prior to Professional Development Training

İpek had defined herself from time to time as a responsible consumer. She noted that she consumed mostly in the areas of transformation since she regularly uses taxi to

be on time and for late outings. She also reported the effect of eating out in her food consumption in terms of overconsumption. Other than that, İpek reported several daily practices she engaged in pursuing sustainable consumption. These included consciously buying green products, carrying a water flask to avoid buying plastic bottled water, not requesting plastic knives, forks and spoons, using roll-on instead of deodorant, carrying cloth bags for shopping, need-oriented grocery shopping, not asking for printed receipts, turning off lights and running water when not used, using public transportation, and walking and hitchhiking in campus.

As those examples indicate İpek engages in sustainable activities for reducing plastic waste, food waste, paper waste, carbon emissions and responsible energy and water consumption, which entails competency in planning, implementing, and evaluating consumption-related activities.

4.3.4.2. Daily Practice of İpek in Response to Professional Development Training

İpek claimed to sustain and enhance responsible consumption practices in response to training. In addition to previous endeavors, she mentioned knitting, and using knitted materials, reusing clothes and materials under the competency of planning, implementing, and evaluating consumption-related activities. Apart from that, she explained sharing concerns regarding sustainable consumption and encouraging others to use sustainable alternatives and being a role model as follows:

I may have been a role model. For example, I told most of the people around me that they can't use deodorant, they can't use it and they don't use it, because I told them, it's harmful, etc. ..the roll-on I used,(green product) I really like that roll-on I use. I gave it as a gift to my cousins. Other than that, I was trying to reduce the use of plastic bags at home (of my parent), I bought a bag(cloth) for that, I bought a bag that I used myself to them. They have been using it. But the use of plastic bags has not gone down to zero. Other than that..it would be better if I have such effects (in future).

The abovementioned activities exemplify the competency to communicate the idea of sustainable consumption to others and critically take on one's role as an active stakeholder in the market. On the other hand, İpek noted that eating out and regular

use of taxis are the factors to increase her carbon print. The facilities of dormitories and the requirements of student life are reported by İpek as challenges to integrate sustainable consumption practices into her everyday life. She stated her intention to enhance sustainable practices at her own house. Her intentions included oil waste management and reuse of materials.

4.3.4.3. Change in the Daily Practice of İpek

The most apparent change in the daily practice of İpek was engaging change agency into action by encouraging others to use sustainable alternatives. This change implied the development of competency to critically take on one's role as an active stakeholder in the market. Apart from that, variations in sustainable consumption practices under the competency of planning, implementing and evaluating consumption related activities were reported by İpek. Table 25 summarizes the changes that occurred in İpek's daily activities.

Table 25. Change in the Daily Practice of İpek

Daily Practice	Prior Training	In response to training
Unsustainable practices Taking informed action	Regular use of taxis	Regular use of taxis
	Eating out	Eating out
	Reducing plastic waste	Reducing plastic waste
	Reducing food waste	Reducing food waste
	Reducing paper waste	Reducing paper waste
	Reducing carbon emissions	Reducing carbon emissions
	Responsible consumption of energy and water	Responsible consumption of energy and water
	Using/buying environmentally friendly materials	Using/buying environmentally friendly materials
		Reusing
		Sharing concerns
		Being role-model
		Encouraging others
	Planning, implementing, and evaluating consumption-related activities	Planning, implementing, and evaluating consumption-related activities
		Communicating the idea of sustainable consumption to others
		Critically taking on one's role as an active stakeholder in the market

4.3.5. Teaching Practice of İpek

4.3.5.1. Teaching Practice of İpek Prior to Professional Development Training

When inquired about her teaching practice İpek expressed her endeavors may be influential over young children's awareness regarding topics of sustainability. She elaborates her teaching practices as follows:

For sustainability.. the awareness that I brought to the children, maybe it can affect it. For instance, about forests. For example, I refer to why trees are important, we use trees for many things. For example, papers. They are three years old. Papers produced by trees, some of them knew it, and some heard about it for the first time. You know, our paper is also obtained through trees, so let's not waste the paper we use in our activities. Because we can avoid cutting trees that way. I talked about that. Maybe they might have learned it because of me.

İpek commented on designing and implementing activities regarding sustainability but not preparing an activity addressing sustainable consumption. She expressed preparing and implementing activities focusing on reducing water waste, protection of forest and planting seeds of apple.

Analysis of activity plans prior to professional development training demonstrated that there were two activities related to sustainable consumption. As Table 26 demonstrates there were five activity plans prepared before professional development training started. İpek designed various types of integrated activities. When compared in terms of material use one activity did not require any material; recyclable and reusable materials were used in four activities; disposable, natural and reused materials were used in two activities. Life-cycle, waste, pollution of land and pollution of sea were the related terms reflected in activity processes before professional development training. According to the analysis of activity plans, two of the plans were integrating sustainable consumption but in the phases of naming concepts, themes and concerns regarding sustainable consumption and relating to issues of sustainable consumption in terms of experience, knowledge, and feelings.

Table 26. Analysis of Activity Plans Composed Prior to Professional Development Training

Daily plans	Activity Type	Materials	Process	Related Terms
1	Language integrated Science	Recyclable Reusable Natural	-	Life-cycle
2	Art and Music integrated Language	Recyclable Reusable Disposable	-	-
3	Language integrated Play	Recyclable Reusable Reused	-	-
4	Music integrated Drama	-	Naming Relating	Waste Pollution of Land
5	Language and Play integrated Art	Recyclable Reusable Reused Disposable Natural	Naming Relating	Garbage/Waste Pollution of Sea

4.3.5.2. Teaching Practice of İpek in Response to Professional Development Training

İpek expressed her development of planning and implementing sustainability-oriented activities for young children, yet she felt that she needed more development in composing sustainable consumption-oriented activities. Working with three-year-olds, expectations of mentor teachers, and physical shortcomings of practicum schools were stated as barriers to creating an activity addressing sustainable consumption.

Investigation of activity plans designed and implemented during theoretical training illustrated that İpek had planned one activity addressing sustainable consumption in terms of naming concepts, themes, concerns related sustainable consumption and relating to issues of sustainable consumption in terms of experience, knowledge, and feelings. As Table 27 material choice reflected in the plans was usage of recyclable materials in all three activities, reused and reusable materials in two activities, and natural materials in one activity. No disposable material was used in the activities.

Table 27. Analysis of Activity Plans Composed During Theoretical Training

Daily plans	Activity Type	Materials	Process	Related Terms
6	Science and Drama integrated	Recyclable	-	-
7	Art Drama integrated	Reused		
	Math	Reusable	Naming	-
		Recyclable	Relating	
		Reused		
		Natural		
8	Movement and Art integrated	Recyclable	-	-
	Early Literacy	Reusable		

When compared to activities planned before training in terms of material use, it can be seen that there is avoidance of disposable materials in activities designed during theoretical training. Other than that, there are notes on the activity plans in terms of reuse of the materials such as:

There are mushrooms, grass, and cones in the soil in the basket. (The teacher has purchased mushrooms in advance and can use these mushrooms later by peeling them.) The teacher tries to create a natural mushroom environment. (activity 7)

When plans designed before training and during theoretical training are compared in terms of addressing sustainable consumption in the activity process, there seems to be no difference. This point expressed by İpek in her reflective journal as follows:

I would like to design an activity process in which I introduce the message of sustainable consumption or address sustainable consumption, however, topics of my activities were not suitable for it since my mentor teacher has been choosing the topic of activities. I implemented activities related to underwater animals, fungi and the color of black. I tried to integrate them (with sustainable consumption) but it was not effective. I am going to try to address sustainable consumption in my future activity plans.

Exploration of activity plans designed during practical training illustrated a decline in using recyclable and disposable materials in activities. As Table 28, reused, reusable and natural materials were used in four activities, whereas recyclable materials were used in two activities. Similar to the case of activity plans designed during theoretical training, no disposable materials were used in activities designed

during practical training. İpek reflects on her material choice in activities in the following journal entry as follows:

This week I have been more careful to reuse waste papers etc. in my activities. I took a big cartoon from stationary which means to thrown away, but that could be useful for me. And I used it as the main material in my activity.

According to the investigation of activity process four activities out of five included sustainable consumption whereas two of them demonstrated all phases of naming concepts, themes, concerns related sustainable consumption; relating to issues of sustainable consumption in terms of experience, knowledge, and feelings; critically reflecting on consumption and its consequence; and taking informed action towards sustainable consumption.

Table 28. Analysis of Activity Plans Composed During Practical Training-Activity Plan Preparation Guidance

Daily plans	Activity Type	Materials	Process	Related Terms
9	Language integrated Art	Recyclable Reused Reusable Natural	Naming Relating	Seasonal food consumption
10	Language and Math integrated Science	Recyclable Reused Reusable	Naming Relating	-
11	Language and Movement integrated Music	Natural	-	-
12	Language integrated Science	Reused Reusable Natural	Naming Relating Critically Reflecting Taking Action	Compost, fertilizer, food waste
13	Art integrated Science	Reused Reusable Natural	Naming Relating Critically Reflecting Taking Action	Paper waste, limited sources

Overall, İpek engaged in several types of sustainable consumption activities within the scope of her practice teaching. First of all, she designed and implemented activities introducing sustainable consumption which exhibit competency of planning, implementing and evaluating consumption-related activities. Other than

that, she influenced her mentor teacher with her activities thus demonstrated the competency of communicating the idea of sustainable consumption to others:

Our [mentor] teacher was also saying something like ‘uhh you’re the first person I heard of that, uhh I am very surprised about that,’ etc. Or she was not throwing away the materials I designed, for instance. They have stayed at the class like that. She was using those materials at class.

İpek also exhibited using ICT interactively in Activity 12 in which she offered young children a compost-making workshop. She enriched her activity involvement of parents as follows:

The teacher asks the classroom teacher to forward the compost informative brochure and compost making guide, which she prepared digitally, containing the compost making QR code, to the families.

4.3.5.3. Change in the Teaching Practice of İpek

Teaching practice of İpek improved in terms of designing and implementing an activity process addressing sustainable consumption as Table 29 shows. The previous consumption-themed activities of İpek introduced sustainable consumption within lower phases compared to the last consumption-themed activities of İpek. In addition, there is another change observed in terms of material usage between previously planned activities and later planned activities. İpek preferred using natural and reused materials more compared to the beginning of the study. When compared to competency-based İpek exhibited three competencies as planning, implementing and evaluating consumption-related activities, competency of communicating the idea of sustainable consumption to others, using ICT interactively in response to training.

İpek explicated the change in the teaching practice with these words:

Actually it affected me more (in terms of teaching practice). Activities, it offered to think on them thoroughly. I mean before it was like empty underneath, I was thinking about doing something but without grounding it. But now, especially my last two activities, I started to think about from

materials to which terms I use, how to say, how to make an impression, how to make it long-term learning. I started to think about all of them. And I felt more conscious, not as if I' making idle talk. I trained in it, In fact. I have the necessary background. I am able to implement activities feeling like this.

Table 29. Change in Teaching Practice

Teaching Practice	Prior Training	In response to training
Taking informed action	Raising awareness of young children	Influencing her mentor teacher through her activities and materials
	Designing activities about sustainability not connecting to sustainable consumption	Improved activity process plans to address sustainable consumption Conscious material usage, reuse Planning, implementing, and evaluating consumption-related activities Communicating the idea of sustainable consumption to others Using ICT interactively

4.3.6. Intersection Between Citizen Role and Teacher Role of İpek

İpek's citizen role and teacher role demonstrated similarities in terms of placing importance on sustainability and sustainable consumption, commitment and change agency in daily life and educational settings. Similarly, improvement in critical reflection and informed action were observed in both roles in response to professional development training. When compared according to the competencies of sustainable consumption, competencies of reflecting on individual needs and cultural orientations, thinking visionary and considering interrelatedness, communicating the idea of sustainable consumption to others, and planning, implementing and evaluating consumption-related activities were exhibited in both teacher role and citizen role of İpek. The competency of critically taking on one's role as an active stakeholder in the market was portrayed only in İpek's citizen role and the competency of using ICT interactively was portrayed only in İpek's teacher role. The summary of İpek's understanding and practice regarding the citizen role and teacher role is available in Table 30.

Table 30. Summary of İpek's Understanding & Practice

	Prior Training	In Response to Training
Citizen Role	Limited definition	Detailed definition
	Environmental	Holistic, critical
	Willingness	Commitment Inspired by concrete educational materials
	Limited Critical Reflection	Deepened Critical Reflection (purchasing in terms of need satisfaction, consumption and production chain, criticism of exploitation and consumer society, living without considering others, and the future)
	Informed Action	Increased Informed Action (Reusing, sharing concerns, being role-model, encouraging others)
Teacher Role	Limited content and strategy (child competency dimension)	Developed content and strategy (child competency dimension, participatory and activist dimension)
	Willingness to develop knowledge and practice	Commitment Intention, self-efficacy Inspired by creative-transformative phase of critical education
	Limited Critical Reflection	Deepened Critical Reflection (Criticism of overconsumption Importance of role-modeling Reflecting on material choice)
	-	Informed Action Developed teaching practice Developed activity plan process

4.4. Exploration of Change in Understandings and Practices in Response to Professional Development Training: The Story of Kardelen

4.4.1. Kardelen in Research Context

Like the other participants, Kardelen was having her last semester as an undergraduate student. In addition to her major in Early Childhood Education, she was also minoring in the Department of Sociology. She was 23 years old and living with her family while involved in the present study. Kardelen followed six of the seven theoretical training sessions and all practical training sessions of professional development. Kardelen completed all training assignments and wrote eight reflective journals in response to this

process. As part of the practice teaching course, she worked with 49-60-month-old children. She designed and implemented twelve activity plans for this group, four of which were prepared with the guidance of the researcher. She also designed and shared the 13th activity plan which is the product of the final training session.

Motivation for participation in the study and expectations from training: Kardelen referred to her experience in the environmental education course in terms of noticing the importance of sustainability and that it would start from the early years of age. Based on this perception, she was motivated to participate in the study due to her academic interest in sustainability and professional development. Her expectations consisted of learning about critical literacy, sustainable consumption and the vision of sustainability, integrating sustainability into daily life, and professional development in terms of communicating sustainability to others.

Previous knowledge and experience: Kardelen was familiar with the sustainability term through social media and her cross-curricular experience in the environmental education course. She expressed hearing it most in ecological terms. Recently, she also encountered its usage related to the economy and technology. On the other hand, critical literacy and sustainable consumption were unfamiliar terms to her.

4.4.2. Self-reported Understanding of Kardelen as a Citizen

4.4.2.1. Understanding of Kardelen as a Citizen Prior to Professional Development Training

Naming concepts, themes and concerns regarding sustainable consumption

Kardelen defined sustainability as ensuring the continuity of things and finds it very important due to the efficient use and preservation of resources. Her expressions suggested a focus on economic and environmental concerns. She referred to sustainable consumption as consumption considering sustainability. She relates sustainable consumption to sustainability based on need-oriented consumption, recycling and reusing.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

Kardelen stressed the importance of sustainability and being a responsible consumer and portrayed herself as such. She expressed that she tried to contribute to sustainability but found her contributions insufficient since she did not consider sustainability criteria in all aspects of her daily practices. She also mentioned her willingness to develop her understanding in order to integrate sustainability into her life.

Critically reflecting on consumption and its consequences

Kardelen engaged with critical reflection by reflecting on her consumption based on individual needs. She referred to the division of needs and wants in her purchasing behavior. Other than that, she claimed that consumption is a cultural and social act as follows:

I think it [being a responsible consumer] is a cultural thing. Like a social culture, you know..So, let's say something falls on the ground, so one person doesn't pick it up, but if a few people go to pick it up, maybe everyone will go to pick it up. You know, I think it's a bit social behavior.

Her statements implied the role of cultural orientations in consumption. Kardelen exhibited the competency of reflecting on individual needs and cultural orientation considering her analysis of consumption based on individual needs, wants, and culture.

4.4.2.2. Understanding of Kardelen as a Citizen in Response to Professional Development Training

Naming concepts, themes and concerns regarding sustainable consumption

Kardelen's sustainability definition after training referred to using resources efficiently and more than that adopting sustainability into a lifestyle in environmental, economic and social terms. She stated the importance of sustainability for the efficient use of resources, avoiding environmental pollution, future generations and a better future. According to her, becoming a responsible consumer is important for natural resources and contributing to

sustainability. She described sustainable consumption as a need-oriented and informed act in terms of reflecting on the limitations of resources and critically reflecting on consumption and its consequences. She directly related sustainable consumption to sustainability in a circular way that sustainable consumption orients sustainability and sustainable lifestyles necessitate adopting sustainable consumption.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

Kardelen stressed the importance of sustainability and becoming a responsible consumer. She reported contributing to environmental sustainability but lacking in supporting social and economic sustainability. She referred to herself as a more responsible consumer compared to the beginning of training, but she claimed that she is not a responsible consumer in all terms due to socio-economic limitations. She also shared her intention to consume local food and decrease packaged food consumption. Her statements demonstrated a commitment to sustainability.

Critically reflecting on consumption and its consequences

Kardelen's statements suggested that she engaged in critical reflection on consumption and its consequences in terms of division of needs and wants and considering interrelatedness. She particularly commented on her clothing purchases in terms of reflecting on the division of needs and wants and engaging in need-oriented consumption. Additionally, Kardelen emphasized the role of sustainable consumption in terms of limitations of resources and effects on the future which entails considering interrelatedness in terms of environmental concerns and future generations. She noted paying attention to seasonal food consumption and expressed her willingness to consume local food considering its effect on the environment and her health as an example of considering interrelatedness in consumption.

4.4.2.3. Change in the Understandings of Kardelen as a Citizen

As Table 31 summarizes there have been changes observed in mindset of Kardelen. She offered more broadened and detailed definitions of sustainability and sustainable

consumption. She explained the change in sustainability understanding with following statements:

In fact, we think more about the environmental aspect of sustainability. It [professional development training] allowed me to look into the economic and social aspects of this as well. It allowed me to better understand that these are the whole.

Additionally, her critical reflection regarding consumption and its consequences expanded and resulted in a change in competency-based. She attained the competency of thinking visionary and considering interrelatedness in addition to reflecting on individual needs and cultural orientations in response to training.

Table 31. Change in the Understandings of Kardelen as a Citizen

Understanding	Prior training	In response to training
Naming concepts, themes and concerns regarding sustainable consumption	Continuity of things	Sustainability Using resources efficiently and adopting sustainability into a lifestyle in environmental, economic, and social terms. Important for the efficient use of resources, avoiding environmental pollution, future generations and a better future.
	Consumption considering sustainability	Sustainable consumption consumption as reflecting on the limitations of resources, need-oriented, informed act, critically reflecting on consumption and its consequences important for sustainability and natural resources Sustainable consumption and sustainability are interrelated
	Sustainable consumption relates to sustainability via need-oriented consumption, recycling and reuse. Stressing the importance Insufficient contributions to sustainability due to daily life practices Willingness to increase her level of knowledge and practice responsible consumer Division of needs and wants Consumption as a cultural and social act	Stressing the importance more responsible consumer but not in all terms Commitment to sustainability Intention to local food consumption More responsible consumer but needs development Division of needs and wants Considering interrelatedness in terms of environmental effects and limitations of sources
Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings		
Critically reflecting on consumption and its consequence	Reflecting on individual needs and cultural orientations	Reflecting on individual needs and cultural orientations Thinking visionary and considering interrelatedness

4.4.3. Self-reported Understanding of Kardelen as Teacher Candidate

4.4.3.1. Understanding of Kardelen as Teacher Candidate Prior to Professional Development Training

Naming concepts, themes and concerns regarding sustainable consumption

Kardelen stated that sustainability and sustainable consumption are important topics to introduce in early childhood. She claimed that sustainability should not be taught like a concept but as building habits and behavioral patterns in early years. She referred to young children's potential preconceptions and pre-attitudes and agency while placing the importance on sustainability education. According to Kardelen, sustainability can include information regarding the environment, Earth, respecting and caring for the environment, recycling, and reuse in early childhood education and it can be addressed through project approach, outdoor activities and experiential learning. As for sustainable consumption, she suggested integrating it into sustainability-themed activities via philosophizing and play.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

Kardelen stressed the importance of sustainability and sustainability consumption in the field of early childhood education. She reported that she started addressing sustainability through her activities and expressed her willingness to do more. Apart from that, she mentioned the importance of the teacher's attitude toward sustainable consumption and noted her mentor teacher's supportive role in reusing materials while preparing educational materials for her practice teaching.

Critically reflecting on consumption and its consequences

Kardelen's statements in her teacher role suggested a critical reflection in terms of the agency of young children. She stated young children's easily adapting to sustainability through raising awareness and modeling. She presented the following example referring to her practice teaching:

Once I implemented an activity focusing on recycling. I said that we should throw the paper in the recycling bin for papers. During an activity, I accidentally forgot this and tried to throw the paper in the trash. One of my students realized this and said, “Teacher, don't throw it there, put it in the waste bin”, for instance.

4.4.3.2. Understanding of Kardelen as Teacher Candidate in Response to Professional Development Training

Naming concepts, themes and concerns regarding sustainable consumption

Kardelen restated the importance of sustainability and sustainable consumption in the early years as it was before the training. She suggested that it was important for young children's potential preconceptions and pre-attitudes and build habits and behavioral patterns in the early years. She emphasized the young children's curiosity and interest in nature and using their agency when they embrace the idea of sustainability. According to her, recycling, awareness of waste production, energy sources, and production processes can be introduced with outdoor learning, experiential learning, field trips, parent involvement, and using ICT and media while addressing sustainability in early childhood. As for sustainable consumption, she suggested presenting responsible use of materials, food, and collaboration while integrating sustainable consumption into daily routine, seeking sustainable alternatives to change habits, building collaboration between teachers, family, and school administrators, with active participation of young children, collaboration, sharing materials and field trip.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

Kardelen stressed the importance of sustainability and sustainable consumption in the early years and expressed her intention to address sustainability and sustainable consumption in her future teaching. She stated feeling fulfillment due to her practice with young children as she observed their awareness of sustainability and their various viewpoints about it. Her statements demonstrated her commitment to sustainability and sustainable consumption in her teacher role. Other than that, she noted being a pre-service teacher as a barrier to implicating more various activities while addressing sustainability.

She elaborated that she would have organized field trips to demonstrate production processes such as visiting a bakery or a tailor, etc.

Critically reflecting on consumption and its consequences

Kardelen addressed irresponsible material use of young children such as using new glue without finishing the old one or using a paper for only drawing a tiny piece on it. Additionally, she addressed paper waste results from not reusing it and food waste due to not completing portions. She emphasized the role of young children in the transformation of society in terms of adapting sustainability to daily life and transferring this mindset to future generations. She claimed young children enjoyed the use of their agency. On the other hand, she emphasized the necessity of collaboration between stakeholders in education to create a school culture feeding agency and transformation. She explained that in her own words as follows:

...because this way we can expand both sustainable consumption.. sustainability from individual to public. First, I did it. Firstly, I developed myself. Later, I support other people to do it. It is a solidarity, we create a solidarity from individual to public this way. And we are doing it with children. The teacher who learns this skill shows it to her students the following year. Or, for instance, a school principal who is aware of this supports teachers more in this regard. Such as organizing more field trips regarding this. Or tries to integrate parents more..Therefore at this point, I think that the school principal, the teacher, the parent, the child, all of these are a whole. I think that if all of these are a whole, it [sustainability] can be more supported and it would be more beneficial for sustainability.

Considering her critical reflection regarding her teacher role, Kardelen exhibited the competency of reflecting on individual needs and cultural orientations and thinking visionary and considering interrelatedness.

4.4.3.3. Change in the Understanding of Kardelen as a Teacher Candidate

As Table 32 suggests, there have occurred some changes in Kardelen's teaching understanding. There is a development in her knowledge as reflected in her statements as follows:

Before I started this project with you, I had done some things in my previous practice teaching, but I hadn't known exactly that these were sustainability. Or I

could have elaborated more, for example. This was something that was already in me, in my life. But from now on I will apply it more consciously, more carefully.

Kardelen stressed the importance of sustainability and sustainable consumption before and after training for early conception, attitude formation, and building habits and behavioral patterns. After training, her statements expanded in terms of addressing young children's curiosity and interest in nature and their agency for societal change. Moreover, she offered more specific and varied content and strategies to address sustainability and sustainable consumption. In her teaching role, she demonstrated her commitment before and after training, however, she expressed her fulfillment due to her teaching in response to training. Additionally, she referred to the agency of young children while critically reflecting on consumption and its consequences before and after training, her critical reflection reached to creating a culture of transformation that support agency of young children in response to training.

Table 32. Change in the Understanding of Kardelen as Teacher Candidate

Understanding	Prior training	In response to training
Naming concepts, themes and concerns regarding sustainable consumption	Important topic to introduce in early childhood	Important topic to introduce in early childhood
	not teaching it like a concept	Young children's curiosity and interest in nature
	building habits and behavioral patterns in early years	building habits and behavioral patterns in early years
	young children's potential	agency of young children
	preconception pre-attitudes	young children's potential
		preconception pre-attitudes
		Sustainability Content
	Environment, Earth	Recycling, awareness of waste
	environmental protection and respect, recycling, reuse	production, energy sources, production process
		Strategies to teach Sustainability
	project approach, outdoor learning, experiential learning	outdoor learning, using ICT, media, parent involvement, experiential learning, field trip
		Sustainable Consumption Content
	Integrating sustainable consumption into sustainability-themed activities	Responsible use of materials, food, and collaboration
		Strategies to teach sustainable consumption
	Philosophizing, play	Integrating sustainable consumption into daily routine, seeking sustainable alternatives to change habits, collaboration between teachers, family, and school administrators, collaboration, active participation of young children, sharing materials, field trip

Table 32. (continued)

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings	Stressing the importance Mentor teacher's supportive role in reusing importance of teacher's attitude Started addressing sustainability and willingness to do more	Stressing the importance Fulfillment due to her practice with young children Commitment to sustainability Intention to address sustainability and sustainable consumption in her teaching Being a pre-service teacher as a barrier
Critically reflecting on consumption and its consequence	Agency of young children	Criticism of irresponsible material use of young children Criticism of paper and food waste Agency and transformation Creating a school culture Reflecting on individual needs and cultural orientations Thinking visionary and considering interrelatedness

In terms of competencies, Kardelen developed competencies of reflecting on individual needs and cultural orientations and thinking visionary and considering interrelatedness in response to professional development training.

4.4.4. Self-reported Daily Practice of Kardelen

4.4.4.1. Daily Practice of Kardelen Prior to Professional Development Training

Kardelen reported paying attention to engaging in sustainable practices before participating in training although she found her practices insufficient. Her daily practices included need-oriented consumption in terms of material use and food, reducing her carbon footprint via walking and using public transport, recycling by sorting out waste, and reusing such as making a pencil case out of old jeans. Kardelen exhibited the competency of planning, implementing, and evaluating consumption-related activities considering the abovementioned practices.

4.4.4.2. Daily Practice of Kardelen in Response to Professional Development Training

When inquired about her daily activities Kardelen stated various sustainable consumption practices within her citizen role. She mentioned need-oriented consumption in terms of cloth purchasing, material use and selection, reducing

carbon emissions via walking and using public transport, picking up trash and cleaning the environment, generally eating at home, engaging in seasonal food consumption; reducing plastic waste by carrying cloth bags for not buying plastic bags for shopping; and using energy responsibly in terms of electricity as turning off power tools and lights when not used. On the other hand, Kardelen referred to her fast food and packaged food consumption as unsustainable practices. When her daily practices were evaluated, it necessitated the competency of planning, implementing, and evaluating consumption-related activities. Additionally, she noted sharing information with family members and learning from them to reuse in cooking which entails the competency of communicating the idea of sustainable consumption to others.

4.4.4.3. Change in the Daily Practice of Kardelen

Kardelen reported making contributions to sustainability before and in response to training. The review of her daily actions, which is summarized in Table 33 demonstrates an increase in sustainable consumption practices in response to training. Kardelen also reported the effect of training on her clothes purchase, selection of goods and material use. Additionally, her reported sustainable consumption activities expanded by reducing plastic waste by carrying a cloth bag, informing family members, and responsible energy use while she did not refer to reuse in her later activities. Moreover, she also mentioned her unsustainable practices as fast food and packaged food consumption while referring to her daily activities after training.

Table 33. Change in the Daily Practice of Kardelen

Daily Practice	Prior Training	In response to training
Taking informed action	Need-oriented consumption	Fast food and packaged food consumption
	Reuse	Need-oriented consumption
	Reducing carbon footprint	Reducing plastic waste
	Recycling-sorting out waste	Reducing carbon footprint
	Planning, implementing, and evaluating consumption-related activities	Responsible energy use Informing family members Planning, implementing, and evaluating consumption-related activities Communicating the idea of sustainable consumption to others

The comparison of daily practices based on competencies illustrated that Kardelen gained the competency of communicating the idea of sustainable consumption to others in response to training whereas she exhibited the competency of planning, implementing, and evaluating consumption-related activities before and after training.

4.4.5. Teaching Practice of Kardelen

4.4.5.1. Teaching Practice of Kardelen Prior to Professional Development Training

Kardelen stated she prepared activities addressing sustainability but did not introduce sustainable consumption before participating in training. She mentioned planning an art activity reusing residual materials in young children's design, another activity focusing on recycling, and a math activity in which she used natural materials for graphing and patterning. She also noted that she reused materials while preparing educational materials and her mentor teachers supported this practice.

Before training, Kardelen composed five integrated activities within the scope of the practice teaching course. Analysis of activities demonstrated that she addressed sustainable consumption in one of the activities in terms of naming concepts, themes and concerns regarding sustainable consumption and relating to issues of sustainable consumption in terms of experience, knowledge, and feelings. As Table 34 illustrates, Kardelen mostly used recyclable and reusable materials in her activities. She used natural and disposable materials in two of the activities while not reusing residual materials in any of the activities.

Table 34. Analysis of Activity Plans Composed Prior to Professional Development Training

Daily plans	Activity Type	Materials	Process	Related Terms
1	Math integrated science	Recyclable Reusable Natural	-	-

Table 34. (continued)

2	Play integrated drama	Recyclable Reusable Natural	Naming Relating	-
3	Art integrated language	Recyclable Reusable	-	-
4	Art integrated drama	Recyclable Reusable Disposable	-	-
5	Play integrated math	Recyclable Reusable Disposable	-	-

4.4.5.2. Teaching Practice of Kardelen in Response to Professional Development Training

When inquired about her contribution to sustainability in her teacher role, Kardelen stated that she paid attention to reducing water waste by reminding young children to responsible use of water and reducing food waste by serving appropriate portions and encouraging young children to consume their portions, and responsible energy use by checking electricity with the support of her mentor teacher in the classroom. Moreover, Kardelen noted that she engaged more in reusing materials in her teaching practice in terms of reusing educational materials with little modifications and reusing residual materials in activity processes. Her endeavors in reusing were mentioned in her reflective journal as follows:

For instance, I collect residual materials particularly papers and reused them in activities of practice teaching.

Additionally, Kardelen reported that she informed young children about material choice in activities via demonstrating the reuse of residual materials from previous activities. Lastly, Kardelen referred to her effect on her mentor teacher. She reported that she informed her mentor teacher about sustainable consumption via her activities and her mentor teacher started to implicate similar activities. She explained that as follows:

Beginning with this project, I have contributed more to the children. But, I think, I contributed a lot to my mentor teacher as well, for instance. She was hesitant when I asked whether I could do this project. But as I continued doing the project, she

developed new things as well. For example, she said ‘this idea was really good’ and later she implicated other things. I mean to influence another person, except children..influencing other educators. Later as they influence other students and other teachers, this will become something that expands.

As Table 35 demonstrates, none of the activities composed during the theoretical training introduced sustainable consumption into the learning process. However, recyclable and reusable materials were used in all activities, and two activities included the reuse of residual materials. No disposable materials were used. It seems Kardelen refrained from disposable material use while engaging in reusing.

Table 35. Analysis of Activity Plans Composed During Theoretical Training

Daily plans	Activity Type	Materials	Process	Related Terms
6	Art integrated drama	Recyclable Reused Reusable	-	-
7	Art integrated language	Recyclable Reusable	-	-
8	Play integrated movement	Recyclable Reused Reusable	-	-

During practical training, Kardelen prepared five different activity-learning processes. As the analysis of activity processes remarked, Kardelen used various types of integrated activities while presenting sustainable consumption to young children. Among those, three introduced sustainable consumption with the phases of naming concepts, themes, and concerns regarding sustainable consumption and relating to issues of sustainable consumption in terms of experience, knowledge, and feelings while one addressed sustainable consumption with all phases. Apart from that, terms of recycling, reuse, waste, water pollution, limited sources, reducing waste, protecting habitats, compost, food waste and natural fertilizer were introduced within the learning processes of activities that addressed sustainable consumption. In terms of material choices in activities, recyclable and reusable materials were mostly used in activities, while materials were reused in only one activity. This is consistent with Kardelen’s statements on her considerations in material. Table 36 summarizes the analysis of the activities prepared within the practical training.

Table 36. Analysis of Activity Plans Composed During Practical Training-Activity Plan Preparation Guidance

Daily plans	Activity Type	Materials	Process	Related Terms
9	Art and math integrated science	Recyclable Reused Reusable	Naming Relating	Recycling, reuse, waste
10	Drama integrated language	Recyclable Reusable	Naming Relating Critically reflecting Taking Action	Water pollution, limited sources, reducing waste
11	Early literacy and music integrated math	Recyclable Reusable		-
12	Music integrated play	Recyclable Reusable	Naming Relating	Protecting habitats
13	Language integrated science	Recyclable Reusable	Naming Relating	Compost, waste, recycling, food waste, natural fertilizer

When Kardelen's teaching practice is revisited it is observed that she prepared improved learning processes in activity plans to address sustainable consumption. In addition to this improvement, her statements regarding sustainable consumption in her teaching practice suggested that she exhibited the competency of planning, implementing, and evaluating consumption-related activities

Apart from that, Kardelen demonstrated the competency of using, editing, and sharing different forms of knowledge. In the 10th activity, Kardelen addressed water pollution in terms of sustainable consumption and enriched young children's learning with parent involvement. Parents were informed about the learning process and asked to support their children in expanding their knowledge regarding pollution and sustainable consumption via interacting with community workers. This is reflected in the parent involvement part of the daily plan as follows:

The teacher asks the parents their children need to talk to a garbage collector or cleaning staff in the park, neighborhood or cleaning staff at the weekend about the importance of keeping the environment clean, what a clean environment should be like, and what we can do as individuals for a clean environment. Then, the children are asked to draw a picture of the clean environment in their dreams, reflecting on what they learned from their conversations with the garbage collector/cleaning

staff...On Monday, we will talk with the children about the experiences they learned from talking with the garbage collector/cleaning staff through their pictures. Then, I will add this picture to the children's portfolios.

Lastly, Kardelen exhibited the competency of communicating the idea of sustainable consumption to others by informing her mentor teacher about sustainable consumption in addition to increasing young children's awareness about material selection and use.

4.4.5.3. Change in the Teaching Practice of Kardelen

As Table 37 demonstrates, Kardelen's teaching practice improved in terms of sustainable consumption. She took various informed actions orienting sustainable consumption that she did not engage in before training and demonstrated an improved learning process in activity plans. Additionally, she noted that she engaged more in reusing materials in her teaching practice compared to her teaching practice before participating in training. Kardelen exhibited the competencies of using, editing, and sharing different forms of knowledge and communicating the idea of sustainable consumption to others in addition to planning, implementing, and evaluating consumption-related activities in response to training.

Table 37. Change in the Teaching Practice of Kardelen

Teaching Practice	Prior Training	In response to training
Taking informed action	Designing activities about sustainability not connecting to sustainable consumption Reusing materials in teaching	Reducing water waste Reducing food waste Responsible energy use of young children Reusing materials in teaching Informing young children about material choice in activities Improved activity process plans to address sustainable consumption Informing mentor teacher Engagement of young children with various forms of knowledge Planning, implementing, and evaluating consumption-related activities Using, editing, and sharing different forms of knowledge Communicating the idea of sustainable consumption to others

4.4.6. Intersection Between Citizen Role and Teacher Role of Kardelen

There appeared some similarities and differences in understanding and practice of Kardelen in her citizen role and teacher role. She demonstrated enhanced understanding and critical reflection in both teacher role and citizen role. Similarly, she exhibited the competencies of reflecting on individual needs and cultural orientations, thinking visionary and considering interrelatedness in both roles. As for informed actions, Kardelen demonstrated competencies of planning, implementing, and evaluating consumption-related activities and communicating the idea of sustainable consumption to others in both roles while exhibiting the competency of using, editing, and sharing different forms of knowledge in her teacher role.

Table 38. Summary of Kardelen's Understanding & Practice

	Prior Training	In Response to Training
Citizen Role	Limited definition Environmental, Economic Willingness Limited Critical Reflection Informed Action	Detailed definition Holistic, Commitment Deepened Critical Reflection (Considering interrelatedness in terms of environmental effects and limitations of sources) Increased Informed Action (Informing family members)
Teacher Role	Limited content and strategy (child competency dimension) Willingness to develop knowledge and practice Limited Critical Reflection -	Developed content and strategy (child competency dimension, participatory and activist dimension, whole-school approach) Commitment Intention, self-efficacy Inspired by young children's capabilities Deepened Critical Reflection (Criticism of irresponsible material use of young children, paper and food waste, agency and transformation creating a school culture) Informed Action Developed teaching practice Developed activity plan process

4.5. Exploration of Change in Understandings and Practices in Response to Professional Development Training: The Story of Güneş

4.5.1. Güneş in Research Context

Güneş was a 23-year-old teacher candidate in the last semester of her major in Early Childhood Education. During the research study, she lived in the dormitory located on the

university campus. Güneş attended all theoretical and practical training sessions for professional development and wrote ten reflective journals illustrating her experience. She fulfilled all training requirements and designed thirteen activity plans for 61-72-month-old children, which she practiced as part of her practicum. Five of those activity plans were designed with the researcher's guidance as part of practical training for professional development.

Motivation for participation in the study and expectations from training: Güneş was motivated to be involved in professional development training due to her interest in academic studies. She anticipated comprehending the vision of sustainability and learning about sustainable practices in early childhood and critical literacy in response to training.

Previous knowledge and experience: Güneş mentioned that only sustainability is a familiar term for her and she did not have any knowledge regarding sustainable consumption or critical literacy. She reported learning about sustainability in the environmental education course and researching it through the Internet while designing an activity plan.

4.5.2. Self-reported Understanding of Güneş as Citizen

4.5.2.1. Understanding of Güneş as Citizen Prior to Professional Development Training

Naming concepts, themes and concerns regarding sustainable consumption

Güneş defined sustainability with the phrases of not wasting anything, reusing, need-based purchasing, using natural sources, and engaging in do-it-yourself activities. She expressed that it is important for future generations. It seems her definition rather focuses on efficient material usage. As for sustainable consumption, she offered phrases of consuming consciously and being aware of what and how to consume. She referred to the negative effect of the procurement process on nature and reducing the carbon print while explaining its importance. According to her, sustainable consumption orients sustainability as people consume consciously leading to the most efficient and the least use of natural resources.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

Güneş emphasized the importance of sustainability and sustainable consumption, and she further commented that sustainability should be important for every person. Although expressing commitment to sustainability and her willingness to be involved in more sustainable practices, Güneş portrayed herself as not a responsible consumer due to not reflecting on purchasing in terms of carbon footprint. Other than that, she referred to living in a dormitory as a barrier to sustainable consumption in terms of making compost.

Critically reflecting on consumption and its consequences

Güneş exhibited the competency of thinking visionary and considering interrelatedness as she engaged in critical reflection in terms of consumption and its consequences. When inquired about consumption, she mentioned criticism of selfishness in terms of thinking about the next generations and the scarcity of resources which suggested intergenerational justice. Güneş shared her criticism of imported food consumption referring to reducing the carbon footprint resulting from the procurement phase of the products. She also reflected on her plastic consumption in terms of referring to the relationship between consumption and production and stating previous consumption habits as a barrier. Her statements referred to considering interrelatedness as follows:

Because, you know..usual routine at that moment, for instance. The slightest act. Buying a bottle of water from the market. Actually, it's better to take it from home in your flask, but you forget it. Or something happens, you buy it, you have to buy it somehow. And you know it's not a sustainable practice. I reuse this bottle, for instance. Such as cutting and turning it into a pen holder. Or put it into a recycling bin, this is the least I could do. But I don't think it helps with sustainability. After all, I bought this plastic, a new one will be produced in its place. It would be better not to buy it at all.

Additionally, she critically reflected on her consumption behavior in terms of the division of needs and wants and the hierarchy of needs in purchasing clothes.

4.5.2.2. Understanding of Güneş as Citizen in Response to Professional Development Training

Naming concepts, themes and concerns regarding sustainable consumption

Güneş's definition of sustainability after training included harmony between nature, humans and all parts of the universe, efficient usage of resources, protection of cultural heritage and transmission of culture and sustainability of natural resources. She reported the importance of sustainability for the lifecycle on Earth. Her explanations suggested an eco-centric and holistic perspective toward sustainability. Güneş described sustainable consumption as need-oriented consumption, awareness of product choice and resources used and reflecting on cultural orientations in consumption. According to her, sustainable consumption is important for sustainable living. They are correlated terms that sustainable consumption orients sustainability in terms of efficient use and protection of resources.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

Güneş stressed the importance of sustainability and sustainable consumption. She reported that she makes more contributions to sustainability compared to the beginning of training. Although not portraying herself as a very responsible consumer she acknowledged trying to be. Güneş expressed her commitment to sustainability and noted that change agency provided inspiration for her.

Critically reflecting on consumption and its consequences

Güneş exhibited the competency of reflecting on individual needs and cultural orientations in her critical reflection on consumption and its consequences. She critically reflected on her consumption behavior in terms of the division of needs and wants and the hierarchy of needs in purchasing clothes. Additionally, she noted the role of culture in consumption patterns, criticized popular culture in terms of feeding overconsumption, and reflected on the effect of advertisements on perceived

obsolescence in her consumption. She also reflected on cultural orientations with the following example demonstrating a religious tradition focused on responsible use of food and sharing:

For example, we have some cultural traditions. For example, let's say Ashura. It is actually a religious tradition, a religious culture. You know, the purpose of doing this is actually to combine the things that are available and create a meal and share it. For example, if we are more aware and conscious of this while doing this, we will actually consume a little more responsibly. Because there are some people who do this for ornamental purposes. Ashura is actually simple and concise. Wheat, sugar, beans..sometimes a few fruits and done. But now, for example, it has gone from being a bit more traditional to decoration. You know, different exotic fruits and so on are added to the Ashura. Not doing that, for example.

Apart from that, Güneş reflected on the production and procurement processes by reading labels and checking localization, raw materials and origin of products. Additionally, commented on second-hand items on decreasing demand for production. Her critical reflection demonstrated life-cycle approach to consumption and production which necessitated the competency of thinking visionary and considering interrelatedness.

4.5.2.3. Change in the Understandings of Güneş as Citizen

As Table 39 indicates, when Güneş's understanding as a citizen before and after training was compared, more sophisticated and comprehensive definitions of sustainability and sustainable consumption were observed in the statements of Güneş. Her perspective reflected a holistic and eco-centric viewpoint in this sense. She stated her commitment to sustainability and sustainable consumption before and after training. Her critical reflection expanded according to the change in her perspective as well. She referred to the role of culture on consumption and criticized the popular culture's and advertisements' impact on consumption patterns. Her critical reflection on the consumption and production process also expanded in terms of adopting a life-cycle approach. Moreover, she expressed being inspired by change agency in her citizen role in response to the training.

Table 39. Change in the Understandings of Güneş as a Citizen

Understanding	Prior training	In response to training
Naming concepts, themes and concerns regarding sustainable consumption	not wasting anything, reusing, need-based purchasing, using natural sources, and engaging in do-it-yourself activities	Sustainability harmony between nature, humans, and all parts of the universe, sustainability of natural resources, protection of cultural heritage and transmission of culture, efficient usage of resources holistic perspective towards sustainability, eco-centric view important for Lifecycle on Earth
	important for future generations	Sustainable consumption need-oriented consumption, awareness of product choice and resources used, reflecting on cultural orientations Sustainable consumption orients sustainability in terms of efficient use and protection of resources
Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings	Consuming consciously, aware of what and how to consume Important to reduce the carbon footprint Sustainable consumption orients sustainability as the best, most efficient, and least use of natural resources	Stressing the importance Commitment to sustainability Not a very responsible consumer but tries her best More contributions to sustainability Inspired by change agency
	Stressing the importance Commitment to sustainability Willingness to develop more practice Not a responsible consumer Living in a dormitory as a barrier to compost	Commitment to sustainability Not a very responsible consumer but tries her best More contributions to sustainability Inspired by change agency
Critically reflecting on consumption and its consequences	Division of needs and wants and hierarchy of needs in purchasing Criticism of selfishness, intergenerational justice critical questioning on plastic consumption, criticism of imported food consumption, considering interrelatedness	Division of needs and wants and hierarchy of needs in purchasing Role of culture on consumption Criticism of popular culture Effect of advertisement Reflection on production process - life-cycle approach

4.5.3. Self-reported Understanding of Güneş as Teacher Candidate

4.5.3.1. Understanding of Güneş as Teacher Candidate Prior to Professional Development Training

Naming concepts, themes and concerns regarding sustainable consumption

Güneş mentioned it is important to introduce sustainability and sustainable consumption in early childhood for early conception and attitude formation of

young children and their curiosity and interest in nature. She offered to address agriculture, savings, paper production, seed planting in terms of sustainability and daily used items, cloth production, bread-making process, and food in terms of sustainable consumption. As for strategies to teach sustainability, she suggested situated, practice-based learning processes with concrete examples. She also offered situated learning to introduce sustainable consumption.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

Güneş stressed the importance of sustainability and sustainable consumption in the early years and stated she paid attention to contributing to sustainability during practice teaching. Güneş expressed her commitment and willingness to develop knowledge and practice of sustainability and sustainable consumption in her teacher role.

Critically reflecting on consumption and its consequences

Güneş critically reflected on young children's engagement with paper waste, food waste, and overuse of tissue paper in early childhood institutions within the spectrum of sustainable consumption. Her reflections necessitated the competency of thinking visionary and considering interrelatedness. Additionally, she explained her efforts in material choice in her activity designs and implementations as an example to competency of thinking visionary and considering interrelatedness in her teacher role such as avoiding use of disposable materials, not printing out visuals and using digital tools.

4.5.3.2. Understanding of Güneş as Teacher Candidate in Response to Professional Development Training

Naming concepts, themes and concerns regarding sustainable consumption

Güneş explicated the importance of sustainability and sustainable consumption in the early years in response to training, as she did before training. She

addressed early conception and attitude formation and agency of young children and building habits and behavioral patterns in the early years. She suggested culture, school culture, school materials, eating routines, and food consumption as topics to address sustainability and toys, food, clothes, the effect of cartoons, paper use, food consumption, local production and handmade items, do-it-yourself activities and reuse as topics to sustainable consumption. In terms of strategies she offered play, storytelling, creative dramatics, using visuals and seeking sustainable alternatives while addressing sustainable consumption, and modeling, involvement of the teacher, media, using durable materials, do-it-yourself activities and reducing material use while addressing sustainability.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

Güneş stressed the importance of sustainable consumption and sustainability in early years and expressed commitment to sustainability and sustainable consumption in her teacher role. She stated that she deepened her knowledge and practice as a teacher candidate and reported her self-efficacy. She expressed her intention to address sustainability and sustainable consumption in her future teaching and noted she was inspired by change agency in her teacher role.

Critically reflecting on consumption and its consequences

Güneş engaged with critical reflection in terms of criticism of young children's overconsumption of toys in addition to paper waste, food waste, and overuse of tissue papers in early childhood settings. Other than that, she developed ideas to reduce material demand in terms of seeking sustainable alternatives in educational materials such as engaging in do-it-yourself activities, creating blackboards for young children to reduce paper-based activities, and reusing residual materials that challenged unsustainable consumption habits. As a

result, she exhibited the competencies of thinking visionary and considering interrelatedness and reflecting on individual needs and cultural orientations.

4.5.3.3. Change in the Understanding of Güneş as Teacher Candidate

As Table 40 illustrates, Güneş placed importance on sustainability and sustainable consumption in the early years before and after training considering young children's early conception and young children's natural curiosity and interest in nature. However, building habits and behavioral patterns in early years and agency of young children have appeared in her statements in response to training. Furthermore, a developed knowledge regarding introducing sustainability and sustainable consumption, self-efficacy in teaching, inspiration by change agency, and development of competencies thinking visionary and considering interrelatedness and reflecting on individual needs and cultural orientations in her critical reflection have been observed in Güneş's understanding in response to training. She expressed the change in teaching understanding as follows:

... I realized that sustainability is not just about throwing the paper in the recycling bin or even separating the plastics for the children. This was the first.. I think the best activity I did about this was the one about these toys. Old and new toys, what are the materials used, why there were such toys, etc. It was extremely enjoyable and fun to discuss and talk about it with the children. It [training] changed my perspective on activities a bit more.

Table 40. Change in the Understanding of Güneş as a Teacher Candidate

Understanding	Prior training	In response to training
Naming concepts, themes and concerns regarding sustainable consumption	Important to introduce in early childhood for young children's potential preconception, young children's curiosity and interest in nature	Important to introduce in early childhood for young children's potential preconception, building habits and behavioral patterns in early years and agency of young children
	Sustainability Content	
	Agriculture, savings, paper production, seed planting	Culture, school culture, school materials, eating routines and food consumption
	Strategies to teach sustainability	
	Situated, practice-based, concrete examples	Modeling, involvement of teacher, media, using durable materials, do-it-yourself, reducing material use
	Sustainable consumption content	

Table 40. (continued)

	daily products, cloth production, bread-making process, food	Toys, food, clothes, affect of cartoons, paper use, food consumption, local production and handmade, do it yourself, reuse
		Strategies to teach sustainable consumption
	situated	Play, storytelling, creative dramatics, using visuals, seeking sustainable alternatives
Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings	Stressing the importance Commitment to sustainability Willingness to develop knowledge and practice	Stressing the importance Developed knowledge and practice, self-efficacy Commitment to sustainability Intention to address sustainability and sustainable consumption in her teaching Inspired by change agency
Naming concepts, themes and concerns regarding sustainable consumption	Important to introduce in early childhood for young children's potential preconception, young children's curiosity and interest in nature	Important to introduce in early childhood for young children's potential preconception, building habits and behavioral patterns in early years and agency of young children
		Sustainability Content
	Agriculture, savings, paper production, seed planting	Culture, school culture, school materials, eating routines and food consumption
		Strategies to teach sustainability
	Situated, practice-based, concrete examples	Modeling, involvement of teacher, media, using durable materials, do-it-yourself, reducing material use
		Sustainable consumption content
	daily products, cloth production, bread-making process, food	Toys, food, clothes, affect of cartoons, paper use, food consumption, local production and handmade, do it yourself, reuse
		Strategies to teach sustainable consumption
	situated	Play, storytelling, creative dramatics, using visuals, seeking sustainable alternatives
Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings	Stressing the importance Commitment to sustainability Willingness to develop knowledge and practice	Stressing the importance Developed knowledge and practice, self-efficacy Commitment to sustainability Intention to address sustainability and sustainable consumption in her teaching Inspired by change agency
Critically reflecting on consumption and its consequence	Criticism of paper waste, food waste, tissue waste	Criticism of young children's overconsumption of toys Criticism of paper waste, food waste, tissue waste Seeking sustainable alternatives in educational material
	Thinking visionary and considering interrelatedness	Thinking visionary and considering interrelatedness Reflecting on individual needs and cultural orientations

4.5.4. Self-reported Daily Practice of Güneş

4.5.4.1. Daily Practice of Güneş Prior to Professional Development Training

Güneş did not portray herself as a responsible consumer and found her daily practices of sustainable consumption limited before training. Her sustainable practices included responsible consumption of water by turning off the water while tooth brushing, using less water while washing hands and hair, recycling by sorting out waste, reducing plastic waste by carrying a water flask, reducing carbon emissions via walking on campus, reusing, and need-oriented cloth purchasing. Güneş referred to her food consumption as unsustainable since she decided based on wants and did not reflect on reducing her carbon footprint in her choices. Review of her actions demonstrated that Güneş exhibited the competency of planning, implementing, and evaluating consumption-related activities.

4.5.4.2. Daily Practice of Güneş in Response to Professional Development Training

Güneş reported that she contributed more to sustainability compared to the beginning of the training but found it still inefficient. Her daily practices regarding sustainable consumption consisted of responsible energy use via turning off lights when not used and dimming screen brightness in mobiles and computers, reducing plastic waste and disposable material use via carrying thermos and water canteen, and buying carboy instead of bottled water, engaging in need oriented clothes purchase, reducing carbon footprint via local food consumption, reading labels to reflect on the life-cycle approach, walking and using public transportation, sharing cabs with colleagues when they are late for practicum. Additionally, she informed family members about sustainable consumption and encouraged them to local food consumption by checking the labels of the products and influenced their behavior. The review of her daily activities suggested that Güneş demonstrated the competencies of planning, implementing, and evaluating consumption-related activities, communicating the idea of sustainable consumption to others and critically taking on one's role as an active stakeholder in the market.

4.5.4.3. Change in the Daily Practice of Güneş

As Table 41 illustrates there has been a positive change in the daily practices of Güneş. She refrained from unsustainable practices and increased the variety of sustainable practices.

Her endeavors reflected a positive change in competencies that she exhibited only the competency of planning, implementing, and evaluating consumption-related activities before training while she demonstrated communicating the idea of sustainable consumption to others and critically taking on one's role as an active stakeholder in the market in addition to previous one.

Table 41. Change in the Daily Practice of Güneş

Daily Practice	Prior Training	In response to training
Unsustainable practices	Not reflecting on reducing carbon footprint in food consumption	
Taking informed action	Need-oriented purchasing of clothes Responsible consumption of water Reducing carbon footprint Reducing plastic waste Reusing Recycling Planning, implementing, and evaluating consumption-related activities	Need-oriented purchasing of clothes Responsible consumption of water Responsible energy use Reducing carbon footprint Reducing plastic waste Reusing Recycling Encouraging family members to local food consumption Influencing them to check labels Planning, implementing, and evaluating consumption-related activities Communicating the idea of sustainable consumption to others Critically taking on one's role as an active stakeholder in the market

4.5.5. Teaching Practice of Güneş

4.5.5.1. Teaching Practice of Güneş Prior to Professional Development Training

Before training, Güneş reported preparing activities introducing sustainability but not addressing sustainable consumption. She prepared an activity on seed planting and germination in terms of practice teaching, an activity about sorting out waste and recycling, another activity about soap making in terms of a cross-curricular assignment, and a workshop on water purification in her workplace.

Additionally, she took informed actions regarding sustainable consumption such as reducing paper waste via consciously avoiding paper printing, using technology and digital

tools, using picture books, reducing waste via not using disposable materials, using durable materials, reusing and engaging with do-it-yourself activities while creating educational materials and making reusable materials with modifications for various activity processes, reducing paper waste of young children via encouraging them to reuse drawing papers, reducing food waste of young children via controlling the portions of young children, reducing tissue consumption of young children via encouraging them to need-oriented consumption and reducing water waste by encouraging young children to turn off the water while not using,

According to the analysis of activity plans summarized in Table 42, Güneş prepared five integrated activities, one of which addressed sustainable consumption in the learning process. This activity introduced sustainable consumption with the levels of naming and relating to sustainable consumption and presented the terms seed-planting and life cycle. Güneş used recyclable and reusable materials in all activities. She reused residual materials in two activities while using disposable and natural materials in one of the activities.

Table 42. Analysis of Activity Plans Composed Prior to Professional Development Training

Daily plans	Activity Type	Materials	Process	Related Terms
1	Music integrated math	Recyclable Reusable	-	-
2	Art integrated language	Recyclable Reused Reusable	-	-
3	Play integrated movement	Recyclable Reused Reusable	-	-
4	Language integrated science	Recyclable Reusable Disposable Natural	Naming Relating	Seed-planting, life cycle
5	Language integrated art	Recyclable Reusable	-	-

4.5.5.2. Teaching Practice of Güneş in Response to Professional Development Training

When inquired about her contributions to sustainability in her teaching role, Güneş mentioned various activities. She reported reducing paper waste through consciously

avoiding paper printing, using picture books and ICT, reducing waste by not using disposable materials and using durable materials, using less materials, engaging in do-it-yourself activities, reusing waste materials, designing reusable materials. Additionally, she stated encouraging young children to be responsible for water consumption, reducing paper waste of young children via encouraging them to reuse drawing papers, reducing food waste of young children via controlling the portions of young children, reducing tissue consumption of young children via encouraging them to need-oriented consumption, responsible energy use of young children via asking them to check lights.

In addition to these contributions with young children and considerations in material use, Güneş shared her influence over mentor assistant teacher. She explained that her mentor assistant teacher mostly implemented paper-based activities which resulted in paper waste. She informed her mentor assistant teacher about activity processes implemented without materials.

As Table 43 illustrates, Güneş did not address sustainable consumption in the plans she prepared during theoretical training. However, the analysis of materials used in activities points to a change in disposable material use. Güneş used recyclable materials in all three activities, reusable materials in two activities, and reused materials in one activity.

Table 43. Analysis of Activity Plans Composed During Theoretical Training

Daily plans	Activity Type	Materials	Process	Related Terms
6	Science integrated movement	Recyclable	-	-
7	Art integrated early literacy	Recyclable Reusable	-	-
8	Music integrated drama	Recyclable Reused	-	-

Güneş prepared five integrated activities during the practical training. As Table 44 demonstrates two of the activities addressed sustainable consumption at all levels of naming, relating, critically reflecting, and taking action. One of the activities was

science-integrated art; the other was language-integrated science. Waste, recycling, reuse, reducing waste, recycling and zero waste were introduced as terms within the learning process. As the analysis indicated there was a decline in material use. Reusable materials were used in four activities, recyclable materials were used in three activities, in two activities materials were reused.

Table 44. Analysis of Activity Plans Composed During Practical Training- -Activity Plan Preparation Guidance

Daily Plans	Activity Type	Materials	Process	Related Terms
9	Science integrated art	Reused Reusable	Naming Relating Critically reflecting Taking action	Waste, recycling, reuse, reducing waste
10	Play integrated drama	Recyclable	-	-
11	Math integrated movement	Recyclable Reusable	-	-
12	Early literacy integrated movement	Recyclable Reusable	-	-
13	Language integrated science	Reused Reusable	Naming Relating Critically reflecting Taking action	Recycling, zero waste

Considering her contributions with young children, developed learning processes in activity plans and her endeavors regarding material use Güneş exhibited the competency of planning, implementing, and evaluating consumption-related activities. Additionally, she exhibited the competency of communicating the idea of sustainable consumption to others as she informed and encouraged her mentor assistant teacher to implement activities without materials and avoid the overuse of paper-based activities.

4.5.5.3. Change in the Teaching Practice of Güneş

As Table 45 summarizes there have been observed a change in teaching practice of Güneş. Güneş engaged in sustainable consumption oriented activities in educational

settings prior to training. In response to training, these activities expanded and diversified. She exhibited improved learning processes in her activity plans and addressed responsible energy use of young children, encouraged her mentor-assistant teacher to activities without materials in addition to engaging with activities she also mentioned prior to training.

Table 45. Change in the Teaching Practice of Güneş

Teaching Practice	Prior Training	In response to training
Taking informed action	Designing activities about sustainability not connecting to sustainable consumption	
	Reducing paper waste	Improved activity process plans to address sustainable consumption
	Reducing waste	Reducing paper waste
	Reducing food waste	Reducing waste
	Reducing water waste	Reducing food waste
	Reusing, do-it-yourself, designing reusable materials	Reducing water waste
		Reusing, do-it-yourself, designing reusable materials
		Responsible energy use of young children
		Encouraging mentor-assistant teacher to activities without materials
	Planning, implementing, and evaluating consumption-related activities	Planning, implementing, and evaluating consumption-related activities
		Communicating the idea of sustainable consumption to others

4.5.6. Intersection Between Citizen Role and Teacher Role of Güneş

Understanding of Güneş in citizen role and teacher role suggested a similarity in terms of her commitment, agency and critical reflection. Additionally, she exhibited the competency of thinking visionary and considering interrelatedness and reflecting on individual needs and cultural orientations in both roles. As for practices, planning, implementing, and evaluating consumption-related activities and communicating the idea of sustainable consumption to others in both roles while exhibiting the competency of critically taking on one's role as an active stakeholder in the market in her citizen role. The summary of Güneş's understandings and practices is illustrated in Table 46.

Table 46. Summary Of Güneş's Understanding & Practice

	Prior Training	In Response to Training
Citizen Role	Limited definition Environmental, Economic Willingness Critical Reflection Informed Action	Detailed definition Holistic, Commitment Inspired by change agency Deepened Critical Reflection (Role of culture on consumption, criticism of popular culture, effect of advertisement, life-cycle approach) Increased Informed Action (Encouraging family members to local food consumption and check labels)
Teacher Role	Limited content and strategy (child competency dimension) Commitment Willingness to develop knowledge and practice Limited Critical Reflection Informed Action	Developed content and strategy (child competency dimension, participatory and activist dimension) Commitment Intention, self-efficacy Inspired by change agency Deepened Critical Reflection (Criticism of young children's overconsumption of toys, seeking sustainable alternatives in educational material) Informed Action Developed teaching practice Developed activity plan process

4.6. Exploration of Change in Understandings and Practices in Response to Professional Development Training: The Story of Doğa

4.6.1. Doğa in Research Context

Doğa is a 22-year-old female teacher candidate and is expected to graduate from the Department of Early Childhood Education one semester later. During the current study, she lived in a neighborhood close to the university campus with her flatmates. In the scope of practice teaching course, she was practicing with 36-48-month-old children in a public kindergarten. Throughout the study, Doğa attended six of the seven theoretical training sessions, however, she could not participate in practical training sessions except for the last wrap-up and guidance session. This last session was conducted after teacher candidates completed activity plan assignments for the

practice teaching course. Although Doğa designed an activity process during the last session she could not submit it to the researcher as a daily plan document. As a result, all the activity plans evaluated in the following were composed by Doğa without the support of the researcher. Other than that, she did not write any reflective journals during training.

Motivation for participation in the study and expectations from training: Doğa had a personal interest in critical literacy and a professional interest in sustainability. She expected to learn about all three concepts and build awareness of critical literacy and sustainability. Other than that, she noted having higher expectations from the training session in terms of experiencing active participation and experiential learning.

Previous knowledge and experience: Doğa mentioned she had earlier information about sustainability from social media and her exploration of academic studies. As for sustainable consumption, she reported having no previous knowledge or experience. Critical literacy was her biggest interest among those terms. She stated that she had learned about critical literacy from a literature workshop and creative dramatics training she attended. However, she noted having limited knowledge about it.

4.6.2. Self-reported Understanding of Doğa as Citizen

4.6.2.1. Understanding of Doğa as Citizen Prior to Professional Development Training

Naming concepts, themes and concerns regarding sustainable consumption

Doğa referred to sustainability as not damaging anything in nature, not adding new concerns for nature as far as possible and maintaining life by respecting nature. Her definition focused on the protection of nature and respecting nature while maintaining life. Doğa had no previous knowledge regarding sustainable consumption therefore she only reported that sustainable consumption might be one's awareness of own consumption. When inquired about the connection between sustainability and sustainable consumption she noted she supposed they might be directly related through the purchasing and disposal of products.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

Doğa expressed not only educators, but all people need to build awareness regarding sustainability and critical literacy. She stressed the importance of sustainability in terms of nature, better life conditions and future generations. She believed all people needed to live in harmony with nature. Although she explained that she placed importance on being a responsible consumer she did not portray herself as a responsible consumer due to enjoying shopping. Doğa expressed her willingness to change this point as follows:

I think it is important. I would want my habits to be shaped at that stage. In fact, I am pushing myself toward it, but I cannot say I have succeeded completely.

Critically reflecting on consumption and its consequences

Doğa's statements before training implied her reflections on consumption and its consequences in terms of the division of needs and wants and considering interrelatedness. Doğa mentioned analysis of her purchasing behavior in terms of needs and wants by categorizing her consumption as need-oriented and daily used products, occasionally used products that make her happy, and want-oriented products. She also stated humans' consumption consequences on nature which refers to considering interrelatedness in environmental terms. She reflected on her consumption habits as follows:

..I don't do unnecessary laundry, for instance. I don't wash what I wear only once if it is not too dirty or stained. Because I am aware..that how much clean and drinking water in nature might be polluted by a machine load of laundry.

4.6.2.2. Understanding of Doğa as Citizen in Response to Professional Development Training

Naming concepts, themes, concerns related sustainable consumption

Sustainability definition of Doğa included responsibilities and duties towards all living things and nature, living life with a sustainability mindset, reflecting on

minimum effect on the bigger system after participating in the training which suggested an eco-centric view towards sustainability. Furthermore, she stated that sustainability is important for earth, natural resources, all living things, economic development, empowering social consciousness and social welfare. A critical and holistic perspective towards sustainability were reflected on her statements.

Doğa referred to sustainable consumption as consuming consciously, consumption as an informed act after critically reflecting on consumption and its consequences and mentioned its importance for natural resources, the Earth, future generations, lives of all people, economy and health. It seemed she elaborated her definition of sustainable consumption likewise her definition of sustainability. Moreover, she mentioned sustainability and sustainable consumption are interrelated concepts that people's duties and responsibilities toward all living things and nature consist of sustainable consumption practices

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

Doğa stressed the importance of sustainability and sustainable consumption. She referred to sustainability as daily life skills that need to become an essential habit. She expressed her commitment to sustainability and sustainable consumption as follows:

In our life's basic moments, from the moment we wake up till we go to bed in everything we do, I feel like I always have this tab open in the background. And I think that now, I shouldn't say just a piece of paper. I shouldn't say just a single piece of plastic waste of mine. I shouldn't say just a bottle of water. If I consume one plastic bottle less that day, then I consume less plastic. One step closer to a sustainable life. I think I would reduce my carbon footprint even a little bit this way.

Doğa reported she became a responsible consumer with a level of 60 to 70% after she participated in training. She further explained it in her words as follows:

I think I have been a responsible consumer since the day I noticed that I had given up my comfort zone and stopped buying bottled water. And it is a very basic but very effective example for me.

Critically reflecting on consumption and its consequences

Doğa engaged in critical reflection while elaborating on her ideas about sustainability and sustainable consumption. This critical reflection illustrated that Doğa adopted the competency of reflecting on individual needs and cultural orientations and the competency of thinking visionary and considering interrelatedness. To illustrate, she commented on the division of needs and wants in consumption behavior and reflected on her purchasing regarding need satisfaction. She stated that she cannot remember when the last time she bought something that was unneeded. She added that she realized that sustainable practices were also more economical solutions to need satisfaction compared to want-based practices. Apart from that, she reflected on the effect of social media as follows:

..as I spend too much time in school, at the[early childhood education] institution. When I get off work I use public transportation, spend longer time using the metro so I cannot use my mobile phone. And when I cannot arrive home I am discharged and I have a need to socialize. And because I am not influenced by social media I don't feel like I need to consume/buy something.

Reviewing her experience in terms of the division of needs and wants, organizing her consumption pattern toward need satisfaction, and questioning the effect of social media feed into consumer culture Doğa exhibited the competency of reflecting on individual needs and cultural orientations.

Moreover, her critical analysis of consumption included reflection on the consumption and production chain from material production to provision and disposal and considerations on the effects of consumption between systems for instance on ecological systems. She referred to considering interrelatedness and reflection on the consumption and production chain through the following statements:

I was not aware that consuming canned tuna was that harmful for Earth, I mean I am not vegetarian or vegan. I think we need to consume..But this is another point. But I had no idea that it costs so much water consumption, so much oil consumption, that hunting ships cause so much destruction to nature. I never thought that the provision chain was that critical. I never thought about the background of it. And after I realized that, I started to think

about the background of everything I consumed. Ok this is here, but where does it come from, how does it come? Why is it here? I mean why I should buy this so often? Why should I contribute to this supply chain..

In addition, Doğa reflected on her change agency and expressed the change in her vision reflecting the idea that the future is shapeable as follows:

The thing inspiring for me was that..I always see those concepts.. as very extreme and must be implemented one hundred percent. And I realized that. No, very, very, very tiny things.. Actually, the things that I said to myself ‘if I do this it won’t make a difference’ would make a difference. This is the thing that inspired me the best. I mean that we could change some things even at a starting point.. In fact, I have been enlightened that we become a sustainable consumer if we simply don’t ignore the thoughts that come to mind.

As Doğa engaged in reflection on the consumption and production chain, considered the interrelatedness in terms of the consequences of consumption and production, and reflected on the possibility of change, she exhibited the competency of thinking visionary and considering interrelatedness.

4.6.2.3. Change in the Understandings of Doğa as Citizen

Doğa expressed that she developed her level of knowledge, learned new concepts and practice and her understanding of sustainable consumption has been completely positively affected in response to professional development training. She referred to the change in her understanding as a change in the mindset.

When Doğa’s understanding of sustainable consumption before and after training is compared it implies a change toward a more sustainable mindset as summarized in Table 47. To demonstrate, her definition of sustainability broadened and presented a holistic, critical and eco-centric view. Similarly, her definition of sustainable consumption was elaborated as an informed act upon critical reflection. Moreover, her willingness to develop knowledge and practice led to a commitment to sustainability and sustainable consumption and Doğa started to portray herself as a responsible consumer after training. As for competencies, she exhibited reflecting on individual needs and cultural orientations and thinking visionary and considering interrelatedness in response to the professional development training.

Table 47. Change in the Understandings of Doğa as a Citizen

Understanding	Prior training	In response to training
Naming concepts, themes and concerns related sustainable consumption	Protection of nature, living/maintaining a life respecting nature Eco-centric view	Sustainability Sustainability mindset leading to practice holistic, critical perspective towards sustainability, Eco-centric view
	one's awareness of own consumption	Sustainable consumption consumption as an informed act after critically reflecting on consumption and its consequences
	Sustainability and sustainable consumption directly connected through product purchasing and disposal Stressing the importance Willingness to develop knowledge and practice Not a responsible consumer	Sustainable consumption orients sustainability, interrelated concepts Stressing the importance Commitment to sustainability 60-to70% responsible consumer
Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings		
Critically reflecting on consumption and its consequences	Division of needs and wants Considering interrelatedness	Division of needs and wants Reflection on purchasing in terms of need satisfaction Reflecting on the effect of social media Reflection on consumption and production chain Considering interrelatedness Reflecting on change agency Reflecting on individual needs and cultural orientations Thinking visionary and considering interrelatedness

4.6.3. Self-reported Understanding of Doğa as a Teacher Candidate

4.6.3.1. Understanding of Doğa as a Teacher Candidate Prior to Professional Development Training

Naming concepts, themes and concerns regarding sustainable consumption

Doğa stated sustainability was definitely important to address in early childhood education in order to build habits and behavioral patterns in the early years.

Reducing paper waste, reducing water waste, life cycle and composting were mentioned by Doğa as topics to address sustainability in an early childhood classroom. She further suggested science and music activities and experiential learning to teach sustainability.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

Doğa mentioned her concerns over observations of food, water, and paper waste and plastic consumption in early childhood settings and her interest in those issues as a teacher candidate. She expressed getting very upset over food waste observing children wasting pieces of bread in breakfast, playing with them, and throwing them on the ground. Doğa further explained that she was seriously concerned due to the colossal waste production in early childhood education, particularly in the name of art activities with the following statements:

Particularly in art activities, there is too much paper waste, too much residual materials' waste..always making something with plastic bottles. Nowadays there is this concept in our school; waste to art. But it is nothing to do waste. They buy brand new garbage bags and doing something out of them [in activities]. I think it is very awful. Always making something with paper cups. Pieces of paper are not being reused but thrown in recycling bins. I mean there is actual colossal waste in our field. I really think there is a serious amount of waste in early childhood education.

Critically reflecting on consumption and its consequences

Doğa engaged in critical reflection on consumption and its consequences while sharing her observations and impressions of early childhood settings. She expressed her criticism of food waste referring to serving children bigger portions of food at mealtimes. She stated her observation that children could not finish the portions or simply did not want to eat and instead played with the food. These statements implied need-oriented consumption. She explicated her point of view as follows:

Our only solution should not be to give waste food to stray animals. I think we first consider it while generating. I mean while wasting and generating waste. Our

solutions should not be like animals eat it, it shouldn't be like, you know, I'll dump it in nature.

Doğa added she observed children playing with water and causing water waste in addition to food waste. Other than that, she criticized paper use as a routine in early childhood settings and reflected on it as a traditional material choice for art activities. She commented on paper waste as following:

..always straight A4 papers with A quality are used instead of using for instance straw papers or papers easier to be recycled. And then a few pencil scratches on paper and it goes to waste or it goes to portfolio. From portfolio to parents and then what? Most of it again goes to waste.

Lastly, criticism of waste production/unsustainable consumption in art activities appeared in Doğa's reflection. She reported that she observed waste-to-art activities leading to more waste production and plastic use when implemented unconsciously as follows:

..and I honestly don't think teachers in the field have internalized it that much. Because they buy brand-new plastic bottles for instance. They are going to create something out of them. They pour the water in the plastic bottles into children's water flasks. So, in fact, they generate a new waste. To reuse waste material. And this is horrible.

Doğa referred to material choice based on needs and the effect on cultural orientations behind daily routines and therefore exhibited the competency of reflecting on individual needs and cultural orientation as a teacher candidate.

4.6.3.2. Understanding of Doğa as Teacher Candidate in Response to Professional Development Training

Naming concepts, themes, concerns related sustainable consumption

Doğa reported addressing sustainability in early childhood years is definitely important in terms of building habits and behavioral patterns in early years, young children's potential preconception and pre-attitudes. She also noted young children are competent to understand and act on it. Doğa indicated that education for sustainability is an educational

philosophy that aims to raise children with consciousness with a children's rights-based approach and it cannot be integrated through a workshop once a week or a theme just for a week. She referred to her ideas as follows:

..actually conscious in every sense. I mean critical literacy is involved here. Children questioning what they consume. I think it [education for sustainability] is raising children questioning why they consume, what else they can do about what they have, reflecting on being content themselves with what they have and creating ideas about this issue. I really think sustainability in education definitely means that. And a workshop once a week..or a one-week long theme implemented in education year I believe it would not help to embed it into education. Sustainability in education means making it in educational philosophy.

Doğa suggested providing concrete and inspiring examples, situated learning, using media such as packaging, advertisements, videos, audio, and magazines; critical literacy, active participation, critical questioning, modeling, peer learning, and parent involvement were strategies to use while addressing sustainability and sustainable consumption. She expressed that daily life, the concept of being a consumer, consumption and production chains as reflected in non-local foods, why packaged foods are not spoiling, procurement of those foods, and the division of needs and wants would be topics to explore while introducing sustainable consumption in early years. Furthermore, Doğa mentioned looking into product contents and reading labels seeking environmentally friendly alternatives, reusing, reducing paper consumption, and looking for sustainable alternatives as the activities young children may engage in regarding sustainable consumption.

Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings

Doğa expressed feeling proud in terms of her contribution to sustainability and sustainable consumption in her teaching practice. She expressed her commitment and contentment in her teaching practice by increasing awareness of young children and encouraging them to consume responsibly. She further mentioned her intention to address sustainability and sustainable consumption in her future teaching practice. She elaborated on her intention as follows:

because it [sustainability] is very much involved in children's rights. In fact, we always argue that children should know their rights. But we are constantly missing

this concept. That's why most of all. Why this is for them.. why this is important for them. Or why this is important for the things important for them. A girl in our classroom has a cat, for instance. She is crazy about it. Another one tends to plants. Really likes her mother's flowers. Talks about those always. In fact, I aim to teach them why it is an important concept even for all those.

Critically reflecting on consumption and its consequences

Doğa engaged in critical reflection on consumption and its consequences in early childhood settings from various points. She reported observing as a teacher how much waste is generated in classrooms without even noticing. She expressed that she critically reflected on purchasing material in terms of its usage and disposal which entailed adopting a life-cycle approach. She emphasized not using any disposable material in the classroom. Those reflections of Doğa entailed thinking visionary and considering interrelatedness.

Furthermore, Doğa mentioned sharing each new material with the young children in order to inform them about its purpose and usage and ask their ideas on how to make use of it after it served its purpose. In this way, she involved young children into the process of division of needs and wants in consumption patterns as well as encouraging them to seeking for sustainable alternatives. This process reflects the competency of reflecting on individual needs and cultural orientations.

Lastly, she commented on the young children's engagement with reading labels within the scope of critical questioning for consumption. She suggested that young children should look into labels and analyze the content in terms of the background of materials, the origin of the product, whether they consume it etc. She emphasized critically questioning the concept of consumer and the act of consuming with young children. These considerations exhibited her critical reflection on the validity and reliability of knowledge in the teacher role.

4.6.3.3. Change in the Understanding of Doğa as Teacher Candidate

Doğa's understanding in the teacher role demonstrated development in terms of building practical knowledge and content knowledge regarding sustainability and sustainable

consumption. She offered more varied strategies and more detailed content for addressing sustainability and sustainable consumption. Her perspective of education reflected a critical rights-based approach and it was also observed in her critical reflection on consumption and its consequences in her teacher role. She exhibited the competencies of reflecting on individual needs and cultural orientations and thinking visionary and considering interrelatedness in response to training. The summary of the change in the understanding of Doğa within the teacher role is illustrated in Table 48.

Table 48. Change in the Understanding of Doğa as a Teacher Candidate

Understanding	Prior training	In response to training
Naming concepts, themes, and concerns regarding sustainable consumption	Important topic to introduce in early childhood years building habits, behavioral patterns in early years	Important topic to introduce in early childhood years building habits, behavioral patterns in early years, young children's potential preconception and pre-attitudes, competence of young children educational philosophy raising children's consciousness, right-based approach towards education for sustainability Sustainability Content
	Reducing paper waste, reducing water waste, life cycle, composting	Division of needs and wants, reuse, reducing paper consumption, choosing sustainable alternative daily life, discussing the concept of being a consumer, consumption and production chains as reflected in non-local foods, why packaged foods are not spoiling, procurement of those foods, looking into product contents and reading labels seeking for environmentally friendly alternatives
Relating to issues of sustainable consumption in terms of experience, knowledge, and feelings	Music, science, experiential learning	Strategies to Teach Sustainability Active participation, critical questioning, modelling, peer learning, situated, parent involvement, providing concrete and inspiring examples, using media such as packaging, advertisements, videos, audio, and magazines; critical literacy.
	feeling upset over food waste seriously concerned due to the colossal waste production in early childhood education interest in the waste topic in early childhood settings as a teacher candidate	Feeling proud for integrating sustainable consumption Committed to sustainability Intention to address sustainability and sustainable consumption in future teaching practice

Table 48. (continued)

Critically reflecting on consumption and its consequence	Criticism of food waste, water waste, paper waste	Criticism of waste generation
	criticism of waste production/unsustainable consumption in art activities	Critically reflecting on material purchase based on a life-cycle approach
	Reflecting on individual needs and cultural orientations	Division of needs and wants
		Reading labels and critically reflecting on information
		Reflecting on individual needs and cultural orientations
		Thinking visionary and considering interrelatedness
		Critically reflecting on the validity and reliability of knowledge

4.6.4. Self-reported Daily Practice of Doğa

4.6.4.1. Daily Practice of Doğa Prior to Professional Development Training

Doğa noted not being a responsible consumer due to her shopping habits and want-oriented purchases. However she reported contributing to sustainability by doing simple but effective things like sorting out clothes waste, electronic waste such as batteries, and organic waste as collecting oil waste and putting them in recycling bins; reducing water waste through consciously avoiding frequent and unnecessary use of washing machine and checking taps for dripping and responsible usage of water while showering; reusing clothes, freecycling, gifting extra cosmetics and products.

Apart from that, she stated walking and using public transportation in her daily life and avoiding unnecessary chemical usage such as using environmentally friendly deodorant and buying environmentally friendly products, and avoiding pollution via carrying pocket ashtrays which contribute to reducing carbon emissions and minimizing carbon print.

When Doğa's daily life habits were reviewed it demonstrated that she engaged in sustainable consumption practices centered on reducing waste generation, water waste, carbon emissions, and responsible use of water. As a result, Doğa demonstrated the competency of planning, implementing, and evaluating consumption-related activities in her daily life within her citizen role.

4.6.4.2. Daily Practice of Doğa in Response to Professional Development Training

As it was mentioned in the previous section, Doğa expressed being a sustainable consumer with a level of 60-to70 percent. She claimed that she engaged in more conscious consumption in response to training as doing less shopping and engaging in need-oriented consumption reflecting on needs and long-term use, durability of the material, and decreasing cosmetics purchases through using alternative solutions such as putting lens solution on mascara in order to increase its lifespan. She also reduced plastic waste by using solid shampoo and carrying water thermos instead of buying bottled water; Moreover, she reduced carbon emissions by avoiding unsustainable consumption and production. She expressed that she stopped buying canned tuna considering its hazardous effect on oceans during the production and procurement process. She reported sharing materials with friends, reducing food waste through planning meals in food purchases and trying compost at home and reducing water waste. She expressed less energy consumption due to responsible use and financial concerns, but more public transportation and taxi use or borrowing friends' cars due to the remoteness of the workplace compared to the beginning of the training. As abovementioned examples demonstrated Doğa took informed action towards sustainable consumption and exhibited the competency of planning, implementing, and evaluating consumption-related activities

Lastly, Doğa mentioned her agency in influencing others to reflect on their consumption habits, raising awareness of family members and friends about sustainable consumption, and informing flatmates and house guests about her new learnings and practices at home. As Doğa used her agency and influenced immediate surroundings towards sustainable consumption she reflected the competencies of communicating the idea of sustainable consumption to others and critically taking on one's role as an active stakeholder in the market.

4.6.4.3. Change in the Daily Practice of Doğa

When inquired about her daily practices and consumption habits in response to training Doğa replied she has completely positively influenced and changed habits. As Table 49 demonstrates Doğa engages in sustainable practices prior to and in response to training;

however, there is an increase in sustainable consumption and a decrease in shopping behavior in response to training. However, there is also a change in terms of taxi and car use due to the remoteness of the workplace. Doğa expressed that she also used public transportation but spent one and a half hours arriving at her workplace due to the longer route of public transportation. Positive changes occurred in her daily practice included less shopping and an increase in need-oriented consumption through reflecting on long-term use and durability of the materials; seeking alternative solutions in cosmetics purchase, reducing food waste and need-oriented and planned food consumption, raising awareness of family and friends and influencing others to reflect on their consumption habits. While explaining these changes Doğa further emphasized the change in buying bottled water as follows:

I was also complaining a lot about heating up the water. You know, like I'm going to take more than one water, like in a glass canteen with me. I spent my money and bought a steel thermos, a water thermos. One and a half liters usually meets the water I need when I am out during the day. And since I had difficulty carrying it, I actually developed a solution. I bought camping hooks, mountaineering hooks, and I attach them to my bag. And a plastic bottle.. because that's what I consume the most in this life.. Drinking water outside all the time, really. I simply changed that habit. I think even that was very effective in my life.

Table 49. Change in the Daily Practice of Doğa

Daily Practice	Prior Training	In response to training
Taking informed action	Loves shopping	Taxi use and borrowing friends' cars
	Overconsumption of cosmetics	
	Reusing, freecycling, gifting, repairing	Less shopping; need-oriented consumption
	Reducing plastic waste	Using sustainable alternatives
	Reducing water waste	Reducing carbon emissions
	Using water responsibly	Reducing plastic waste
	Reducing carbon emissions	Reducing food waste
		Using water responsibly
		Raising awareness of family and friends,
		Influencing others to reflect on their consumption habits
	Planning, implementing, and evaluating consumption-related activities	Planning, implementing, and evaluating consumption-related activities
		Communicating the idea of sustainable consumption to others
		Critically taking on one's role as an active stakeholder in the market

There was also a change reflected in the competencies demonstrated by Doğa. As it is reflected in Table 49, Doğa exhibited the competency of planning, implementing, and evaluating consumption-related activities before training while communicating the idea of sustainable consumption to others and critically taking on one's role as an active stakeholder in the market.

4.6.5. Teaching Practice of Doğa

4.6.5.1. Teaching Practice of Doğa Prior to Professional Development Training

When inquired about previous teaching practice Doğa declared that she prepared and implemented activities addressing sustainability before participating in the study, but she could not evaluate her previous teaching in terms of sustainable consumption due to her limited knowledge. Doğa explained two different activity processes: one focused on reusing papers, paper production, and responsible consumption of papers and one activity included reusing plastic waste and paper waste. This suggested that Doğa designed activities introducing concepts about sustainable consumption in her practicum but did not relate it to term of sustainable consumption.

Doğa prepared and implemented five activity plans within the scope of the practice teaching course before professional development training. As analyses summarized in Table 50 indicated she designed a science integrated art activity process addressing sustainable consumption within the phases of naming concepts, themes and concerns regarding sustainable consumption and relating to issues of sustainable consumption in terms of experience, knowledge, and feelings. This activity focused on waste management and introduced the term recycling.

Table 50. Analysis of Activity Plans Composed Prior to Professional Development Training

Daily plans	Activity Type	Materials	Process	Related Terms
1	Movement integrated play	Recyclable Reusable	-	-
2	Music integrated play	Reusable	-	-

Table 50. (continued)

3	Science integrated art	Recyclable Reused Reusable Disposable Natural	Naming Relating	Recycling
4	Language integrated art	Recyclable Reusable	-	-
5	Math integrated movement	Recyclable Reusable	-	-

Doğa stated she preferred to plan activity processes in which she reuses waste materials and uses reusable materials like crayons which are part of class materials or no materials at all. She noted the mentor teacher's request for particular activity types such as using print-outs as a limitation to sustainable consumption at this point. Doğa's statements are consistent with the analysis of the activity plans in terms of material use. Other than that, Doğa reported that her mentor teacher was collecting waste materials, but she was not addressing reusing in her teaching. Upon Doğa's activities, her mentor teacher and Doğa engaged in a conversation about reusing that illustrated Doğa's competency of communicating the idea of sustainable consumption to others in addition to the competency of planning, implementing, and evaluating consumption-related activities.

4.6.5.2. Teaching Practice of Doğa in Response to Professional Development Training

Doğa's teaching practice after professional development training is composed of her practice teaching experience and working experience she started immediately after the last week of the spring semester. Doğa prepared and implemented one language-integrated art activity and one drama-integrated art activity during the theoretical training in terms of the practice teaching course. As Table 51 illustrates, analysis of these activities revealed that those activities did not introduce sustainable consumption in the learning process. As for materials, all two activities included only recyclable and reusable materials which is consistent with Doğa's statement about her material choice.

Table 51. Analysis of Activity Plans Composed During Theoretical Training

Daily plans	Activity Type	Materials	Process	Related Terms
6	Language integrated art	Recyclable Reusable	-	-

Table 51. (continued)

7	Drama integrated art	Recyclable Reusable	-	-
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After theoretical training, Doğa prepared four more activity plans within the scope of the practice teaching course. Since Doğa could not participate in the practical training those four activities were not prepared with the guidance of the researcher. Doğa prepared one science-integrated movement activity plan addressing sustainable consumption by introducing seed planting. Analysis of the activity demonstrated that it integrated sustainable consumption in the phases of naming concepts, themes and concerns regarding sustainable consumption and relating to issues of sustainable consumption in terms of experience, knowledge, and feelings. Apart from that, disposable materials were used in one activity process, natural materials were used in two activity processes, recyclable materials were used in three activity processes, and reusable materials were used in all four activity processes. Table 52 illustrates the summary analysis of activity.

Table 52. Analysis of Activity Plans Composed After Theoretical Training

Daily plans	Activity Type	Materials	Process	Related Terms
8	Art integrated language	Recyclable Reusable Disposable Natural	-	-
9	Drama integrated play	Reusable	-	-
10	Science integrated movement	Recyclable Reusable Natural	Naming Relating	Seed planting
11	Science integrated art	Recyclable Reusable	-	-

The analysis of activities suggested that Doğa designed activities introducing concepts about sustainable consumption but lacked in engaging young children with critical reflection and informed action toward sustainable consumption in her practice teaching. However, she reported that she prepared and implemented a paper production activity in her teaching practice at her new workplace. This activity focused on reducing paper waste, increasing young children's awareness of the paper production process, and reusing materials. Doğa explained this activity as follows:

We are currently recycling paper from waste paper, we left it to dry over the weekend. They [young children] were very tense, very stressed. We did a paper tearing workshop...And with that, they developed their motor muscles a little bit. On the one hand, they let out this inner expression. Then we turned it into a paper pulp, and today we poured it on the wires to dry. You know the splatter-proof hot oil wires, we poured it on them. We will use it again. So right now in my own classroom, I am actually implementing the solutions to many of the things that I have been complaining about, and many of the things that we found the solution together.

When inquired about her contributions to sustainability in her teacher role Doğa noted that she definitely contributed to sustainability as a teacher referring to her three-week-long teaching experience. She explained that she reduced material demand and engaged in need-oriented purchasing via mixing and reusing crayons, reusing materials and equipment, turning materials into reusable-durable materials and avoiding disposable materials use. She mentioned reducing paper waste via reusing papers and using sustainable alternatives in terms of making individual blackboards for children, reducing food waste for young children to choose their portions of meals and encouraging responsible use of water for cleaning time and using wastewater for vegetables in the school garden. These practices of Doğa in early childhood settings entailed the competency of planning, implementing, and evaluating consumption-related activities.

Lastly, she stated informing parents and school management about her materials and activity choices for sustainable consumption. For instance, doing blackboards with reusing materials for young children to use for early literacy and free time activities, reusing papers for art activities, and not doing art crafts leads to waste generation. These activities suggested that she demonstrated the competencies of communicating the idea of sustainable consumption to others and critically taking on one's role as an active stakeholder in the market.

4.6.5.3. Change in the Teaching Practice of Doğa

Before training, Doğa's teaching practice was limited to material use and designing activities introducing concepts about sustainable consumption. As Table 53 illustrates, Doğa expanded and enhanced her teaching practice in various points and it pointed a development in terms of competencies reflected in teaching practice. She exhibited the

competencies of planning, implementing, and evaluating consumption-related activities, communicating the idea of sustainable consumption to others, critically taking on one's role as an active stakeholder in the market and using, editing and sharing different forms of knowledge in response to training while she only exhibited the competency of planning, implementing, and evaluating consumption-related activities before training.

Table 53. Change in the Teaching Practice of Doğa

Teaching Practice	Prior Training	In Response to Training
Taking informed action	Designing activities introducing concepts about sustainable consumption	Designing activities introducing concepts about sustainable consumption
	Reusing waste materials	Addressing sustainable consumption in activities
	Using reusable materials	Reducing material demand
	Planning activities without materials	Need-oriented purchasing
		Reusing materials and equipment using sustainable alternatives
		Reducing paper waste
		Avoiding disposable material use
		Reducing food waste
		Informing parents and school management about her materials and activity choices for sustainable consumption
	Planning, implementing, and evaluating consumption-related activities	Planning, implementing, and evaluating consumption-related activities
		Communicating the idea of sustainable consumption to others
		Critically taking on one's role as an active stakeholder in the market

4.6.6. Intersection Between Citizen and Teacher Role of Doğa

Doğa's change agency and commitment is reflected in both her teacher role and educator role. She exhibited the competencies of planning, implementing, and evaluating consumption-related activities, communicating the idea of sustainable consumption to others, critically taking on one's role as an active stakeholder in the market, reflecting on individual needs and cultural orientations and thinking visionary and considering interrelatedness in both the teacher role and the citizen role. To conclude, there was an exact intersection between the teacher role and the citizen role of Doğa according to the findings of the study.

Table 54. Summary of Doğa's Understanding & Practice

	Prior Training	In Response to Training
Citizen Role	Limited definition	Detailed definition
	Environmental, Willingness	Holistic, Critical Commitment
	Limited Critical Reflection	Inspired by change agency Deepened Critical Reflection (Reflection on purchasing in terms of need satisfaction, effect of social media, consumption and production chain, change agency)
	Informed Action	Increased Informed Action (Raising awareness of family and friends, influencing others to reflect on their consumption habits, need-oriented consumption)
Teacher Role	Limited content and strategy (child competency dimension)	Developed content and strategy (child competency dimension, participatory and activist dimension, broadly-based right dimension whole school approach)
	Willingness to develop knowledge and practice	Commitment Intention, self-efficacy Inspired by change agency
	Critical Reflection	Deepened Critical Reflection (material purchase based on a life-cycle approach, division of needs and wants, reading labels and critically reflecting on information)
	Informed Action	Informed Action Developed teaching practice

4.7. Overall Summary

Previously, the experiences of each of the six teacher candidates were portrayed separately. In the following, six teacher candidates' overall understandings and practices as citizens and teacher candidates and the intersection between citizen and teacher roles are summarized.

4.7.1. Overall Change in Understanding as Citizen

Overall change in the understandings of teacher candidates as citizen indicated an increased level of knowledge as suggested by detailed and more sophisticated definitions; commitment and deepened critical reflection. As Table 55 illustrates, before professional

development training, all teacher candidates except one offered limited definitions of sustainability and sustainable consumption. Sustainability conceptions were generally focused on the environmental pillar; two addressed the economic pillar, while only one addressed the social pillar before training. However, they all offered a holistic perspective towards sustainability after participating the training. Apart from that, only one teacher candidate reflected a critical perspective prior to training, this increased to three after training. Similarly, an increase in the number of teacher candidates who expressed their commitment to sustainability and sustainable consumption was observed in the study. Before training, there were two teacher candidates reporting commitment; however, all teacher candidates reported commitment in response to professional development training. Lastly, it was observed that all teacher candidates engaged with deepened critical reflection in response to professional development training. Before training, five teacher candidates exhibited reflecting on individual needs and cultural orientations and two teacher candidates exhibited thinking visionary and considering interrelatedness. All teacher exhibited these competencies in response to training.

Table 55. Overall Change in Understanding as Citizen

Prior Training	In Response to Training
Detailed definition (1)	Detailed definition (6)
Limited definition (5)	Holistic (6) Critical (3)
Economic (2) Environmental (5) Social (1)	
Critical (1)	
Commitment (2)	Commitment (6)
Stressing the importance (6)	Stressing the importance (6)
Concern over impulsive and irresponsible consumption (1)	Being a tenant barrier to practice (1)
Difficulty in integrating it into daily life (2)	Enjoys encouraging others to need-oriented consumption (1)
Willingness (5)	Inspired by change agency (2)
Being a tenant barrier to practice (1)	Inspired by NGO field activities (1)
Being a student barrier to practice (1)	
Living in a dormitory barrier to practice (1)	
Reflecting on individual needs and cultural orientations (5)	Reflecting on individual needs and cultural orientations (6)
Division of needs and wants (5)	Division of needs and wants (5)
Hierarchy of need satisfaction (2)	Hierarchy of need satisfaction (4)
Consumption as a cultural and social act (1)	Reflecting on the influence of social media (3)
	Role of culture on consumption (2)
	Criticism of perceived obsolescence (1)
	Criticism of exploitation and consumer society (1)
	Criticism of popular culture (1)

Table 55. (continued)

Thinking visionary and considering interrelatedness (2) Considering interrelatedness in terms of international and intranational justice (1) Considering interrelatedness (1) Reflecting on production and consumption chain (1) The effect of chain companies (1)	Thinking visionary and considering interrelatedness (6) Considering interrelatedness in consumption choice (3) Reflecting on production and consumption chain (5) Life-cycle approach (2) Demand and supply (1) Seeking sustainable alternatives (1) Noticing the lack of active citizenship (1) Realization of civic role (3) Criticism of living without considering others and the future (1)
Critically reflecting on the validity and reliability of knowledge (1) Critically reflecting on information pollution on social media (1) Critically reflecting on the label of products-criticism of greenwashing (1)	Critically reflecting on the validity and reliability of knowledge (2) Effect of advertisement-reflecting on validity and reliability (2)

4.7.2. Overall Change in Understanding as Teacher Candidate

When all teacher candidates' understandings within the teacher role were reviewed, the findings of the current study indicated a positive change. Overall change in teacher candidates' understanding illustrated a developed knowledge on content and practice, as suggested by detailed explanations by teacher candidates and improved self-efficacy in teaching. All teacher candidates stated the importance of addressing sustainability and sustainable consumption in the early years before and after training. Five teacher candidates touched on the child competency dimension, two addressed the participatory and activist dimension, and only one mentioned the whole-school approach while explaining education for sustainability in the early childhood context before training. However, all teacher candidates' understanding of sustainability education included the child competency dimension and the participatory and activist dimension, while two teacher candidates also addressed the broadly-based right dimension in this respect. Moreover, three teacher candidates referred to the whole-school approach, among whom also referred to the whole-system approach.

Apart from that, all teacher candidates declared their commitment towards sustainability and sustainable consumption in addition to the sense of self-efficacy and intention to

address sustainability and sustainable consumption in future teaching. As Table 56 illustrates, teacher candidates deepened their critical reflection on consumption concerns in educational settings as well. In terms of this engagement, all teacher candidates exhibited reflecting on individual needs and cultural orientations and thinking visionary and considering interrelatedness in their teacher role after participating in professional development training.

Table 56. Overall Change in Understanding as Teacher Candidate

Prior Training	In Response to Training
Important in ECE (6)	Important in ECE (6)
Child competency dimension (5)	Child competency dimension (6)
Participatory and activist dimension (2)	participatory and activist dimension (6)
Whole school approach (1)	broadly-based right dimension (2)
	Whole school approach (3)
	Whole system approach (1)
Commitment (2)	Commitment (6)
Willingness to develop (4)	Intention (6)
Intention (1)	Self-efficacy (6)
	Inspired by critical education (1)
	Inspired by change agency of young children (1)
	Inspired by change agency (2)
	Inspired by concrete examples (1)
	Being a pre-service teacher barrier to implications (3)
Critically reflecting on the validity and reliability of knowledge (1)	Critically reflecting on the validity and reliability of knowledge (2)
Truly communicating the core of sustainability (1)	Critical literacy perspective toward information/labels (2)
Reflecting on individual needs and cultural orientations (3)	Reflecting on individual needs and cultural orientations (6)
Criticism of food use as a material in activities (1)	Criticism of food waste (3)
Criticism of food waste (2)	Reflecting on material choice (3)
Criticism of overuse of materials (2)	Division of needs and wants in product purchase for young children (2)
Division of needs and wants in clothes and toy purchase (1)	Creating a school culture (1)
Thinking visionary and considering interrelatedness (3)	Overconsumption of toys (1)
Criticism of paper waste (3)	Thinking visionary and considering interrelatedness (6)
Criticism of tissue waste (1)	Agency and transformation (1)
Criticism of water waste (1)	No doom and gloom approach (1)
	Seeking sustainable alternatives in educational material (3)
	Criticism of paper waste (4)
	Importance of role-modeling (2)
	Criticism of irresponsible use of tissue, paper, and routine materials (5)

4.7.3. Overall Change in Daily Practice

According to the findings, all teacher candidates engaged in various sustainable activities in daily life, and all except one participant who had greater experience in terms of sustainability and sustainable consumption demonstrated improvement in sustainable consumption practices in response to training. As Table 57 illustrates, the overall change in daily practices of the teacher candidates suggests an increase in the number and variety of sustainable consumption-oriented practices. Before training, all teacher candidates stated they paid attention to reducing their carbon footprint via public transportation or walking. Following this practice, need-oriented purchasing, reducing water waste, reducing food waste, and reusing were the most mentioned practices by teacher candidates. After training, reducing carbon footprint via using public transportation or walking, need-oriented purchasing, in addition to responsible use of energy and recycling by sorting out waste, were declared by all teacher candidates as adopted daily life practices. Reducing water waste, reducing food waste, reducing plastic waste, reusing and encouraging family members and friends to sustainable consumption were other most stated practices of teacher candidates.

When self-reported daily practices of teacher candidates were revisited, it was seen that teacher candidates were mainly involved with individual actions before professional development training. However, sharing concerns, being a role model, raising awareness of family members and friends, encouraging family members and friends to sustainable consumption, and influencing family members and friends in terms of changing behaviors also appeared in the sustainable consumption practices of teacher candidates in response to training. Moreover, the increase and variation in practice after participating in training resulted in the development of competencies as well. While only the competency of planning, implementing, and evaluating consumption-related activities was exhibited before training, competencies of communicating the idea of sustainable consumption to others and critically taking on one's role as an active stakeholder in the market were exhibited in addition to the previous one in response to training. Moreover, while only the competency of planning, implementing, and evaluating consumption-related activities was exhibited before training, competencies of communicating the idea of sustainable consumption to others and critically taking on one's role as an active stakeholder in the market were exhibited in addition to the previous one in response to training.

Table 57. Overall Change in Daily Practice

Prior Training	In Response to Training
Frequent Shopping (1)	Use of taxis for longer routes of public transport (2)
Overconsumption of cosmetics (1)	Borrowing cars for longer routes of public transport (1)
Regular use of taxis (1)	Regular use of taxis (1)
Eating out (1)	Eating out (1)
Not reflecting on reducing the carbon footprint in food consumption (1)	Fast food and packaged food consumption (1)
Frequent showering, toothbrushing and hand washing (1)	Sometimes leaving/forgetting power tools on charge (1)
Frequent charging/using of technological tools (1)	
Reusing (4)	Reusing (4)
Recycling (2)	Recycling (6)
Reducing water waste (4)	Reducing water waste (5)
Reducing food waste (2)	Reducing food waste (4)
Reducing plastic waste (4)	Reducing plastic waste (4)
Reducing carbon footprint (6)	Reducing carbon footprint (6)
Using/buying environmentally friendly materials (2)	Using/buying environmentally friendly materials (2)
Responsible use of energy (3)	Responsible use of energy (6)
Need-oriented purchasing (4)	Need-oriented purchasing (6)
Voluntary simplicity (1)	Voluntary simplicity (1)
free-cycle, gifting (2)	Second-hand shopping (1)
do-it-yourself (1)	Using sustainable alternative (1)
Reducing paper waste (1)	Sharing concerns (2)
	Being a role model (1)
	Raising awareness of family and friends (2)
	Encouraging family members and friends (4)
	Influencing family members and friends (3)
Planning, implementing, and evaluating consumption-related activities (6)	Planning, implementing, and evaluating consumption-related activities (6)
	Communicating the idea of sustainable consumption to others (5)
	Critically taking on one's role as an active stakeholder in the market (3)

4.7.4. Overall Change in Teaching Practice

All teacher candidates portrayed improvement in sustainable consumption engagement within educational settings. As Table 58 demonstrates, the overall change in teaching practice pointed to an increase in the number and diversity of activities. Before training, four teacher candidates stated reusing materials for their teaching practices, which was the most mentioned sustainable practice. After training, all six teacher candidates declared themselves engaged in reusing. Following reusing, informing the mentor teacher about sustainable consumption and reducing paper waste was the most mentioned sustainable consumption-oriented practice after training. Apart from that, five teacher candidates designed activities about sustainability, but they were not connected to sustainable

consumption. After training, an improved activity learning process was observed in the daily plans used in the practice teaching of five teacher candidates. There was no change in the learning process of the one teacher candidate who could not attend the practical training. But this one teacher candidate stated addressing sustainable consumption in activities as an in-service teacher after she was employed, while the current study was conducted.

The improvement in sustainable consumption engagement suggested an improvement in terms of competencies as well. While five teacher candidates exhibited planning, implementing, and evaluating consumption-related activities before training, all six teacher candidates exhibited this competency and the competency of communicating the idea of sustainable consumption to others in response to training. Apart from that, two teacher candidates reflected critically taking on one's role as an active stakeholder in the market, two teacher candidates reflected using, editing and sharing different forms of knowledge and one teacher candidate reflected using information and communication technology interactively.

Table 58. Overall Change in Teaching Practice

Prior Training	In Response to Training
Designing activities about sustainability not connecting to sustainable consumption (5)	Designing activities about sustainability not connecting to sustainable consumption (1)
Reducing paper waste (2)	Reducing paper waste (4)
Reducing waste (1)	Reducing waste (2)
Reducing food waste (1)	Reducing food waste (3)
Reducing water waste (1)	Reducing water waste (3)
Turning materials reusable-durable (1)	Designing reusable materials (1)
Reusing (4)	Reusing (6)
Responsible consumption of energy (1)	Responsible consumption of energy (3)
Raising awareness of young children (1)	Recycling (1)
Designing reusable materials (2)	Reducing material use (2)
Planning activities without materials (1)	Need-oriented purchasing (1)
	Using sustainable alternatives (2)
	Sharing materials with colleagues/friends (1)
	Informing young children about material choice in activities (2)
	Informing mentor teacher (4)
	Encouraging mentor-assistant teacher to activities without materials (1)
	Preparing activity plans addressing sustainable consumption (5)
	Addressing sustainable consumption in activities (1)
	Preparing and placing warning signs with young children (1)
	Engagement of young children with various forms of knowledge (2)
	Informing parents and school management about materials and activity choices for sustainable consumption (1)

Table 58. (continued)

Planning, implementing, and evaluating consumption-related activities (5)	Planning, implementing, and evaluating consumption-related activities (6) Communicating the idea of sustainable consumption to others (6) Critically taking on one's role as an active stakeholder in the market (2) Using, editing and sharing different forms of knowledge (2) Using ICT interactively (1)
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4.7.5. Intersection Between Citizen and Teacher Roles

Teacher candidates' understandings and practices within teacher role and citizen role demonstrated some similarities and differences as summarized in Table 59. Developed level of knowledge, commitment toward sustainability and sustainable consumption were common in both teacher role and citizen role. All teacher candidates exhibited reflecting on individual needs and cultural orientations, thinking visionary and considering interrelatedness, planning, implementing, and evaluating consumption-related activities in both teacher role and citizen role. Except for one, all teacher candidates demonstrated communicating the idea of sustainable consumption to others in both roles. This one teacher candidate demonstrated this competency in her teacher role. Overall, three participants exhibited the competency of critically taking on one's role as an active stakeholder in the market in the citizen role, among which one also reflected this competency in the teacher role. One participant demonstrated critically taking on one's role as an active stakeholder in the market only in the teacher role. Apart from that, using, editing and sharing different forms of knowledge was portrayed by two participants only in the teacher role while using information and communication technology interactively was portrayed by one participant only in the teacher role.

Table 59. Comparison Between Citizen and Teacher Roles

Citizen Role	Teacher Role
Developed Knowledge (6)	Developed Knowledge (6)
Commitment (6)	Commitment (6)
Reflecting on individual needs and cultural orientations (6)	Reflecting on individual needs and cultural orientations (6)
Thinking visionary and considering interrelatedness (6)	Thinking visionary and considering interrelatedness (6)
Planning, implementing, and evaluating consumption-related activities (6)	Planning, implementing, and evaluating consumption-related activities (6)

Table 59. (continued)

Communicating the idea of sustainable consumption to others (5) Critically taking on one's role as an active stakeholder in the market (3)	Communicating the idea of sustainable consumption to others (6) Critically taking on one's role as an active stakeholder in the market (2) Using, editing and sharing different forms of knowledge (2) Using ICT interactively (1)
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Key Findings

- All teacher candidates increased their level of knowledge; expressed their commitment towards sustainability and sustainable consumption; and engaged in critical reflection and informed action for sustainable consumption within their citizen role in response to professional development training.
- All teacher candidates increased their level of knowledge and self-efficacy in teaching; expressed their commitment towards sustainability and sustainable consumption, and intention to address sustainability and sustainable consumption in their future teaching practice; engaged in critical reflection and informed action in their teacher role in response to professional development training.
- In terms of the sustainable consumption understanding within the citizen role, all participants demonstrated a holistic approach to sustainability and sustainable consumption, three of whom also adopted a critical perspective in response to training.
- In terms of sustainable consumption understanding within the teacher role, all teacher candidates reflected a child competency dimension and a participatory and activist dimension, and two of them acknowledged a broadly-based right dimension of sustainability education in early childhood. Moreover, three teacher candidates referred to the whole-school approach, among whom also referred to the whole-system approach.
- In terms of daily practices, all teacher candidates increased sustainable consumption behavior except the one with greater experience who had already adopted sustainable lifestyle practices before training. Among the daily practices, mainly private sphere behaviors were reported compared to public sphere behavior or civic engagement. One teacher candidate noticed her lack of involvement and

expressed her intention to support collaborations in the neighborhood. Moreover, living in dormitories, student life, and being a tenant were reported as barriers to sustainable daily practices.

- In terms of teaching practice, all teacher candidates portrayed an increase in sustainable consumption engagement with an increase in the number and diversity of activities. Five teacher candidates demonstrated improvement in the learning process of daily plans which are prepared within the scope of practice teaching course in terms of addressing sustainable consumption, one teacher candidate who did not attend practical training did not reflect a change in daily plans. Apart from that, being a preservice teacher was reported as barrier to sustainable consumption-oriented teaching practice due to mentor teacher's specific requests of activity and topic practice teaching; physical shortcomings of practicum school and working with younger age (3 year-olds), mentor teachers and school directors discouraging actions.
- All teacher candidates exhibited the key competencies of reflecting on individual needs and cultural orientations, thinking visionary and considering interrelatedness and planning, implementing, and evaluating consumption-related activities within the citizen role while five of them exhibited the competency of communicating the idea of sustainable consumption to others and three of them exhibited the competency of critically taking on one's role as an active stakeholder in the market in the citizen role.
- Within the teacher role, competencies of reflecting on individual needs and cultural orientations, thinking visionary and considering interrelatedness, planning, implementing, and evaluating consumption-related activities and communicating the idea of sustainable consumption to others were demonstrated by all teacher candidates. Two teacher candidates exhibited the competency of critically taking on one's role as an active stakeholder in the market, two demonstrated the competency of using, editing and sharing different forms of knowledge while one reflected the competency of using information and communication technologies interactively.

As a summary, this section of the dissertation displayed data derived from the six teacher candidates' experiences in terms of their understanding and practices of sustainable

consumption within their citizen role and teacher role. Each teacher candidate's experience was presented separately while portraying them in the research context, addressing the change in their understandings and practices as citizens and teacher candidates in response to professional development training, and the intersection between the citizen role and the teacher role. Lastly, an overall summary of teacher candidates' experiences and key findings was stated, which suggested how professional development during practice teaching might address development in knowledge and practice.



CHAPTER 5

DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

The present chapter introduces the discussion of the key findings displayed in the previous chapter, referring to related national and international literature. Following the discussion, implications and recommendations for further studies are stated respectively.

5.1. Discussion

The present study aimed at investigating Early Childhood Education teacher candidates' experiences of Professional Development Training which is designed to inform them about sustainable consumption via critical literacy during their practice teaching. This investigation took place in a green campus setting and addressed understandings and practices of teacher candidates as citizens and as teacher candidates in response to professional development training. It illustrated how teacher candidates defined concepts, themes and concerns related to sustainable consumption; how they related to issues of sustainable consumption in terms of experience, knowledge, and feelings; how they critically reflected on consumption and its consequences and what kind of informed actions they engaged in as citizens throughout daily life and as professionals throughout teaching practice. The findings of the study indicated that all teacher candidates demonstrated an enhanced understanding regarding sustainable consumption in both their citizen role and teacher role compared to before training. Teacher candidates offered detailed definitions, expressed commitment and engaged in critical reflection and informed action for sustainable consumption both in the citizen role and teacher role in response to training.

5.1.1. Change in Understanding as Citizen

According to the findings of the present study, teacher candidates offered more detailed definitions suggesting an increased level of knowledge, expressed commitment to sustainability and sustainable consumption as citizens, and engaged in deepened critical reflection on consumption and its consequences in daily life situations. Similarly, previous research demonstrates that interventions in higher education institutions bring changes in knowledge and attitude of university students (Merrit et al., 2019; Petersen et al., 2007; Schoolman et al., 2016; Wuest et al., 2014) and action-oriented, participative, and transformational pedagogies support awareness and reflection, which brings improved understanding (Alvarez-Suarez et al., 2014; Frank & Stanszus, 2019). This finding, referring to improved understanding, also aligned with findings of another teacher education study within sustainability research conducted with in-service teachers in Türkiye. Feriver et al. (2016) indicated a change in the sustainability perspectives of early childhood teachers in response to a 7-day-long training based on transformative learning. Although there was a difference in participants' roles in the field and length of the training offered, both studies have a transformative focus.

Despite holding mainly an environmental focus on sustainability before training, all teacher candidates reflected a holistic approach to sustainability, three of whom also adopted a critical perspective. This is also reflected in the sustainable consumption conception. This finding is contrary to the result of another study conducted by Dymont et al (2014), which reported the heavy appearance of natural themes on the conception of early childhood educators' understanding of sustainability before participation in professional development and decrease in natural themes increase in social themes and very low appearance of economical aspects after training. This difference might stem from the current study provided much longer training compared to the study of Dymont et al. (2014) which offered two or five hour-long workshops. The focus of professional development might be another point causing difference in findings since the current study presented a holistic conception of sustainability with a critical perspective and encouraged teacher candidates to critically analyze the definition of sustainable development and sustainable

consumption from various viewpoints addressing diversity, justice, reliability and validity, and create their own definitions throughout the training. Moreover, the participants are different in terms of their role in the field, preservice teachers may be more prone to acquire new conceptions regarding sustainability compared to in-service teachers.

5.1.2. Change in Understanding as Teacher Candidate

In terms of teacher role, findings indicated developed knowledge on content and practice, improved self-efficacy in teaching, deepened critical reflection on consumption concerns in educational settings, and intention to address sustainability and sustainable consumption in their teaching practice for all participants. However, one of the participants found sustainability easier to address compared to sustainable consumption. It might result from the familiarity with sustainability since sustainable consumption is a very recent concept compared to the previous one (Fischer et al., 2022), and participants had limited or no experience with sustainable consumption before the study. Moreover, sustainability is the umbrella term covering all sustainable development goals.

Developed knowledge and self-efficacy were associated with long engagement with professional development, practice-based learning and reflection in the literature (Kadji-Beltrán, 2024; Boeve-de Pauw et al., 2022; Trauth-Nare, 2015). Therefore, the study's findings are consistent with related literature as it offers professional development on sustainable consumption with theoretical and practical training based on critical literacy that exemplifies long engagement with transformative, action-oriented and participative pedagogy. Apart from that, this finding also aligned with another study conducted in Türkiye with in-service teachers. Alıcı and Şahin (2023) reported an increase in early childhood teachers' awareness and knowledge of education for sustainability after participating in the professional development addressing both education for sustainability and critical media literacy, which included five sessions of training and guidance during teachers' practice throughout a semester. Although the present study focused on preservice early childhood teachers' professional development, both studies have in common addressing practical and

theoretical training in professional development with a critical component. Therefore, findings also suggest similarities in this respect.

This study aligned with another study conducted with elementary pre-service teachers in terms of indicating developed knowledge, self-efficacy, sense of responsibility, and intention to address sustainable consumption in future teaching practice by Merritt et al. (2019). However, different from the study of Merritt et al. (2019), the present study demonstrated that teacher candidates engaged in deepened critical reflection in terms of reflecting on individual needs and cultural orientations and thinking visionary and considering interrelatedness in educational settings. This difference may be associated with the difference in focus of studies. To demonstrate, while Merritt et al. (2019) explored the outcomes of the course that presents sustainability and education for sustainability with a flipped approach to teaching, the current study focused on a professional development training based on critical literacy.

All participants' perspectives on sustainability education reflected a child competency dimension and a participatory and activist dimension, and two of them acknowledged a broadly-based right dimension based on the categorization of Davis (2010). This perspective reflects the early childhood education for sustainability, which openly integrates sustainability into the educational agenda, broadening its stance rights-based and pointing to the qualifications, agency, and potential of young children (Davis, 2010). One participant among them also indicated refraining from a “doom and gloom approach” to education, which is consistent with the claim that early childhood education for sustainability is a transformative education spreading hope and agency and it should not be a “doom and gloom” education (Davis, 2010; Davis & Elliott, 2024).

Three teacher candidates reflected the whole-school approach (Evans, 2015) while addressing sustainability and sustainable consumption in early childhood education. They referred to collaboration between teachers, school directors, and other staff in addition to parent involvement and young children's agency in order to address change. In addition, one of the participants addressed the whole-system approach

(Stoltenberg & Benoist-Kosler, 2020) as offering collaboration with the community and local government in her teaching practice in order to cultivate societal change, which necessitated active citizenship.

5.1.3. Change in Daily Practice

Change in consumption patterns is generally reported to be challenging via intervention (Alvarez-García et al., 2014; Nolet, 2009; Schoolman et al, 2016). However, the findings of the present study remarked on engagement with informed actions towards sustainable consumption in response to professional development training. All of the teacher candidates, except the one with greater experience in sustainability and sustainable consumption, reflected a positive change in sustainable consumption in their daily practices. This teacher candidate with greater experience demonstrated informed actions before and after training. This might be due to this particular teacher candidate already having adopted sustainable lifestyles before participating in the study.

University students are reported to be more prone to involvement with sustainable consumption when practice-oriented interventions are facilitated (Mieg et al., 2013). This finding of the present study is consistent with other studies situated in participative and transformative pedagogies in terms of reporting the behavioral change in the majority of participants in addition to an increase in awareness and knowledge (Albareda-Tiana et al., 2019; Álvarez-Suárez et al, 2014; Frank & Stanszus, 2019). Moreover, this study also aligned with another study conducted with elementary preservice teachers by Merritt et al. (2019) in America in terms of improvement in sustainable consumption practices. But present study differs from the study of Merritt et al. (2019) in terms of a lack of change in recycling, reducing waste and alternative transportation. The present study reported the engagement of teacher candidates with the use of public transportation or walking, recycling reducing paper waste, plastics waste and food waste among other individual actions. Moreover, this study illustrated teacher candidates involved in sharing concerns, encouraging family members and friends and influencing them towards sustainable consumption practices. This difference in findings may result from the difference

between studies in terms of cultural context and focus on professional development. While Merritt et al. (2019) focused on sustainability and education for sustainability based on future thinking, systems thinking, values thinking and strategic thinking with a course used flipped approach, this study addressed critical perspective to sustainability and sustainable consumption within professional development training adopting critical pedagogy. This study empowered teacher candidates through professional development training based on critical literacy in which learners were encouraged to critically analyze daily life situations and consequences regarding consumption and production from various perspectives, seek alternatives that work for intergenerational, social and environmental justice.

Teacher candidates mentioned various types of sustainable consumption practices in response to the training. When reported sustainable consumption behaviors were reviewed, it was seen that more private sphere behavior was reported compared to public sphere behavior or civic engagement (Stern, 2000). For example, recycling, reusing, need-oriented purchase, and responsible use of resources were mainly mentioned and four teacher candidates mentioned encouraging family members and friends and three mentioned influencing family members and friends. One of the teacher candidates noticed her lack of involvement and expressed her intention to support collaborations in the neighborhood. One another expressed being inspired by NGO field activities during training. However, they both did not mention any related collective practice they had adopted. This finding suggests limited active citizenship. Similar to this finding, another study conducted in Türkiye pointed to low engagement in environmental activism in parents of young children and more engagement in environmentally responsible behavior in the private sphere compared to the public sphere (Demirci, 2023). In this respect, another study conducted in Belgium with 12 young adults who are environmentalists reported that many of the participants were occupied with private sphere actions (Kenis & Mathijs, 2012). Lack of engagement with collective actions seems to be observed in various contexts.

Apart from that, some barriers that negatively affect sustainable consumption practices of teacher candidates were reported in the study. Living in dormitories and

student life are proposed by two teacher candidates as challenges to integrate sustainable consumption practices into daily life. This finding is contradictory to the study of Schoolman et al. (2016) undertaken in higher education institutions. Schoolman et al. (2016) suggested that the contextual features of higher education institutions might be influential in carrying out sustainable practices. Moreover, green campuses are reported to positively affect student proactivity in literature (Frizon et al., 2024; Ribeiro et al., 2021). This difference may result from teacher candidates referring to changes like making compost and collecting residual materials and reusing that challenge daily routines rather than simply sorting out waste. Additionally, one teacher candidate reported being a tenant as a barrier to engaging in the conservation of water and energy with infrastructural changes in the building. Similarly, the landlord/ tenant dilemma has been reflected in the literature as a concern in restorations regarding energy and resource efficiency and a blockade needs to be overcome (Ástmarsson et al, 2013).

According to Freire (2000), these barriers are *limit situations* affecting the critical action. If individuals overcome them through critical reflection, they reach critical consciousness and thus, transformative action. To demonstrate, one teacher candidate referred to longer time spent outside home or dormitories and hot weather as a barrier to reducing plastic waste via avoiding buying plastic bottled water. She expressed that carrying a water flask did not meet her daily water needs for these situations. However, in response to professional development training, she reported overcoming this barrier and changing her behavior. She reported buying a larger thermos for carrying drinking water that would not be affected by air temperature and camping hooks to attach the thermos to her daily bag. In other words, she challenged this barrier by critically exploring the situation and seeking alternatives to buying bottled water. In her case, critical reflection brought critical action and she overcame this *limit situation*.

5.1.4. Change in Teaching Practice

In this study, increased knowledge, self-efficacy, commitment and deepened critical reflection were accompanied by sustainable consumption practices. All teacher

candidates demonstrated positive changes in terms of sustainable consumption-oriented practices in educational settings. Improved activity processes in daily plans, embedding sustainable consumption practices such as reusing materials, reducing paper waste, food waste, and plastic waste, responsible use of water and energy into daily routine, engagement of young children with various forms of knowledge and practice, informing mentor teachers, and mentor assistant teachers and in one case family and school directors in terms of material and equipment choice considering sustainability were reported as outcomes of the present study. This finding is aligned with related literature that action-oriented, learner-centered, transformative educational approaches in teacher education cultivate teaching practice of educators in terms of supporting sustainability (Davis & Davis, 2020; Murphy et al., 2021; Wakefield et al., 2022).

This finding is consistent with another study offering professional development training to in-service early childhood teachers in Türkiye context with respect to sustainability and critical media literacy. Alıcı and Şahin (2023) indicated an improvement in education for sustainability teaching practices of in-service early childhood teachers after participating in a professional development that included five sessions of training and guidance during teachers' practice throughout a semester. Despite the difference in the role of participants in educational settings, the critical component in professional development offered by both studies seems to result in similar findings based on teaching practice.

As in the case of daily practices, this study pointed to a limit situation (Freire, 2000) affecting critical action in educational settings. Being a preservice teacher was reported by three teacher candidates as a barrier to their sustainable consumption-oriented teaching practice. Mentor teacher's specific requests of activity and topic practice teaching; physical shortcomings of practicum school and working with younger age (3-year-olds), mentor teachers and school directors discouraging actions. These barriers are also reflected in other two studies conducted with pre-service teachers in the area of sustainability research (Alıcı & Alan, 2022; Ärlemalm-Hagsér, 2017).

5.1.5. Key Competencies for Sustainable Consumption

The findings of the present study demonstrated that all teacher candidates exhibited the competencies of reflecting on individual needs and cultural orientations, thinking visionary and considering interrelatedness and planning, implementing, and evaluating consumption-related activities within the citizen role while five of them exhibited the competency of communicating the idea of sustainable consumption to others and three of them exhibited the competency of critically taking on one's role as an active stakeholder in the market. On the other hand, competencies of using, editing, and sharing different forms of knowledge; and using information and communication technologies were found to be absent in citizen roles. Within the teacher role, competencies of reflecting on individual needs and cultural orientations, thinking visionary and considering interrelatedness, planning, implementing, and evaluating consumption-related activities and communicating the idea of sustainable consumption to others were demonstrated by all teacher candidates. Two teacher candidates exhibited practices of sustainable consumption orienting with the competency of critically taking on one's role as an active stakeholder in the market, two demonstrated the competency of using, editing and sharing different forms of knowledge while one reflected the competency of using information and communication technologies interactively. The result suggested a difference in terms of competencies attained by teacher candidates based on their roles. This difference between the teacher role and the citizen role might have resulted from the content of the training offered within the scope of the study. Professional development training provided theoretical training on both citizen and teacher roles while facilitating practical training on the teacher role. In other words, following theoretical training, teacher candidates were encouraged to seek ways to embed sustainable consumption into their teaching practice. It seems that this facilitation brought variety in terms of consumption behavior.

When the present study's findings are compared to another study that focuses on key competencies of sustainable consumption through an intervention based on mindfulness there are some differences. While competencies to reflect on individual needs and cultural orientations and communicating the idea of sustainable

consumption to others were mostly observed competencies with respect to introspection in the study of Frank et al. (2019), competencies to think visionary and consider interrelatedness, to critically take on one's role as an active stakeholder in the market, to plan, implement, and evaluate consumption-related activities and to use, edit, and share different forms of knowledge were reported as lacking and to use information and communication technologies were reported as missing. The present study, however, only points out the lack of competency to use, edit, and share different forms of knowledge and using information and communication technologies. This difference might result from the current study's training focused on critical reflection and critical action. Considering Fischer and Barth (2014b) relate change agency to the competency to critically take on one's role as an active stakeholder in the market and the present study's focus on hope and agency as reflected in Freire's critical literacy pedagogy (Shor & Freire, 1987), this difference was expected. Similarly, the competency to think visionary and consider interrelatedness is associated with rethinking interrelatedness and future-oriented thinking with acknowledging the future as shapeable, which also aligns with educational approach of Freire (2000). This approach, is also called the pedagogy of hope, empowers learners to reflect critically on possible alternatives to reach affirmative future sustainability scenarios.

5.2. Implications

In line with the discussions of the findings above, this study may present some implications for researchers and educators in the field. In the current study, the understandings and practices of teacher candidates regarding sustainable consumption were investigated in response to professional development training addressing sustainable consumption via critical literacy. This double-loop professional development training (Argyris & Schön, 1974) data collection tools, the context of the study, the whole research process, and findings pertaining to training were explained in detail. This documentation may serve as a guide for researchers who investigate similar research purposes.

The present study suggests that teacher candidates demonstrated an enhanced understanding regarding sustainable consumption in both their citizen role and

teacher role compared to before training and engaged in critical reflection and informed action for sustainable consumption both in the citizen role and teacher role in response to the critical literacy-based training consisting of theoretical and practical sessions. Considering the gap in literature in terms of addressing teacher education to support education for sustainability and challenge unsustainable values and practices (Alici, 2020; Davis & Davis, 2020, Jickling, 2018; Orr, 2020) the current study presents a detailed training program in terms of how to embed sustainable consumption and critical literacy into professional development for preservice teachers, that it would be a guide for teacher educators. Teacher educators may use action-oriented, transformative and learner-centered pedagogies in order to promote knowledge, commitment and practice of teacher candidates. Additionally, as the study points to an increase in understanding and practice of teacher candidates in response to professional development offered during practice teaching, practice teaching courses might be enriched with professional development opportunities for teacher candidates in terms of sustainable consumption and sustainability.

The current study addressed the citizen role and indicated an improvement in citizen understanding and daily life practices regarding sustainable consumption in response to action-oriented and transformative training, which suggests an implication for lifelong learning and global citizenship education. Educators who work with adult learners or youth are encouraged to contribute to global citizenship education in terms of achieving SDG 4: quality of education in particular, contributing to transformation towards sustainability in general (UNESCO, 2019a). In this respect, the current study could be an example of addressing citizenship; educators who address lifelong learning may utilize critical literacy-based sustainable consumption training in order to cultivate citizen contributions to sustainability and sustainable life practices.

The findings supported that pre-service teachers' social agency should be reinforced within educational institutions for positive societal change (Giroux, 1997). Experiences of pre-service teachers with mentor teachers, young children, and educators are foundational for their professional development and future teaching practice (La Paro, 2016). This process is also reflective on the other stakeholders in

teacher education. Therefore, in order to cultivate transformation, pre-service teacher education may be enriched with critical literacy to address active citizenship and sustainability from the perspective of social justice and fairness. Additionally, limited active citizenship experiences may be overcome with the support of community service courses in the faculties. Teacher educators might use community service courses to build stronger collaboration with NGOs to support active citizenship and therefore, transformation of society towards sustainable mindsets and lifestyles.

5.3. Recommendations for Further Studies

This study was conducted in a green campus setting while scrutinizing pre-service early childhood teachers' understandings and practices of sustainable consumption in response to professional development training. It reported how teacher candidates defined, related to and critically reflected on sustainable consumption and what kind of informed actions they engaged in as citizens throughout daily life and as professionals throughout teaching practice. In line with this doctoral study's findings and the researcher's reflections on the research process, some propositions for further inquiries might be offered.

Considering the potential of preservice teacher education in terms of strengthening teacher candidates' knowledge, commitment, and implications, achieving sustainability and sustainable consumption and in this respect supporting quality education (UNESCO; 2017), there is a need to further exploration (Alici, 2020; Ärlemalm-Hagsér & Sandberg, 2011; Davis & Davis, 2020; Elliott & McCrea, 2015; Evans et al., 2017; Ferreira et al., 2014). This qualitative case study explicated the change in understandings and practices of teacher candidates in response to critical literacy-based professional development training on sustainable consumption in a green campus setting. Further studies may address different settings such as non-campus or newly established universities, or different cultural contexts reflecting different backgrounds and characteristics of participants that may alter understandings and practices and critically explore outcomes of professional development training.

The findings of the present study suggest that preservice teachers demonstrated developed knowledge and commitment to sustainability and sustainable consumption and engaged in critical reflection and informed action towards sustainable consumption after participating in professional development training. A follow-up study may inquire participants' understandings and practices of sustainable consumption after their graduation and engagement in full-term employment in order to observe longer-term outcomes of professional development. As a beginning teacher, their engagement with other stakeholders such as colleagues, parents, school directors and other staff, whether they adopt whole-school approach or whole-system approach, the facilities of the school etc. might be reflective on their understanding and practice related to sustainable consumption.

This study focused on citizen and teacher roles regarding sustainable consumption. Professional development training offered within the scope of the current study included theoretical training for citizen and teacher roles and practical training for the teacher role. The result suggested a difference in terms of competencies attained by teacher candidates based on their roles in favor of the teacher role. Another study with a similar purpose may introduce a professional development training offering practical training for citizen and teacher roles in addition to theoretical training in order to address this difference.

Further studies of pre-service teacher education on sustainable consumption may offer a professional development training in collaboration with the practicum schools which reflects a transformative whole-school approach (Evans, 2015). This may overcome the barrier of mentor teachers' discouraging requests while strengthening preservice teachers' sense of agency and collaboration of school directors and mentor teachers.

This study undertook a case study approach and reflected the experiences of pre-service teachers during practice teaching. It was a doctoral dissertation carried out by the researcher without support from governmental or non-governmental organizations. A research team with the support of governmental or non-governmental organizations may study preservice teachers' professional development

via action research through collaboration with the community in order to reinforce transformation towards sustainable lifestyles and active citizenship. In this respect, a whole-system approach (Stoltenberg & Benoist-Kosler, 2020) may have been addressed to explore collective action potential in addition to individual action.



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APPENDICES

A. SUMMARY OF SESSIONS

Sessions	Topics	Aims	Meetings	Materials & Tools	Sources	Meeting Characteristics
I	Critical Literacy & Sustainability	Tells educational perspective of critical education.	1	Question & Answer notes-digital, mobile phones, computer & projector	Play, presentation	Face-to-face indoor meeting
		Explains critical literacy phases. Lists concepts related to sustainability. Lists pillars of sustainability. Defines sustainability.	2	Online meeting platform	Presentation, graphic novel-humor	Online meeting
II	Consumption	Identifies how individual lifestyle choices influence social, economic and environmental development. Identifies consumption and production patterns and value chains, and interrelatedness of consumption and production. Tells roles, rights and duties of different actors in production and consumption. Differentiates between wants and needs in consumption. Analyzes own individual consumer behavior in light of the needs of the natural world, other people, cultures and countries, and future generations. Expresses responsibility for the environmental and social impacts of their own consumption and production.	3	Online meeting platform	Video, news, website, open data platform	Online meeting

A. (continued)

Sessions	Topics	Aims	Meetings	Materials & Tools	Sources	Meeting Characteristics
III	Zero Waste	Identifies the dilemmas/trade-offs related to (economic) system. Explains the system changes necessary for achieving sustainable consumption and production by giving examples. Explains how individual lifestyle choices influence social, economic and environmental development. Expresses the need for sustainable practices in production and consumption. Challenges cultural and societal orientations in consumption and production.	4	Online meeting platform	Children's song, videos	Online meeting
IV	Critical Literacy in ECE for Sustainable Consumption	Lists activities for achieving sustainable consumption in ECE. Express the importance of education and learning opportunities to promote sustainability. Explains the important role of children's agency in terms of achieving sustainable consumption and production and sustainability. Discovers how to motivate and empower children via using educational opportunities through participatory methods.	5	A large-sized sheet - reused & pen, computer	Animation, video, research article, digital brochure.	Face-to-face outdoor meeting

A. (continued)

Sessions	Topics	Aims	Meetings	Materials & Tools	Sources	Meeting Characteristics
V	NGOs and civic participation-field trip	Explores how to promote sustainable consumption and production with civic participation. Gives examples to activities of NGOs supporting sustainable consumption and production. Explains activities for achieving sustainable consumption in ECE by giving examples. Evaluates sustainable consumption and production practices in terms of sustainability criteria. Create ideas to take on critically their role as an active stakeholder.	6	Mobile phones, online document, a large-sized sheet -reused & pen	Digital brochure, news.	Face-to-face outdoor meeting
VI	Critical literacy in ECE for Sustainable Consumption - wrap up for a framework	Explains activities for achieving sustainable consumption in ECE Express the importance of education and learning opportunities to promote sustainability. Explains perspective of critical literacy to sustainable consumption. Explains how to motivate and empower children via using educational opportunities through participatory methods.	7	A large-sized sheet - reused & pen		Face-to-face indoor meeting

A. (continued)

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Sessions	Topics	Aims	Meetings	Materials & Tools	Sources	Meeting Characteristics
VII	Activity Plan Preparation	Explains how to motivate and empower children via using educational opportunities through participatory methods. Evaluates sustainable consumption and production related activity plans and implementations in terms of sustainability criteria. Prepares activity plans related to sustainable consumption and production in a way that promotes sustainability.	8	Reused papers & pen, computer & projector	Picture books, play	Face-to-face indoor meeting
VIII	Activity Plan Preparation	Explains how to motivate and empower children via using educational opportunities through participatory methods. Evaluates sustainable consumption and production related activity plans and implementations in terms of sustainability criteria. Prepares activity plans related to sustainable consumption and production in a way that promotes sustainability.	9	Reused papers & pen, computer & projector		Face-to-face indoor meeting
IX	Activity Plan Preparation	Explains how to motivate and empower children via using educational opportunities through participatory methods. Evaluates sustainable consumption and production related activity plans and implementations in terms of sustainability criteria. Prepares activity plans related to sustainable consumption and production in a way that promotes sustainability.	10	Reused papers & pen, computer & projector	Picture books	Face-to-face indoor meeting

A. (continued)

Sessions	Topics	Aims	Meetings	Materials & Tools	Sources	Meeting Characteristics
X	Activity Plan Preparation	Explains how to motivate and empower children via using educational opportunities through participatory methods. Evaluates sustainable consumption and production related activity plans and implementations in terms of sustainability criteria. Prepares activity plans related to sustainable consumption and production in a way that promotes sustainability.	11	Reused papers & pen, computer & projector	Picture book	Face-to-face indoor meeting
XI	Activity Plan Preparation	Explains how to motivate and empower children via using educational opportunities through participatory methods. Evaluates sustainable consumption and production related activity plans and implementations in terms of sustainability criteria. Prepares activity plans related to sustainable consumption and production in a way that promotes sustainability.	12	Reused papers & pen,		Face-to-face outdoor meeting

B. EXAMPLE SESSION PLAN

Konu: Sorumlu Tüketime Destek Yerel Örgütlenmeler-Alan Gezisi

Süre: 120 dakika

Kazanımlar:

- Sorumlu tüketime yurttaş katılımı ile nasıl katkı sağlanabileceğini inceler.
- Sivil toplum kuruluşlarında sorumlu tüketimi destekleyen etkinliklere örnek verir.
- Sorumlu tüketim ile ilgili uygulamaları sürdürülebilirlik kriterleri açısından değerlendirir.
- Etkin bir paydaş olarak üretim tüketim zincirinde eleştirel bir rol üstlendiğini gösterir.

Üretken Temalar: Sivil toplum, yurttaş katılımı

Araç ve Gereçler: cep telefonu, çevrimiçi belge (dijital araç)

Paylaşım Çemberi: Katılımcılar daha önceki oturumlarla ilgili sorularını, fikirlerini, duygularını ve yeni öğrenmelerini paylaşırlar. Daha sonra eğitmen katılımcılara daha önce bir sivil toplum kuruluşuna ya da topluluğa katılıp katılmadıklarını ve ilgili deneyimlerini sorar.

Dernek Alan gezisi (Dernek içinde kompost alanı, organik bostan, ikinci el eşya dükkanı, onarım atölyesi, geri dönüşüm kumbaraları, eğitim ve kültürel etkinlikler için salonlar bulunmaktadır).

Birinci Etkinlik: Derneğin temsilcisi ile tanışılır. Eğitmen katılımcılardan derneğin çevresini gezmelerini ve genelde sürdürülebilirlik özelde sorumlu tüketim ile ilgili buldukları ip uçlarını ve özellikle temsilciye sormak üzere merak ettiklerini paylaştığı çevrimiçi belgeye not almalarını ister. Katılımcıların incelemelerinden sonra derneğin temsilcisi derneği kısaca tanıtır. Yaptıkları etkinliklerden bahseder. Grup merak ettiklerini sorarken temsilciyle birlikte dernek çevresi tekrar gezilir. (Tanımlayıcı Aşama)

İkinci Etkinlik: Katılımcılar dernekte en hoşlandıkları yerde fotoğraf çekinirler. Katılımcılar bu fotoğrafı daha önce dernekle ilgili not aldıkları çevrimiçi belgeye yüklerler. Eğitimci fotoğrafın altına aşağıdaki soruların cevaplarını yazmalarını ister:

(Kişisel Yorumlayıcı Aşama)

- Bu derneğin katılımcısı olsaydınız, burada sorumlu tüketimle ilgili ne yapıyor olurdunuz?
- Dernekte inceledikleriniz arasında neleri beğendiniz, neleri beğenmediniz? Neden?

(Eleştirel Aşama)

- Sizce kimler bu derneğe katılmak isteyebilir? Bu dernek kime hitap ediyor?
- Kimler bu derneğe katılmak istemeyebilir?
- Dernekteki etkinlikler kapsayıcı mı? Her katılımcıya (farklı yaş grupları, farklı kültürler, farklı ihtiyaçlar ve özel gereksinimler) hitap ediyor mu?
- Dernekteki etkinlikler sürdürülebilirliği destekliyor mu, sorumlu tüketimi destekliyor mu? Nasıl?
- İncelediklerinizi düşündüğünüzde buradaki etkinlikler kimlerin yararına olabilir?
- Kimlerin zararına olabilir?

(Yaratıcı/Dönüştürücü Aşama)

- Bu derneğe başka nasıl katkı sağlanabilir?
- Dernek etkinliklerinde değiştirmek isteyeceğiniz bir şey var mı?
- Buraya kadar oluşturduğunuz kısmi bir gazete yazısı olarak düşünseydiniz, bu yazının manşeti ne olurdu?

C. ACTIVITY PLAN CODING FORM

Etkinlik Çeşidi										
Büyük Grup			Küçük Grup			Bireysel			Bütünleştirilmiş	
Matematik	Drama	Erken Okuryazarlık	Fen	Türkçe	Oyun	Müzik	Sanat	Hareket	Okul Dışı Öğrenme	
Yaş Grubu										
Kazanım ve Göstergeler										
Bilişsel Gelişim			Dil Gelişimi		Fiziksel Gelişim ve Sağlık			Sosyal Duygusal Gelişim ve Değerler		
Malzemeler ve Araçlar										
Geri-dönüşebilen		Tekrar kullanılmış		Tekrar kullanılabilen		Kullan-at		Doğal Materyaller		
Kavramlar										
Sözcükler										
Sorumlu Tüketim ile İlgili Kavramlar										
Yöntemler										
Öğrenme Süreci										
Tanımlayıcı Sorumlu tüketimle ilgili kavramları, temaları, sorunları adlandırma										
Kişisel Yorumlayıcı Sorumlu tüketim konularıyla kişisel deneyim, bilgi ve duygular temelinde ilişki kurma										
Eleştirel/Çok kültürlü/ Önyargı karşıtı Tüketim ve sonuçları üzerine eleştirel değerlendirme				İlişkiseliliği dikkate alma ve öngörülü düşünme						
				Bireysel ihtiyaçlar ve kültürel yönelimler üzerine değerlendirme						

	Bilginin geçerliliğini ve güvenilirliğini sorgulama	
Yaratıcı/ Dönüştürücü Sorumlu tüketim için bilinçli bir şekilde harekete geçme	Etkin bir paydaş olarak üretim tüketim zincirinde rolünü üstlenme	
	Sorumlu tüketim fikrini başkalarına anlatma	
	Tüketimle ilgili etkinlikleri Sürdürülebilir olacak şekilde planlama, uygulama ve değerlendirme	
	Farklı bilgi kaynaklarını kullanma, düzenleme ve paylaşma	
	Bilgi ve İletişim Teknolojilerini kullanma	

D. APPROVAL OF THE METU HUMAN SUBJECTS ETHICS COMMITTEE



E. CURRICULUM VITAE

HAVVA AYÇA ALAN

EDUCATION

Ph.D.: Early Childhood Education, Middle East Technical University, Ankara, Türkiye (2015-2025)

M.S.: Early Childhood Education, Middle East Technical University, Ankara, Türkiye (2012-2015)

B.S.: Early Childhood Education, Middle East Technical University, Ankara, Türkiye (2005-2011)

WORK EXPERIENCE

Middle East Technical University, (2013-2023)- Research Assistant

Ordu University, (2012-2013)-Research Assistant

F. TURKISH SUMMARY / TRKE ZET

OKUL NCESİ EĖİTİMDE SORUMLU TKETİM İİN ELEŖTİREL OKURYAZARLIK: ĖRETMEN ADAYLARININ DENEYİMLERİ

1. GiriŖ

İstatistikler gnmz yaŖam tarzı alışkanlıklarının insanların ve diĖer tm canlıların ihtiyalarını karŖılama olasılıklarını hem Ŗimdiden hem de gelecek koŖullar iin tehdit ettiĖini gsteriyor. Bireyler tketim alışkanlıkları ve p ynetimi hakkında daha dikkatli davranmalı ve bilinli tketimi tercih etmelidir. (UN, 2019). Bu baĖlamda, Ama 12: Sorumlu retim ve tketim (UNESCO, 2017) byk nem kazanmaktadır. Srdrlebilir ve sorumlu tketim, doĖal kaynaklar zerindeki yk ve hava, toprak ve suyun kirlenmesini azaltarak iklim deĖiŖikliĖi etkileri aısından olumlu sonular doĖurabilir (UN Environment, 2018). Bu hedefe ulaŖmada aktif vatandaşlık ve deĖiŖim eylemliliĖi kritik nem taŖımaktadır. Daha yksek dzeyde farkındalık ve bilgi ile glendirilmiŖ vatandaşlar, yaŖam dngs etkileri dŖk rnleri tercih ederek ve tketici glerini kullanarak retim ve tketim kalıplarını etkileyebilir ve srdrlebilirlik iin politika ve uygulamaların dnŖmne katkıda bulunabilirler (UNESCO, 2005). Sosyo-ekonomik koŖulları ne olursa olsun, toplumun tm katılımcılarının kamusal bilgiyi maniple eden gl yapıların farkında olması gerekir, nk gnlk yaŖamda birincil kaynaĖımız olan fosil yakıtlar hakkındaki bilgiler, Ŗirketlerin ıkarlarını gzetten yanıltıcı bir Ŗekilde daĖıtılabilir ve bu da doĖal kaynakların zarar grmesine ve gezegenimizdeki yaŖamın olumsuz etkilenmesine neden olabilir (Gove & Still, 2014). EleŖtirel okuryazarlık, bilgisizlik veya yanlış algılamaya neden olan altta yatan nedenlere meydan okuyarak srdrlebilir tketime ynelik daha yksek dzeyde farkındalık ve bilgi yaratma aısından yardımcı olabilir ve bilinli ve temkinli eylemde bulunulmasını saĖlayabilir. Janks'in (2014) belirttiĖi gibi, eleŖtirel okuryazarlık deĖiŖim iin bir olasılık yaratır nk eylem ne kadar kk olursa olsun, baŖka bir yerdeki etkisi birbiriyle iliŖkili bir dnyada dnŖmle sonulanabilir, rneĖin bireysel karbon ayak

izinin azaltılması açısından enerji tasarrufuna ilişkin bireysel düşüncelerin alınması sürdürülebilir yaşama ve çevrenin korunmasına katkıda bulunabilir. Bireylerin çağdaş tüketim kalıplarının gezegenimiz üzerindeki etkileri düşünüldüğünde bu önemli bir olasılıktır (UN, 2018).

Daha adalet odaklı ve çevre dostu bir topluma doğru ilerlemek için doğaya, kendine ve başkalarına saygı ve eylemlilik inşa edecek pedagojik modelin dönüştürücü, öğrenen merkezli ve eylem odaklı olması gerekir (Rieckmann, 2018). Dolayısıyla sürdürülebilirlik için eğitim, öğretme odaklı bir perspektiften öğrenme odaklı bir perspektife doğru ilerlemeyi gerektirmektedir (UNESCO, 2017). Bu noktada, eğitime eleştirel okuryazarlık yaklaşımı, sürdürülebilirlik için eğitimin, öğrenenlerin eleştirel düşüncelerini ve eylemliliklerini teşvik ederek dönüştürücü eğitime doğru ihtiyaç duyulan bu değişimi gerçekleştirmesini teşvik edebilir. Eleştirel okuryazarlık, aktif katılım ve eleştirel düşünmeye dayanır. Öğrenciler eleştirel analize katılırken kendi kültürlerini ve önceki deneyimlerini de katarlar (Quintero, 2004). Öğrencilerin yaşamlarıyla bağlantısı olan herhangi bir konu, eleştirel okuryazarlık uygulamaları kapsamında gelişimsel olarak duyarlı bir müfredatı temel almak için metin olarak kullanılmalıdır ve kullanılabilir (Vasquez & Felderman, 2013). İçinde yaşadığımız çoklu kriz çağına atıfta bulunan bu konular, iklim krizinden nesli tükenmekte olan türlere, yoksulluktan eğitime erişime kadar sürdürülebilirlik için eğitime eleştirel bir bakış açısı getiren konuları kapsayabilir.

Dahası, Okul öncesi dönem çocuklarının sorumlu tüketime katılması onların gelişim ve değişim açısından edimi, yaşam boyu öğrenme açısından potansiyelleri (Davis et al., 2009) ve öncül kavram edinimleri ve tutum geliştirmeleri için çok önemlidir (Didonet, 2008). Bu yüzden, okul öncesi dönem çocuklarının bu kazanımını destekleyecek öğretmenleri yetiştirecek bir yüksek öğrenime ihtiyaç vardır. Erken çocukluk döneminin ön kavramlar ve ön tutumlar açısından hassas bir dönem olduğu (Davis, 2010; Didonet, 2008; Prammling Samuelson ve Kaga, 2008; Siraj-Blatchford ve ark. 2010), evde, okulda ve daha geniş bir toplulukta yaşanan deneyimler, akranlar ve medya ile sosyalleşme nedeniyle yanlış kavramlar ve kalıp yargılar geliştirilebileceği düşünülmektedir (Boutte ve ark., 2011; Husband, 2014). Tüketime yüksek bir trend olduğu ve piyasa odaklı politikaların sürdürülebilir yaşama meydan

okuduđu düşünöldüğönde, küçük çocukların eleştirel akıl yürütme becerilerini geliştirmek büyük önem taşımaktadır. Bu nedenle, bilginin eleştirel analizi sadece okul faaliyetlerine daha fazla katılım için değil, aynı zamanda bilinçli bireyler yaratmak için de ilgi çekicidir (Winograd, 2015). Ayrıca, erken çocukluk döneminde yapılan çalışmalar, eleştirel okuryazarlığı kullanmanın küçük çocukların sosyal adalet ve eşitlik gibi toplumun zorlu meseleleriyle ilgilenmelerini ve eleştirel düşünme becerilerini geliştirmelerini kolaylaştırdığını göstermektedir (Callow, 2017; Chafel ve ark., 2007; Husband, 2014; Kim, 2012; Kim, 2016; Stribling, 2014). Her ne kadar bu çalışmalar temelde toplumun gündelik sorunlarıyla eleştirel bir şekilde ilgilenmek için eleştirel okuryazarlık kullanımına odaklansa da, tutucu normlara karşı bir tutum oluşumunu da ima etmektedir. Bu noktada eleştirel okuryazarlık, kalıplaşmış tutumlara meydan okumak ve insan haklarına saygı, kültürü kucaklama, çeşitliliğe değer verme, doğayı önemseme ve toplum kaynaklarını koruma gibi konulara yönelik ön tutumları düzeltmek için kullanılabilir (Quintero, 2004; Vasquez, 2005; Vasquez, 2017; Vasquez ve Felderman, 2013). Bu süreç, çocukların eylemliliğini ve yaratıcılığını besleyebilir ve fikirlerine değer verildiğini ve saygı duyulduğunu yansıtabilir ki bu da erken çocukluk eğitiminde sürdürülebilirlik için eğitimin temellerine karşılık gelir. Yaygın eğitim uygulamaları sürdürülebilir olmayan yaşam biçimlerine meydan okumak yerine doğrudan ya da dolaylı olarak katkı sağlamaktayken (Jickling ve ark, 2018) eleştirel eğitim veya eleştirel okuryazarlığı destekleyen eğitim, öğretmen adaylarının çevrelerindeki önemli konulara karşı daha hassas olmalarını sağlayarak müfredatı çocuklar için anlamlı, günlük yaşamdan beslenen sosyal ve çevresel konularla bezeli öğrenme fırsatlarıyla zenginleştirerek bu konuda katkı sunabilir (Noris ve ark, 2012; Souto-Manning, 2017).

Sorumlu tüketim çalışmaları yakın bir süredir sürdürülebilirlik alanyazınında yer almaktadır. Öğrenenlerin sorumlu tüketime ilişkin algı ve motivasyonlarında iyileşme görülse de davranışsal boyutlarda yetersizlik söz konusudur (Merritt ve ark, 2019; Schoolman ve ark, 2016; Wuest ve ark, 2014). Tüketici davranışlarındaki değişime yönelik ilgi literatürde baskın olmakla birlikte, sürdürülebilir olmayan uygulamalara neden olan sosyokültürel, politik ve yapısal unsurları göz ardı etme veya hafife alma eğilimi nedeniyle oldukça eleştirilmektedir (Araújo ve ark., 2021;

Chappels & Trentmann, 2015; Ficher & Barth, 2014a). Kemmis'in (2009) de belirttiği gibi, bu çalışma sürdürülebilirlik için eğitim odaklı sorumlu tüketim için düşünmenin, ilişki kurmanın ve harekete geçmenin farklı yollarını eleştirel bir şekilde yansıtmaya ve keşfetmeye odaklanmaktadır. Devamlı bir eylem ve yansıtma döngüsü olan praxis yoluyla tüm öğrenenlerin özgürleşmesine ve gelişimine odaklanmaktadır. Dolayısıyla bu çalışma, uygulamaların dönüşümünün yanı sıra algı ve motivasyon oluşturma ve sürdürülebilir uygulamaların altında yatan ve karşılığında uygulamaları şekillendiren faktörleri sorgulama konularını ele almaktadır.

Sorumlu tüketim, bireysel yaşam pratiklerinin daha küresel meselelerle örtüştüğü, eğitimcilerin ve öğrencilerin hem tüketici hem de vatandaş oldukları düşünüldüğünde, öğrencilerin yaşam tarzı seçimlerinin ve günlük uygulamalarının genel sürdürülebilirlik üzerinde nasıl bir etki yarattığını keşfedebilecekleri bir alandır (Sahakian & Seyfang, 2018). Öğretmen adayları için sürdürülebilir bir tüketim öğrenme deneyimi, sürdürülebilirliğe yönelik motivasyonlarını sürdürmek için mesleki yaşamlarına ve günlük yaşamlarına hitap eden bir yönü genişletmelidir (João & Silva, 2022). Bu nedenle mevcut çalışma, sorumlu tüketime yönelik anlayış ve uygulamalarına odaklanırken her bir katılımcı için yurttaş rolü ve öğretmen rolü olmak üzere iki boyut tanımlamaktadır.

Yurttaş rolü, sorumlu tüketim ve üretimle ilgilenmek, pazarda bilinçli seçimler yapmak, sorumsuz tüketim sorunlarını çözmek için araştırma yapmak, toplumun diğer katılımcılarını ve politika yapıcıları sorumlu tüketime yönelik harekete geçmeye motive etmek için temsilciliği kullanmak anlamına gelen sorumlu tüketimle ilgili günlük yaşamda gerçekleştirilen eylemler, yansımalar ve etkileşimler olarak tanımlanmaktadır (UNEP, 2010). Öğretmen rolü, çeşitli öğretim anlarını ve öğrenme fırsatlarını kolaylaştırarak bireylerin sürdürülebilirlik yetkinliklerini kazanmalarını destekleyen eğitimci perspektifine odaklanır (Rickman, 2018) ve sürdürülebilir tüketimin güçlendirilmesi ve sürdürülmesine dayalı olarak tüketimle ilgili her türlü deneyim, etkinlik, meslektaşlar, personel, çocuklar ve ebeveynlerle etkileşim vb. dahil olmak üzere erken çocukluk eğitimi ortamları bağlamında tanımlanmaktadır. Bu nedenle, öğretmen adaylarının anlayış ve uygulamalarının incelenmesi, toplumun

dönüşümündeki eğitsel ve sivil rolleri göz önünde bulundurulduğunda iki kat önemlidir (Alıcı & Alan, 2022; Ärlemalm-Hagsér, 2017; João & Silva, 2022).

Bu çalışma, özellikle eylemlilik, eleştirel düşünme ve dönüştürücü eğitim konularının ele alınması açısından sürdürülebilirlik eğitime katkı sağlayabilir (Davis & Elliot, 2024; Evans ve ark., 2017). Sürdürülebilirlik alanında öğretmen eğitimi büyüyen bir araştırma alanıdır (Fischer ve ark., 2022) ve bu alanda sürdürülebilirlik için erken çocukluk eğitimi özelinde yetersizlik olduğu belirtilmektedir (Alıcı, 2020; Ärlemalm-Hagsér & Sandberg, 2011; Davis & Davis, 2020; Elliott & McCrea, 2015; Ferreira ve ark., 2014) Özellikle tüketim olgusunun müdahale yoluyla değiştirilmesinin genellikle zor olduğu bildirilmektedir (Alvarez-García ve ark., 2018; Nolet, 2009; Schoolman ve ark., 2016). Mevcut çalışma, öğretmen eğitiminde eleştirel okuryazarlık yaklaşımını kullanarak bu boşluğu dolduracak ve mevcut öğretim uygulamalarının çoğunlukla politikanın sürdürülebilirlik üzerindeki etkisini göz ardı etme eğilimi nedeniyle (Orr, 2020), bu dönüşümü ele almakta ve sürdürülebilir olmayan uygulamalara ve zihin yapısına meydan okumakta başarısız olduğu yönündeki eğitim eleştirisini de ele alacaktır (Jickling ve ark., 2018; Sterling ve ark., 2017).

Bu çalışma, sürdürülebilirliğin sosyal, ekonomik ve çevresel boyutları arasındaki etkileşimleri kapsayan bütüncül bir bakış açısı üzerine inşa edilen, öğrenme ve öğretmeye yönelik yerleşik ve işbirlikçi yaklaşımlarla katılımcı yöntemlerin kullanıldığı ve yeniden kullanılan kağıtlar ve dijital belgeler gibi sürdürülebilir materyallerin kullanıldığı, sürdürülebilirliğin ele alınması gereken bir konu olarak görülmekten ziyade programa entegrasyonunu yansıtan öğretmen adaylarını güçlendirmeye yönelik bir mesleki gelişim programı sunmaktadır. Alanyazın bu noktada eksikliğe işaret etmektedir (Alıcı, 2020; Ärlemalm-Hagsér & Sandberg, 2011; Davis & Davis, 2020; Elliott & McCrea, 2015; Ferreira ve ark., 2014). Dolayısıyla bu çalışma, öğretmen adaylarının hem öğretmen rolüne hem de vatandaş rolüne odaklanan bir mesleki gelişim eğitimi örneği sunarak ilgili literatüre katkıda bulunabilir ve Ayrıca bu çalışma, Türkiye’de öğretmen eğitimi açısından farklı bir bağlamı ve sorumlu tüketim gibi farklı bir odağı örnekleyerek eleştirel okuryazarlık literatürüne katkıda bulunabilir.

Bu araştırma Okul Öncesi öğretmen adaylarının öğretmenlik uygulaması dersine devam ederken katıldıkları eleştirel okuryazarlık temelli sorumlu tüketim mesleki gelişim eğitimi kapsamında deneyimlerini incelemeyi amaçlamaktadır. Çalışma katılımcıların katıldıkları mesleki gelişim eğitimi sonunda yurttaş rolü ve öğretmen rolü içerisinde sorumlu tüketim anlayışlarındaki ve uygulamalarındaki değişikliklere odaklanmaktadır. Çalışma kapsamında aşağıdaki araştırma sorularına cevap aranmaktadır.

1. Katıldıkları Mesleki Gelişim Eğitimi sonrasında okul öncesi öğretmen adaylarının sorumlu tüketim anlayışları ne ölçüde değişti?
 - a. Katıldıkları Mesleki Gelişim Eğitimi sonrasında okul öncesi öğretmen adaylarının sorumlu tüketim anlayışları yurttaş rolü içinde ne ölçüde değişti?
 - b. Katıldıkları Mesleki Gelişim Eğitimi sonrasında okul öncesi öğretmen adaylarının sorumlu tüketim anlayışları öğretmen rolü içinde ne ölçüde değişti?
2. Katıldıkları Mesleki Gelişim Eğitimi sonrasında okul öncesi öğretmen adaylarının sorumlu tüketim uygulamaları ne ölçüde değişti?
 - a. Katıldıkları Mesleki Gelişim Eğitimi sonrasında okul öncesi öğretmen adaylarının sorumlu tüketime yönelik günlük uygulamaları ne ölçüde değişti?
 - b. Katıldıkları Mesleki Gelişim Eğitimi sonrasında okul öncesi öğretmen adaylarının sorumlu tüketime yönelik öğretmenlik uygulamaları ne ölçüde değişti?
3. Okul öncesi öğretmen adaylarının öğretmen rolü ve yurttaş rolü sorumlu tüketim anlayışları ve uygulamaları nasıl kesişmektedir?

2. Yöntem

Bu çalışma okul öncesi öğretmen adaylarının deneyimlerinin derinlemesine araştırılmasına olanak sağladığı için nitel araştırma yöntemlerinden durum çalışması (Stake, 2008) yaklaşımıyla yürütülmüştür. Bu çalışma, öğretmen adaylarının gerçek yaşam deneyimlerine odaklanmakta ve katıldıkları mesleki gelişim eğitimine yanıt olarak anlayış ve uygulamalarını incelemeyi amaçlamaktadır. Bu deneyim içerisinde

anlayış ve uygulamalarının nasıl değiştiği bu çalışmanın odak noktasıdır. Başka bir deyişle, bu çalışma bağlama özgü bir olgudur. Yanısıra, bu araştırma, güncel bir durumu ele alırken anlamlardaki temsillerin çeşitlenmesini de destekleyen görüşmeler, günlükler ve doğrudan katılımcılardan toplanan belgeler aracılığıyla gerçekleştirilmiştir. Bu nedenle, mevcut çalışma özgün bir duruma ve onun sınırlarına odaklanan tek durum desenidir (Stake, 2008).

Bu çalışma Ankara'daki yeşil kampüslü bir devlet üniversitesinde yürütülmüştür. Üniversite misyonunda doğaya karşı duyarlı olduğunu belirtmektedir. Mezunlar derneği, akademik personel derneği ve öğrenci kulüpleri, doğaya saygı, çeşitlilik, demokrasi, bilim ve sosyal adalet konularında üniversitenin iklimini etkilemektedir. Özellikle kampüste doğayı koruma, hayvan ve bitkilere sahip çıkma, ekolojik bilgi ve çalışmaları güçlendirme misyonuyla kurulmuş öğrenci kulüpleri bulunmaktadır. Zaman zaman kampüste öğrenci kulüpleri, bölümler veya üniversitenin idari birimleri tarafından bazı seminerler, çalıştaylar ve etkinlikler düzenlenmektedir. Yanısıra, sürdürülebilirliğe ilişkin seçmeli dersler sunulmakta. Eğitim fakültesi özelinde ise okul öncesi öğretmenliği lisans program kapsamında zorunlu çevre eğitimi dersi verilmektedir.

Çalışmanın örneklemini toplam 11 atölye oturumundan oluşan 12 toplantılı mesleki gelişim eğitim dizisine gönüllü olarak katılan altı son sınıf öğrencisi oluşturmaktadır. Çalışmada bilgilerini uygulama ile ilişkilendirmelerini mümkün kılan alandaki potansiyel bilgi birikimleri ve öğretmenlik uygulaması deneyimi sebebiyle son sınıf öğrencilerine odaklanılmıştır. Bu amaçlı seçim, incelenen vakaya özgü en iyi katılımcıların seçilmesini hedeflemiştir (Creswell, 1994; Merriam, 1998). Bütün katılımcılar kadın öğretmen adaylarından oluşmaktadır. Katılımcıların sürdürülebilirlik, sorumlu tüketim ve eleştirel okuryazarlık ile ilgili önceki deneyimleri farklılaşmaktadır. Daha önce atölyeye katılan ve eko rehber olarak çalışan bir katılımcı dışında öğretmen adaylarının deneyimleri sürdürülebilirlik ile ilgili ortak deneyimleri katıldıkları çevre eğitimi dersinden oluşmaktadır. Dört katılımcının sorumlu tüketim özelinde beş katılımcının eleştirel okuryazarlık özelinde çalışmaya katılmadan önce deneyimi olmamıştır. Bir katılımcı sivil toplum kuruluşu, diğer bir katılımcı sosyal medya vasıtasıyla sorumlu tüketim özelinde bilgi

edinmiş, diğer bir katılımcı da yaratıcı drama atölye eğitimleri kapsamında eleştirel okuryazarlık özelinde bilgi edinmiştir. Çalışma kapsamında bütün katılımcılar mesleki gelişim eğitimine katılmıştır.

Mesleki gelişim eğitimi sürdürülebilirlik odaklı sorumlu tüketim eğitimini eleştirel okuryazarlık temelinde sunmuştur. Bu program sürdürülebilirliğe bütünsel bir bakış açısını -sosyal, kültürel, politik ve çevre bileşenlerinin ilişkiselliğini yansıtan (UNESCO, 2002)- benimsemekte, 12. Küresel Amaç olan sorumlu tüketimi (UNESCO, 2019) bütünsel olarak sürdürülebilirliğe hizmet eden önemli bir amaç olarak ele almaktadır. Sorumlu tüketimi eleştirel okuryazarlık temelli destekleyen bu eğitim programı oluşturulurken eleştirel pedagojinin prensipleri olan *yerleşik, katılımcı, duyuşsal, problem tanımlayıcı, çok kültürlü, demokratik, diyalog temelli, kalıp yargılardan arındıran, araştırmacı, disiplinler arası, harekete geçirici/ aktivist* özellikleri (Freire, Shor,1992; Shor, & Freire, 1987) eğitim sürecine bütüncül olarak yansıtılmıştır. Kaynakların paylaşımı için dijital araçlar tercih edilmiş ve kalem-kağıt etkinlikleri için müsvedde kağıtlar yeniden kullanılmıştır. Paylaşılan kaynaklar kapsayıcılık temelinde kontrol edilmiş ve çeşitliliği yansıtmıştır. Eğitim, erken çocukluk eğitimi bağlamında sorumlu tüketim ve eleştirel okuryazarlık hakkında altı teorik bölümden oluşan yedi oturumdan ve araştırmacının kolaylaştırıcılığı ve rehberliğinde etkinlik planı hazırlamayı ele alan beş pratik oturumdan oluşmuştur. Eğitim boyunca katılımcılar, yeni öğrendikleri ve yaşadıkları deneyimler üzerinde düşünmeye ve altta yatan değerleri ve çıkarımları eleştirel bir şekilde analiz etmeye teşvik edilerek, katılımcıların yaratıcılıkları ve düşünömsellikleri geliştirilmiştir.

Öğretmen adaylarının anlayış ve uygulamalar kapsamında deneyimlerini yansıtan bu çalışmanın verileri mesleki gelişim eğitimi öncesinde ve sonrasında görüşme tekniğı kullanarak, mesleki gelişim eğitimi sonrasında etkinlik planlarının ve yansıtıcı günlüklerin doküman incelemesi yapılarak toplanmıştır. Katılımcıların ön görüşme ve son görüşme olmak üzere görüşme tekniğı kullanarak ve etkinlik planlarının ve yansıtıcı günlüklerin doküman incelemesi yoluyla toplanmıştır.

Bu çalışmada bire bir, yarı yapılandırılmış görüşme kullanılmış ve araştırmacı tarafından ön ve son görüşme olmak üzere iki görüşme protokolü hazırlanmıştır. Ön

görüşme protokolü katılımcıların demografik bilgilerini, önceki bilgi ve deneyimlerini, yurttaş ve öğretmen olarak sorumlu tüketim anlayışlarını, sorumlu tüketime yönelik günlük ve öğretim uygulamalarını ve katılımcıların mesleki gelişim eğitimi ile ilgili beklentilerini ele almıştır. Benzer şekilde, son görüşme protokolü de yurttaş ve öğretmen olarak sorumlu tüketim anlayışlarını sorumlu tüketime yönelik günlük ve öğretim uygulamalarını ve katılımcıların eğitim programına ilişkin deneyimlerini ve kendilerini değerlendirmelerini ele almıştır. Görüşme protokolleri hazırlandıktan sonra uzman görüşüne başvurulmuş ve görüşmelerin pilot çalışması yapılmıştır.

Çalışmada kullanılan başka bir araç araştırmacı tarafından eleştirel okuryazarlık teorik çerçevesini dört aşamada sınıflandıran Critical Creative Reading Method / Eleştirel Yaratıcı Okuryazarlık Modeli (Ada & Campoy, 2004) rehberliğinde oluşturulan yansıtıcı günlüklerdir. Yansıtıcı günlükler teorik eğitim oturumlarına ve uygulamalı eğitim oturumlarına atıfta bulunarak iki şekilde hazırlanmıştır ve uygulamadan önce uzman görüşüne başvurulmuştur.

Son olarak bu çalışmada yine araştırmacı tarafından geliştirilen Etkinlik Planı Kodlama Çizelgesi kullanılmıştır. Milli Eğitim Bakanlığı (2024) tarafından önerilen günlük plan içerisindeki etkinlik formatı temel alınarak öğretmen adaylarının öğretmenlik uygulaması kapsamında hazırladıkları etkinlik planlarına yansıyan sorumlu tüketim anlayış ve uygulamalarını incelemek amacıyla içerik analizinde kullanılmak üzere bir kodlama formu geliştirilmiştir. Bu incelemede etkinlik türü, materyaller, kavramlar vb. gibi öğrenme sürecinin tüm özellikleri hedeflenmiştir. Uygulama öncesinde pilot çalışması yapılmış ve uzman değerlendirmelerine başvurulmuştur.

Çalışma 2024 Bahar döneminde gerçekleştirilmiş ve yaklaşık 14 hafta sürmüştür. Üniversite Etik Kurulu'ndan gerekli resmi izin alındıktan sonra öğretmen adayları araştırmaya davet edilmiştir. Katılımcılar süreçle ilgili bilgilendirildiklerini ve gönüllü katılım gösterdiklerini belirten onam formunu imzalamış ve araştırmacıyla paylaşmışlardır. Gönüllü katılımcılar belirlendikten sonra ön görüşmeler yapılmış ve bu görüşmelere dayanarak mesleki gelişim eğitiminin içeriği yeniden gözden

geçirilmiştir. On iki toplantıdan oluşan on bir oturumluk mesleki gelişim eğitimi sunulmuştur. Bu oturumlar kaydedilmiş ve araştırmacı her oturum için saha notları almıştır. Mesleki gelişim eğitimi sırasında katılımcılar yansıtıcı günlükler doldurmuş ve öğretmenlik uygulaması dersi kapsamında etkinlik planları hazırlamıştır. Mesleki gelişim eğitimi sona erdikten sonra son görüşmeler gerçekleştirilmiştir.

Bu çalışma sürdürülebilirliğe eleştirel teorinin bakış açısıyla yaklaşmıştır. Toplumsal gerçekliğin insan edimiyle kolektif olarak oluşturulduğunu ve toplumun bileşenlerinin daha eşitlikçi, daha adil, daha kapsayıcı şartların yeniden inşası sürecinde sorumlu ve paydaş olduğunu kabul etmiştir (Ada & Campoy, 2004; Giroux,1987). Eleştirel Eğitimle (Freire, 1970) birlikte katılımcıların eleştirel sorgulamalarla sürdürülebilir olmayan, adaletsiz ve baskıcı unsurlar hakkında farkındalık kazanmasını ve böylece sorumlu tüketim özelinde Sürdürülebilirlik için eleştirel bilinç geliştirebileceğini öne sürmüştür (Chikunda, 2018). Çalışma sorumlu tüketim ile ilgili anlayışları ve uygulamaları tanımlamak üzere Freire'nin (1970) eleştirel okuryazarlık teorik çerçevesini dört aşamada sınıflandıran *Critical Creative Reading Method / Eleştirel Yaratıcı Okuryazarlık Modeli* (Ada & Campoy, 2004) ilgili aşamalarda beklenen çıktıları *Key Competencies for Sustainable Consumption/ Sorumlu Tüketim Temel Yetkinlikleri* (Fischer & Barth, 2014) modeli çerçevesinde sunmakta ve yorumlamaktadır. Veri analizinin çerçevesi bu şekilde oluşturulmuştur.

3. Bulgular

Görüşmelerden ve yansıtıcı günlüklerden elde edilen ve araştırmacının alan notlarıyla desteklenen verilerin analizlerine göre mesleki gelişim eğitimine katıldıktan sonra tüm öğretmen adayları yurttaş rolü içinde bilgi düzeylerini artırmış, sürdürülebilirlik ve sorumlu tüketim olan bağlılıklarını ifade etmiş ve sorumlu tüketim için eleştirel düşünme ve bilinçli eylemde bulunmuşlardır. Eğitim sonrası tüm katılımcıların yurttaş rolü kapsamında sorumlu tüketim anlayışları sürdürülebilirlik ve sorumlu tüketim bütüncül bir yaklaşım sergilemiştir. Ayrıca katılımcılardan üçü de eleştirel bir bakış açısı yansıtmıştır. Elde edilen verilen günlük uygulamalar açısından değerlendirildiğinde, çalışmaya katılmadan önce

sürdürülebilirlik alanında bilgi birikimi ve deneyim sahibi olan ve sürdürülebilir yaşam uygulamalarını zaten benimsemiş olan bir öğretmen adayı dışında tüm öğretmen adaylarının sorumlu tüketim davranışlarını artırmış olduğu görülmüştür. Öğretmen adayları tarafından beyan edilen sorumlu tüketim odaklı günlük uygulamalar incelendiğinde ise, kamusal alan davranışları veya sivil katılıma kıyasla ağırlıklı olarak özel alan davranışlarından oluştuğu gözlemlenmiştir. Bir öğretmen adayı katılım eksikliğini fark etmiş ve sorumlu tüketim özelinde mahalledeki toplumsal işbirliklerini destekleme yönündeki niyetini dile getirmiştir. Bunların dışında, yurttan kalmak, öğrenci hayatı ve kiracı olmak sürdürülebilir günlük uygulamaları kısıtlayan durumlar olarak bildirilmiştir.

Benzer şekilde görüşmelerden, yansıtıcı günlüklerden ve etkinlik planlarının analizlerinden elde edilen ve araştırmacı alan notlarıyla desteklenen verilerin analizleri tüm öğretmen adaylarının, öğretimde bilgi ve öz yeterlilik düzeylerini artırmış olduğunu göstermiştir. Sonuçlara göre, tüm katılımcılar sürdürülebilirlik ve sorumlu tüketimle yönelik bağlılıklarını ve gelecekteki öğretmenlik uygulamalarında sürdürülebilirlik ve sorumlu tüketimi ele alma niyetlerini ifade etmiş; mesleki gelişim eğitimine yanıt olarak öğretmen rollerinde eleştirel yansıtma ve bilinçli eylemde bulunmuşlardır. Öğretmen rolü kapsamında sorumlu tüketim anlayışı açısından, tüm öğretmen adayları çocuk yetkinliği boyutunu ve katılımcı ve aktivist boyutu yansıtırken, ikisi erken çocukluk döneminde sürdürülebilirlik eğitiminin geniş tabanlı bir hak boyutunu kabul etmiştir. Ayrıca, üç öğretmen adayı tüm okul yaklaşımına atıfta bulunmuş, bunlardan biri de tüm sistem yaklaşımına atıfta bulunmuştur.

Katılımcıların öğretmenlik uygulamaları kapsamında sorumlu tüketim uygulamalarının artmış ve çeşitlenmiş olduğu gözlemlenmiştir. Bununla beraber, beş öğretmen adayı uygulama öğretmenliği dersi kapsamında hazırladıkları günlük planların öğrenme sürecinde sürdürülebilir tüketimi ele alma konusunda gelişme gösterirken, uygulama eğitimine katılmayan bir öğretmen adayı günlük planlarında bir değişiklik yansıtmamıştır. Bunun dışında, uygulama öğretmenin etkinlik ve konu öğretimi konusundaki özel istekleri, uygulama okulunun fiziksel eksiklikleri ve küçük yaştaki (3 yaş) çocuklarla çalışma, uygulama öğretmenleri ve okul

müdürlerinin cesaret kırıcı davranışları nedeniyle aday öğretmenlik sorumlu tüketim odaklı öğretmenlik uygulamasının önünde engel olarak bildirilmiştir.

Bütün katılımcılar sorumlu tüketimin temel yetkinliklerinden ilişkiselliği dikkate alma ve öngörülü düşünme, bireysel ihtiyaçlar ve kültürel yönelimler üzerine değerlendirme, tüketimle ilgili etkinlikleri sürdürülebilir olacak şekilde planlama, uygulama ve değerlendirme yetkinliklerini yurttaş rolü içerisinde göstermişlerdir. Altı kişiden beş öğretmen adayı sorumlu tüketim fikrini başkalarına anlatma yetkinliğini yansıtırken üçü de etkin bir paydaş olarak üretim tüketim zincirinde rolünü üstlenme yetkinliğini göstermektedir. Öte yandan, farklı bilgi kaynaklarını kullanma, düzenleme ve paylaşma, bilgi ve iletişim teknolojilerini kullanma yetkinliklerinin yurttaş rolü içerisinde bulunmadığı görülmüştür.

Benzer değerlendirme öğretmen rolü üzerinden yapıldığında ilişkiselliği dikkate alma ve öngörülü düşünme, bireysel ihtiyaçlar ve kültürel yönelimler üzerine değerlendirme, tüketimle ilgili etkinlikleri sürdürülebilir olacak şekilde planlama, uygulama ve değerlendirme ve sorumlu tüketim fikrini başkalarına anlatma yetkinliklerinin tüm öğretmen adayları tarafından edinildiği gözlemlenmiştir. Etkin bir paydaş olarak üretim tüketim zincirinde rolünü üstlenme ve tarafından, farklı bilgi kaynaklarını kullanma, düzenleme ve paylaşma iki öğretmen adayı tarafından yansıtılırken, Bilgi ve İletişim Teknolojilerini kullanma sadece bir öğretmen adayı tarafından yansıtılmıştır.

4. Tartışma ve Öneriler

Bu çalışmanın bulgularına göre, öğretmen adayları bilgi düzeylerinin arttığını gösteren daha ayrıntılı tanımlar sunmuş, yurttaş olarak sürdürülebilirlik ve sorumlu tüketime bağlılıklarını ifade etmiş ve günlük yaşam uygulamalarında tüketim ve sonuçları üzerine derinlemesine eleştirel düşünme sürecine girmişlerdir. Benzer şekilde, önceki araştırmalar yükseköğretim kurumlarındaki eğitim çalışmalarının üniversite öğrencilerinin bilgi ve tutumlarında değişiklik yarattığını göstermekte (Meritt ve ark., 2019; Petersen ve ark., 2007; Schoolman ve ark., 2016; Wuest ve ark., 2014), ve eylem odaklı, katılımcı ve dönüşümsel pedagojiler farkındalığı ve

düşünmeyi desteklediğini, bu da daha gelişmiş bir anlayış getirdiğini önermektedir (Alvarez-Suarez ve ark., 2014; Frank & Stanszus, 2019).

Eğitimden önce sürdürülebilirlik konusuna ağırlıklı olarak çevresel açıdan odaklanmalarına rağmen, tüm öğretmen adayları sürdürülebilirliğe bütüncül bir yaklaşım sergilemiş, öğretmen adaylarından üçü de eleştirel bir bakış açısı benimsemiştir. Bu durum sorumlu tüketim anlayışına da yansımıştır. Bu bulgu, Dymont ve arkadaşları (2014) tarafından yürütülen ve erken çocukluk eğitimcilerinin mesleki gelişime katılmadan önce sürdürülebilirlik anlayışlarında doğal temaların ağır bastığını, eğitimden sonra ise doğal temaların azaldığını, sosyal temaların arttığını ve ekonomik yönlerin çok az ortaya çıktığını bildiren bir başka çalışmanın sonucuyla çelişmektedir. Bu fark, Dymont ve arkadaşlarının (2014) iki ya da beş saatlik atölye çalışmaları sunan çalışmasına kıyasla mevcut çalışmanın çok daha uzun süreli eğitim vermesinden kaynaklanıyor olabilir. Mesleki gelişimin odağı da bulgulardaki farklılığa neden olan bir diğer nokta olabilir çünkü mevcut çalışma eleştirel bir bakış açısıyla bütüncül bir sürdürülebilirlik anlayışı sunmuş ve öğretmen adaylarını eğitim boyunca sürdürülebilir kalkınma ve sürdürülebilir tüketim tanımlarını çeşitlilik, adalet, güvenilirlik ve geçerliliği ele alan çeşitli bakış açılarından eleştirel bir şekilde analiz etmeye ve kendi tanımlarını oluşturmaya teşvik etmiştir. Ayrıca, katılımcılar alandaki rolleri açısından farklıdır, öğretmen adayları hizmet içi öğretmenlere kıyasla sürdürülebilirlikle ilgili yeni kavramlar edinmeye daha yatkın olabilir.

Öğretmen rolü açısından bulgular, tüm katılımcılar için içerik ve uygulama konusunda gelişmiş bilgi, öğretimde gelişmiş öz yeterlilik, eğitim ortamlarındaki tüketim kaygıları üzerine derinleşmiş eleştirel düşünme ve öğretim uygulamalarında sürdürülebilirlik ve sürdürülebilir tüketimi ele alma niyeti olduğunu göstermiştir. Bu bulgu ilgili alanyazınla benzerlik göstermektedir (Alıcı & Şahin, 2023; Kadji-Beltrán, 2024; Boeve-de Pauw ve ark., 2022; Trauth-Nare, 2015). Dahası, Tüm katılımcıların sürdürülebilirlik eğitimine bakış açıları Davis'in (2010) kategorizasyonuna dayanan bir çocuk yetkinliği boyutunu ve katılımcı ve aktivist bir boyutu yansıtırken, ikisi ayrıca geniş tabanlı bir hak boyutunu benimsemiştir. Bu bakış açısı, sürdürülebilirliği eğitim gündemine açıkça entegre eden, duruşunu hak

temelli olarak genişleten ve küçük çocukların niteliklerine, eylemliliklerine ve potansiyellerine işaret eden sürdürülebilirlik için erken çocukluk eğitimi yansıtmaktadır (Davis, 2010). Üç öğretmen adayı, erken çocukluk eğitiminde sürdürülebilirlik ve sürdürülebilir tüketimi ele alırken tüm okul yaklaşımını (Evans, 2015) yansıtmıştır. Değişimi ele almak için ebeveyn katılımı ve küçük çocukların temsiliyetine ek olarak öğretmenler, okul müdürleri ve diğer personel arasındaki işbirliğine atıfta bulunmuşlardır. Buna ek olarak, katılımcılardan biri, aktif vatandaşlık gerektiren toplumsal değişimi geliştirmek için öğretmenlik uygulamasında toplum ve yerel yönetimle işbirliği önererek tüm sistem yaklaşımını (Stoltenberg ve Benoist-Kosler, 2020) ele almıştır. Katılımcılar genel olarak günlük yaşantılarında sorumlu tüketime yönelik gelişme göstermişlerdir. Mevcut çalışmanın bu bulgusu, farkındalık ve bilgi artışına ek olarak katılımcıların çoğunda davranış değişikliği bildirmesi açısından katılımcı ve dönüştürücü pedagojilerde yer alan diğer çalışmalarla tutarlıdır (Albareda-Tiana ve ark., 2019; Álvarez-Suárez ve ark., 2014; Frank & Stanzus, 2019). Bununla beraber öğretmen adayları eğitime yanıt olarak çeşitli sürdürülebilir tüketim uygulamalarından bahsetmişlerdir. Rapor edilen sürdürülebilir tüketim davranışları incelendiğinde, kamusal alan davranışı veya sivil katılıma kıyasla daha fazla özel alan davranışı rapor edildiği görülmüştür (Stern, 2000). Bu bulgu aktif vatandaşlıkta yetersizliğe işaret etmektedir. Bu bulguya benzer şekilde, Türkiye'de yapılan bir başka çalışma da okul öncesi dönem ebeveynlerde çevresel aktivizme katılımın düşük olduğuna ve kamusal alana kıyasla özel alanda çevreye karşı sorumlu davranışlara daha fazla katılım olduğuna işaret etmiştir (Demirci, 2023). Bu bağlamda, Belçika'da çevreci 12 genç yetişkinle yapılan bir başka çalışma, katılımcıların çoğunun özel alan eylemleriyle meşgul olduğunu bildirmiştir (Kenis & Mathijs, 2012). Kolektif eylemlere katılım eksikliği çeşitli bağlamlarda gözlemlenmektedir.

Bunun dışında, çalışmada öğretmen adaylarının sorumlu tüketim uygulamalarını olumsuz etkileyen bazı engeller de rapor edilmiştir. Yurtlarda yaşamak ve öğrencilik hayatı, iki öğretmen adayı tarafından sorumlu tüketim uygulamalarını günlük hayata entegre etmenin önündeki zorluklar olarak öne sürülmüştür. Bu bulgu, Schoolman ve diğerlerinin (2016) yükseköğretim kurumlarında gerçekleştirdiği çalışmayla çelişmektedir. Schoolman ve arkadaşları (2016), yükseköğretim kurumlarının

bağlamsal özelliklerinin sürdürülebilir uygulamaların gerçekleştirilmesinde etkili olabileceğini öne sürmüştür. Ayrıca, literatürde yeşil kampüslerin öğrenci proaktivitesini olumlu yönde etkilediği bildirilmektedir (Frizon vd., 2024; Ribeiro vd., 2021). Bu fark, öğretmen adaylarının sadece atıkları ayırmak yerine kompost yapmak, artık malzemeleri toplamak ve yeniden kullanmak gibi günlük rutinleri zorlayan değişikliklere atıfta bulunmalarından kaynaklanıyor olabilir. Ayrıca, bir öğretmen adayı kiracı olmanın, binadaki altyapı değişiklikleriyle su ve enerji tasarrufuna katılmanın önünde bir engel olduğunu belirtmiştir. Benzer şekilde, ev sahibi/kiracı ikilemi, enerji ve kaynak verimliliğine ilişkin restorasyonlarda bir endişe kaynağı olarak literatüre yansımıştır ve aşılması gereken bir engeldir (Ástmarsson vd., 2013). Freire'ye (2000) göre bu engeller eleştirel eylemi etkileyen sınır durumlarıdır. Bireyler eleştirel düşünme yoluyla bunların üstesinden gelirlerse eleştirel bilince ve dolayısıyla dönüştürücü eyleme ulaşırlar.

Benzer şekilde tüm öğretmen adayları eğitim ortamlarında sorumlu tüketim odaklı uygulamalar açısından olumlu değişiklikler göstermiştir. Bu bulgu, öğretmen eğitiminde eylem odaklı, öğrenen merkezli, dönüştürücü eğitim yaklaşımlarının sürdürülebilirliği destekleme açısından eğitimcilerin öğretmenlik uygulamalarını geliştirdiği yönündeki ilgili literatürle uyumludur (Davis & Davis, 2020; Murphy ve ark., 2021; Wakefield ve ark., 2022). Günlük uygulamalarda olduğu gibi, bu çalışma da eğitim ortamlarında eleştirel eylemi etkileyen bir sınır durumuna (Freire, 2000) işaret etmektedir. Öğretmen adayı olmak, üç öğretmen adayı tarafından sürdürülebilir tüketim odaklı öğretmenlik uygulamalarının önünde bir engel olarak bildirilmiştir. Uygulama öğretmenin özel etkinlik ve konu uygulaması öğretimi talepleri; uygulama okulunun fiziksel eksiklikleri ve daha küçük yaştakilerle (3 yaş) çalışma, uygulama öğretmenleri ve okul müdürlerinin cesaret kırıcı eylemleri. Bu engeller, sürdürülebilirlik araştırmaları alanında öğretmen adaylarıyla yapılan diğer iki çalışmaya da yansımıştır (Alıcı & Alan, 2022; Ärlemalm-Hagsér, 2017).

Öğretmen adaylarının rollerine bağlı olarak edindikleri yeterlikler açısından bir farklılık olduğunu göstermiştir. Öğretmen rolü ile vatandaş rolü arasındaki bu fark, çalışma kapsamında sunulan eğitimin içeriğinden kaynaklanmış olabilir. Mesleki gelişim eğitimleri hem vatandaş hem de öğretmen rollerine ilişkin teorik eğitimler

sunarken öğretmen rolüne ilişkin uygulamalı eğitimleri kolaylaştırmıştır. Başka bir deyişle, teorik eğitimin ardından öğretmen adayları sürdürülebilir tüketimi öğretim uygulamalarına dahil etmenin yollarını aramaya teşvik edilmiştir. Bu kolaylaştırmanın tüketim davranışı açısından çeşitlilik getirdiği görülmektedir.

Bu çalışmanın bulguları, bilinçli farkındalığa dayalı bir müdahale yoluyla sürdürülebilir tüketimin temel yetkinliklerine odaklanan başka bir çalışmayla karşılaştırıldığında bazı farklılıklar ortaya çıkmaktadır. Frank ve arkadaşlarının (2019) çalışmasında bireysel ihtiyaçlar ve kültürel yönelimler üzerine değerlendirme ve sorumlu tüketim fikrini başkalarına anlatma yetkinlikleri iç gözlem açısından en çok gözlemlenen yetkinlikler olurken, İlişkiseliliği dikkate alma ve öngörülü düşünme, etkin bir paydaş olarak üretim tüketim zincirinde rolünü üstlenme, tüketimle ilgili etkinlikleri sürdürülebilir olacak şekilde planlama, uygulama ve değerlendirme ve farklı bilgi biçimlerini kullanma, düzenleme ve paylaşma yetkinlikleri yetersiz ve bilgi ve iletişim teknolojilerini kullanma yetkinlikleri eksik olarak raporlanmıştır. Mevcut çalışma ise yalnızca farklı bilgi biçimlerini kullanma, düzenleme ve paylaşma ve bilgi ve iletişim teknolojilerini kullanma yetkinliklerini yetersiz olarak raporlamıştır. Bu fark, mevcut çalışmanın eleştirel düşünme ve eleştirel eyleme odaklanan eğitiminden kaynaklanıyor olabilir. Fischer ve Barth'ın (2014b) değişim eylemliliğini, etkin bir paydaş olarak üretim tüketim zincirinde rolünü üstlenme yetkinliğiyle ilişkilendirdiği ve bu çalışmanın Freire'nin eleştirel okuryazarlık pedagojisinde yansıtıldığı üzere umut ve eylemliliğe odaklandığı düşünüldüğünde (Shor & Freire,1987), bu farklılık beklenen bir durumdur. Benzer şekilde, vizyoner düşünme ve ilişkiseliliği göz önünde bulundurma yetkinliği, Freire'nin (2000) eğitim yaklaşımıyla da uyumlu olarak, geleceğin şekillendirilebilir olduğunu kabul ederken, ilişkiseliliği ve gelecek odaklı düşünmeyi yeniden düşünmekle ilişkilidir. Umut pedagojisi olarak da adlandırılan bu yaklaşım, öğrencileri olumlu gelecek sürdürülebilirlik senaryolarına ulaşmak için olası alternatifler üzerinde eleştirel bir şekilde düşünmeye teşvik edebilir.

Yukarıdaki bulgulara ilişkin tartışmalar doğrultusunda, bu çalışma alandaki araştırmacılar ve eğitimciler için bazı çıkarımlar sunabilir. Araştırma kapsamında oluşturulan çift döngülü mesleki gelişim eğitimi (Argyris & Schön, 1974) veri

toplama araçları, çalışmanın bağlamı, tüm araştırma süreci ve eğitime ilişkin bulgular ayrıntılı olarak açıklanmıştır. Bu dokümantasyon, benzer araştırma amaçlarını araştıran araştırmacılar için bir rehber görevi görebilir. Sürdürülebilirlik eğitimi desteklemek ve çevre dostu olmayan değer ve uygulamalara meydan okumak için öğretmen eğitiminin ele alınması açısından literatürdeki boşluk göz önüne alındığında (Alıcı, 2020; Davis & Davis, 2020, Jickling, 2018; Orr, 2020), bu çalışma, sorumlu tüketim ve eleştirel okuryazarlığın öğretmen adayları için mesleki gelişime nasıl dahil edileceği konusunda öğretmen eğitimcilerine rehber olacak ayrıntılı bir eğitim programı sunmaktadır. Öğretmen eğitimcileri, öğretmen adaylarının bilgi, bağlılık ve uygulamalarını teşvik etmek için eylem odaklı, dönüştürücü ve öğrenci merkezli pedagojileri kullanabilir, bunu öğretmenlik uygulaması dersi kapsamında destekleyebilirler. Mevcut çalışma vatandaş rolünü ele almış ve eylem odaklı ve dönüştürücü eğitime yanıt olarak sürdürülebilir tüketime ilişkin vatandaş anlayışında ve günlük yaşam uygulamalarında bir iyileşme olduğunu göstermiştir; bu da yaşam boyu öğrenme ve küresel vatandaşlık eğitimi için bir sonuç ortaya koymaktadır. Yetişkin öğrencilerle veya gençlerle çalışan eğitimciler, özelde Küresel Amaç 4 olan eğitim kalitesinin gerçekleştirilmesi açısından , genelde ise sürdürülebilirliğe yönelik dönüşüme katkıda bulunan küresel vatandaşlık eğitime katkıda bulunmaya teşvik edilmektedir (UNESCO, 2019a). Bu noktada, mevcut çalışma yurttaşlık eğitimi konusuna bir örnek olabilir; yaşam boyu öğrenmeyi ele alan eğitimciler, vatandaşların sürdürülebilirliğe ve sürdürülebilir yaşam uygulamalarına katkılarını geliştirmek için eleştirel okuryazarlık temelli sürdürülebilir tüketim eğitiminden faydalanabilirler.

Bulgular, olumlu toplumsal değişim için öğretmen adaylarının sosyal eylemliliklerinin eğitim kurumları içinde güçlendirilmesi gerektiğini desteklemektedir (Giroux, 1997). Öğretmen adaylarının uygulama öğretmenleri, küçük çocuklar ve eğitimcilerle yaşadıkları deneyimler, mesleki gelişimleri ve gelecekteki öğretmenlik uygulamaları için temel teşkil etmektedir (La Paro, 2016). Bu süreç, öğretmen eğitimindeki diğer paydaşlara da yansıtılmaktadır. Bu nedenle, dönüşümü geliştirmek için hizmet öncesi öğretmen eğitimi, aktif vatandaşlık ve sürdürülebilirliği sosyal adalet ve hakkaniyet perspektifinden ele alacak eleştirel okuryazarlıkla zenginleştirilebilir. Ayrıca, fakültelerdeki topluma hizmet derslerinin

desteęiyle sınırlı aktif vatandaşlık deneyimlerinin üstesinden gelinebilir. Öğretmen eğitimcileri, aktif vatandaşlığı ve dolayısıyla toplumun sürdürülebilir zihniyet ve yaşam tarzlarına doğru dönüşümünü desteklemek amacıyla STK'larla daha güçlü bir işbirliği kurmak için topluma hizmet derslerini kullanabilir.

Gelecek çalışmalar, yerleşke olmayan veya yeni kurulan üniversiteler gibi farklı ortamları veya katılımcıların anlayış ve uygulamalarını değiştirebilecek farklı geçmiş ve özelliklerini yansıtan farklı kültürel bağlamları ele alabilir ve mesleki gelişim eğitiminin sonuçlarını eleştirel bir şekilde inceleyebilir. Bir takip çalışması, mesleki gelişimin daha uzun vadeli sonuçlarını gözlemlemek için katılımcıların mezun olduktan ve tam süreli istihdama katıldıktan sonra sürdürülebilir tüketim anlayışlarını ve uygulamalarını sorgulayabilir. İleriki çalışmalara bu konuyu eylem araştırması yöntemiyle çalışabilir ve toplumla işbirliğini desteklemeye odaklanabilir.

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