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Curriculum Development in Singapore and Turkey: Reflections of Administrative Structure and Educational Reforms

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Abstract

The purpose of the study was to investigate the curriculum development process in Singapore and Turkey comparatively regarding administrative structure and educational reforms. As a qualitative descriptive research, this comparative study is expected to contribute to evaluation of possible strengths and weaknesses of the two countries in curriculum development and support the adoption of effective policies and practices by policymakers. Considering the purpose of the study, the data were collected through document analysis. Content analysis was utilized to analyze qualitative data gathered from the official documents and research reports. Results revealed similarities and differences in terms of centralized approach, administrative units and their missions in Singapore and Turkey with respect to administrative structure of curriculum development. Regarding the reflections of educational reforms on curriculum development process and policies, it was found that although the educational reforms were implemented for similar purposes in the two countries, the way of implementation and sustainability demonstrated considerable differences in terms of conditions such as planning, delivery, timing and monitoring. It is recommended that regulations should be made in Turkey such as establishing research mechanisms to systematically study on the integration of curriculum policy and practice to fill in the gap between them.

Keywords: Comparative education, curriculum development, educational reforms

Singapur ve Türkiye'de Yönetsel Yapı ve Eğitim Reformları Bağlamında Program Geliştirme Süreçleri

Öz

Bu çalışmanın amacı, Singapur ve Türkiye'deki program geliştirme süreçlerini yönetsel yapı ve eğitim reformları bağlamında karşılaştırarak incelemektir. Betimsel nitelik taşıyan bu nitel karşılaştırmalı eğitim çalışmasının program geliştirme açısından iki ülkenin olası güçlü ve zayıf yönlerini değerlendirme boyutunda alana katkı sağlaması beklenmektedir. Çalışmanın verileri dokuman incelemesi yoluyla toplanmıştır. Resmi belge ve araştırma raporlarından elde edilen verilerin analizinde içerik analizinden yararlanılmıştır. Çalışmadan elde edilen bulgular program geliştirmede yönetsel yapı açısından Singapur ve Türkiye'nin merkeziyetçi yapı, yönetsel birimler ve görevleri bağlamında benzerlik ve farklılıklarını olduğunu göstermektedir. Eğitim reformlarının program geliştirme uygulamalarına yansımaları bakımından ise iki ülkede de eğitim reformlarının benzer amaçlara hizmet etmesine rağmen reformların uygulanışı ve sürdürülebilirliğinin planlama, zamanlama ve izleme gibi konularda farklılıklar gösterdiği görülmektedir. Bu bağlamda Türkiye'de politika ve uygulama bütünlüğünü sistematik olarak inceleyecek araştırma mekanizmalarının kurulması gibi düzenlemelerin yapılması önerilmiştir.

Anahtar kelimeler: Eğitim reformları, karşılaştırmalı eğitim, program geliştirme.

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1 | INTRODUCTION

Business world has particularly been influenced by the changes in social and economic fields as a result of globalization, and a competitive environment has become more tangible in global economy. Within this framework, quality workforce and human capital are considered as the driving force in ensuring economic development, expansion, and sustainability. The significance of the 21st century skills such as creativity and cooperation has increased to develop that force, which, in turn, reflects in the field of education. Goals that countries set for attaining a place in the global world are achieved through education. Considering the role of education in growing up new generations, curriculum is regarded as a route map for establishing the future of a country. "In every school where teachers are instructing students, a curriculum exists" (Oliva, 1997, p. 3), in other words, "the institution of education is activated by a curriculum" (Oliva, 1997, p. 22). Since the nature of curriculum is characterized by future orientation (Moore, 2015), the meaning of curriculum for a country is that the objectives, skills and values determined in curriculum development policies and practices reflect the intended human profile in the future. As Pinar (2004) points out, regardless of specific content areas, curriculum incorporates historical, political, theological, racial, aesthetical, social, and international aspects with an emphasis on educational experiences. Considering those aspects, curriculum development policies and practices adopted by countries become increasingly essential for economic development, scientific and technological advances, social cohesion, and sustainability in the global world.

A curriculum is developed and implemented coherently with the specific social, economic, and political conditions as well as the present education system of a country. Not only curriculum is a product and reflection of the education systems of the societies in the national context, it is also among the primary criteria that are utilized for explaining achievement and failure in education when taking other countries into consideration (Mullis et al., 2016; Organization for Economic Co-operation and Development [OECD], 2016). To this end, education systems, curricula and teacher education systems of the countries with sustainable and high levels of achievement in international large-scale assessment studies such as Trends in International Mathematics and Science Study (TIMMS), Programme for International Student Assessment (PISA) and Progress in International Reading Literacy Study (PIRLS) have attracted considerable attention and comparative education studies have gained increasingly more importance.

Comparative education, strongly associated with globalization as a dynamic process, is broadly defined as an explanatory and interpretive field of study whose purpose is to understand and interpret characteristics of national education systems and their development (Kazamias, 2009). In other words, understanding education systems and practices of different nations not only provides significant findings in terms of directing educational policies of different countries (Zhao et al., 2008), but enables to watch the world outside, as well (Bray & Jiang, 2014).

The present study focusing on comparative investigation of curriculum development process within the framework of administrative structure and educational reforms in Turkey and Singapore is considered important in terms of understanding the role of curriculum policies and curriculum development for the success of education systems. As given in the Table 1, various comparative studies have been conducted in the context of Singapore and Turkey in terms of different aspects such as curricula and textbooks for different courses, teacher education systems, education systems and higher education systems.

Table 1. Aspects of Comparative Studies in Singapore and Turkey

The Focus of the Comparison	Studies
Curricula for different courses	see Baildon et al. 2016; Derman and Gürbüz 2015; Huang and Bond 2016; Şeker 2014; Yaman and Göçen 2014
Textbooks for different courses	see Erbaş et al. 2012; Fan and Zhu 2007; Lianghuo and Yan 2007
Teacher education systems	see Erbilgin and Boz 2013; Göçen Kabaran and Görgen 2016; Hairon and Tan 2017; Lloyd et al. 1998; Orakçı 2015; Rasmussen and Bayer 2014; Seng et al. 2008
Education systems	see Bal and Başar 2014
Higher education systems	see Marginson 2011; Mok 2000; Sanders 2018

Addressing curriculum development in terms of administrative structure and educational reforms may be significant in order to increase the quality of education. Singaporean education system appeals attention with the impact of achievement in international assessments; however, Turkey has not reached the desired level of achievement in those assessments yet. Comparative studies regarding curriculum development in both Singapore and Turkey are expected to contribute to evaluation of possible strengths and weaknesses of curriculum development process and support the adoption of effective policies and practices by policymakers and stakeholders in education in those countries. Accordingly, the present study is also considered to contribute to literature in terms of comparison of curriculum development process in Singapore and Turkey. Lastly, the study is expected to provide an insight into national and international discussions regarding the reflections of administrative structure and educational reforms upon curriculum development.

To contextualize the discussion that addresses curriculum development in the two countries regarding administrative structure and educational reforms, firstly brief information is provided about education systems in Singapore and Turkey.

Contextual framework: The education system in Singapore and Turkey

Singapore, which is a far-east country and not a member of OECD, has become a country that has a share in global economy, promotes innovation and research, and appealed attention of scientists and scientific institutions worldwide for 1990s (OECD, 2010). Being one of the Four Asian Tigers because of the achievements created in the field of economy in 1980s, Singapore achieves significant breakthroughs in education in the 21st century, as well (National Institute of Education [NIE], 2012).Singapore, participating in TIMMS in 1995 (Singapore Ministry of Education [SME], 2004), in PIRLS in 2001 (SME, 2007) and in PISA in 2009 (OECD, 2016) for the first time, has attained achievements consistently till now. In 2011 TIMMS and PIRLS studies, Singapore was the only country where more than half of the students attained high international level of achievement in all the three domains (i.e. science, mathematics and reading) (Mullis, 2013).

On the other hand, Turkey, which is one of the candidate members of European Union (EU), attempts to achieve the goal of ensuring quality in education by concentrating on educational reforms within the framework of adaptation to EU. However, considering the international assessments, it is observed that Turkey scored below the average points of the all participating countries in general in science, reading and mathematics literacy in the four applications from 2006 to 2015 (Ministry of National Education [MoNE], 2016a), and similarly scored below the average points in mathematics and science in 2015 TIMMS (MoNE, 2016b). However, 2018 PISA results indicated that Turkey was one of the three countries that increased the scores in reading, mathematics and science literacy significantly compared to PISA 2015 results; yet Turkey was still below in the ranking among OECD countries (MoNE, 2019).

Taking education systems into consideration, 359 schools were located according to 2018 data in Singapore (SME, 2018, p.2), whose population was 5888926 according to July 2017 data. (Central Intelligence Agency [CIA], 2018). 228670 students are enrolled in primary schools and 152687 students are enrolled in secondary schools (SME, 2018, p.2). Students are enrolled in the compulsory primary schools at the age of seven and primary schools last for six years. Although secondary schools are not compulsory, almost all the students graduated from primary schools continue to secondary schools that last for four or five years. English is the language of instruction in all courses and levels except for mother tongues (Mullis et al., 2016).

In Turkey, whose population was about 81 million according to the data in 2016 (Turkish Statistical Institute [TUIK], 2018), there were 24967 primary schools, 18745 lower-secondary (middle) schools and 11783 upper-secondary schools, and the number of registered students was 5104599 at primary schools, 5590134 at lower-secondary schools and 5689427 at upper secondary schools (National Education Statistics, 2017/2018). Compulsory education was extended to 12 years divided as four-year primary school, four-year lower secondary school and four-year upper secondary school with the legislation numbered 6287 accepted in 2012 (MoNE, 2012). According to the MoNE Pre-School Education and Primary School Institutions Regulation, it is compulsory for children who are no more than 72-month-old to be enrolled in primary school; however, minimum 60-66-month-old children can be enrolled in primary school with their parents' consent (MoNE, 2014). Turkish, the formal language of Turkey, is the medium of instruction. Thus, Singapore and Turkey are differentiated in terms of population, the schooling age for compulsory education, the number of schools and students in line with population and language of instruction.

In this context, the purpose of the present study was to investigate curriculum development process in Singapore and Turkey regarding administrative structure and educational reforms (i.e. regulations, changes, projects, etc.) comparatively, and to identify similarities and differences between the two countries. The following research questions were sought for an answer:

(1) How is curriculum development process constructed in terms of administrative structure in the education systems of Singapore and Turkey?

(2) What are the reflections of educational reforms in Singapore and Turkey on curriculum development process?

2 | Method

Research design

The present study is basically a descriptive research which is identified by Neuman (2014) as a research that "…presents a picture of the specific details of a situation, social setting, or relationship." (p. 38), "…starts with a well-defined issue or question and tries to describe it accurately." (pp. 38-39) and "…focuses on 'how' and 'who' questions…" (p. 39). Lambert and Lambert (2012) argue that qualitative research designs such as phenomenology or grounded theory can be not only descriptive but explanatory as well, and the term, qualitative descriptive research, can also be used "… instead of incorrectly naming the research approach used by another method (i.e., phenomenology, grounded theory, ethnography)" (Lambert & Lambert, 2012, p.256). Qualitative descriptive research "… tends to draw from naturalistic inquiry, which purports a commitment to studying something in its natural state to the extent that is possible within the context of the research arena" (Lambert & Lambert, 2012, p. 255). The study, which is a qualitative one by nature, aims to investigate curriculum development process in Singapore and Turkey; therefore, it is a qualitative descriptive research.

Data collection tools and procedures

Considering the purpose of the study, the data were collected through document analysis, which is defined as analyzing systematically either electronic or printed materials about the phenomena or events to be investigated (Bowen, 2009). Document analysis can be conducted in several ways. Bowen (2009) states that it entails three phases which are skimming, reading thoroughly and interpreting. In this study, however, document analysis was conducted in five phases in total, which are recommended by Forster (1995) as (1) obtaining documents, (2) checking the originality of documents, (3) understanding documents, (4) analyzing the data obtained from the documents, and (5) using the data (as cited in Yıldırım & Şimşek, 2013, p. 223). Table 2 summarizes the phases of document analysis and the procedures followed in the study:

Table 2. Phases of Document Analysis and Procedures

Phases of Document Analysis	Procedures
1.Obtaining documents	The documents needed for answering research questions are all written documents, either printed or electronic, about administrative structure, educational reforms (reforms, projects, legitimate changes, curricula, etc.) and curriculum development process in Turkish and Singapore education systems. Thus, academic articles obtained from national and international databases such as EBSCO, Web of Science and ULAKBIM by searching the relevant keywords (curriculum development, educational reform, organizational/a administrative structure, etc.), national and international reports for the two countries, development plans and documents from the official websites of the ministries of education are included in the study.
2.Checking the originality	Original, official and academic documents obtained from the official websites of Ministries of Education in Singapore and Turkey, and the relevant ministerial departments (https://www.moe.gov.sg; http://www.meb.gov.tr; http://ttkb.meb.gov.tr), official websites of international organizations (https://www.oecd.org), official websites in which the reports of international assessments are published (http://timssandpirls.bc.edu) and national and international databases such as EBSCO and ULAKBİM were used as the dataset. Additionally, it was constantly checked that whether the documents in the dataset indicated coherent information or not.
3.Understanding documents	In order to analyze the documents systematically and comparatively, a preliminary review of the documents of each country was carried out and an organizational structure was established for the scope of the research questions.
4.Analyzing the data	Documents represented the whole dataset in the study and content analysis was utilized in analyzing the obtained data.
5.Using the data	Since the data set of the study comprised documents published in the official websites of the institutions/organizations in each country and academic papers indexed in national/international databases, it is open access. The results of the study were reported based on the scientific rules and ethical conducts.

Data analysis

In cases where documents constituted the dataset alone, a comprehensive content analysis was required (Bowen, 2009). Content analysis, which enables written materials to be categorized into smaller, more purposeful and manageable content units (Weber, 1990), aims to find out core meanings via the consistent themes and patterns obtained from those materials (Patton, 2002).

The Content Analysis Form (CAF) developed by the researchers in line with the research questions was utilized in the study for guiding the data analysis process. As presented in Table 3, categories in CAF were attempted to be determined in a way that they are explicit and independent from each other. In addition, words and their meanings in context are selected as analysis unit.

Table 3. Dimensions of CAF

Dimensions/ Sub-dimensions	Administrative Structure					
	Administrative approach	Authorized institution / organization	Responsible unit / headquarters	Missions and responsibilities of unit / headquarters	*CD-oriented missions and responsibilities	Other missions and responsibilities
	Educational Reforms					
	Period when it was put into practice	Focus of reform			*Reflections on CD	

*CD: Curriculum Development

The formula, Reliability = Number of agreements / (Total number of agreements + disagreements) x100 (Miles & Huberman, 1994) was used for determining inter-rater reliability of the obtained data. Three different documents (academic article, national report, international report) that were selected randomly for each country were analysed independently by the researchers based on CAF and rate of agreement calculated for each country was determined as over 85%. The rate of agreement 70% and over is acceptable for reliability of a study (Miles & Huberman, 1994). Therefore, the codes and themes determined by different coders are regarded to be compatible with each other at a good rate.

3 | Findings

In line with the research questions addressed in the study, the results are organized under two main themes: a) administrative structure of curriculum development process and b) reflections of educational reforms on curriculum development process.

Administrative structure of curriculum development process

Administrative structure of curriculum development process in Singapore

In Singapore, with a centralized education system, Ministry of Education is responsible for developing, implementing, monitoring, and supervising educational policies for structure of schools, curricula, pedagogy and evaluation in all levels of education including higher education (SME, 2016a). Whereas Singapore education system displays a centralized structure in various fields such as national education policies, national curricula and constructing school system, schools are provided with autonomy and responsibility in administration and in some professional areas like educational practices compatible with learners' needs (Mullis et al., 2016). By this understanding of autonomy, it is intended to encourage innovation in administrative practices of schools (OECD, 2010) and enable national policies and curricula developed by the related headquarters of ministry to be implemented more effectively in accordance with school

conditions. The related headquarters of the ministry monitor schools to guide school development in areas such as learning, instruction and school leadership, and a close cooperation is established between schools and the ministry (Mullis et al., 2016). In this context, there is an alignment between national curricula, examinations, opportunities provided for learners, and accountability criteria for teachers and school administrators (OECD, 2010).

In Singapore, curriculum development, implementation, monitoring and evaluation studies are carried out by three headquarters, called Curriculum Planning & Development, Curriculum Policy Office and Student Development Curriculum, which are incorporated in SME. Those headquarters directing curriculum studies fulfil several complementary missions and responsibilities such as developing policies which shape national curriculum, designing, developing, and revising curriculum, and supervising other institutions and foundations in curriculum-related issues (SME, 2017).

ADMINISTRATIVE STRUCTURE OF CURRICULUM DEVELOPMENT PROCESS IN TURKEY

In Turkish education system with a centralized and hierarchical structure, MoNE takes responsibility for the missions as part of eight spheres of activity. Those eight spheres of activity are (1) organizing and conducting education and training; (2) science, culture, arts and sports; (3) measurement and evaluation; (4) human resources management (teacher appointment, in-service training, etc.); (5) research and development studies; (6) administration and inspection; (7) international affairs; and (8) physical and technological infrastructure activities (MoNE Department of Strategy Development, 2015). Other missions of MoNE are listed as determining, implementing, and auditing national policies and strategies; and designing, implementing and updating curricula and training programs in all levels (pre-school, primary and secondary) except higher education (Official Gazette, 2011).

The responsibilities of MoNE for those broad and different areas are performed by hierarchically structured central governance, local governance and abroad governance (Official Gazette, 2011). All activities related to curriculum development, implementation, monitoring and evaluation processes are carried out by Board of Education (BoE) (MoNE Regulations, 2012). Among seven departments incorporated in BoE, Department of Curriculum and Department of Monitoring and Evaluation are the basic units that direct studies on curriculum implemented throughout the country (BoE, 2017a). Those two departments that conduct curriculum development and evaluation studies fulfil the missions and responsibilities such as identifying procedures and principles about curricula, and monitoring and evaluating curriculum implementation processes (BoE, 2017b, 2017c). Together with those departments, Headquarters of Secondary Education (see http://ogm.meb.gov.tr), Primary Education (see http://tegm.meb.gov.tr) and Vocational and Technical Education (see http://mtegm.meb.gov.tr), which are the units of MoNE, take role in curriculum development process through their monitoring and evaluation departments. However, the main responsibility belongs to BoE in all curriculum issues.

Table 4 summarizes the administrative approach, authorized institution, headquarters for curriculum development and their missions and responsibilities in Singapore and Turkey.

Table 4. The Administrative Structure of Curriculum Development Process in Singapore and Turkey

Singapore	Turkey
Administrative Approach	
Centralized governance	Centralized governance
Authorized Institution	
Singapore Ministry of Education (SME) (all levels)	Ministry of National Education (MoNE) (except higher education)
Headquarters for Curriculum Development	
Curriculum Planning & Development (CPD); Curriculum Policy Office (CPO); Student Development Curriculum (SDC)	Affiliated with BoE, Department of Curriculum (DoC); Department of Monitoring and Evaluation (DoME)
Missions and Responsibilities of Headquarters for Curriculum Development	
CPD Curriculum development-related (CD-related) *Designing, developing and revising curriculum; designing and implementing special curriculum programs such as gifted education program; supervising other institutions and foundations in curriculum-related issues Other responsibilities * Designing, implementing and monitoring instruction and assessment processes; managing resources, school library and language centers	DoC CD-related *Determining procedures and principles about curriculum; ensuring the alignment of curricula between school types and levels; following procedures for prepared, developed or renewed curriculum Other responsibilities * Performing other missions assigned by BoE
CPO CD-related * Developing, renewing and updating policies that shape the national curriculum Other responsibilities * Developing policies for achieving curriculum, instruction and assessment practices in a balanced, purposeful and effective way	DoME CD-related * Monitoring and evaluating curriculum, teaching materials and educational and instructional practices in education system Other responsibilities * Preparing monitoring and evaluation reports, sharing them with relevant people, institutions and organizations, and performing other missions assigned by BoE
SDC CD-related * Overseeing formal curriculum and co-curricular programs in the areas such as arts education, character and citizenship education, sports and outdoor education and co-curricular activities; designing and implementing national programs that complement and enrich school curricula; supporting and guiding schools for the implementation of holistic programs that will develop students in all areas such as cognitive, affective and physical domains.	

REFLECTIONS OF EDUCATIONAL REFORMS ON CURRICULUM DEVELOPMENT PROCESS

REFLECTIONS OF EDUCATIONAL REFORMS ON CURRICULUM DEVELOPMENT PROCESS IN SINGAPORE EDUCATION SYSTEM

Singapore education system with approximately 50-year-history has reached its present level through the reforms implemented within the scope of four basic phases, which are survival-driven (1959-1978), efficiency-driven (1979-1996), ability-based (1997-2011) and student-centric, values-driven (2012-present), respectively (SME, 2012a).

In survival-driven phase between 1959-1978, when the first steps were taken for transformation to nationalize the system remained from the colonial period, the reforms were characterized by schooling, teacher education and education system (SME, 2010). The changes that stood out in that phase consisted of making bilingualism compulsory since 1966, teaching English language to all students along with their own mother tongue from the first grade, and having made the second foreign language learning compulsory from the seventh grade to the tenth grade since 1969 (SME, 2010).

In efficiency-driven phase between 1979-1996, firstly education system was inclusively evaluated for making it sustainable in terms of students' social development and responsive to all students' needs in 1978. Consequently, through structural changes, curricula were implemented that will enable learners to progress in their own pace in separate groups devoted to academic achievement and meet their learning needs (SME, 2010). In that phase, the most significant development focusing on curriculum was the foundation of the Curriculum Development Institute of Singapore, which was responsible for developing all curricula and teaching materials to improve the quality of all instructional materials in 1980 (Gopinathan & Deng, 2006; OECD, 2010; SME, 2010). Since 1980, school evaluations have been conducted that focus on structure of the school, curriculum, extra-curricular activities, and health of learners (SME, 2010).

In ability-driven phase from 1997 to 2011, significant reform movements occurred that shaped Singapore education system and curriculum. Among them, the most inclusive and fundamental one was the Shaping Our Future: Thinking Schools, Learning Nation vision, which was implemented by Prime Minister Goh Chok Tong in 1997. This reform movement whose purpose was to enable every child to put his / her own potential into practice at the utmost level, emphasized culture of thinking and continuous learning (Koh, 2002) and as a requirement of that emphasis, curriculum was revised in the framework of teaching and enhancing thinking skills, creativity, independent learning habits, citizenship and information technology skills (Koh, 2004; SME, 2010; Tan, 2008). Moreover, content was reduced and thinking skills was included in the curriculum (SME, 2010).

In 1997, another reform on formal education process was the determination of the Desired Outcomes of Education. Desired Outcomes of Education, which were characterized as the qualities that each student must possess at the end of the formal education process, were acknowledged as a national framework that directed educational policies and curriculum (SME, 2010). Through that framework, Singaporean students were intended to become self-confident individuals, autonomous learners, active participants in teamwork, and concerned citizens who are conscious of citizenship. On the other hand, Key Stage Outcomes were the transformed form of Desired Outcomes of Education into developmental goals and indicated the expected goals from students at the end of primary school, secondary school and higher education (post-secondary) (SME, 2015).

Program for Rebuilding and Improving Existing Schools (PRIME) was launched in 1999 for achieving Desired Outcomes of Education and Key Stage Outcomes, which were the important steps for determining national standards. Through that program, school conditions were intended to be enhanced such as establishing libraries including new media sources and classrooms in which strategic use of information and communication technologies (ICTs) is promoted. The School Excellence Model, which was introduced

in 2000, offered the criteria for schools' self-evaluation. Additionally, full-time schooling initiated at all secondary schools in 2000 and extra (non-academic) programs enabled students' holistic development. In 2003, SME focused more on strengthening Innovation and Entrepreneurship, which was a dimension of Desired Outcomes of Education, and emphasized to develop students' life skills. Flexible School Infrastructure reform, introduced in 2005, intended to redesign the use of the present areas at schools and transform the areas out of the classrooms into effective learning areas (SME, 2010). Even though those improvement studies were carried out for increasing the quality of education at the macro level, they were of vital importance for achieving the national standards, and enhancing and evaluating the effectiveness of the curriculum prepared for meeting those standards at the micro level.

In 2005, SME started a transformation movement that was grounded in learning and focused on the interaction between teacher and student together with the supporters of that interaction such as school leader and school conditions. Thus, SME implemented the Teach Less, Learn More initiative, which was regarded as a reflection of Thinking Schools, Learning Nation vision. The purpose of the initiative was to create a learning-teaching process in which classroom interaction was promoted, students experienced life skills and effective teaching approaches were utilized via the autonomy and flexibility given to schools rather than an examination-focused instruction (SME, 2010). In this context, a reduction was made in subject areas of the content and 10-20 percent of space was left to teachers for enabling school-based flexibility in curricula. Teachers were given opportunity to use that space according to their own students' needs, and to design their courses by utilizing several teaching and evaluation approaches. Additionally, schools were allowed for designing their own curricula. Resource support and counselling service from curriculum experts were provided for them, as well (SME, 2010). Another change intended with Teach Less, Learn More initiative was about evaluation and a balance was intended to be established between evaluation of learning and evaluation for learning (SME, 2010). For instance, evaluation is considered as a part of teaching and learning process in primary mathematics curriculum. Monitoring problem-solving process, asking questions effectively and using methods such as performance assessment, rubrics and self-evaluation are promoted (SME, 2012b).

In 2008, SME focused on the information, skills, and competences that students would need in the future and concentrated on the need to develop 21st century skills of students. To this end, developing those competencies was intended from the very beginning of the primary school (SME, 2010). Therefore, 21st century skills including critical and creative thinking, collaboration and information skills, communication skills, consciousness of citizenship, intercultural skills and global awareness competence were considered as a part of curriculum (SME, 2016b). For instance, a relationship is established between 21st century competencies including citizenship literacy, global awareness, and intercultural skills; critical and creative thinking and information and communication technology skills, and science literacy (SME, 2013).

The plans for the integration of information and communication technologies into education were implemented in a three-stage period. In the first plan completed between 1997 and 2002, all schools were provided with the basic infrastructure and teachers were trained. In the second plan between 2003 and 2008, the integration of information and communication technologies into curricula was improved and technology was intended to be used in a more effective and productive way. In the third plan having been implemented since 2008, more integration of information and communication technologies into curriculum, instructional practices, and evaluation (school evaluation and national evaluation) were emphasized. With respect to infrastructure, more flexible and mobile options were encouraged to be utilized (SME, 2010). For instance, information and communication technologies are integrated into learning activities by teachers and their use is promoted in online discussion activities and in making abstract concepts concrete with simulations in primary science curriculum (SME, 2013).

In recent years, creating multiple educational means appropriate for students' abilities have been emphasized. Educational reforms highlight variation, flexibility, and choice dimensions in the system. The

flexibility found in curriculum through different educational options give an opportunity to implement school-based curricula relevant to students' needs (SME, 2010). School-Based Curriculum Development (SBCD) movement, which can be said to be largely grounded in Teach Less, Learn More initiative and Bottom-Up Initiative, Top-Down Support philosophy (Hairon et al., 2018), is regarded as one of the most significant changes that have been put into practice in the curriculum field recently. Whereas curriculum development in Singapore has a centralized structure with national curriculum and central curriculum agencies, SBCD is considered a consequence of the continuous reform initiatives. SBCD gives schools more autonomy for planning and designing educational experiences by not only adapting national curriculum materials, but also creating their own materials according to their own conditions and needs (Gopinathan & Deng, 2006). However, it can be stated that the effects of centralization, such as hierarchy, less shared decision making and less student voice, have been felt on both understanding and implementation of SBCD in Singaporean centralized-decentralized education system (Hairon et al., 2018).

In student-centric, values-driven phase from 2012 to present, a program called as Values in Action was launched to encourage students to be active citizens and a spirit of volunteerism was emphasized. Community involvement was also encouraged for more sustainable learning (SME, 2012a).

REFLECTIONS OF EDUCATIONAL REFORMS ON CURRICULUM DEVELOPMENT PROCESS IN TURKISH EDUCATION SYSTEM

With the establishment of Republic of Turkey in 1923, significant steps were taken in the modernization policies through education (Varış, 1976), hence, Mustafa Kemal Atatürk, the founder of the Republic of Turkey, firstly invited John Dewey to Turkey and took his ideas on how to implement education in a democratic system and how to train teachers to enable them to adopt to the new system (Ata, 2001). In this context, Dewey was charged with building the fundamentals of the education system in Atatürk's period (TEDMEM, 2015).

After proclamation of the Republic, Law on Unification of Education (Tevhid-i Tedrisat) was enacted in 1924 and all educational institutions were connected to MoNE as well as curricula were undergone comprehensive changes. The underlying concepts of those changes were secularism, positive sciences, and western orientation, thus the standardized first five-year curriculum was prepared (Varış, 1976). Between 1924 and 1930, the first studies on curricula were carried out and teaching the basic principles of the republic regime to the new generations was adopted as a fundamental philosophy of all curricula (MoNE, 1990; as cited in Yüksel, 2003).

BoE was established with the law enacted on 3rd April 1926 under the name of National Education Bureau as a scientific advisory committee and decision-making body with the responsibility to make regulations for improving the quality of national education. BoE functions as a legislative unit of MoNE by approving curricula and course books via making regulations and directives (Erdoğan, 2012). In 1928, the national Turkish alphabet based on Latin alphabet instead of Arabic was accepted with the Alphabet Reform which has had an important role in the development of language, science, and culture in Turkey. Beyond just an alphabet change, Alphabet Reform was of a vital importance in terms of the national language and culture (Korkmaz, 1998) and it was reflected on the curriculum as the use of pure Turkish vocabulary rather than vocabulary of foreign origin and elimination of Arabic and Persian language courses (Savaşkan-Akdoğan, 2010). Whereas the rate of literacy of the general population in Turkey was 8.16% in 1927 (Başgöz & Wilson, 1968; as cited in Tongul, 2004, p. 126), after the Alphabet Reform, a quarter of the population became literate between 1928 and 1935 (Kodamanoğlu, 1964; as cited in Tongul, 2004, p. 128).

From the proclamation of the republic to 1950, completely curriculum-oriented studies were conducted for achieving the quality in education considering the opportunities and conditions of the country. However, understanding of curriculum in this period was to list the subjects based on courses

and timing of those subjects (Yüksel, 2003). Until 1948, different curricula were implemented at urban and rural primary schools. Since that case had a negative effect on the equal opportunities in education, the distinction between urban and rural curriculum was eliminated with the 1948 primary school curriculum (BoE, 2009). The 1948 primary school curriculum was implemented for twenty years, then it was substituted by 1968 curriculum which was developed in accordance with the requirements of Primary School Law enacted in 1961. With the advent of that curriculum, the understanding towards curriculum moved away from subject-list oriented curriculum to the curriculum shaped by the framework of key constituents (Demirel, 1992). Whereas the procedures and principles that must be taken into consideration in curriculum development process were determined through the model adopted by BoE in 1983, those decisions were not transferred into practice (BoE, 2009).

National Education Development Project was introduced by MoNE with the contribution of the World Bank in 1990 and lasted for seven years. Through that project, it was intended to achieve the quality and achievement standards like OECD countries in primary schools, secondary schools and teacher education, to develop administrative practices of MoNE and to enable to use resources in an effective and efficient way (Department of Research and Development of Education [DRDE], 1999; Kılıç, 1998). Founded as a product of that project in 1992, DRDE (EARGED) was charged with following the latest developments in the fields of education and instruction in both national and international levels, and investigating, and developing curricula (Kılıç, 1998). With the advent of DRDE, the developments such as proposing a new curriculum development model in 1993 (Gözütok, 2003a), establishing Curriculum Laboratory Schools in 1994 (Kılıç, 1998) and developing curriculum for those schools (DRDE, 1999) can be acknowledged as an indicator of the importance attributed to research on curriculum development process and procedures in Turkey.

In 1997, compulsory education was extended from five years to eight years with the changes in education system. The eight-year compulsory education reform led to the changes in the curricula and syllabuses of some courses and course books in accordance with students' interests and abilities. For instance, in 1998-1999 academic year, some courses such as foreign language (the 4th and 5th grades) and citizenship and human rights education (the 7th and 8th grades) were implemented, elective courses were determined for the grades between four and eight, and the 6th-7th grades national history and national geography courses were integrated into social sciences course (MoNE, 2000; as cited in Erdem, 2005).

The 58th Government Program, which was announced in 2002, addressed the need for an education reform to increase the quality of education and international competitiveness, to diverge from rote learning and to raise independent individuals (Ministry of Development [MoD], 2014). In fact, one of the most effective rationales behind the need for reform was the low achievement levels in both international tests such as TIMMS and PIRLS, and national tests such as Student Achievement Test. Therefore, all curricula for the courses at primary schools were redeveloped in 2004, since the present curricula did not include the knowledge, skills and values required in the 21st century to overcome the problems and deficiencies in the education system (DRDE, 2005). The approach, objectives, content, teaching and learning processes, and measurement and evaluation dimensions of the primary school curriculum underwent changes within the framework of curriculum reform (Aşkar et al., 2005). The new primary school curriculum that emphasized individual differences and learner-centred approaches such as constructivism, active learning and multiple intelligences, was piloted in nine cities and 120 schools in 2004-2005 academic year (Akınoğlu, 2005; MoD, 2014). The renewed curriculum was introduced to be implemented throughout the country in 2005-2006 academic year (DRDE, 2005).

In 2010, two different reform movements were introduced. The first one, Reconstruction of Secondary School System comprised of the transformation of all common high schools to Anatolian high schools (i.e. schools that last for four years and provide intensive language instruction) or Anatolian vocational high schools till 2014. Through this transformation, it was intended to minimize the quality differences among schools and reduce the school variation (MoD, 2014). Secondary physics, chemistry, biology, and

mathematics curricula for 9th - 12th grades were updated in 2013 as a reflection of this reconstruction (MoNE, 2013b). The other reform introduced in 2010 was FATIH Project (Movement of Enhancing Opportunities and Improving Technology) which was the most comprehensive technology project in the history of Turkish education. The purpose of the project was to ensure all schools throughout the country to have equal technological infrastructure, to improve the technological opportunities at schools and to ensure all students throughout the country to benefit from those technological opportunities equally within the scope of equal opportunity principle in education (MoD, 2014; MoNE, 2016c). Active use of information technologies along with their integration into teaching and learning process were achieved based on accessibility, efficiency, equal opportunities, measurability, and quality guidelines in this regard. The fundamental components of FATIH Project were identified as (1) the provision of equipment and software infrastructure (provision of the tools such as high-speed and secure internet, interactive whiteboard, tablet pc); (2) provision and administration of electronic pedagogical content (development of course materials such as electronic interactive content, animation, simulation, education and information network videos and visuals and e-books); (3) in-service training of teachers (in-service training practices on effective use of information technologies during the courses); (4) conscious, secure, manageable and measurable use of information technologies (teaching and evaluating secure use of information technologies tools and internet); and (5) active use of information technologies in curriculum (integration of technological equipment and electronic content into curriculum and teacher guidebooks in a way to be used actively). Thus, it was expected to develop students' use of technology, problem solving, effective communication, analytic thinking, collaboration which are considered as 21st century skills (MoNE, 2016c). As a reflection of that project, for instance, mathematics curriculum for 5th-8th grades which was updated in 2013 incorporated information and communication technologies skills as a part of the skills intended to be developed (MoNE, 2013a).

In 2011, central organization of MoNE was restructured and quality of education was intended to increase. Department of Monitoring and Evaluation was founded as a reflection of this reconstruction to curriculum development (MoD, 2014) and the department was charged with monitoring and evaluating all educational and instructional practices along with curriculum (BoE, 2017c).

According to the law numbered 6287, which was enacted in 2012 and led to radical changes in Turkish education system, compulsory education was extended from eight years to twelve years as three periods each of which lasts for four years (MoD, 2014). The 12-year compulsory education was constructed as 4-year primary school as the first stage, 4-year lower secondary school as the second stage and 4-year upper-secondary school as the third stage, and it became mandatory for pupils who turned 72 months to begin primary school. The change in the system led to the arrangements in primary school, lower-secondary school and upper-secondary school curricula based on the needs and characteristics of new group of ages. Therefore, all curricula were intended to be updated by giving priority to the courses at the first grade for primary schools, the fifth grade for lower-secondary schools and the ninth grade for upper-secondary schools since 2012-2013 academic year (MoNE, 2012).

After the 12-year compulsory education reform implemented in 2012, a completely curriculum-oriented study named as Updating Curriculum for Primary School, Middle School and Secondary School was conducted and draft curricula for 51 courses in total were published for opinions of the stakeholders from teachers to parents on 13th January 2017 (MoNE, 2017a, 2017b). In January 2018, they were updated again based on public opinion. The renewed curricula were implemented in 2017-2018 academic year for the first, fifth and ninth grades. In 2018-2019 academic year, the new curricula started to be implemented for all grades and all courses (MoNE, 2017b). The major change prominent in the new curricula is the inclusion of Values Education and Turkish Qualifications Framework (TQF) into all curricula. For instance, the basic competences within TQF, which are communication in the mother tongue, communication in the foreign language, mathematical competence and basic competencies in science and

technology, digital competence, learning to learn, social and civic competence, initiative and entrepreneurship, cultural awareness and expression, are associated with the objectives of the mathematics curriculum for primary and lower-secondary school (MoNE 2018a). Additionally, core values, which are justice, friendship, self-control, honesty, respect, patience, responsibility, love, altruism, and patriotism, are included in the new curricula such as mathematics and English language curricula (MoNE, 2018a, 2018b).

4 | Discussion and Conclusion

The purpose of the current study was to investigate the reflections of administrative structure and educational reforms on curriculum development process in Singapore and Turkey. The results indicated that curriculum development process is administered by the departments of Ministries of Education in both Singaporean and Turkish education system in a centralized structure. However, there seems clear differences. The structure in Singapore is hierarchically more flexible, more curriculum development oriented and more complementary when the authorized departments of the two countries and their missions and responsibilities are compared. Whereas curriculum development studies are carried out by the related headquarters of SME (i.e. Curriculum Planning & Development, Curriculum Policy Office and Student Development Curriculum) in Singapore, they are coordinated by the sub-units of BoE (i.e. Department of Curriculum and Department of Monitoring and Evaluation), which is one of the central institutions of MoNE in Turkey. When the administrative structures of the two countries are compared in terms of missions and responsibilities, it is obvious that the common points are to design, implement, monitor, evaluate and develop curriculum which incorporates the knowledge and skills required in the 21st century. However, whereas separate headquarters are responsible for both developing curriculum policies that shape the national curriculum, and conducting complementary and enrichment curriculum studies for the holistic development of students in Singapore, there are not any separate departments responsible for developing policies for curriculum or preparing enrichment programs in Turkey.

Although more authority has recently been given to schools, Singapore education system still displays a centralized structure (OECD, 2010). However, implementation of curriculum prepared by the ministry in accordance with school conditions is promoted to establish a balance between centralization and decentralization in Singapore education system (Hairon et al., 2018; Mullis et al., 2016) and mechanisms are developed for providing autonomy to schools and school districts to some extent for making centralized structure more manageable (OECD, 2010). In Turkey, education and school systems are characterized by a highly centralized structure (OECD, 2013; TEDMEM, 2015). On the other hand, that understanding of centralized administration leads to difficulties in meeting the demands of schools (TEDMEM, 2015) and the centrally prepared standardized curriculum fail to satisfy the needs of local schools and students (DRDE, 1997). Therefore, it is recommended for Turkey to adopt a semi-centralized or semi-decentralized administration system which benefits from both the strengths of centralized administration (i.e. centrally-prepared curricula as the common ground of education) and strengths of decentralized administration (i.e. participation of schools in decision-making) (TEDMEM, 2015).

When addressing the educational reforms in Singapore and Turkey in terms of their reflections on curriculum development practices, it is evident that the reforms that were introduced in Singapore during survival-, efficiency-, ability-driven and student-centric, values-driven phases (SME, 2012a) are implemented in a complementary and systematic way with the long-term goals. The outcomes of reforms such as Thinking Schools Learning Nation vision, Teach Less Learn More movement and 21st century skills are asserted to be directly reflected on curriculum (see Koh, 2004; SME, 2010; SME, 2016b; Tan, 2008). It can be stated that the reflections of those systematic reforms particularly on national curriculum contribute to the achievement in education in international context. In Turkey, however, it is possible to maintain that educational reforms are related to system in general and they are usually disconnected from each other without considering the required conditions broadly. Although curriculum innovations were

based on systematic needs analysis such as 1936 or 1948 primary school curriculum studies, and pilot studies were at the heart of curriculum development as in Curriculum Laboratory Schools (Gözütok, 2003a, b) or curriculum innovation in 2005, the procedures in developing curriculum have not been informed by MoNE as in 2005 curriculum innovation since 2005. One of the greatest obstacles to increasing the quality of education in Turkey is considered as the implementation of policies regardless of comprehensive evaluation and investment, and adoption of another policy without assessing the effects of the previous one (MoD, 2014). On the other hand, systematic studies are conducted in Singapore such as planning, getting feedback from stakeholders, piloting, teacher training, monitoring the implementation and evaluating performance, capacity and support (SME, 2012a), which might be one of the factors behind its recognition and success in education.

It is important to ensure the sustainability and consistency in reforms for achieving their goals (Şirin & Vatanartıran, 2014). It is possible to infer that the sustainability and consistency in educational reforms are ensured in Singapore. Curriculum reform initiatives had some challenges in Singapore such as the need to make more realistic policies considering cultural and social dynamics rather than to base the initiatives solely on curriculum visions (Deng, Gopinathan, & Lee, 2013). However, Singapore attempts to overcome those challenges and improve education through ways such as adoption of evidence-based practices regarding curriculum and integration of vision and leadership (OECD, 2010). Since educational and curriculum reforms were considered effective in promoting and sustaining national development, reform initiatives responded to different issues in different phases in a complementary way in Singapore (Tan, 2008). On the other hand, it is concluded that educational reforms in Turkey cannot complement each other due to political reasons to a large extent and cannot be implemented with a holistic perspective (TEDMEM, 2015). To overcome this situation, it is recommended to make evidence-based and systematic reforms and review the reform-making process in Turkish education system (Şirin & Vatanartıran, 2014; TEDMEM, 2015). As one of the latest studies in terms of curriculum development and presented to public opinion in 2017, the new curricula in Turkey are stated to be developed by considering the comprehensive and systematically collected data such as the results of national and international tests and comparative studies (MoNE, 2017a), which can be evaluated as an indicator that curriculum development studies are started to be addressed more systematically by the ministry. However, it is possible to state that curriculum update and innovation studies conducted successively after the curriculum reform in 2004 were carried out with the approach of eliminating the old and implementing the new one without conducting curriculum evaluation studies. Therefore, consistent, sustainable, and complementary curriculum development studies cannot be conducted (TEDMEM, 2015).

In Singapore, a close relationship seems to be established between educational policies and practice (Mullis et al., 2016). Curriculum policies approach is adopted for achieving the national and international goals of curriculum, which is like the case in Thinking Schools Learning Nation vision. The curriculum policies headquarter of SME can be regarded as an indicator of that approach. In Turkey, however, it is evident that studies related to curriculum change and innovation are conducted in the form of making changes in course names, subjects of the courses and course hours. Implementation of new courses or integration of some courses into a new construct with the advent of eight-year compulsory education in 1997 can be considered as an indicator of this understanding. Therefore, it is possible to state that curriculum policies that are not developed adequately lead to the frequent innovation and updates in curriculum.

In Singapore, some skills such as critical thinking, use of information technologies, creative thinking and independent thinking are highlighted within the scope of Thinking Schools Learning Nation vision introduced in 1997 (Koh, 2002; SME, 2010; Tan, 2008); then critical and creative thinking, collaboration and information skills, communication skills, civic literacy, global awareness and intercultural skills considered as 21st century skills (SME, 2016b) are reflected on curriculum. Similarly, some skills such as

critical and creative thinking, problem solving, decision making, communication, research, use of information technologies and entrepreneurship were emphasized in curriculum change in 2004 in Turkey (Aşkar et al., 2005). Considering this similarity, it can be stated that particularly thinking skills are integrated into curriculum in both Singapore and Turkey. However, whereas teaching the 21st century knowledge and skills through the curriculum in both countries is one of the primary goals of education, only Singapore is proved to achieve that goal indicated in large- and small-scale assessment studies. It is possible to maintain that some of the reasons behind this case can be listed as monitoring and evaluating curriculum during implementation, developing long-term policies on curriculum, implementing complementary and enrichment programs, and adapting national curriculum to school conditions.

Further, in Singapore, the three-phased plan for the integration of information and communication technologies into educational practices have ensured to create technology infrastructure at schools, to integrate technology into curriculum, teaching and learning process and evaluation, and to provide teacher training since 1997 (SME, 2010). Similarly, in Turkey, FATIH Project introduced in 2010 have led to provide schools with equipment and software infrastructure, to integrate information technologies into curriculum, and to provide teacher training on the use of technology in teaching and learning process (MoNE, 2016c). Therefore, it is possible to maintain that integration of technology into educational practices is emphasized and reflected on curriculum in both Singapore and Turkey. However, whereas Singapore started to integrate information and communication technologies into education in 1997 and carried out this process in a three-phased plan that extended from the preparation of infrastructure to teacher training and curriculum (SME, 2010); Turkey introduced the Project in 2010 and implemented it right after piloting. It can be considered as an indicator that more comprehensive and long-term planning is conducted in Singapore whilst planning process in Turkey is rather rapid without studies on all its dimensions such as infrastructure and teacher training. This can be supported by several research studies in terms of teacher concerns or problems basically related to hardware and software tools and inefficiency of in-service training (see Ayvacı, Bakırcı & Başak, 2014; Çiftçi, Taşkaya & Alemdar, 2013).

It is also evident in Singapore that qualifications expected from each student after the completion of formal education were determined beforehand through the desired outcomes of education. Additionally, key stage outcomes, which are the transformed forms of desired outcomes of education into developmental outcomes in each key stage, were identified (SME, 2015). In Turkey, the 10th Development Plan (2014-2018) presents the fundamental policy towards curriculum as the evaluation and development of curriculum continuously by determining meaningful learning objectives. Therefore, the need for determining the qualifications expected from alumni is emphasized (MoD, 2014). Compatible with the European Qualifications Framework, Turkish Qualifications Framework also classifies the intended competencies in all levels including basic education, secondary education, and higher education in the areas of knowledge, skills and proficiency (Professional Qualifications Institution, 2015). Thus, it is obvious that the need for determining the qualifications expected from students at the end of formal education has recently been recognized in Turkey; on the other hand, this need was met and the desired outcomes of education were determined approximately 20 years ago in Singapore.

In conclusion, Singapore and Turkey have several similar and different characteristics in terms of administrative structure, educational reforms, and their reflections on curriculum development, which may be affected by several social, economic, political, educational, and geographical factors. Since curriculum takes a role as a bridge in enabling students to achieve the goals of schools, society and their own goals (Ornstein & Hunkins, 2017) and in progressing towards the objective of nurturing individuals of the 21st century, curriculum development should be viewed as never-ending, dynamic, and systematic process in which each decision should be based on research-based data rather than the results obtained from a trial-and-error process (Oliva & Gordon, 2013; Ornstein & Hunkins, 2017; Varış, 1976). Considering the curriculum development and educational reform movements in general in Turkey, it can be stated that majority of the factors leading to achievement in Singapore education system are taken into consideration; even both countries addressed curriculum and syllabus in similar ways. The term curriculum is used for the

courses such as mathematics, and the term syllabus is addressed as the yearly plans from the first to twelfth grades or from primary to university education in both countries (Mullis et al., 2016). However; there is still a gap between the goals and implementation, in other words policies and practices. This may be the result of the fact that Department of Research and Development of Education, which was one of the former departments of MoNE, was closed in 2011 and research and development missions were distributed to other departments (Education Reform Initiative, 2012). Therefore, it is recommended that the necessary regulations should be made for filling in the gap between policies and practices in such as establishing research and monitoring mechanisms to systematically study on the integration of curriculum policy and practice. It is also recommended to give priority to conducting needs assessments, piloting process, curriculum evaluation studies, and monitoring the effects of policies on practice to address that gap.

The present study included findings limited to the data obtained from document analysis. Therefore, it is recommended that future studies should address the issue broadly by such as taking stakeholders' opinions to gain an in-depth insight into the effects of educational reforms and administrative structure on curriculum related issues.

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