ADIYAMAN UNIVERSITY

Journal of Educational Sciences

AUJES

Volume:13

Issue:1

June 2023

ADIYAMAN UNIVERSITY JOURNAL OF EDUCATIONAL SCIENCES

An international refereed e-journal and publishes two issues per year.
Year: 2023 Issue: 1

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Article History
Received: 07.05.2023
Received in revised form: 20.06.2023
Accepted: 27.06.2023
Available online: 28.06.2023
Article Type: Research Article

ADIYAMAN UNIVERSITY
Journal of Educational Sciences
(AUJES)

https://dergipark.org.tr/tr/pub/adyuebd

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To cite this article:
Erden Basaran, O. (2023). The role of temporary education centers on syrian refugee students' socio-cultural adaptation. *Adiyaman Univesity Journal of Educational Sciences, 13*(1), 1-20.

Adiyaman University Journal of Educational Sciences

Volume 13, Number 1, June 2023, Page 1-20 ISSN: 2149-2727
DOI: http://dx.doi.org/10.17984/adyuebd.1113518

The Role of Temporary Education Centers on Syrian Refugee Students' Socio-cultural Adaptation

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Abstract

Temporary Education Centers (TECs), which closed in 2019, were established to ensure that Syrian students continue their interrupted education in their native language and slowly acquire the necessary Turkish language skills for social adaptation and transition to public schools. However, these centers failed to actualize their main role due to their administrative structure and instructional strategies. Framed within the premises of socio-cultural adaptation theory, this narrative study, analyzes how these institutions, particularly their organizational structure, language education, and teachers' perception affect the socio-cultural adaptation of Syrian students in Turkish society. The initial dialogical data supported with researchers' observations were gathered through semi-structured interviews with Syrian and Turkish administrators and teachers, and Syrian students studying in a TEC. The collected data were analyzed using Critical Discourse Analysis. The findings indicate that despite the fact that these institutions aim to encourage Syrian students to learn the Turkish language for their social adaptation, grammar-based language instruction remained restricted due to grammar-based teaching and lack of the Syrian administration's support. Syrian students in TEC experience isolation from the Turkish community, therefore, feel anxious about their social adaptation. Yet, Syrian and Turkish administrators do not share the same concerns with the Syrian students because of carrying different educational and social agendas. On the other hand, Syrian and Turkish teachers are mainly concerned about Syrian students' social identity construction and educational achievement. This study explains the reasons for having various social adaptation expectations and argues that isolated educational institutions for refugees generate negative results for refugee students' social adaptation.

Keywords: Temporary education centers, social adaptation, refugee education, socio-cultural adaptation

Introduction

Turkey established various educational programs such as camp schools, Temporary Education Centers (TECs), and admission into public schools to improve the socio-cultural adaptation of Syrians and reduce anti-refugee sentiments (Erden, 2017; Aykırı, 2017; Çelik & İçduygu, 2019). As one of the educational programs that Turkey offered to Syrian refugees, TECs differed from the other programs because of their aim and organizational structure (Kaya, 2019). TECs aim to educate Syrian children in Arabic to eliminate their disadvantages due to having interrupted education, teach Turkish skills for transitioning them to Turkish schools, and provide social-adaptation skills in a safe environment (Ihlamur-Öner, 2013; Kaya, 2019).

The brief explanation of TECs' aim showed that they were originally established to expedite the social adaptation process of Syrian children. However, the literature on TECs indicated that they caused several social, cultural, and educational problems such as identity crisis, accreditation issues for Syrian teachers working in TECs and Syrian students studying in Turkish educational institutions, the limited number of Turkish classes, ethnic and political pressure from the dual administration system (Erden, 2017; Aykırı, 2017; Çelik & İçduygu, 2019; Kaya, 2019). Therefore, this study analyzes how TECs, particularly their organizational structure, language education, and teachers' perceptions, affect the social adaptation of Syrian children to Turkish society. Guided by the socio-cultural adaptation theory (Berry, 2005; Ryan et al., 2008), this study argued that TECs negatively influenced Syrians' socio-cultural adaptation process because of their dual management system, lack of sufficient hours of Turkish language classes, and offering isolated spaces for Syrians.

The statistics provided by the Ministry of National Education showed that there were more Syrian students (641.630) in TECs than in Turkish public schools (518.105) in 2018. Stock et al. (2016) indicate that approximately 76% of Syrian refugee students attended TECs, whereas only 24% of them attended Turkish public schools in 2014. Although the percentage of Syrian students registered in TECs was reduced over the

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years, there was still a high demand for TECs a year before its closure. After the closure of 2019, many students were sent to public schools. Due to these reasons, it is crucial to understand how TECs contributed to the social adaptation of Syrian students because these centers operated long enough to affect the social adaptation to fulfill its educational and social aims of social adaptation and inclusion in public schools. Accordingly, the following research question was used to examine the issue.

1. What is the role of TECs in the socio-cultural adaptation of Syrian students?
    a. What is the role of the academic structure in the social adaptation of Syrian students?
    b. What is the role of the administration structure in the social adaptation of Syrian students?
2. How do the Syrian and Turkish school communities define socio-cultural (social) adaptation?

Literature Review

The recent studies on TECs show that these centers cannot fulfill their purpose due to the encountered problems (Aydin & Kaya, 2019; Crul et al. 2019; Erbaş, 2021; Taskin & Erdemli, 2018). The reasons behind this failure are the quality of the offered Turkish courses and other education services, accredited Syrian teachers and lack of accredited documentation for Syrian students, pedagogical differences used by Turkish and Syrian teachers, and the dual administration system controlled by Turkish and Syrian principals (Balkar et al., 2016; Kaya, 2019; Gökçe & Erdal, 2018; Taskin & Erdemli, 2018; Tunga et al., 2020; Unutulmaz, 2019). Although many Syrian teachers working in TECs were trained by UNICEF (Gümüş et al., 2020), many of them still fell behind of pedagogical knowledge due to being trained as doctors, lawyers, or engineers, and working in TECs with fake diplomas (Gümüş et al., 2020).

The courses offered in Arabic are effective to meet the immediate needs of Syrian students. The medium of instruction also complies with the refugees' expectations of protecting their local identity through the use of their native language as medium of instruction (Dreyden-Peterson, 2017; Güney & Konak, 2016). When the Australian education policies regarding educating refugees are examined, Hattam and Every (2010) remark that refugee education is often structured without paying attention to refugee and local parents' expectations. However, TECs in Turkey partially resolve the problem of including refugee opinion on education policies by offering courses in their native languages and allowing Syrian teachers to participate in education activities (Balkar et al., 2016; Kaya, 2019; Taskin & Erdemli, 2018; Tunga et al., 2020). However, Syrian refugee students' detachment from the Turkish community pushes them into their societal realities and sphere (McCarthy, 2018; Yalcinkaya et al., 2018).

Countries with experience in accommodating refugees, such as the United States of America (USA), England, and Australia, establish such temporary education places for refugees to have a better transition to the local system (Bajaj et al., 2017; Majeed et al., 2018; Matthews, 2008). Even though these countries allow refugees to enroll in schools only open to refugees, they encourage the use of their official language (Rutter, 2006; Hattam & Every, 2010). Education services are offered to refugee children to improve their adaptation and inclusion in their new environment (Bajaj et al., 2017; Majeed et al., 2018; Matthews, 2008). Hence, the educational services are designed for newcomer children to adapt to the local culture and language. For example, the Newcomers School program in the US offers courses only in English, and they provide social course programs pertinent to American culture (Feinberg, 2000). In the case of TECs, besides an obligation of 5-10 hours of Turkish classes, decisions concerning education are left to Syrian teachers (Balkar et al., 2016; Kaya, 2019). In many countries with a large number of refugees, the native languages of refugees are taught as second languages or not included in the curriculum (Tseng, 2018). The situation is the opposite in Turkey; the Turkish language is taught as a second language at TECs.

In addition to enculturation and language instruction, developed countries plan educational programs to promote refugee students' interaction with locals. Roxes (2011), for example, reveals in his study of a school in the United States that teaches only refugee and immigrant children that teachers engage with local people and involve them in the refugee education process to raise refugee children's cultural understanding of local life. This study, on the other hand, does not explain how refugee students, who are educated separately from local pupils, interact with the people as part of their educational activities. Although the following studies date back, Candappa (2000) and Goodwin-Gill (2002) argue that refugees avoid enculturation practices in order to protect their values. As a result, they choose an isolated lifestyle separate from the majority of society. In the case of Turkey, refugees live together with Turkish people in most of the cities due to the settlement policy (Sönmez & Süleymanov, 2017). However, Turkey could not provide Syrian refugees with sustainable living circumstances together with Turkish people because access to education and health is frequently hampered by inconsistent policies (Allen et al., 2018). Turkey's settlement strategy favors the distribution of refugees across the country's regions and cities. Refugee children are also encouraged to attend Turkish schools as a result of this policy

(Yildirimalp et al., 2017). Syrian refugees, on the other hand, choose TECs to educate their children (Lifelong Learning Headquarters, 2018). This corroborates Candappa (2000) and Goodwin-Gill's (2002) arguments about migrants' tendency to live apart.

Students' first contact with Turkish people at TECs is established via school staff (Aydin & Kaya, 2019; Kaya, 2019). For this reason, refugee students mainly start the social adaptation process in TECs with administrators and Turkish teachers appointed by the Ministry of National Education. Studies regarding refugee students' social adaptation processes show that more research studies should be conducted to understand refugee students' social adaptation processes in the education system (Ihlamur-Öner, 2014; Karataş, 2015). Although Turkey's settlement policy on social adaptation encourages Syrian students to go to public schools, this policy seems ineffective because many refugee children experience discrimination and isolate themselves from their local peers and they also experience other educational problems such as accreditation and language issues (Dorman, 2014; Duruel, 2016; Erden, 2017). Özden's (2013) report on refugees highlights similar adaptation problems among Syrian people and adds that the language barrier between Turkish and Syrian people bolsters the negative discourses about refugees and anti-refugee sentiments.

According to the research, using a common language or choosing the host country's language will help with social adaptation (Buchanan et al., 2017; Refugee and Education, 2017; Tseng, 2018; Yalcinkaya et al., 2018). In nations such as the United States, Australia, the Netherlands, and England, teaching fundamental language skills is seen as a critical necessity and a key prerequisite for social adaptation and integration (Bajaj et al., 2017; Hattam & Every, 2010; Majeed et al., 2018; Matthews, 2008; Rutter, 2006). These nations provide language courses with an enculturation or adaptation topic. In the Netherlands, the language skills of refugee children are identified as a determining factor for advancement to the next educational grade (Refugee and Education, 2017). Although it criticizes the quality of language courses and resources, the Education Council, an independent entity that provides advice to the Dutch Ministry of Education, promotes instruction in the official language (Glastra & Schedler; 2004; Refugee and Education, 2017).

Turkey wants Syrian refugees to have access to Turkish education but intends to give them education in their local tongue (Seydi, 2014). Despite the fact that this scenario gives the impression of favoritism toward Syrians in general, foreign schools that provide instruction in a different language are owing to the rights of legal foreigners in Turkey. The decision to open TECs complies with the law, according to Article 96 of the Foreigners Protection Law's fourth section, which is created for adaptation. Furthermore, according to Article 96 of the law, it is possible to plan adaptation and education activities that will enable foreigners in Turkey to gain knowledge and skills that will help them adapt and act independently when they return to Turkey or their home country (Ministry of National Education-General Directorate of Primary Education, 2013; the Ministry of Interior, 2014).

The problem is the quality of Turkish courses at TECs have been linked to teaching methods and practices. The focus of language instruction in these centers is primarily on grammar (Aydin & Kaya, 2019; Kaya, 2019). The language classes at these schools do not cover notions about Turkish society; instead, refugee students obtain vital background knowledge through non-governmental groups, the media, or people they know (Evin, 2014; Siapera, 2019). Language education nowadays focuses on grammatical, conceptual, and cultural elements in order to develop communication abilities (Arnot & Pinson, 2005; Rutter, 2006; Veugelers, 2007). In England, for example, cultural subtleties and values are essential for language learning. According to Blackwell and Melzak (2000), England requires students of English to master a conceptually supported language in order to comprehend the lifestyle, expectations, and functioning of British society. As a result, they begin teaching grammar in order to increase language usage in later phases. In the Netherlands, there is a comparable expectation in the language instruction process for refugees. People who resettle in the Netherlands for whatever reason must know the Dutch culture and the language at a level that allows them to express themselves, according to the Netherlands' education and integration regulations (Jansen et al., 2006; Veugelers, 2007; van Koeven & Leeman, 2011).

Language education in TECs, on the other hand, is primarily focused on teaching reading and writing with an emphasis on grammar, with little attention paid to cultural and conceptual constructs or a deeper understanding of the meaning (Aydin & Kaya, 2019; Balkar et al., 2016; Kaya, 2019; Taskin & Erdemli, 2018). Teaching language where socio-cultural adaptation is preferred should go beyond teaching reading and writing because it constructs the notion of discourse communities, communities of practice, and appropriation of discourse in the immediate environment (Baynham, 2006). As Sharifian et al. (2021) highlighted, Afghan refugees found teaching language via grammar problematic because they did not learn how to communicate with the Australian community or access social services. Another study with Syrian refugees in Scotland also indicated that the English they learned was not compatible with the ones spoken in their new environment and lacked culturally important points (Martzoukou & Burnett, 2018). Studies with Syrians studying in TECs also indicated similar problems due to a lack of teaching socio-culturally useful language skills. In the Turkish

context, Yolcu and Doğan (2022) also reported that primary and middle school mathematics teachers mentioned language and communication issues are the main problems for culturally diverse children to learn mathematics in meaningful ways. Additionally, this study highlighted that a very low percentage of these teachers use cultural background as a source for meaningful mathematics.

Theoretical Framework

Socio-cultural adaptation is defined as establishing and adopting new values of people who migrated or were forced to migrate concerning their new living conditions (Ryan et al., 2008). Ward and Kennedy (1999) define socio-cultural adaptation as behavioral competence such as culture and social skill acquisition. They mention that socio-cultural adaptation is measured by the duration of stay in a new culture, cultural knowledge, level of engagement and affiliation with host nations, cultural distance, language fluency, and acculturation tactics. Berry (2005) considers socio-cultural adaptation as a process of developing cultural and social expectations through socially interacting with the people in refugees' and migrants' new environments. He later furthers this explanation and adds individuals' cultural and psychological alterations are due to their interactions with people of their own and other cultural groups (Berry, 2005).

There are various factors affecting the process of socio-cultural adaptation. For example, Swartz et al. (2010) remark that people's ethnic, national, and religious affiliation were as important factors as the duration of stay in a new culture, cultural competence, level of engagement and affiliation with host nations, cultural differences, language skills, and acculturation tactics. Yet, they highlight that no matter how carefully the socio-cultural adaptation of individuals was examined, the process could be a migration paradox. However, they also underline that newcomers' possibility of encountering negative social, physical, psychological, and cultural experiences could be reduced by extending their interaction with the people of the host community.

The quality of cultural interaction during the socio-cultural adaptation process of newcomers is also related to the host communities' attitudes towards newcomers. Berry (2006) states that programs and policies created for socio-cultural adaptation could achieve successful results if all social groups participate in the social interaction process. Şafak-Ayvazoğlu et al. (2021) study shows that the socio-cultural adaptation of Syrians under temporary protection in Turkey is not successful as it is planned because of escalating anti-refugee sentiments among Turkish people. The host community's reluctance to be involved in cultural interaction with Syrians negatively affected Syrian's socio-cultural adaptation.

The existing literature on the sociocultural adaptation of refugees highlighted the importance of the culture of both hosts and newcomers, language teaching, culturally responsive pedagogy and teaching, and social adaptation and inclusion (Aydin & Kaya, 2019; Baynham, 2006; Sharifian et al. 2021; Soylu et al., 2020; Yolcu, 2020). Additionally, the studies conducted on the experiences of refugees in Turkey and other countries underlined the necessity of teaching the local language with the aim of improving socio-cultural adaptation for increasing newcomers' access to social services and for feelings of belonging in their new environment (Aydin & Kaya, 2019; Kaya, 2019; Bajaj et al., 2017; Majeed et al., 2018; Matthews, 2008; Yildirimalp et al., 2017). However, TECs, as stated in the literature, had problems teaching language skills with sociocultural adaptation compatibility and left the decision of Syrian youth's sociocultural adaptation to Syrian teachers (Balkar et al., 2016; Kaya, 2019). Further research is needed to examine and understand why the issue of socio-cultural adaptation of Syrian refugees was protracted for a long time and left under the control of Syrian teachers and administrators. Therefore, this study used the premises of the sociocultural adaptation framework and supported it with the findings of other studies to understand the role of TECs in Syrian youth's socio-cultural adaptation and the reasons for not achieving the general refugee policy of integrating refugee students in the Turkish community.

Method

This qualitative study used a narrative research methodology to examine the role of TECs in Syrian students' social adaptation process. By using Clandinin's (2006) conceptualization of narrative inquiry as "the study of experience as a story" (p. 45), this study gathered information by examining participants' narrated stories and summarized significant events in their narratives. According to Connelly and Clandinin (1990), people are natural storytellers and can locate themselves in individual and community experiences. In addition, Reissman (2008) mentions that critical events in people's stories are a powerful tool to understand the discourses that shape people's lived experiences. Therefore, the participants were asked to describe their daily educational activities and the critical events they experienced during these activities. Furthermore, the participants were encouraged to talk about their learning and teaching experiences, academic development, and social adaptation process of themselves and others in their narratives. By using narrative research, this research uncovered key

concerns connected to participants' perceptions of socio-cultural adaptation and learning/teaching experiences in TECs.

Participants

This study used the narrative of different social actors at a TEC, including Syrian students, administrators and teachers, and Turkish teachers and administrators. There were many volunteers among Syrian students and teachers to participate in the study, but only those with Turkish language skills and studying in the afternoon shift of the TEC participated in this study due to the language barrier and lack of trustable translators in TEC. These criteria were not intentionally planned, but the researcher could only visit the data collection site during the afternoon shift due to her personal schedule and she wanted to eliminate the loss of meaning during the translation process. The research included 18 participants: one Syrian principal, one Syrian vice-principal, one Turkish principal, one Turkish vice-principal, three Turkish teachers, four Syrian teachers, and seven refugee students. Both Turkish and Syrian principals were male, and their ages were respectively 45 and 49. The vice-principals were female, the Syrian vice-principal was 38, and the Turkish vice-principal was 35.

Syrian and Turkish teachers' ages ranged between 25 and 35. Three of the Syrian teachers were male, and one was female. One of the female teachers from Syria taught Arabic language and social sciences classes, whereas the other teachers taught mathematics, physics, and biology. Math teachers taught students from second to twelfth grade. The biology and physics teachers mainly taught high school students, but, when needed, they assisted elementary-level science classes. Syrian teachers had an average of nine years of teaching experience.

Among Turkish teachers, there were one male and two female teachers. All the teachers were responsible for teaching Turkish language classes, but female teachers also carried out art-related activities such as marble art and poetry reading. However, only one female teacher had one year of teaching experience. The other Turkish language teachers had an average of 5 years of teaching experience in teaching Turkish to foreigners. Table 1. Summarizes the demographic information about teachers and administrators. The names are pseudonyms.

Table 1. Demographic Information of Teacher and Administrator Participants

Name	Position	Nationality	Gender	Educational Experience	Age	Branch
1. Ahmet	Principal	Turkey	Male	19	45	Turkish
2. Mehmet	Principal	Syria	Male	21	49	Classroom Teaching
3. Şerife	Vice-principal	Turkey	Female	10	35	History
4. Hatice	Vice-principal	Syria	Female	12	38	Classroom Teaching
5. Fatma	Teacher	Turkey	Female	5	32	Turkish
6. Emine	Teacher	Turkey	Female	1	25	Turkish
7. Ali	Teacher	Turkey	Male	6	35	Turkish
8. Hasan	Teacher	Syria	Male	10	35	Mathematics
9. Hüseyin	Teacher	Syria	Male	9	33	Physics
10. Ömer	Teacher	Syria	Male	8	33	Biology
11. Zehra	Teacher	Syria	Female	9	33	Arabic & Social Sciences

The TEC, where the data were collected, had two shifts for students. The morning shift was for elementary-level students and the afternoon shift was for secondary-level students. As the data of this study were collected in the afternoon, Syrian students, who participated in this study, were high school students. Syrian refugee students' ages were between 15 and 20. Four of them were female, and three of them were male. Each Syrian student had

at least one year of interrupted education due to coming to Turkey in the middle of the academic year, a lack of Turkish language skills, not being able to register at a school, and gender issues. Table 2 summarizes information about Syrian students. The names are pseudonyms.

Table 2. Demographic Characteristics of the Syrian Students

Name	Age	Gender	Interrupted Academic Year	Education Level
Nur	17	Female	2	10
Raşa	15	Female	1	9
Mine	20	Female	2	11
Necla	19	Female	3	10
Mecit	20	Male	3	11
Usame	17	Male	2	9
Talha	19	Male	1	12

Data Collection Tools

The data were collected through interviews, active and passive observations. Carspecken (2013) suggests that active and passive observations are necessary to start meaning-making of people's claims in their speech acts. In passive observations, the researcher focuses on getting to know the environment without verbal communication with the participants. In active observation, researchers are involved in verbal communication, when necessary, with the people living in the environment. Observations, as Connelly and Clandinin (1990) also explained, help researchers comprehend the final point of the inquiry and clarify how important features embedded in daily life routines shape participants' stories. Clandinin (2006) also stressed that participants' points of constancy were the observation. Therefore, this study aimed to see whether the constancy of participants' lived experiences aligned with the ongoing discourse of daily routines and symbols used in the TEC.

A semi-structured interview protocol was used for each participant group. These interview protocols included questions about TEC's academic and administrative structure, language education, medium of instruction, activities in TEC, expectations from TEC, and issues of social-cultural adaptation. The observation notes collected before the interviews were used to compile a research journal. The research journal helped the researcher track the chronology of the events and issues mentioned in the interviews. The observation notes enabled the researcher to see the constancy of participant's responses. During the interview, demographic information of the participants such as their gender, age, years of experience either as a student or professional and duration of interrupted education. These information sets provided similarities and differences in participants' lived experiences of education in TECs.

Data Collection Process

The data were gathered from students, principals, and teachers in a three-year TEC program. The data collection process began in the third week of February and concluded in the second week of June. The data collection process started with passive observations to get an understanding of the TEC's organization within the parameters of the obtained ethics permission such as collecting data from those with full consent, gaining consent from parents if the participant is a minor, and getting consent from students after parental approval. After three weeks of passive observation, individuals eligible to participate in the research were contacted to invite them to the research. In March 2016, students, principals, and teachers were contacted to call for volunteers. A Syrian teacher proficient in Turkish and Arabic languages helped the researcher to make the announcement for the study. Potential participants were given one week to decide about their involvement. Interviews with volunteers who had adequate Turkish language skills began on April 11, 2016, and concluded on April 25, 2016. The researcher met with each participant three times, including the main meeting. Meanwhile, the process of active observation started and continued until the end of May. During the interviews, inquiries about the TEC and some educational routines were reviewed thoroughly with the participants to confirm the observation data. The duration of the interviews was a minimum of 35 minutes maximum of 67 minutes. All interviews were recorded and then transcribed for data analysis purposes. This study also used visual data, official documents, and teaching materials to support observations and interviews.

Data Analysis

In narrative analysis, an event summary is an important step to see the significant changes in one's story (Riessman, 2008). The events of each interview were listed after each of them was completed. When the data were transcribed, significant events were matched with the intervals of events mentioned in the transcribed data. The summary of events was shared with the participants to get their opinion about the accuracy of the collected data. This process was completed in December 2017 via online meetings or phone conversations.

In line with the Critical Discourse Analysis (CDA), the data sets were coded through open-ended coding with Nvivo 11. The event summaries before the coding process were only used to understand the critical events in participants' stories and help participants have the opportunity to reflect on their earlier responses. CDA is a qualitative analytical approach for critically defining, interpreting and explaining how discourses construct, perpetuate, and legitimize social norms and values (Wodak & Meyer, 2009). As Mullet (2018) mentions, this analytical approach allows researchers to conduct a detailed analysis of dialogical and symbolic conversations. It provides explanations about how people consciously and unconsciously use language to convey meanings. Therefore, different data sets were interlinked with each other in this study to see the interactions between the conscious and unconscious participants' use of symbolic and conversational messages, such as the use of idioms, and ideological and political phrases in their speech acts. After completing the open-ended coding process by critically analyzing how participants used language to express their stories, the generated codes were categorized to answer the research questions.

Reliability and Validity

The data were coded simultaneously and compared with another researcher who was working in refugee education. After the two researchers discussed the codes and themes, they made the final decision about the codes and how the findings should be represented. During the data analysis, researchers regularly expressed their opinions to ensure that the findings were consistent with the contextual discourse and arguments. In order to generate themes that were universal, no matter which group of people the data came from, the coding process looked at the relationship between Syrian students' social adaptation and other participants' understanding of social adaptation. In each theme and sub-theme, the views of administrators, teachers, and students are shown concerning contextual discourses and arguments that are valid in the institution.

Limitations of the Research

Although the research subjects were chosen voluntarily, the study included Syrian individuals who had Turkish language skills. The researcher's decision to avoid data loss due to translation and lack of trustable translators is one of the limitations. The study, unfortunately, did not include the perspectives of Syrian students and teachers who could not speak Turkish.

This study combines different methodological tools that could be used in narrative inquiry. Researchers are often encouraged to use standard qualitative strategies for collecting and analyzing data. However, postmodern approaches highlight that there is no straightforward empirical-analytic paradigm that could fully explain and capture human experiences (Somerville, 2007). Bettez (2015), therefore, suggested researchers combine the practices of assessment, engage in critical reflexivity, and centralize the relationship between humans and objects to generate a new form of inquiry by bringing existing inquiry forms together. For example, this research used observational data to support dialogical data sets and understand the intended meaning of participants' speech acts for sharing their stories in TECs. Although the observational data was not used as one of the primary data sets in the analysis, using it In the data analysis showed that it was intertwined with the stories. As Leslie (2017) claims, I negate the assumption that researchers should carry out straightforward research projects and support the fact that there are multiple ways of designing and carrying out research projects that engage with a complex and ever-changing world.

Findings

The findings of the study are presented under the following themes: (1) role of the academic and administrative structure of TEC; (2) role of the medium of instruction and Turkish language classes; (3) perceptions of social adaptation. The first and second themes provide answers to the first research question. These themes explain that the academic structure of TECs has a strong role in the social adaptation of Syrian students. The academic structure, in general, raises students' concerns about academic success, whereas the administration structure causes Syrian students to be exposed to social pressure from Syrian administrators, and receive mixed messages about how they should be part of the Turkish community. The third theme explains how social adaptation is perceived and defined by the participants of the study to show the discrepancies in social perception among the participants. The findings revealed that TECs could not provide meaningful and consistent messages about

social adaptation, but the use of Arabic as the medium of instruction created sympathy towards Turkey among Syrian refugees.

Role of the Academic and Administrative Structure of TEC

The participants had differing perspectives on how the TEC worked and how helpful they were. While the young students enrolling in TEC saw these institutions as a stepping-stone to the next stage of their education and for Turkish schools, Syrian administrators and instructors saw them as a way to maintain their culture. Finally, Turkish officials and instructors argued that these schools were established to give temporary assistance to kids whose education had been disrupted. Because there are differences of opinion about how the institution operates, the participants establish the TECs' aims according to their perspectives. The opinions of the participant groups on the institution's aims, as well as their justifications for those judgments, are described in depth under sub-themes.

The Objective of the TECs

Syrian students, Syrian and Turkish administrators and teachers all have different perspectives on the TECs' mission. As a result, based on what the participants said, there is an unnamed conflict between the groups within the institution. There is a disagreement of view among the participating parties due to the differences of opinion between the instructor, the student, and the administrators concerning the institution's aims. However, because of the institution's hierarchical organization and power balance, the members are hesitant to voice the issue. Usame stated that the Syrian students were under pressure as a result of the circumstances.

> I do not want teachers to be this angry. I want to win the exam. A diploma is needed. Our principal says it is required to be Syrian. However, he says, do not tell this to the other principal. He says, "Tell them; I studied; I learned Turkish." The Turkish principal wants something else. He says it is required to know the language. I do not know what to do. How do I say this? There is a lot of pressure. [†]

Syrian students said that these institutes were founded in response to Syrian parents' wish to preserve their culture. These TECs, according to students, functioned in accordance with their parents' wishes and were seen by Syrian parents as a political socialization tool and a cultural sanctuary for maintaining their culture. Yet, Syrian students thought that these institutions should educate Syrian students about the Turkish educational system. Nur, who wanted to study for the university examinations, believed that their parents' attitude is harmful to them:

> Mom and dad are afraid a lot. We will be different. They think that we will not be relaxed. I do not think so. They do not even know Turkish students. Mom and dad are afraid; hence we come here—no Turkish friends. No meeting. Dad says, be Syrian. But the school says to learn Turkish. Only Turkish is not possible. University is required. Work is required. School should help us with exams. We study for one exam; the Turkish is different. The same exam is required. We are (are) unsatisfied. Turkish school is hard, but to have the same examination is good. It is hard for us. I am studying for the exam. There are two years, but I must start at once.

The different exams Nur talked about referred to alternative university entrance exams taken for entering the universities. Other students, like Nur, also thought that they all took different university entrance exams because of their parents and Turkish administrators in the TECs. Some of the students said they would study at the university as special students (a different way of registration in the Turkish system.), while others said they would take the foreign student exam (YOS), and others said they wanted to go to a private university. The Turkish administrators said that students' preparations for university in different ways were not related to TECs' aim, but students' choices for university entrance exams vary due to the official documents and financial conditions of each student. Syrian teachers also supported the Turkish administrators that the aim of institutions was not to prepare for university. The Turkish administrators indicated that the primary objective of the TECs was to close the gaps in Syrian students' education and channel them into formal education. The principal of the center, Ahmet, clarified the institution's aim and the logic behind the word 'temporary' with the following sentences.

> As the name suggests, these schools are temporary and will be closed down. However, they continue to operate due to high demand. Our objective is to continue the education of children. Especially those who do not speak Turkish and receive education in Arabic. Although in limited amounts, we have books for teaching the Turkish language. It is better than nothing. But everyone comes here with their

[†] The excerpts from the interviews of the Syrian participants were not arranged in accordance with the grammar rules to be faithful to the participant's statement.

> plan. Parents are trying to protect their children from assimilation. Students want to go to university. Syrian administrators want something else. I think that they do not support the idea of teaching the Turkish language here since they believe that they could find jobs when Syrian children speak Turkish.

Turkish administrators frequently stated that TECs are compatible with the Temporary Protection Laws. They often highlighted that the Syrian people had a say in the content of the education given in these institutions. Although the Turkish administrators accepted that it was illegal not to include the opinions of Syrian educators, their implicit discourses and behaviors showed that they had a say in the balance of power. Moreover, the Turkish administrators criticized Syrian administrators and teachers for their reluctance in teaching Turkish and for their agenda.

> We often do the opposite of what the state tells us. The state says, 'Teach them Turkish to attend our schools,' but Syrians seem content. There are no obligatory measures to encourage Syrians to go to our schools yet. Sometimes we also encourage them to stay. Especially when we think that some group of children will not fit into our system. For instance, Syrians want girls and boys to sit separately. I understand their culture, but here, it is different. You know about that temporary protection law. We make our decisions accordingly. We value adaptation and respect their culture, but Syrian teachers must also be eager in doing the same thing.

On the other hand, Syrian teachers and administrators claimed they supported teaching the Turkish language when Turkish administrators and teachers were around. However, they continued their cultural politics when they were on their own. Syrian teacher Huseyin mentioned that he argued with the other Syrian teachers and administrators about this issue:

> My child is in a Turkish school. I do not want him to study there. Syrian teachers teach our children to be Syrians. They say, be Turkish, later. This is not right, I said. Why are you doing it like this? Let the kids learn the Turkish language. He got mad at me. I come from Syria, but I am not Arab. He says I do not understand. They want the kids to be Arabs and speak only Arabic.

> Turkish teachers and some Syrian teachers stated that each group used a distinctive national discourse in TECs. While the Syrian administrators did not comment on this subject, their statements regarding the aim of TECs showed that they supported Arab nationalism. In general, Syrian administrators said that the purpose of these schools was to protect Syrian students who did not speak the Turkish language against the potential dangers of cultural corruption and physical harm they would be exposed to in public schools. The Syrian vice-principal, Hatice Hanım, explained that there were Syrian students transferred to TECs to protect themselves: "Children should speak Turkish, but they do not know how. Other schools are problematic. They tell our Syrian kids to leave, and they beat them (the participant was questioned to clarify which groups beat them). Turkish kids beat them. They say you are Syrian. They should be Syrian. We registered them in this school. This school is good. They are learning their language, not other languages. There is trust. There is order. Culture is important. There is culture. They learn Arabic, but the essential things are trust and order. For example, this kid was beaten and then came here. Then the other one told us that he had no friends and came here. When there was trouble, they came here. We do not want any trouble. Let him stay there. The other principal tells them to stay in public schools, but I say registration is needed.

Ms. Hatice's commentary reflected the opinions of the Syrian administrators regarding how they perceive TECs' aim. The Syrian administrators thought these schools existed to provide students with safe shelter. They focused on making students feel safe; however, the safety concept mostly was constructed on cultural protection. Although there was an emphasis on cultural protection, the Syrian teachers and administrators did not show the same attention to the quality of education students receive. A few Syrian teachers supported that the academic purpose of the TECS should be improved. Syrian math teacher Hasan mentioned that students needed education and should be free from ideological views.

> I came to Turkey four years ago. One of my children was born here. One of them is in this school. He went to a Turkish school first. I started to work here. Then I brought him here. I thought he would learn Turkish quickly and would be supported. It did not happen. Arabic is spoken a lot, but Turkish is not. He is going to a Turkish school next year. There is so much fight here. Mehmet and Ahmet's teachers argue a lot and do things differently. One of them says that they (students) should go to a Turkish school and the other says that it is good and safe here. Teachers teach their classes, but it is as if the children do not live in Turkey. Some have been here for years but still cannot speak Turkish. They learn Arabic, but out in the streets, it is Turkish. Work is in Turkish. We want these schools to offer good education and make children happy, but many problems exist.

According to Syrian teachers, Syrian administrators provided information about the aim of TECS based on what they thought should be in TECs. In addition, other teachers such as Hasan tried to indirectly explain an ideological conflict within the institution. Turkish teachers remained silent about the ideological conflict or changed the subject when it was brought up. They often felt outnumbered in TECs. Yet, they indirectly expressed how the conflict affected their education. Ali, one of the Turkish teachers, quickly stated that the conflict between the Syrian and Turkish administrations was a deep issue that he stayed away from and then expressed his views on the TECs' aim.

> The situation between the Turkish and Syrian administrations does not go unnoticed, but this situation does not concern us. I do not like to discuss it as well. We do not have enough people here. I do my responsibilities as they should be. I help the children learn Turkish, feel comfortable outside by teaching culture, and teach the value of the kindness shown to them. However, forgive my directness; some are ungrateful. They criticize our help to them. They want everything and nothing, but they do not know Turkish, yet they think Turkey should allow them to be registered in universities without knowing Turkish. If they go to another country, they will not be allowed near the school's door without learning the language of that country. Therefore, we are trying to teach language to these kids here. They should learn the language so that they can do whatever they want.

The participants' responses to the aim of TECs revealed more significant problems. As there was no consensus among Syrian and Turkish administration and staff, and Syrian students, each group reflected their own ideology on students and wanted to carry their personal agenda. It also showed that the head administration used a different strategy for the registration of Syrian students. The Turkish administration supported the enrollment of students in public schools, but the Syrian administration encouraged students to study in TECs and they often justified their encouragement by highlighting the lack of language skills among Syrian students. The participants' responses also provided explanations about how the dual administration system worked in TECs. Due to this dual management frame, students were exposed to various adaptation messages and nationalist ideologies. Mine, a Syrian student, summarized the issue: "Home is different. School is different... Teachers in school are different. So, who is right? What should we do? No one is thinking about that." As Mine indicated, Syrian students did not know what is right and what is wrong regarding socio-cultural adaptation.

Administrative Structure and Education

The participants do not provide direct information about the administrative structure, but when observed, the Temporary Education Center functions as a regular school with a two-stage administration system. While all of the administrators were subjected to comply with the rules and regulations of the Ministry of National Education, Syrian administrators and teachers mentioned that they were responsible for organizing the curriculum and course content. They also added that the Turkish administrators had an inspection role and examined the educational activities. The Turkish administrators and teachers also confirmed that they were acting as an upper-level administration to monitor educational activities and communicate with the local educational authorities. The Syrian administration complained that they did not have the authority to decide on administrative issues. Mehmet, the Syrian principal, explained their complaints regarding having limited administrative power:

> Turkish teachers decide what they want because they express their thoughts to the Turkish principal. They want to teach Turkish, but our students do not want to. We tell them, but the principal does not listen to us. If we administered the school, our children would be better and learn more. We only decide what to teach in the school, nothing more.

Syrian and Turkish teachers stated that they took orders from the Turkish administration, but Syrian teachers consulted the Syrian administration for educational activities carried out in the Arabic language. Teachers who teach the Turkish language had to follow the Turkish administration's directions. Their duty is to teach Turkish preparation. In contrast, Syrian administrators oversaw Syrian teachers and received their education material from the Syrian Commission of Education. Emine, one of the Turkish teachers, talked about the communication issues between teachers regarding organizing educational content.

> We do not hold meetings between Syrian and Turkish teachers about teaching. It does not seem necessary at the moment either. It is necessary, in my opinion. While we were studying at the faculty of education, our professors told us to cooperate. But it is challenging to establish good relationships with Syrian teachers and maintain good communication when there are two administrations. Our principal (Turkish Principal) supports us, and he is knowledgeable about teaching Turkish to foreigners. We, in principle, do not interfere with each other's work. We are warned not to teach anything political. Yet did someone warn them? Indeed not. Everything is Arabic. Students who will register at school are made to explain themselves in Arabic. Nonetheless, Syrian administrators are both translators and assessors, our principal respects their views. Some Syrian teachers said that the Syrian principal

> translates whatever he chooses to, but I do not know about that. What I know, he is making sure that more students come to TEC. Our principal is only strict about not accepting students to the first grade.

Emine's comments showed that there were problems regarding monitoring educational activities. Furthermore, rather than informing teachers about their roles and responsibilities through written decisions, both Syrian and Turkish teachers received instructions verbally. She also provided information about the registration process. In TECs, the only evident enrollment requirement was that first-year primary school children had to be enrolled in public schools. In other words, Syrian parents were obligated to send their school-aged children to public schools. This approach, according to Turkish teachers, encouraged Syrian children to learn Turkish language skills. Moreover, Turkish teachers claimed that students in Turkish schools were not happy in TECs. The mathematics teacher, Hasan, also stated that his child had social adaptation problems after his child was transferred to the TEC. However, Syrian administrators were not enthusiastic about the idea of pupils attending Turkish schools due to their concerns about cultural corruption and loss of identity. On the other hand, Syrian and Turkish teachers implied that the Syrian administrators are attempting to attract more Syrian students to TECs by citing various concerns such as bullying and safety rather than expressing their true feelings about transforming TECs into political places that teach Arab values.

Academic Structure

These institutions offered culturally relevant curricula and a medium of instruction in Arabic. The features of this curriculum usually involved some cultural activities such as marbling art and seminars about wellbeing. The activities usually focus on Syrian culture. As the teaching and administration staff mentioned, the curriculum was created by revising the previous Syrian curriculum, and the Syrian Commission of Education was responsible for the preparation of course materials and books. As Syrian teachers mentioned students continued their education based on the Syrian education system and they highlighted that the differences in the educational programs and activities were not a handicap for Syrian students. However, secondary-level students complained about being educated based on the Syrian Education system and not choosing a field selection such as Science, Math, and Social Science like Turkish students.

This Temporary Education Center incorporated Turkish instruction into the curriculum for five hours each week. Despite the fact that these institutions aim to encourage Syrian students to learn the Turkish language and ease their social adaptation, Turkish language instruction remained restricted, according to Turkish teachers and administrators. Students' Turkish speaking, writing, and reading abilities either lagged behind because of time limitations or were not at the necessary level, which had a detrimental impact on children's adaptation to their new environments. Fatma, a Turkish teacher, claimed that limited language education caused pupils to have social adaptation issues, which she links to the Turkish curriculum's disorganization. She also mentioned that Syrian teachers were the ones to blame because they did not help with the construction of fix schedule:

> I hope that I will continue in the summer. Not to brag about ourselves, but we have a system here. We support third, fourth, and fifth classes with study papers. My timetable is set, but Syrian teachers' timetables are not. Whoever has the time goes to a class and teaches their lesson. Their administration thinks that this is okay. But I get a feeling that they do so to hijack our programs. This way, they can teach more in Arabic and prevent their students from learning Turkish. They often schedule my classes when I am not around. The only thing that we teach with no problem is the cultural activities such as marble art and motivational speeches.

Fatma's remarks were consistent with other teachers. Syrian administrators had the freedom to change the lesson hours and arrangements based on Syrian teachers' availability. Although Turkish administrators stepped in to resolve the timetable issues, Syrian administrators defended themselves that they needed to make changes in the timetable due to limited human resources. As Fatma mentioned, the Turkish administration could only continue their extracurricular activities as they planned.

Syrian pupils' concerns about the academic curriculum originated from their fears for the future. Students, particularly those with strong language abilities, stated that learning subjects in Arabic helped them grasp the content better. Those with weak Turkish language abilities, on the other hand, believed that they would not be able to go to the next stage, and so their anxiety for their future was greater than those with better Turkish skills. Macit, a Syrian student, observed that students who spoke Turkish were more engaged during lectures. Macit also mentioned that when they approached the Syrian administrators to modify the subject and gave more time to learn Turkish, they were not supported by their classmates. Macit also stated that those who opposed the changes in the curriculum had higher socioeconomic status and could afford to tutor outside which caused the academic structure modifications to be postponed.

> I speak Turkish just a little bit (I complimented his speaking to encourage him.) Thank you, but it is not good. We have a neighbor. He studies at the university. He teaches Turkish to me. He advised me that if I speak with short sentences, people will understand. He told me to do so. (I repeated the questions since he paused. Why do you want the lessons to change?) Everything is in Arabic here, but universities are in Turkish. Turkish is needed. The teacher says it is not possible. Friends told the administration that they wanted Turkish. However, some friends told me that they did not want to because they are Syrians. They need Arabic. They speak Turkish and English. The ones who came earlier, I mean. They did not see the war. I did. The ones who came later saw it. We told the principal, let us change it. Friends came. They did not. They learn Turkish. They go to private schools. They say there is no need. But it is needed by me. They hire a teacher. They know the material. I did not go to school. Three years. No school in Syria for a year. No school in Lebanon for a year. No school here for a year. Then mother says, go to school, you need it. But lessons are hard. I do not understand it. The neighbor helps. Then, it is good.

Macit's statements showed that Syrian students with different socio-economic levels had different agendas in coming to TEC. Students, like Macit, often wanted to learn Turkish and receive additional support for university entrance exams, whereas those coming from higher socio-economic status or who resettled before the crisis escalated used TECs as political spaces to maintain their Syrian identity.

Raşa was one of the students with better socio-economic status and no war trauma. She came to Turkey with a residential permit, yet she did not know her current legal status in Turkey. As she explained, she went to a public school after coming to Turkey as there were no options for Syrian students in 2011. When the TECs were opened, she was transferred to TECs because her family wanted her to learn Arabic and Syrian culture. Raşa admitted that she struggled in her first year in the Turkish school, but as she was the only student in the class, her instructor assisted her individually in teaching the Turkish language. When she was transferred to the TEC, she struggled due to the differences in the curriculum, but as she mentioned "she was not bothered with these changes because she came to TEC to learn her language and culture." She also added, "There is no need to change education, language, and lessons. This school was opened to teach Arabic and provide education in Arabic. But it would be beneficial for all if they received better Turkish language education somewhere else."

Role of the Medium of Instruction and Turkish Language Classes

A discussion about whether Turkish or Arabic should be the language of instruction in TECs continued among students, teachers, and administrators. The quality of and the time allocated for Turkish language instruction were questioned by many Syrian students and Turkish teachers. On the other hand, the Syrian administrators claimed that Turkish education was sufficient. The Syrian teachers thought this issue could be resolved with readjustments in lesson hours. Yet, they did not contribute to the process of preparing a fixed timetable. Turkish administrators took a conciliatory attitude to the concerns and highlighted that issues stated by Syrian and Turkish teachers such as a lack of resources and unsuitable materials for the age groups were accurate. Yet, they did not take any preventative measures to meet the needs of students and address the issues appropriately.

Suitability of Turkish Education Materials for the Age Groups

During the interviews, the Syrian principal showed the storeroom where the books that the Syrian Education Commission kept. These books were revised by removing the content about the former Syrian regime. Although there were not enough books in this storeroom for every student, resources were available for different subjects (Figure 1. An exemplary social studies textbook).

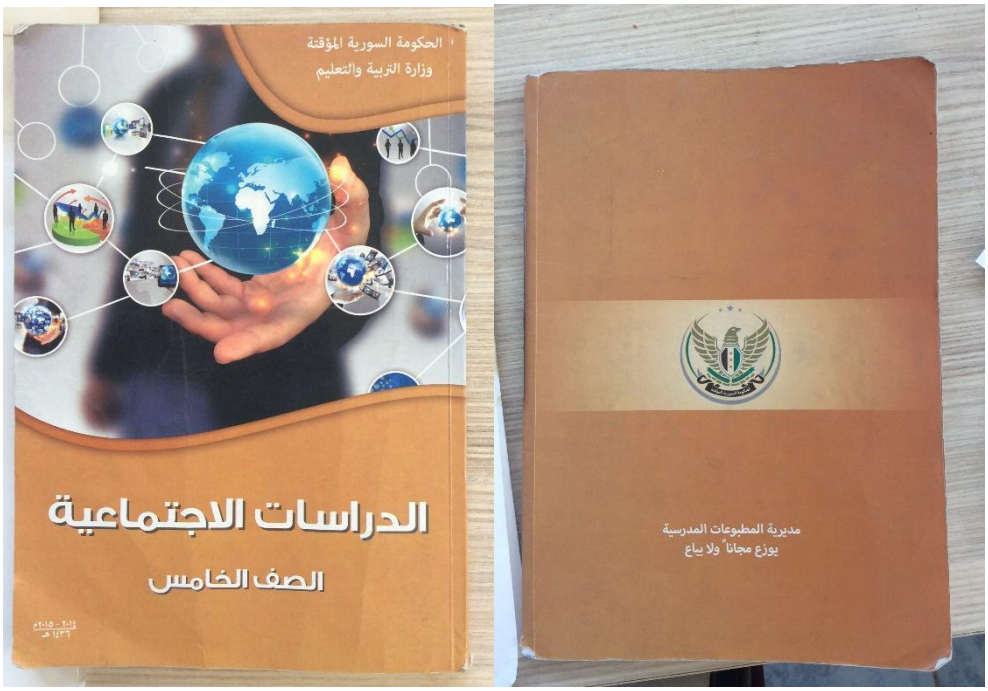

Figure 1. An exemplary textbook used for Arabic education.

Turkish teachers indicated that Arabic resources were available, but there was no repository for Turkish resources to assist students with their Turkish studies. Ali's instructor clearly stated this situation, and the criticisms of other Turkish teachers as follows: "They act as though this institution's purpose is not to assist them, but to compensate for our needs. We lack the necessary resources to teach students Turkish, and instead organize childish events.' Turkish teachers provided the essential learning materials for their students' education either through their own efforts or through the Turkish principal's access to resources provided by various institutions for teaching the Turkish language and culture. The Turkish principal mentioned that a used Turkish book was sold for ten TL. Nonetheless, because the students could not afford it, he began negotiating with the book's publisher to give free resources (Figure 2. The materials used for teaching the Turkish language).

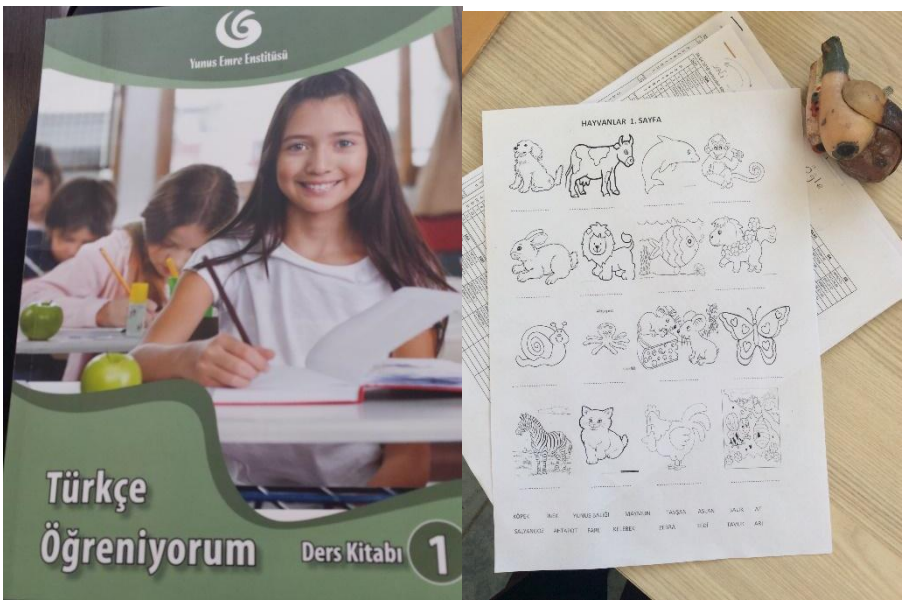

Figure 2. Exemplary materials used for teaching the Turkish language.

Another important issue, as expressed uniformly by the Turkish teachers and administrators, was the inadequacy of Turkish language materials used in the TECs for the different age groups. Turkish teachers stated that the course and exercise books they used were originally designed to teach Turkish literacy to adults in Turkey, but recently they were revised for teaching students at the elementary and secondary levels. Teachers still complained that these materials were insufficient to develop semantic and contextual language learning due

to their overemphasis on reading and writing skills. Teacher Ali explained the problems of using insufficient materials.

> We follow a similar methodology used in mosques or during childhood for teaching the Quran. We were able to read the Arabic script but did not know what the text meant. Students also write and read, but they do not comprehend what they read and write. Basically, we assume that Syrians could communicate with us by using the skills taught to them. In reality, they do not have adequate language skills to communicate. When language is missing, everything stays incomplete. In such circumstances, how is it possible to speak about social adaptation, comprehension, and enculturation?

Turkish teachers emphasized the need of learning Turkish for social adaptation and educating students about cultural values at every opportunity. However, a lack of decent insight regarding the Syrian crisis results in a disagreement between teachers and administrators about how many Syrian students should study Turkish and how much they should continue learning Arabic. All participants agreed that the education provided to students was dependent upon the ongoing Syrian conflict. Nonetheless, Turkish and Syrian educators had varying opinions on the medium of instruction. Syrian educators desire that instruction be delivered in Arabic, and they had no intention to provide Turkish language instruction to protect their culture and social identity. Turkish educators argued that education should be provided in the Turkish language and these students should receive instruction in the Arabic language as if it is part of second language instruction.

Perceptions of Social Adaptation

Administrators, teachers, and students discussed the subject of social adaptation from a variety of perspectives. Social adaptation was viewed as a stressor by Syrian students as they were exposed to a variety of social adaptation discourses from their families, teachers, and peers. Turkish administrators wanted Syrian students to slowly adapt to Turkish society and develop appropriate behaviors in TECs. The Syrian administrators did not favor social adaptation. Instead, they wanted to promote Arab nationalism and implicitly stated that they had no expectation of establishing social harmony outside of their immediate environment. Syrian and Turkish teachers typically discussed academic concerns and advocated for students' adaptability to their school environment. Syrian and Turkish educators emphasized the critical nature of social adaptation. They mentioned that the variety of discourses to which students were exposed would create difficulties with the social adaptation process or national identity development.

Social Adaptation from the Perspective of Syrian Students

Syrian students come from a variety of socioeconomic, ethnic, and cultural backgrounds. For example, Necla was unable to attend a regular school for three years. Additionally, she noted that her educational background was unusual because her family's financial status in Syria was unstable. Necla said that the students' financial situation back home in Syria also generated various opinions about how to adapt to their new lives in Turkey:

> There was no prosperity in Syria. My school was regular (She used the word "adi", which meant normal in Arabic.). Teachers were harsh. They frequently shouted. It is good here. But others say that Turkish schools are not good. They say they are better in Syria. They say going abroad from here is possible. They are rich. They know everything. They can do everything. They go to private schools both here and there. I am good here. I say we learn Turkish. They say it is not required. I want to go to university. It is possible in Turkey. Unlike Syria. They say we should be like the students here. They say we are Arabic, and they are Turkish. Just like Syrian teachers.

Necla stated that students often had different adaptation expectations due to their economic circumstances. Mecit and Mine, like Necla, remarked that students had different perceptions of social adaptations and identity. Mine stated, the economically advantaged students prefer to continue a nationalist discourse and these students often tried to impose their ideas on others by creating pressures:

> Some students tell us not to be Turkish. My grandmother was Ottoman, but my dad is Arab, and my mom is half Arab and half Turk. Other Syrian girls say: "You are a Turk." I told the Turkish principal that they speak like this. Then he told them not to speak like that. But the Syrian principal always said that the Arabic culture is better. The other Syrian girls are rich and say whatever they want. All are good, but we are here now. It is necessary to learn and understand Turkey.

Talha stated that he was one of the students who had conflicts about social adaptation. He embraced his Arab identity and sympathized with Turkey due to Turkey's refugee policies. He also found the Arab nationalism of the Syrian administrators correct since he was ethnically Arab, and her father was a notable social leader. However, his fear of the future and desire not to return led him to think differently from his family like others:

> Father says Syria; teacher says Syria. Then Turkish teachers say it is necessary to know Turkish. Turkish is necessary to go to university. I am Syrian. I cannot be a Turk. But it is necessary to understand Turkey. Mom and dad are afraid that I will be a Turk. I will not; I am Syrian. I know. Turkey sheltered us and gave us school. Here it is very nice. But I do not know what to do. I want to learn Turkish. There are no schools in Syria. Here there are. I want to live here. I did not tell my father that I would stay. Dad says we will return one day.

Like Talha, many students either wanted to stay in Turkey or continue their education in other countries. Therefore, students emphasized that a certain level of social adaptation was mandatory and that learning Turkish was essential. However, class, economic and social differences among them created different perspectives on the level of social adaptation. The varying perspectives often led some student groups to create pressure on other students to protect their national identity and political agenda.

Social Adaptation from the Perspective of the Administration

Syrian and Turkish teachers and administrators stated that the Syrian education system and the Turkish education system showed similarities in respect for elders, teacher-student relations, and the importance of academic knowledge. However, the contradiction of values and notions taught in the Syrian curriculum with the Turkish education system affected Turkish education in general and social adaptation. For this reason and due to security concerns, Syrian administrators did not support socio-cultural adaptation for Syrian students. Although the Syrian principal Mehmet often emphasized that there should be separate education and social areas due to security concerns, he said, "There is no Arabic in the Turkish school. We are different. Here all are Syrian. The Turkish here is enough." By using expressions like these, he implied that he supported segregated educational environments and that he found the issue of social adaptation sufficient only with the language education given in the center.

Although the Turkish principal stated that he knew that the Syrian administrators and some students practice nationalism in these centers, he hoped that social adaptation would happen sooner, or later once Syrian students noticed the opportunities in Turkey. He said, "Turkey is a strong country, Syrian people will adapt to this place due to the humanitarian support provided. Most of these kids received services here that they never witnessed in their country. Therefore, even if Mehmet sustains his nationalistic beliefs, students will eventually give the right decisions*"* The Turkish principal believed that Syrian students would choose social adaptation over Arab nationalism after acknowledging the support given to them.

Social Adaptation from the Perspective of Teachers

Although the teachers trained in the Syrian and Turkish education systems made a common statement that the education systems were similar, they had different social adaptation expectations for Syrian students. The differences in social adaptation perspectives were often guided by their different ideologies about homeland, nation, loyalty, religious feelings, and citizenship duties. The Turkish teachers said that they occasionally talked about things such as homeland, nation, and citizenship. Ali, one of the Turkish language teachers, said he sometimes tried to explain how important it was to fight for the country, Syrian teachers said his speeches made some students uncomfortable. The issue was evaluated by Teacher Ali as follows:

> We are all working for the education of these children here. I do not understand why they are getting uncomfortable due to my words. What is wrong with fighting for your country or loving your country? I taught these students more than Turkish students. This is my national duty. It is part of our education that they learn about these feelings. No matter how much Syrian teachers complain, I will continue to teach in the way I know.

Although the Syrian teacher Ömer admitted that other teachers, like Ali, were doing their best for Syrian children, he stated that Syrian teachers should provide information about national identity and other related concepts. He was also concerned that Turkish teachers would not pay attention to Syrian students' trauma-related experiences:

> Turkish teachers sometimes say, "You came here; you did not fight for Syria" They did not mean bad, but we saw the war. War is hard. These children saw it. They are afraid. When they came here, they were so little. How could they fight in the war? We are here, too. We tell them, "Love Syria" that is it. Many of us have no fathers, no aunts, and no siblings. All dead. But they (Turkish teachers) do not know. We know. Others do not know how to say, "Love Syria". Let us say it.

Syrian teachers believed that social adaptation outside the school was essential, but they had concerns that students received messages at different frequencies about social adaptation from the administration and teachers, their peers, and their families outside the school. Moreover, they acknowledged that the inequality between the course hours generated the underestimation of Turkish lessons among students. Turkish teachers

complained that Syrian teachers did nothing but prevent them from teaching Turkish to Syrian students. According to their opinion, especially the older students, who continued their daily lives by speaking Arabic, already lost their interest in learning Turkish. Fatma, one of the Turkish teachers, said: "They continue their school and social life without any difficulties just by speaking Arabic, why would they worry about learning Turkish? At the end of the day, it causes them not to worry about creating an environment beyond their own or isolated one."

Conclusion and Discussions

The staff participating in the teaching process in TECs did not have a shared understanding of the center's aim, they used diverse approaches to social adaptation. Although these centers originally aimed to help students who had their education interrupted make rapid academic progress and set an example for other countries hosting refugees around the world by providing education in their native language, they also pose a risk in terms of social adaptation. The dual administrative structure of these institutes, according to the findings, provided the space for multiple nationalist discourses to be carried out, causing Syrian students to be confused about social adaptation and establishing conflicting identities as Syrian, refugees and young people. Because they studied in isolated environments, many students who graduated from or were currently enrolled in these schools were concerned about their future. Furthermore, the grouping that arose as a result of Syrian students' social adaptation views posed a concern to the young people who would stay in Turkey in the future. This study highlighted the importance of language education and interconnection with Turkish students for young people under temporary protection status. Learning the Turkish language was not only helpful for them to make their own decisions but to eliminate the pressure that comes from various social actors in both the Turkish and their community.

Language education is critical for the development of social adaptation for refugees since language is not only a medium of communication but also an element in building intercultural communication and understanding (Tseng, 2018). The findings show that Turkish language courses, which were limited to 5-10 hours, focused on grammar and lacked the essential aspect of language teaching from socio-cultural adaptation perspective. This finding aligns with the existing literature that little attention is paid to cultural and conceptual constructs or a deeper understanding of the meaning (Aydin & Kaya, 2019; Balkar et al., 2016; Kaya, 2019; Taskin & Erdemli, 2018; Yolcu & Doğan, 2022). As with other studies conducted in different contexts (Hattam & Every, 2010; Matthews, 2008; Rutter, 2006; Rutter & Jones, 1998), this study underlines the significance of language instruction for social adaptation. However, as the findings indicate, education provided in isolated circumstances exposes refugees to a variety of adaptation discourses from both their social groups and Turkish communities.

The findings also suggest that the organizational structure of the educational institutions, along with the social actors' concerns about their national identity, affect the development of the socio-cultural adaptation process. In the literature, there was no supporting study to support or negate this finding because this problem originated from TECs' unique administration model. As seen in the findings, Syrian students were exposed to patriotic messages from Syrian authorities, while Turkish authorities promoted the inclusion of these students into the Turkish community. Turkish authorities' inclusive education model was problematic due to the inconsistencies that occurred as a result of dual administration, but inclusive education methods supported by culturally-relevant pedagogy and structured based on socio-cultural adaptation strategies would be more effective in preventing refugee students from receiving overly ideological messages from their host and refugee communities. The central administration needs to focus more on developing cohesion and harmony in and out of the classroom. As Yolcu (2023) explains, besides the administration of the teachers, inclusive education process is a process of making the child and the society. Teachers may not be directly teaching social and cultural values, but their instruction helps children conceptualize a cultural understanding of their native and host communities (Yolcu, 2023). Without assuring how teachers and their administrative structure guarantee inclusivity in their instruction and language support, refugee students are in danger of being exposed to ideological pressure from their peers and Syrian teachers. With inclusive education, which respects both the culture of local and refugee communities, refugee students may be exposed to more realistic discourses and realities about their social adaptation process and preferences, and they can protect themselves from various forms of pressure (Yalcinkaya et al., 2018).

The findings suggest that Syrian and Turkish staff hold each other responsible for generating different socio-adaptation discourses in TEC. It is evident that they have different value orientations in promoting or preventing social adaptation among Syrian students. Additionally, this study shows that educational programs like temporary education centers can pose a risk for refugee students' social adaptation if the aims of these centers are not clearly stated and shared with the local and refugee communities. Berry (2005; 2006) also stated that isolated refugee education institutions should not continue to exist because they bring along potential social

adaptation problems. This study also supported the earlier findings of other studies about the social adaptation process. Other countries have created programs similar to the Temporary Education Centers for refugee children whose education has been interrupted and who lack adequate language abilities (Majeed et al., 2018; Matthews, 2008; Tseng, 2018; Veugelers, 2007), but students are fully exposed to the local languages during these practices. Although the institutions and practices created by other countries are perceived as assimilation and strict enculturation examples in the literature, this study suggests that when the native language of refugees is preferred over the official language of the host country, harmony between refugee and local communities has a detrimental effect on refugee students' social adaptation and identity development (Kaya, 2019; Yalcinkaya et al., 2018).

Currently, these centers are no longer providing services, but considering the number of students who attended TECs, new measures should be introduced to educate refugees and eliminate language-related problems. Even after 12 years, refugee students are still having language issues. Therefore, it is important to introduce new measures to teach Turkish to Syrian students to eliminate prolonged social adaptation issues and anti-refugee sentiments that originated because of isolated community development. This suggestion is compatible with many studies as they highlight that language skills and conceptual language education must be prioritized to resolve adaptation issues (Georgiou, 2020; Wofford & Tibi, 2018). Another critical point to consider is that cultural elements, particularly the concepts such as homeland, national culture, and patriotism, should be avoided during language instruction until a decision is made regarding which values and judgments are shared by Syrian and Turkish society.

Although Turkish and Syrian teachers and administrators claimed that they desired an educational atmosphere that accommodated students' demands, no verbal evidence surfaced during the interviews indicating they did so. As a result, students' perspectives on social adaptation and Turkish education will be critical in developing a successful educational model. If students' perspectives are not taken into account during conversations about how education should be delivered, many students will opt out of school or pursue other life pathways that do not satisfy their educational needs. At all levels and in all types of education, student opinions are critical. However, given that, the education of students studying in TECs and similar institutions is frequently interrupted by war and other traumatic events, or they encounter difficult circumstances prior to beginning their education, it is unavoidable that the education they receive is always designed with goals and values that support their motivation. In relation to the lack of language skills among Syrian students, future studies should consider including Syrian students who are not fluent in the Turkish language since their perspectives and experiences can be different from those who speak the language fluently. It is believed that their opinions will unpack issues of why Syrian students struggle to learn the Turkish language.

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Article History
Received: 25.10.2022
Received in revised form: 28.05.2023
Accepted: 27.06.2023
Available online: 28.06.2023
Article Type: Research Article

ADIYAMAN UNIVERSITY
Journal of Educational Sciences
(AUJES)

https://dergipark.org.tr/tr/pub/adyuebd

The Investigation of the 2018 Life Studies Curriculum and Practices to Provide Students with 21 st Century Skills

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To cite this article:
Kıyıkçı, A. & Özyürt, M. (2023). The investigation of the 2018 life studies curriculum and practices to provide students with 21 st century skills. *Adiyaman Univesity Journal of Educational Sciences*, *13*(1), 21-40.

Adiyaman University Journal of Educational Sciences

Volume 13, Number 1, June 2023, Page 21-40 ISSN:2149-2727
DOI: http://dx.doi.org/10.17984/adyuebd.1194198

The Investigation of the 2018 Life Studies Curriculum and Practices to Provide Students with 21 st Century Skills

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Abstract

The present study examined the 2018 Life Studies curriculum (LSC) and its practices, which have been in implementation in Turkey, in terms of developing students' 21st century skills. For this purpose, the 2018 LSC curriculum was scrutinized together with the Life Studies text books recommended by the Ministry of National Education for the first, second, and third graders in the 2020-2021 academic year. The study adopted document analysis, one of the qualitative research methods, and employed descriptive analysis in analysing research data.Partnership21 framework was used as the frame of reference in addressing research data. As a result, it was determined that the 2018 LSC learning outcomes and the activities included in the Life Studies coursebooks and workbooks are mostly aimed at improving the students' learning and innovation skills.Additionally, learning outcomes and activities are focused on developing critical thinking and problem solving to the most, and collaboration to the least among that cluster. The learning outcomes and activities included in the curriculum and books attempt to promote information literacy among the information, media, and technology skills, and the flexibility and adaptability among life and career skills.However, the curriculum ignores improving media literacy. Moreover, the coursebooks do not include activities to improve media literacy, productivity, and responsibility skills. It has also been found that there is a harmony between the learning outcomes in the curriculum and the activities in the textbooks in developing 21st century skills.Most of the learning outcomes in the curriculum are aimed at improving students' 21st century skills.However, there isa limited number of practices for the development of those skills in coursebooks and workbooks. Thus, it is recommended to enrich the coursebooks and workbooks with activities aimed at improving students' 21st century skills.

Key words: Life Studies Curriculum, 21st Century Skills, Coursebooks, The P21 Framework, Learning and Innovation Skills, Information, Media and Technology Skills, Life and Career Skills

Introduction

The first quarter of the 21st century, which is called the information age, has led to a global and rapid transformation in the fields of technology, science, art, economy, and education.For countries to survive in this environment, they need to make progress in science and technology.In addition, it is vital to raise innovative, and entrepreneurial individuals with high problem-solving skills who can transfer the knowledge they have learned to daily life (Ekici, Abide, Canbolat, & Öztürk, 2017, Bybee, 2010, Dede, 2010).However, the skills that individuals need to be active in society, and to be successful in education and business life in the 21st century are not limited to those. Individuals' social and intercultural skills and such skills as flexibility, communication, creative thinking, critical thinking, reflective thinking, taking responsibility, and initiative should also be developed (Uluyol & Eryılmaz, 2015).That's why, the diplomas and basic skills acquired by individuals in 21st century business life are not sufficient. A great many local and international research and reports emphasize the importance of such skills as problem-solving, accessing information, and using technology for individuals to be successful in business life (Ananiadou & Claro, 2009; Canso, 2018; Kivunja, 2015; Reich, 1992; Rotherham & Willingham, 2009; Silva, 2009). All these are called 21st century skills.

Studies have been carried out to define and classify 21st century skills by certain institutions, organizations, and communities such as OECD, NCREL, ISTE, P21, and ATCS. The products of these studies are called 21st century skill frameworks. Figure 1 demonstrates the most frequently cited 21st century skill frameworks in the literature and how 21st century skills are classified in these frameworks.

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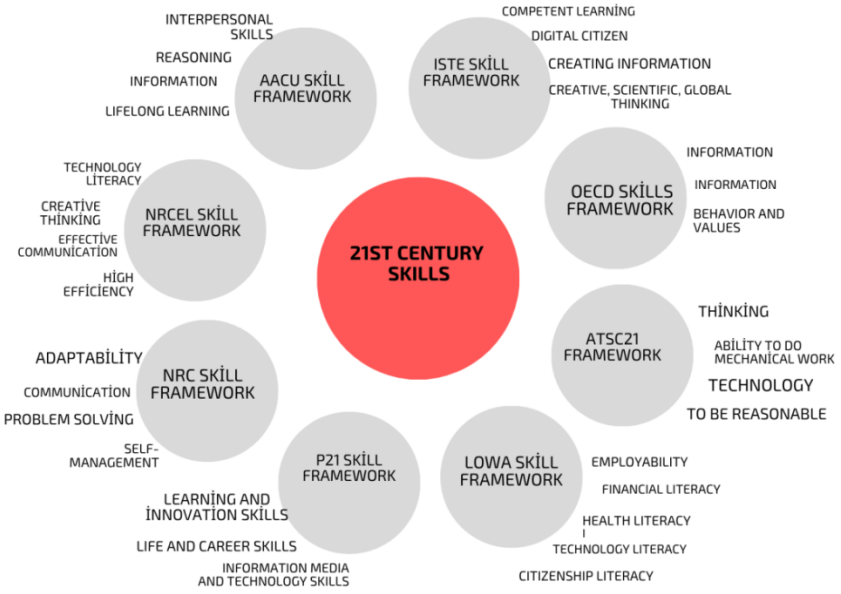


Figure 1.The Frameworks for 21st Century Skills

The examination of these frameworks yields that the skills such as critical thinking, creative thinking, problem-solving, learning to learn, communication, collaboration, and technology literacy are included in all frameworks, albeit with different classifications/sub-dimensions. The P21 skill framework, which is under investigation, is one of the most widely used frameworks in school education. The P21 skill framework, implemented in 21 states and supported by 33 institutions in the USA, is given in Figure 2.

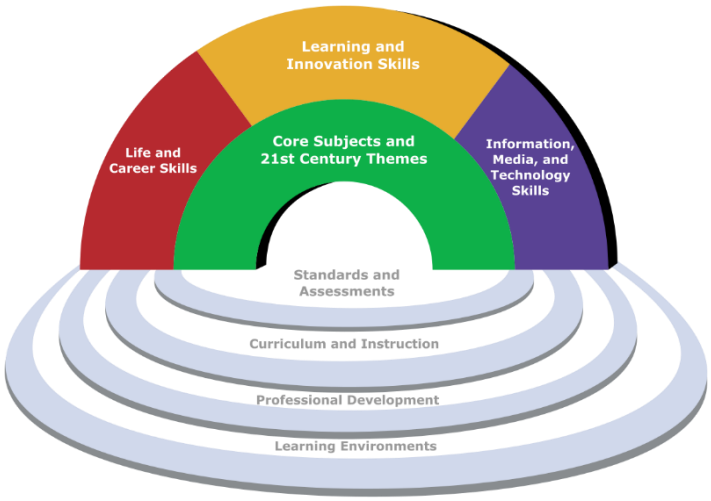


Figure 1 - P21 Framework for 21st Century Learning

Figure 2.21st Century Skills and Support Systems (Partnership for 21st Century Skills, 2015)

Figure 2 indicated that the P21 framework consisted of three dimensions: learning and innovation skills, information media, and technology skills, and life and career skills. *Learning and Innovation* include four skills: creative thinkingand innovation, critical thinking and problem-solving, communication, and collaboration (P21, 2015). These skills are also known as the 4Cs.

The *Information, Media, and Technology*dimension of the P21 framework includes three skills: information literacy, information, communications, and technology (ICT) literacy, and media literacy.These literacies necessitateindividuals to use time and resources effectively in their adventure of accessing information through technology, and to act in accordance with ethical rules in using a variety of media tools (P21, 2015).

*Life and CareerSkills*are categorized as flexibility and adaptability, initiative and self-direction, social and cross-cultural skills, productivity and accountability, leadership, and responsibility.Flexibility and adaptability require adapting to different environments and uncertain situations.It is aimed toequip individuals with the ability to manage time and goals correctly by taking initiative and to work with people with various life experiences and different cultural characteristics through social and cross-cultural skills.Productivity and

responsibility skills refer to workingwith stakeholders follow ingethical rules, and leadership and responsibility skills aim at exploiting each individual's potential decently to achieve common goals (P21, 2015).

Today, the acquisition of these skills by students has become a necessity rather than an option (Williams, 2020). Therefore, a great number of schools organize their education in a way to develop students' 21st century skills, thus, they aim to educate students in a way to be more successful in all areas of life, including professional life(P21, 2015). However, developing these skills necessitates systematic changes in formal education. Curricula and their elements implemented in schools need to be updated by integrating 21st century skills (Nieveen & Plomp, 2017). Moreover, it has been observed that individuals should be active in the processes of knowing, understanding, sensemaking, and realizing during the practices aimed at developing 21st century skills.In this regard, this should be taken into consideration when updating the curriculum (Nair & Ranjan, 2020; Sulistyaningsih, Sulam, Syakur & Musyarofah, 2019).To sum up, curricula with fixed and information-filled content should be replaced by those where teachers are guides and aim to reveal student competencies and skills to meet the needs and expectations of individuals (Ananiadou & Claro, 2009).Canada, Finland, and the Netherlands can be given as examples of countries that reflect this point of view in their curricula. In these countries, curricula are developed in which components such as teacher skills, teaching materials, measurementand evaluation techniques are integrated to develop students' 21st century skills (Fisser & Thijs, 2015).

The studies in Turkey started with the "21st Century Skills and Quality of Education Meeting Series" held for the first time on the 26th of June, 2012.The meetings were organized by the Turkish Industry and Business Association with the participation of representatives of the Ministry of National Education.It was pointed out in these meetings that individuals should have skills such as creative thinking, critical thinking, problem-solving, communication, collaboration, knowing the ways of accessing information, using technology while accessing information, being open-minded, flexible, and adaptable to be successful in business life. Moreover, it has been noted that individuals mustbe aware of their responsibilities, be self-directed and have initiative, have developed social and cultural skills, and have productive and leadership qualities (TÜSİAD, 2013).However, these should not only be regarded as necessary for future business life. These skills are also of great importance for individuals to fulfil their civic duties and take an active part in daily life as a social entity (Çelebi & Altuncu, 2019).As a result, the curricula in practice in Turkey have been updated within this framework (Board of Education, 2017). In this regard, the Life Studies curriculum, which is under investigation, has also been updated (MoNE, 2018).

Updating curricula to develop students' 21st century skills is an important step. It is also vital to examine the inclusiveness and adequacy of the curricula in practice in terms of developingstudents' 21st century skills. That's why, with such a study, matters not provided for, if any, can be identified and curricula and textbooks can be made more functional in improving students' 21st century skills.

A great number of research have problematizedwhether curricula and textbooks aimed at improving 21st century skills in differentlevels of education and various courses in Turkey. To illustrate, the social studies curriculum and textbooks(Demir & Özyurt, 2021), and the social studies teaching undergraduate program (Bozkurt, 2021) were investigated in terms of 21st century skills.Atik & Yetkiner (2021) analysed the learning outcomes of the biology curriculum and Çetin & Çetin (2021) scrutinized the 2013 preschool curriculum and the activity book for teachers with similar objectives.Similarly, Kalemkuş (2021) examined the third and fourth-grade learning outcomes of the 2018 science curriculum.Turkish language and literature curriculum learning outcomes (Gelişli & Erdoğan, 2020), eighth grade 2018 Turkish curriculum learning outcomes, textbooks, and activities, (Altun & Gürol, 2019), the 2018 Turkish curriculum (Kurudayıoğlu & Soysal, 2019), English curriculum (Çelebi & Altun, 2019) were studied in the context of 21stcentury skills. These studies concluded that the curricula do not cover all skills and some of the skills are not sufficiently included. However, it has been determined that there are learning outcomes for the development of most of the 21stcentury skills in the curricula under investigation and activities for the development of these skills in the textbooks.

The examination of the studies on the Life Studies curriculum yields that they focused on the opinions of the teachers (Şenay 2015; Alak ve Nalçacı 2012; Türkyılmaz, 2011; Tuncer 2009; Uğur 2006) and the elements of the curriculum. For example, Aykaç (2011) and Ütkür (2018) examined which methods and techniques teachers used while implementing the Life Studies curriculum, and Narin (2015) analysed the opinions of teachers about developing citizenship knowledge, skills, and values through the curriculum. Öztürk & Kalafatçı (2016), investigated the applicability of the curriculum according to the opinions of teachers. It is observed that the curriculum is analysed in the context of social skills (Gündoğan, 2017), values (Yaşaroğlu, 2018), and key competencies (Taneri & Yüksel, 2020).These studieshavedetermined that the Life studies curriculum includes the skills of doing and executing a task with the group, and the skills of planning and problem-solving (Gündoğan, 2017). However, digital competencies are given little place (Taneri & Yüksel, 2020).

The literature includes a limited number of studies in which the life studies curriculum was examined within the framework of 21st century skills.They found that communication and collaboration skills were

adequately included in the curriculum, but it was limited in terms of developing critical and creative thinking skills (Bektaş, Sellum, & Polat, 2018).Eker & Kurum (2021)determined that learning and innovation skills are mostly included in the curriculum. However, the analysis of the coursebooks and workbookshad never been carried out in the context of 21st century skills. The present study analysed the coursebooks and workbooks, besides the curriculum, in the context of 21st century skills.The present study is important in terms of giving a holistic idea about whether the life studies curriculum and practices develop students' 21st century skills.Besides, it is hoped that the results of the study will contribute to the development of the practicesin the field and the needs analysis of the curricula to be developed.

In this regard, the purpose of this study is to examine whether the 2018 Life Studies curriculum and its practices are aimed at improving the students' 21st century skills.In line with the main aim of the study, answers to the following questions are sought.

1. Do the learning outcomes of the 2018 Life Studies curriculum aim at improving students' 21st century skills?
2. Do the practices(texts, text-based activities, and questions) in the first, second, and third-grade Life Studies coursebooks aim at improving students' 21st century skills?
3. Do the texts and activities in the first, second, and third-grade Life Studies workbooks aim at improving students' 21st century skills?

METHOD

Research Model

Document analysis, one of the qualitative research methods, was used in this study. Qualitative studiesare conducted by employing techniques such as observation, interview, and document analysis, examining the units of analysis in their natural environment thoroughly and revealing the reality by answering why and how questions (Yıldırım & Şimşek, 2008). Document analysis, on the other hand, has been accepted as a method that makes sense by predicting events, phenomena, and cases (Kıral, 2020).In this method, the formation of an understanding of the relevant subject is provided by the analysis of the documents(Corbin & Strauss, 2008).In this study, document analysis was preferred as the Life studies curriculum, coursebooks, and workbooks were analysed in the context of 21stcentury skills.

Data Sources

The data sources of the study are the learning outcomes in the Life Studies curriculum in the 2020-2021 academic year (MoNE, 2018), the practicesin the coursebook, and the activities in the workbook.The practicesin the coursebook are aimed at learning outcomes and consist of texts, text-based activities, and questions.The workbook, on the other hand, contains only activities related to learning outcomes.They are the first-grade (Alemdar, 2020), second-grade (Dokumacı, Gök & Dokumacı, 2018), and third-grade coursebooks (Çelikbaş Güral & Özcan, 2020) and workbooks recommended by the Ministry of National Education in the 2020-2021 academic year.They included the units of Life in Our School, Life in Our Home, Healthy Life, Safe Life, Life in Our Country, and Life in Nature in the spiral curriculum at each grade level (MoNE, 2018).

The Life Studies Curriculum, which is under investigation within the scope of the study, was put into practice in 2018. There are 148 learning outcomes in the curriculum.Life Studies first-gradeand second-grade coursebooks were granted for five years starting from the 2019-2020 academic year, with the decision of the Board of Education No. 8 dated 28.04.2019.The third-grade coursebooks were approved by the Board of Education No. 78 issued 28.05.2018.The practices in the first-grade coursebook consist of 53 texts, text-based activities, and questions.There are 50 texts, text-based activities, and questions in the second-grade coursebook and 43 of them in the third-grade coursebook.The analysed workbooks were written by the Commission of the MoNE (2020). There are 74 activities in the first-grade workbook, 120 activities in the second-grade workbook, and 119 activities in the third-grade workbook.

Data Analysis

This study examined the learning outcomes in the 2018 Life Studies curriculum, the practices in the first, second, and third-grade coursebooks (texts, text-based activities, and questions), and the activities in the workbooks in terms of improving students' 21st century skills. In this regard, research data were analysed descriptively based on the P21 skill framework. The P21 analysis framework used in data analysis is submitted in Table 1 (Gelen, 2017).

Table 1:P21 Analysis Framework for 21st Century Skills

21st Century Skills												
Learning & Innovation skills				***Information, Media & Technology Skills***			**Life & Career Skills**					
	Creative thinking	Critical thinking and problem-solving	Communication	Collaboration	Information literacy	Information, communications, and technology (ICT) literacy	Media literacy	Flexibility and adaptability	Initiative and self-direction	Social and cross-cultural skills	Productivity and accountability	Leadership and responsibility
	Learning outcomes and activities aimed at creating various ideas, making creative and original works with others	Learning outcomes and activities for effective reasoning, analysis, evaluation, and development of various perspectives	Ability to express verbal, written, and unwritten ideas in different environments	Learning outcomes and activities to demonstrate the ability to work with various teams, to achieve common goals together	Learning outcomes and activities for effective access to information resources, use, and management of information	Using technology as a goal to advance knowledge	Interpreting why and how media messages are created, choosing the appropriate media product	Adapting to various roles and environments, adapting to multicultural environments	Effectively managing time and workload, setting goals, and taking initiative	To be able to work with people from different socio-cultural backgrounds, respecting different ideas and opinions.	The multi-way operation, obtaining quality products, striving to achieve the intended result	Acting responsibly, taking into account the interests of the society, being an example, and being a leader to achieve the common goal

While presenting the findings, the learning outcomes were given as they were coded in the curriculum.For example, 2.4.3. refers to the third learning outcome related to the fourth unit of the second grade.The practices in the coursebooks and workbooks were coded based on the order of the text and activities in the book.M1 is the first text in the relevant unit, M1E1 is the first activity of the first text; M1E2 represents the second activity of the first text. Text-basedquestions were coded by adding the letter S to the order of the text in the book. For example, questions related to the second text of the relevant unit are shown as M2S. A similar coding was also done for the activities in the workbook.

Validity and Reliability

To ensure the reliability of the data analysis in the study, the learning outcomes, the practices in the coursebooks, and the activities in the workbooks were analysed independently by the researchers.After the analysis, the inter-coder reliability coefficient was estimated based on the formula of "The number of consensus / (Total consensus + the number of dissensus) x 100" (Miles & Hubermann, 2016).The inter-coder reliability was determined to be 0.86. Afterward, a full consensus was reached by discussing the learning outcomes, practices, and activities that the coders think differently. Moreover, examples of learning outcomes, practices, and activities are also included under the tables while presenting the findings.

FINDINGS

Findings Regarding the Learning Outcomes

A total of 148 learning outcomes, 53 for the first-grade level, 50 for the second-grade level, and 45 for the third-grade level, were examined within the scope of the study. The association of these learning outcomes with 21stcentury skills was given in Table 2.

Table 2:Analysis of Learning Outcomes by 21st Century Skills

21st Century Skills														
		Learning & Innovation skills				***Information, Media & Technology Skills***			**Life & Career Skills**					
Ünit	***Grad***	Creativity and innovation	Critical thinking and problem-solving	Communication	Collaboration	Information literacy	Information, communications, and technology (ICT) literacy	Media literacy	Flexibility and adaptability	Initiative and self-direction	Social and cross-cultural skills	Productivity and accountability	Leadership and responsibily
Life in Our School	***1***		1.1.2 1.1.17	1.1.1 1.1.9 1.1.10 1.1.11 1.1.13		1.1.4			1.1.12 1.1.16	1.1.14 1.1.15	1.1.1 1.1.11 1.1.13		1.1.3 1.1.8 1.1.12
	2		2.1.11	2.1.1 2.1.4 2.1.5 2.1.7 2.1.8 2.1.9	2.1.7				2.1.4 2.1.7 2.1.10	2.1.1	2.1.2 2.1.8 2.1.3		2.1.6
	3	3.1.5 3.1.9	3.1.1 3.1.2 3.1.3 3.1.4 3.1.6	3.1.8	3.1.7	3.1.5 3.1.10			3.1.4	3.1.1 3.1.10	3.1.2 3.1.3 3.1.8		
Life at Home	***1***		1.2.7	1.2.1 1.2.4						1.2.5 1.2.6			
	2		2.2.2 2.2.4 2.2.6	2.2.1 2.2.5	2.2.5	2.2.3 2.2.6	2.2.6		2.2.9	2.2.8		2.2.8	
	3	3.2.3 3.2.6	3.2.1 3.2.5 3.2.8		3.2.4	3.2.1 3.2.3			3.2.8	3.2.4 3.2.7			
Healthy Life	***1***		1.3.2 1.3.3 1.3.5						1.3.6				
	2		2.3.1 2.3.3 2.3.4 2.3.6 2.3.7			2.3.5	2.3.5						
	3		3.3.2			3.3.2							3.3.5
Safe Life	***1***		1.4.7			1.4.5	1.4.6		1.4.1 1.4.3 1.4.4				1.4.1 1.4.3
	2		2.4.1 2.4.6		2.4.4	2.4.4	2.4.5						
	3	3.4.3 3.4.6	3.4.2 3.4.3 3.4.5 3.4.6	3.4.3 3.4.4 3.4.5		3.4.1							
Life in Our Country	***1***		1.5.2 1.5.4										1.5.6 1.5.7
	2		2.5.2 2.5.4 2.5.5			2.5.1 2.5.3 2.5.6	2.5.3 2.5.6		2.5.8		2.5.7		
	3		3.5.4	3.5.2 3.5.3	3.5.7	3.5.6	3.5.9				3.5.7	3.5.4	
Life in Nature	***1***		1.6.5			1.6.7	1.6.7		1.6.3				1.6.4
	2		2.6.1 2.6.2 2.6.3 2.6.8		2.6.4	2.6.7 2.6.9	2.6.9						2.6.4

	3	3.6.1 3.6.3 3.6.4 3.6.6				3.6.2						3.6.2
Total	***6***	***46***	***21***	***7***	***19***	***10***	***0***	***14***	***10***	***11***	***2***	***12***

As can be seen in Table 2, 119 (80%) of 148 learning outcomes in the LSC are aimed at developing one or more 21stcentury skills.When the findings are analysed by grade level, the highest number of learning outcomes aimed at developing 21st century skills are in the second grade (45 learning outcomes), followed by the third grade (37 learning outcomes), and the least number of acquisitions are in the first grade (37 learning outcomes) curriculum.When Table 2 is analysed based on units, the highest number of learning outcomes developing these skills are in the "Life in Our School" unit, and the least number of those are in the "Healthy Life" unit.Some learning outcomes are aimed at developing students' more than one 21st century skill.It has been determined that the learning outcomes in the curricula at all grade levels aimed at improving students' skills in the learning and innovation clustertothe most (80 learning outcomes), and those in the information, media, and technology cluster(29 learning outcomes) to the least. Additionally, there are learning outcomes to develop students' critical thinking and problem-solving skills (46 acquisitions) to the most in the curricula.It is followed by those aiming at improving communication (21 learning outcomes) and information literacy (19 learning outcomes) skills, respectively.It has been determined that the learning outcomes related to the development of productivity and responsibility skills (2 gains) are the least ones.One of these is in the second-year curriculum and the other is in the third-year curriculum. Learning outcomes for the development of media literacy skills were not included in the curricula.Below are examples of learning outcomes aiming at improving students' 21st century skills.

Critical thinking skill:

'HB.3.2.6. Makes original suggestions for the effective and efficient use of resources at home.'

'HB.3.1.9. Makes original suggestions for the effective and efficient use of school resources.'

Critical thinking and problem-solving skills:

'HB.1.1.2. Distinguishes similarities and differences between oneself and peers.'

'HB.2.3.1. Realizes the relationship between healthy growth and development and personal care, sports, sleep, and nutrition.'

'HB.3.6.3. Finds directions by making use of nature.'

Communication skill:

'HB.3.5.3. Introduces the characteristics of historical, natural, and touristic places in the immediate vicinity.'

Communication, social and intercultural skills:

'HB.1.1.13. Follows the rules of courtesy when communicating at school.'

Information literacy skill:

'HB.2.5.6. Explores the cultural heritage elements in its immediate surroundings.'

Information, communications, and technology literacy skill:

'HB.2.2.6. Investigates the contribution of economical use of resources at home to the family budget.'

Entrepreneurship and self-management, productivity, and responsibility skills:

'HB.2.2.8. Implements the works s/he has planned during the day.'

Collaboration, social and intercultural skills:

'HB.3.5.7. Participates in social responsibility projects that address the problems of people from different cultures living in our country.'

Findings Regarding the Practicesin Life Studies Coursebooks

The practices in the Life Studies coursebooks initially present the text and then includetext-based activities and questions. In this regard, 53 texts from the first-grade coursebook, 50 texts from the second-grade coursebook, and 45 texts from the third-grade coursebook together with text-based activities and questions were examined. The obtained results are presented in Table 3.

Table 3: Analysis of Practices in the Coursebooks Based on 21st Century Skills

		21st Century Skills											
		Learning & Innovation skills				***Information, Media & Technology Skills***			**Life & Career Skills**				
Ünit	***Grad***	Creativity and innovation	Critical thinking and problem-solving	Communication	Collaboration	Information literacy	Information, communications, and technology (ICT) literacy	Media literacy	Flexibility and adaptability	Initiative and self-direction	Social and cross-cultural skills	Productivity and accountability	Leadership and responsibily
Life in Our School	***1***	M13E		M1 M2 M11 M13 M15E	M11					M14	M2		M3 M8
	2	M2E	M2E1 M14S	M4 M7 M8E1	M4 M7								
	3	M5S1 M8S1	M7 M2E1 M3E1 M5E1 M9E1 M4S M10S	M8S1	M7 M8S1								
Life at Home	***1***				M2 M4					M6			
	2		M1 M4E1 M6E1 M6E3	M5S	ME4								
	3	M3E1 M5E1 M6E2	M4E1 M6E1						M7E1				
Healthy Life	***1***		M3 M4E1										
	2												
	3	M4E1 M5E1 M1S1	M4E1										
Safe Life	***1***		M7		M4				M4				M1
	2												
	3	M2E1	M2E1 M5E1										
Life in Our Country	***1***	M6E1 M7E1		M4		M1E1	M5				M4		M7E1
	2				M7E1 M8E1	M8E1	M6E1 M8E1						
	3	M5S1				M5S1 M3S1 M7S1			M7				

						M8S1			
Life in Nature	***1***	M4E1 M5E1	M4E1			M1	M2E1		
	2		M8E1 M8E2 M2S1		M4E2	M4E1 M9E2			
	3		M3E1			M2S1			M5E1

As indicated in Table 3, 23 (14%) out of a total of 168 texts in the Life Studies coursebooks are aimed at developing one or more 21st century skills. The examination of text-based activities yielded that 37 (16%) out of a total of 225 activities are aimed at developing these skills.It was determined that only 13 (8%) of the 166 questions in the coursebooks under the headings of ‘Let’s examine’, ‘Let’s evaluate’ and ‘Let’s get ready’ are aimed at developing 21st century skills.In light of these, it can be alleged that the limited number of practices in the coursebooks are aimed at improving students’ 21st century skills.Moreover, it has been found that most practices (text, activities, and questions) in the third-grade coursebooks, followed by the first-grade and the second-grade at least, are aimed at improving students’ 21st century skills, respectively.When Table 3 is analysed in terms of units, it is observed that the “Safe Life” and “Healthy Life” units do not include any practices for developing 21st century skills at the second-grade level.

When the texts, activities, and questions in the coursebooks were analysed, it was concluded that these practices are mostly aimed at improving learning and innovation skills among the skill clusters.Critical thinking and problem-solving are the most referred learning and innovation skills.A very limited number of practices are included in the coursebooks to develop information, media and technology skills, and life and career skills.There are no practices in the coursebooks to improve media literacy, productivity, and responsibility skills under these clusters.Some examples of texts, activities, and questions among the practices in the Life Studies coursebooks aimed at improving students’ 21stcentury skills are presented below.

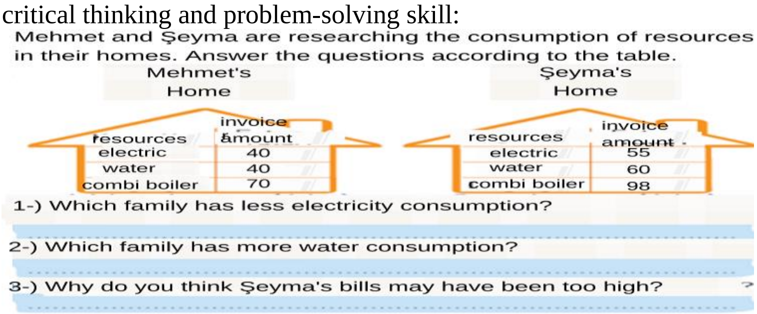
Example text for communication skill:

Hello guys and girs, I am your teacher. My name is Zuhal Bora.Now, can you please introduce yourself?

(The unit entitled Life in Our School, M1: We meet)

The M1 encoded text of the unit entitled *Life in Our School* in the first-grade Life Studies coursebook is intended to enhance the skills of purposeful communication and self-expression in different environments. Accordingly, the text has beenfound to develop communication among 21stcentury skills.

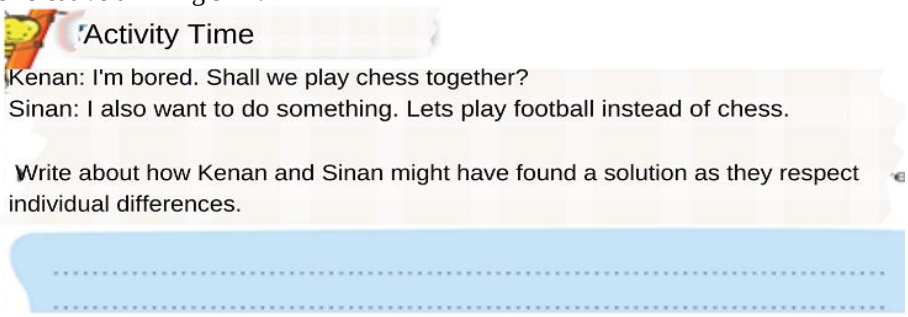
Example activity for critical thinking and problem-solving skill:



(The unit entitled Life at Home, M6E3)

The above example for the M6E3 encoded activity from the unit entitled *Life at Home* in the Life Studies second-grade coursebookis aimed at drawing conclusions, making evaluations, and reasoning about possible causes. Accordingly, the sample activity has been considered to be associated with developing critical thinking and problem-solving among 21st century skills.

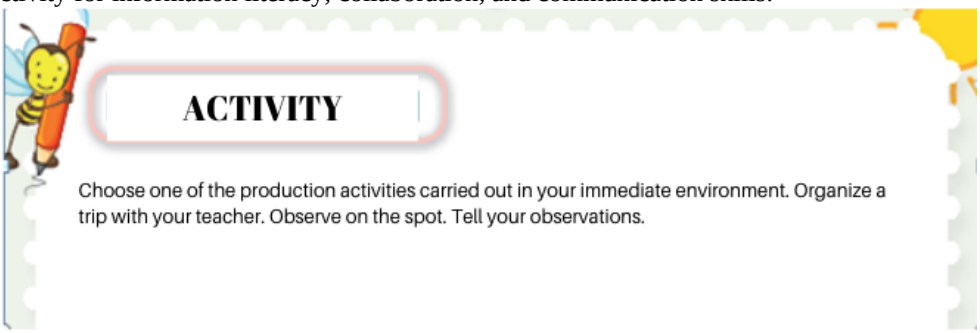
Example activity for creative thinking skill:



(The unit entitled Life in Our School, M2E1)

The example for the M2E1 encoded activity from the unit entitled *Life in Our School* in the second-grade Life Studies coursebook has an instruction with a prompting question to generate new and different ideas. The activity has been regarded to develop creative thinking, among 21st century skills.

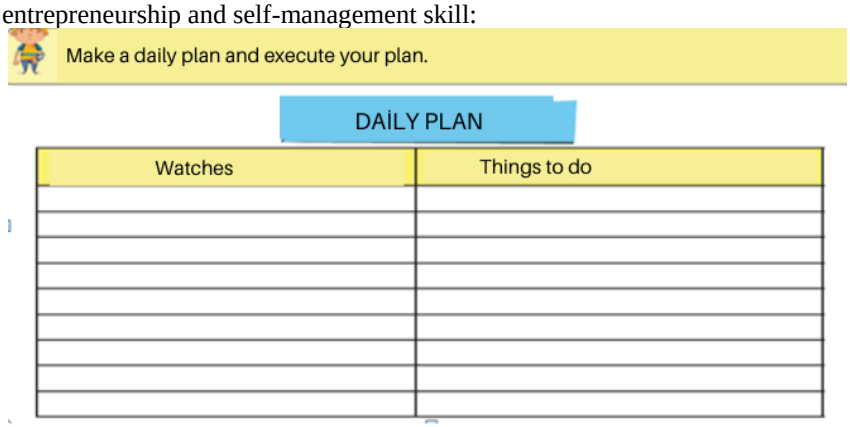
Example activity for information literacy, collaboration, and communication skills:



(The unit entitled Life Unit in Our Country M8E1)

The instructions included in the activity encoded M8E1 for the second grade Life Sciences unit "Life in Our Country" set an example for the processes of reaching information sources effectively, achieving together, and expressing thoughts and ideas. Accordingly, text-basedactivity has beenregarded to improve information literacy, collaboration, and communication, which are among the 21st century skills.

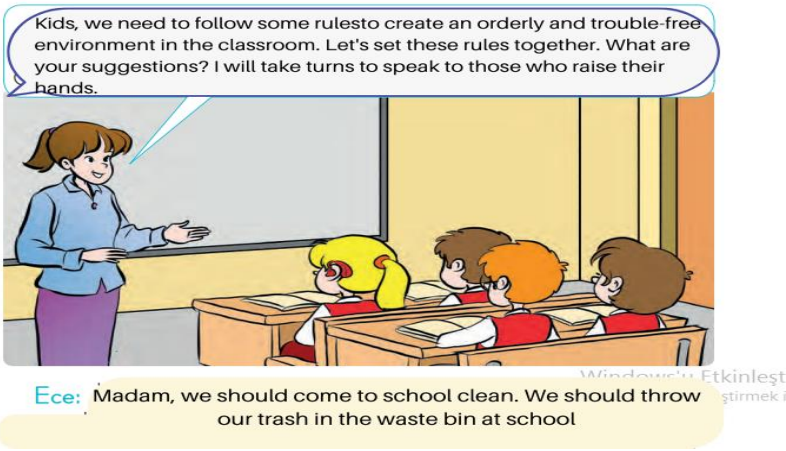
Example activity for entrepreneurship and self-management skill:



(The unit entitled Life in Our Home, M7E1)

The M5E1 encoded activity in the "Life at Home" unit of the third-grade Life Studies coursebook guides students to define tasks, develop short-term goals and implement them. Accordingly, the activity has been regarded to develop entrepreneurship and self-management, which are among the 21st century skills.

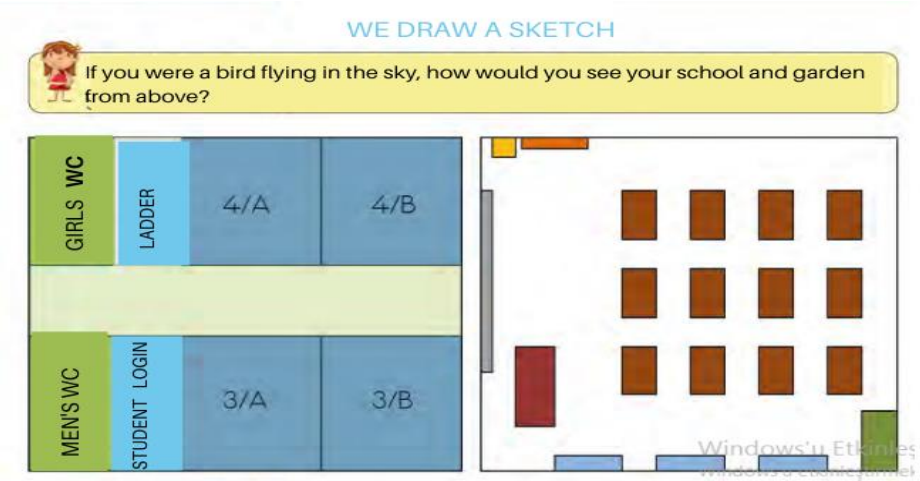
Example text for collaboration skill:



(The unit entitled Life in Our School, M11)

The M11 encoded text in the "Life in Our School" unit of the first grade Life Studies coursebook includes sample speeches for students to create classroom rules based on common ideas. Different children express different ideas and represent an example of acting together and working effectively and respectfully. Accordingly, the text has been regarded to develop the 21st century skill of collaboration.

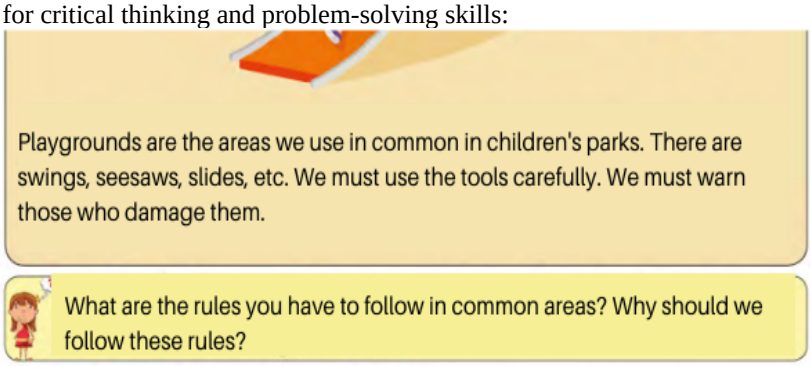
Example question for creative thinking skill:



(The unit entitled Life in Our School, M5S)

The M5S encoded question in the "Life in Our School" unit of the third-grade Life Studies coursebook is located at the beginning of the text. This question aims to reveal the different and original ideas of the students. Accordingly, the text-basedquestion has beenregarded to develop creative thinking, one of the 21st century skills.

Example question for critical thinking and problem-solving skills:



(The unit entitled Life in Our Country, M5S)

The M5S encoded question in the "Life in Our Country" unit of the third-grade Life Studies coursebooks is located at the end of the text. The why statement in the question makes it necessary for the students to justifytheir answers on the right basis among the arguments and make an analysis to advocate their answer. Accordingly, the question at the end of the text has been regarded to develop critical thinking and problem-solving, which are 21st century skills.

Findings Regarding the Activities in Life Studies Workbooks

The Life Studies workbooks for the 2020-2021 academic year were scrutinized within the scope of the study. 75 activities in the first-grade workbook, 120 activities in the second-grade workbook, and 113 activities in the third-grade workbook were examined in terms of developing students' 21st century skills. The obtained findings are given in Table 4.

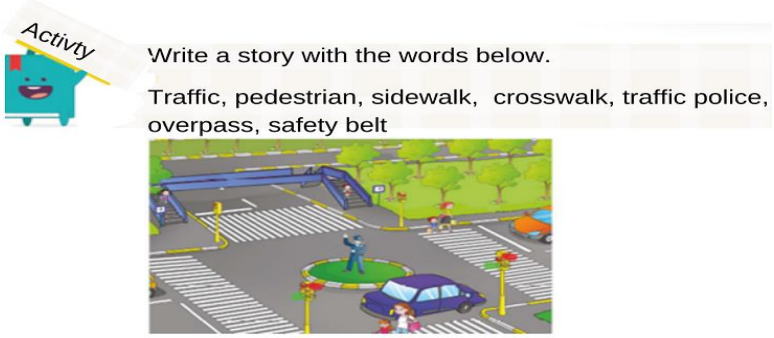
Table 4: Analysis of Activities in Workbooks Based on 21st Century Skills

21st Century Skills													
		Learning & Innovation skills				***Information, Media & Technology Skills***				**Life & Career Skills**			
Ünit	***Grad***	Creativity and innovation	Critical thinking and problem-solving	Communication	Collaboration	Information literacy	Information, communications, and technology (ICT) literacy	Media literacy	Flexibility and adaptability	Initiative and self-direction	Social and cross-cultural skills	Productivity and accountability	Leadership and responsibily
Life in Our School	***1***		M10E1	M10E1 M15E1	M10E1 M15E1								
	2	M9E2 M10E2	M8E1 M9E1 M15E2										
	3	M4E3 M6E2 M7E2 M7E4		M6E2 M7E2 M7E4	M6E2	M9E2							
Life at Home	***1***		M5E1 M7E1										
	2		M6E1 M9E1		M5E2								
	3	M6E3	M2E4 M4E2 M6E2							M7E2			
Healthy Life	***1***	M4E1											
	2	M5E2											
	3	M5E2	M2E1 M5E1										
Safe Life	***1***	M1E1 M2E7											
	2												
	3	M4E4	M3E1 M5E1										
Life in Our Country	***1***	M4E1									M4E1		M6E2
	2					M1E1 M3E2 M6E3							

	3	M6E1	M2E2 M4E3	M2E4 M6E1 M7E1		M9E1 M9E2		M7E1	M7E1 M7E2
Life in Nature	***1***	M3E1				M2E4			
	2		M2E2 M7E3						
	3	M5E3							

Table 4 implied that 53 of the 308 activities in the first, second, and third-grade Life Studies workbooks are aimed at developing one or more 21st century skills while 255 of those are not. The analyses by grade levels indicated that the activities aimed at developing 21stcentury skills are mostly in the third grade, then first grade, and least in the second-grade workbooks, respectively. This is just like the findings obtained from the analysis of the coursebook practices.Accordingly, workbook activities aim at developing students' *Learning and Innovation Skills*to the most and *Information, Media & Technology Skills*to the least.They alsofrequently aimat enhancingcreative thinking, critical thinking, and problem-solving skills among P21's framework for 21st century skills while initiative and self-direction skills are the least ones. The workbooks do not include activities to develop students'information, communications, and technologyliteracy, media literacy, productivity and responsibility, and leadership and responsibility skills.Below are examples of the activities in the Life Studies workbooks aimed at improving students' 21st century skills.

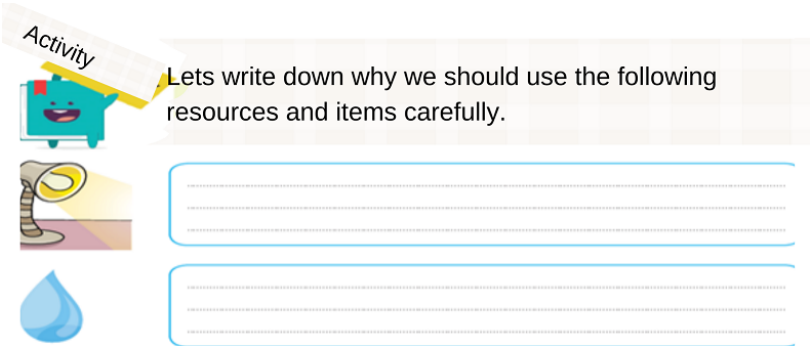
Example activity for creative thinking skill:



(The unit entitled Safe Life, M2E7)

The above example for the M2E7 encoded activity from the unit entitled *Safe Life* in the first-grade Life Studies workbook promotes the development of creative thinking skills, one of the 21st century skills by asking individuals to create a new and original product.

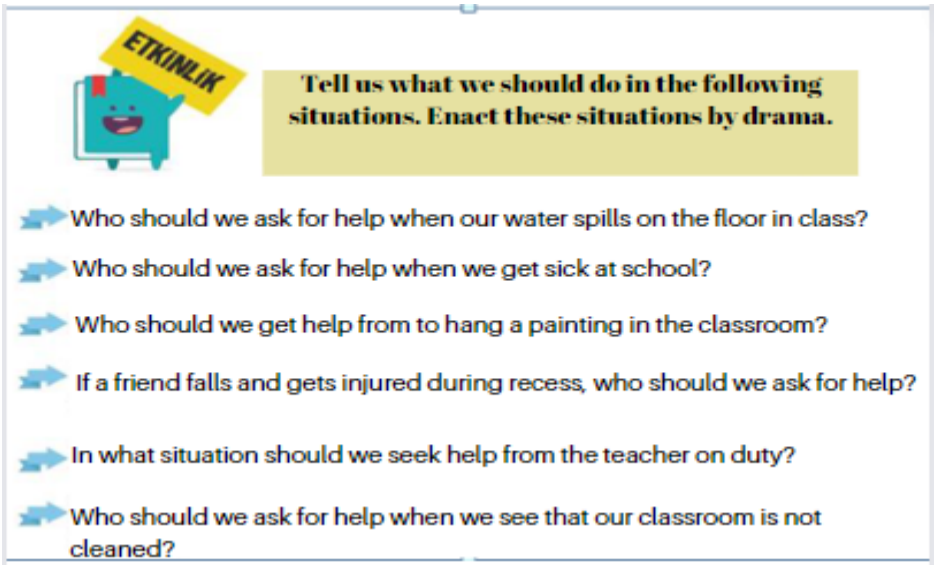
Example activity for critical thinking skill:



(The unit entitled Life at Home, M8E1)

The example for the M8E1 encoded activity from the unit entitled *Life at Home* in the second-grade Life Studies workbook highlights the necessity of careful use of resources and materials. It has been considered to enhance critical thinking skill based on the requirements of creating arguments and questioning.

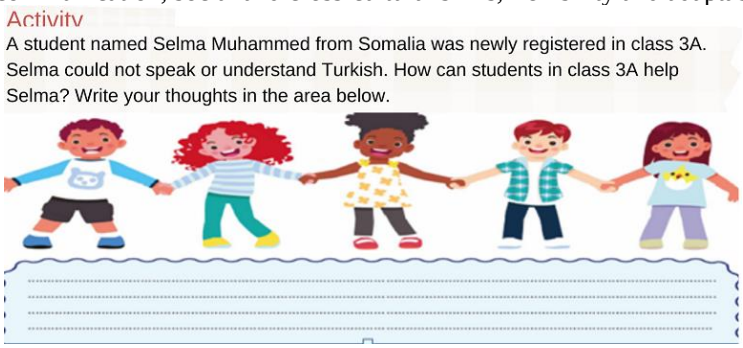
Example activity for communication and collaboration skills:



(The unit entitled Life in Our School, M10E1)

While the M10E1 encoded text-based activity in the "Life in Our School" unit of the first grade Life Studies workbook aims to develop the communication skills of creating new ideas through various questions and sharing them in the appropriate language, it is aimed to indirectly improve the collaboration skill with the directive to ask for help when needed. Accordingly, the activity has been regardedto develop communication and collaboration, among the 21st century skills.

Example activity for communication, social and cross-cultural skills, flexibility and adaptability skills:



(The unit entitled Life in Our Country, M7E1)

The M1 encoded activity of the unit entitled *Life in Our Country* in the third-grade Life Studies workbook isabout being respectful to cultural differences, being flexible and communicating in a multicultural environment, and thus developing social cross-cultural skills, communication, flexibility,and adaptability skills.

DISCUSSION, CONCLUSIONS & RECOMMENDATIONS

According to the research findings, eighty percent of the learning outcomes in the 2018 LSC are aimed at developing one or more 21st century skills of the students.Moreover, it has been determined that the highest number of learning outcomes aiming at developing these skills are in the third-grade curriculum, and the least number of those are in the first-year curriculum.Based on the distribution of the learning outcomes by units, it has been concluded that the highest number of learning outcomes are in the "Life in Our School" unit and the least number of those are in the "Healthy Life" unit.In addition, there are learning outcomes aimed at improving students' 21st century skills in all units at all grade levels.However, it can be claimed that the learning outcomes are mostly aimed at developing skills in the cluster of learning and innovation at all grade levels, and critical thinking and problem-solving are the most among those.That's why, 46 out of 148 learning outcomes in the curriculum are aimed at improving students' critical thinking and problem-solving skills.Similarly, critical thinking and problem-solving skills are found to be mostly included in 21st century skills in Science (Kalemkuş, 2021) and Biology (Atik & Yetkiner, 2021) curricula.Critical thinking and problem-solving have always had a significant impact on inventions depending onhumane needs in history (Rotherdam & Willingham, 2009).Today the way individuals approach new situations is vitalfor solving problems (Bernhardt, 2015).The individual

makes interpretations, analyses, evaluations, inferences, explanations, and self-regulation in the process of developing critical thinking and problem-solving skills. This process first starts in the family environment and its development continues in a planned way thanks to the lessons taught at school (Facione, 1990).In this regard, it is valuable to frequently include the learning outcomes aiming at developing critical thinking and problem-solving skills in the curriculum.

The present study found that the learning outcomes for improving information, media, and technology skills of students are at the very least at all grade levels. Among the skills in this cluster, the curriculum mostly includes the learning outcome of information and communication and technology (ICT) literacy. However,there are no learning outcomes in improving media literacy skills. Media literacy has been regarded as a crucial 21st century skillthat should be acquired both in business life and in daily life (Malter, 2011).The low reference to the aforementioned skill in the curriculum needs to be corrected as it is vital to be competent in using these technologies safely, critically, and appropriately to access information based on the increase in information, communications, and technology (ICT) in the digital world. This finding is also consistent with other research results. Bozkurt (2021) concluded that the social studies teacher training programis not rich in developing digital learning skills such as information, media, and technology literacy.Yüksel & Taeri (2021) and Erbil & Doğan (2019) emphasized that information, communications, and technology (ICT) skills should be integrated intoLife Studies lessons more. Moreover,studies examining the curricula of different courses in terms of 21st century skills obtained similar results.Kurudayıoğlu & Soysal (2019) and Bal (2018)found that information and media literacy skills were the least included learning outcomes inthe Turkish curriculum. Çelebi & Altuncu (2019), who examined the inclusion of 21st century skills in the ninth-grade English curriculum, also found that media literacy and information, communications, and technology (ICT) literacy were hardly included in the curriculum. Many theories have been put forward regarding the integration of information, communications, and technology into modern education procedures. They are commonly systematic. Systematically and sustainably developing students' information, communications, and technology skills is only possible with curricula (NCES, 2002).In this regard, it is expected that more learning outcomes will be included in the curricula to improve information, communications, and technology considering that it is easier to access instructional technologies in learning environments with technology-supported education projects (Uluyol & Eryılmaz, 2015).That's why these are among the most important skills that should be acquired by individuals in today's world.

The examination of the 2018 LSC learning outcomes in terms of developing *Life and Career Skills* indicated that this clusteris subsequent to *Learning and Innovation Skills*. It has been determined thatthe curriculum mostly includes learning outcomes aiming at developing leadership and responsibility, flexibility and adaptability skills among those.However, it was concluded that there are few learning outcomes in the curriculum to improve productivity and accountability skills. There are similar results in the relevant literature. Koç (2020) found that the 2018 LSC was insufficient in terms of developing life skills. Erbil & Doğan (2019), on the other hand, determined that the curriculum should be supported to develop such skills as leadership and responsibility, flexibility, and adaptability based on teachers' opinions.In addition, Akay & Çetin (2019), who examined the skills in the curriculum by years, compared 2015, 2017, and 2018 life studies curricula. As a result, it was yielded that there was no difference between the curriculain terms of skill development.It is important to start developing *Life and Career Skills* in early childhood and the developmental stages of individuals should be considered (Papachaisis, Goudas, Danish & Theodorakis, 2005, cited in Karakuş, 2021). It can be alleged that these skills should be given more space in the learning outcomes of the curriculum.It is also observed that the learning outcomes in the 2018 LSC are mostly aimed at improving the students'21st century skills. However, it is not possible to say the same for the practices in the coursebooks and workbooks. Although the skills that are mostly included in the learning outcomes are also covered more by the practices, the very limited number of practices in the coursebooks and workbooks are aimed at developing these skills. Only 14% of the texts, 16% of the activities, and 8% of the questions in the coursebook are suitable for improving students' 21st century skills. Only 17% of the activities in the workbook are aimed at improving students' aforementioned skills.

While the cluster of learning and innovation skills are mostly included in the coursebooks, as in the learning outcomes, the skills in the clustersof information, media and technology, and life and career are given a very limited number of places.The examination of the practices in the coursebooks within the framework of learning and innovation skills pointed out that critical thinking and problem-solving skills are frequently used at all grade levels, and collaboration skill is the least.Regarding life and career skills, alimited number of practicesaim to develop leadership and responsibility skills while texts and activities to improve productivity and accountability skills are not included in the coursebooks.These results are in line with other research results in the relevant literature. Demir & Özyurt (2021), who examined the questions in the social studies coursebooks in terms of 21st century skills, alsoconcluded that there were no questions aimed at improving productivity and accountability skills.Öztürk (2009) determined that the first-grade Life Studies coursebooks and curriculumwere weak to developsuch skills as initiative and accountability.The initiative enables individuals to take risks, gain

experience and, in parallel, develop a sense of responsibility.It is known that people with an entrepreneurial character can make free choices in their own lives, make arrangements according to their conditions in parallel with the resources they have, and are prone to problem-solving with ideas fed by their imagination (Top, 2012). It was also revealed that entrepreneurship (initiative) in the 21stcentury should be included in curricula by including knowledge, skills, and attitudes (Curth, 2011).Moreover, problem-solving and adaptation to society and life have been regarded as vital skills (Yıldırım, 2021).Therefore, it is important to include more activities in the coursebooks and workbooks to develop students' *LifeandCareer Skills*.Research results indicated that the activities and questions aimed at developing information literacy skills are mostly included in the coursebooks among the information, media, and technology skills.However, these practices, which are included in the "Life in Our Country" and "Life in Nature" units, are also limited in number. In the same units, there are only three activities and a text for information, communications, and technology literacy skills. There are no practices in the coursebook regarding media literacy. In light of these findings, it can be asserted that the practices in the coursebooks are insufficient to develop students' skills in the cluster of information, communications, and technology.In a similar vein, Yüksel & Taneri (2020), who examined the Life Studies coursebooks by the key competencies similar to the 21stcentury skills, found that digital competenceskills, including information literacy and media literacy, wereare at all grade levels.

Another research result is that the activities in the workbooks are mostly aimed at developing creative thinking and innovation skills among *Learning and Innovation Skills*.Additionally, it was determined that activities are frequently included in the workbooks to develop critical thinking and problem-solving skills.It was remarkable that critical thinking skill is the most widely used skill in the learning outcomes and coursebooks while it is creative thinking skill in the workbooks.A similar result was found by Kayhan, Sertel & Altun (2019) in the context of Turkish language curriculum and textbooks.However, they determined that there was a harmony between the learning outcomes in the curriculum and the activities in the textbooks in all skills exclusively creative thinking. In other words, learning outcomes and the practices in the coursebooks and workbooks aim at developing the same 21st century skill.However, the practices in the textbooks are limited in number, and insufficient for the development of most skills.

The study also concludes that information literacy skills, among the *Information, Media, and Technology* skills, are given very little space, and media literacy skills are not included at all in the workbook activities. However, education is of great importance in developingstudents' 21st century skills (Özyurt, 2020). Many countries have added 21st century skills to their curricula, as well as incorporating information literacy and information, communications, and technology literacy (ICT) skills (Adamson & Darling-Hammond, 2015).The studies examining how much information, media, and technology literacy is included in coursebooks and workbooks have underlined that these skills are not a privilege but a necessity in education, and have determined that educational materials are lacking in this regard (Aytaş & Kaplan, 2017; Tanrıkulu, 2014).It is a majorshortcoming to neglect media literacy and information, communications, and technology literacy (ICT) skills in the workbooks.

It was also determined that the activities aiming at developing *Life and Career Skills*are also limited in the workbooks. In addition, activities for developing flexibility and adaptability, initiative and self-direction, productivity, and accountability skills are not included in all grade-level workbooks.It is believed that workbooks increase the quality of learning by providing a rich choice of activities in accompany by coursebooks (Gülüm & Çeltik, 2018).In this regard, it is highly important to review the workbooks and enrich them with activities for developing 21st century skills.

Recommendations

To sum up, this study concluded that the 2018 LSC learning outcomes and the texts and activities in the Life Studies coursebooks and workbooks are aimed at developing critical thinking and problem-solving among Learning and Innovation Skills to the most, and collaboration skills to the least.It was determined that they mainly aim to develop information literacy skills among the Information, Media, and Technology Skills, but the curriculum and textbooks donot include learning outcomes and activities to improve students' media literacy skills.It was found that the curriculum and textbooks intendto develop flexibility and adaptability skills to the most, and productivity and accountability skills to the leastamong Life and Career Skills.Based on the research results, it is suggested that the Life Studies curriculum should be updated and enriched in terms of developing 21st century skills that are never or rarely included in the available curriculum. In addition, 80% of the learning outcomes in the curriculum are aimed at improving students' 21st century skills while less than 20% of the practices in the coursebooks and workbooks are aimed at developing these. Thisoverburdens the teachers, who are the implementers of the curriculum, in the development of students' 21st century skills. That's why, the practices in the coursebooks and workbooks are insufficient to develop students' 21stcentury skills. Therefore, it is recommended that teachers support students in the development of all 21stcentury skills by making conscious

planning, developing, and implementing activities related to the learning outcomes so that the curriculum can be carried out effectively in the specified context.

In this study, the Life Studies curriculum was analysed descriptively in the context of 21st century skills through document analysis of the coursebooks and workbooks. In this respect, the study can be considered as an analysis of the context in the development of students' 21st century skills. In future research, how curricula are handled in the context of developing students' 21st century skills during the learning and teaching process can be examined based onthe analysis ofteacher-student opinions, classroom observations, and diaries. Thus, concrete findings and suggestions regarding the implementation can be submitted to the opinions of researchers, policymakers, and practitioners.

Author (s) Contribution Rate

This study was carried out in collaboration. Corresponding author written first.

Conflicts of Interest

There is no potential conflict of interest in the study.

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Article History
Received: 19.01.2023
Received in revised form: 26.06.2023
Accepted: 26.06.2023
Available online: 28.06.2023
Article Type: Research Article

ADIYAMAN UNIVERSITY
Journal of Educational Sciences
(AUJES)

https://dergipark.org.tr/tr/pub/adyuebd

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To cite this article:
Zor, Y. M. (2023). Investigation of multidimensional scale transformation methods applied to multidimensional tests according to various conditions. *Adiyaman Univesity Journal of Educational Sciences, 13*(1), 41-53.

Adiyaman University Journal of Educational Sciences

Volume 13, Number 1, June 2023, Page 41-53 ISSN: 2149-2727
DOI: http://dx.doi.org/10.17984/adyuebd.1239198

Investigation of Multidimensional Scale Transformation Methods Applied to Multidimensional Tests According to Various Conditions

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Abstract

The purpose of this study was to compare the equating errors of item and ability parameters obtained by performing scale transformation methods to two multidimensional test forms under various conditions. Sample size (1000-2000), common item ratio (20% and 40%), correlation between dimensions (0.1-0.5-0.9) and parameter estimation model (2 parameter logistic model and 3 parameter logistic model) were taken as research conditions. Root Mean Squared Error (RMSE) was used to examine the accuracy of the scale transformation results. It was observed that the RMSE value generally decreased as the sample size and common item ratio increased and the correlation between dimensions decreased. Higher equating errors were obtained when the mean-sigma method was used. In the estimation of the discrimination parameter, lower RMSE values were obtained in 2PLM for all methods. In the estimation of difficulty and ability parameters, lower RMSE values were obtained in 2PLM for Stocking-Lord method and in 3PLM for mean-mean and mean-sigma methods.

Key words: Multidimensionality, Scale transformation, Mean-mean, Mean-sigma, Stocking-lord

Introduction

Tests in the field of education and psychology are used for various purposes such as determining the learning deficiencies of individuals, selection and placement of individuals in an educational institution or a job. The decisions to be taken about individuals can be accurate and fair only if the tests are valid and reliable. In many large-scale test applications applied at national and international level, different test forms are used for purposes such as ensuring test security and estimating the change in test scores by using different items (Öztürk Gübeş, 2014). In these applications, different test forms consisting of equal numbers of items are created so that the content and item format of the item are equivalent to each other (Xu, 2009). The main purpose of using different equivalent test forms is to compare the scores obtained from the tests and to use the scores obtained interchangeably. Although the test forms are prepared with similar content and psychometric characteristics in order to measure the same trait, the scores obtained from the test forms should be equated by numerical transformation (Braun & Holland, 1982). As a result of the numerical transformation, the scores obtained from the test forms are placed on the same scale and the scores obtained from the tests can be used interchangeably.

Comparing scores obtained from different test forms that are not at the same scale level may lead to inaccurate results. In order for the scores to be comparable, a statistical adjustment is made between the scores obtained from different test forms by test equating, so that the scores are on the same scale (Kolen & Brennan, 2014). Test equating, which is a statistical technique, reveals the relationship between the scores obtained from test forms (Chu & Kamata, 2003). Angoff (1984) defined test equating as equating the unit system of one form to the unit system of another form. As a result of test equating, scores obtained from different test forms can be used interchangeably (Hambleton & Swaminathan, 1985; Kolen & Brennan, 2014).

Test equating is a statistical process that regulates the differences between the scores obtained from two test forms with similar difficulty and content and allows these scores to be used interchangeably (Kolen & Brennan, 2014). One of the conditions required for test equating is that the test forms measure the same structure. In addition, the reliability coefficients of the test forms should be close to each other and features such as equality, symmetricity and group invariance should be met (Dorans and Holland 2000).

The first step of the test equating process is to decide on the equating design. Kolen and Brennan (2014) explained three basic test equating designs as follows; single group design, random groups design and non-equivalent groups anchor test (NEAT) design. The non-equivalent groups anchor test design is also referred

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to as the common-item non-equivalent groups (CINEG) design in the literature (Reckase, 2009; Topczewski, Cui, Woodruff, Chen, & Fang, 2013). Since the non-equivalent groups common test design has been widely used in many national and international large-scale tests, the non-equivalent groups common test design was used in this study. In this design, the test forms (Form X and Form Y) have a common set of items and these forms are administered to groups taking different tests. In this design, the group taking Form X is not considered equivalent to the group taking Form Y. Differences between Form X and Form Y averages are considered as a combination of differences between the groups taking the test and differences between the test forms (Kolen & Brennan, 2014). The difference in ability between the groups is controlled by means of common (anchor) items in both forms and the scores obtained from the test forms are equated to each other (He, 2011).

In a test equating process, after the equating design is selected, the equating method is determined and the item and ability parameters of each test form are estimated according to this method. Then, item and ability parameters are transformed into a common scale. Scale transformation should be performed when using a non-equivalent groups anchor test design, this step is not necessary since the parameters estimated in single and equivalent group designs will be on the same scale. After the item and ability parameters are placed on a common scale, the scale on which the test scores will be reported is determined. If the test scores are to be reported on ability parameters, the process is completed, but if reporting is to be done on true scores, true scores should be estimated according to different ability levels and true scores of both forms should be equated (Kabasakal, 2014).

Tests used in education and psychology are inherently multidimensional to some extent due to the many sources of multidimensionality involved in scoring (Ackerman, Gierl & Walker, 2003). The sources of multidimensionality may be that the test consists of more than one content area or that the test has more than one item format (mixed format tests). In such cases, it is very difficult to meet the unidimensionality assumption (Kim, Lee, & Kolen, 2020). Therefore, the relationship between items in tests used in education and psychology is not as simple as described in unidimensional models. It can be interpreted that the predictions made using unidimensional models have lower errors when there is a dominant dimension in which the items in the test are collected and the dimensionality source of the test is mostly explained by this dimension. In cases where the data structure of the test measures more than one latent trait, unidimensional models make predictions on the axis of the strongest dimension in the data structure, and ability and item parameters estimated using unidimensional models can be highly biased (Gibbons, Immekus, & Bock, 2007; Reckase, 1985). If more than one psychological trait affects the responses to the items in the test and the test consists of more than one content area or more than one item format, it can be interpreted that the unidimensionality assumption is violated and in this case, unidimensional models should not be used (Kim & Lee, 2022; Zhang, 2009). Instead, models under the multidimensional item response theory (MIRT) can be used.

In MIRT, item discrimination parameter is calculated differently from unidimensional item response theory. According to this theory, since the test consists of more than one dimension, the items in the test have a separate discrimination parameter for each dimension. Item discrimination is represented by multidimensional discrimination index (MDISC). MDISC is used in conjunction with the parameter a in unidimensional models. The length of the vector related to the MDISC index is calculated as given in Equation 1, where a_{ik} is the discrimination parameter of item i for each dimension (Reckase, 2009).

$$MDISC = \sqrt{\sum_{n=1}^{k} a_{ik}{}^{2}} \tag{1}$$

While the items in the test have a separate discrimination parameter for each dimension, they have a single difficulty parameter. The multidimensional difficulty index (MDIFF) is a parameter corresponding to the b parameter in the unidimensional item response theory. The d_i in Equation 2 is the intercept parameter related to item difficulty and calculated by the interaction of a and b parameters. MDIFF index is calculated as given in Equation 2 (Reckase, 2009).

$$MDIFF = \frac{-d_i}{MDISC} \tag{2}$$

It has been explained in the previous sections that as the number of latent traits measured by a test increases, the test measures more than one ability. While items in some tests measure more than one latent trait,

each of the items in some tests may be combined under a separate latent trait. Tests with items that are related to more than one ability are called complex structured tests, while tests in which items are gathered under different abilities and are related only to the level of ability they measure are called simple structured tests (Zhang, 2012). While the items in a simple structured test load on only one dimension, in a complex structured test the items load on more than one dimension (Ackerman, Gierl, & Walker, 2003). Simple structure may never occur in real data structures, however, simple structure assumes that the secondary loadings of items for data fluctuate around zero (Kim & Lee, 2022). In this study, two-dimensional simple structured data sets were generated and analyses were conducted on these data sets.

In the test equating study using the NEAT design, the parameters estimated from different forms may not be on the same scale due to the differences in ability between the groups. Therefore, a linear transformation is required to place the parameters estimated from the test forms on the same scale. Separate calibration and concurrent calibration methods can be used to transform the item parameters of the test forms applied to different groups to the same scale (Kolen & Brennan, 2014). Since separate calibration has been found to give more accurate and reliable results in multidimensional data structures (Kim & Kolen, 2006; Kolen & Brennan, 2014), separate calibration method was used in this study.

Separate calibration refers to the situation where item and ability parameters for each form are estimated separately and then an additional linking procedure is applied to place the two sets of parameters on the same scale (Kim, 2018). In NEAT design, item parameters of common items are used for scale transformation. With the scale transformation process, it is aimed to transform the item and ability parameters estimated from the new test form into the scale of the item and ability parameters of the old test form. For this purpose, it is necessary to obtain the slope (A) and intercept (B) constants. With these constants, the equivalent of the ability parameter value in one form can be found in the other form. Considering that there are I and J forms of a test, the ability (θ) parameter of person i in Test I and its equivalent in Test J can be calculated as given in Equation 3 (Kolen & Brennan, 2014).

$$\theta_{Ji} = A\theta_{Ii} + B \tag{3}$$

The transformation of item parameters from Test I to Test J is given in Equation 4. Since the guess parameter (parameter c) is on the probability scale, there is no need for transformation.

$$\begin{aligned} a_{Jj} &= \frac{a_{Ij}}{A} \\ b_{Jj} &= Ab_{Ij} + B \\ c_{Jj} &= c_{Ij} \end{aligned} \tag{4}$$

a_{Ij}, b_{Ij}, c_{Ij} : Item parameters for test I of item j

a_{Jj}, b_{Jj}, c_{Jj} : Rescaled item parameters of item j for test J

The methods used for separate calibration in scale transformation can be defined as moment methods and characteristic curve methods. Moment methods include mean-mean and mean-sigma methods, while characteristic curve methods include Stocking Lord and Haebara methods. In this study, mean-mean and mean-sigma methods from moment methods and Stocking Lord from characteristic curve methods were used.

In mean-mean (MM) method, slope (A) and intercept (B) constants are obtained by using the means of discrimination and difficulty parameters for common items (Loyd & Hoover, 1980). The calculation methods of slope and intercept constants are given in Equation 5.

$$\begin{aligned} A &= \frac{\mu(a_i)}{\mu(a_j)} \\ B &= \mu(b_j) - A\mu(b_i) \end{aligned} \tag{5}$$

$\mu(a_i), \mu(a_j)$: Mean of the discrimination parameters estimated from common items in i and j scales, respectively

$\mu(b_i), \mu(b_j)$: Mean of the difficulty parameters estimated from common items in i and j scales, respectively

Means and standard deviations of the difficulty parameters of common items are used to obtain the slope (A) and intercept (B) constants in Mean-Sigma (MS) method, (Marco, 1977). The mathematical expression for the calculation of the constants A and B according to the mean-sigma method is given in Equation 6.

$$A = \frac{\sigma(b_j)}{\sigma(b_i)}$$
$$B = \mu(b_j) - A\mu(b_i) \quad (6)$$

$\mu(b_i), \mu(b_j)$: The mean of the difficulty parameters estimated from common items in scales i and j, respectively

$\sigma(b_j), \sigma(b_i)$: Standard deviation of difficulty parameters estimated from common items in scales j and i, respectively

In Stocking-Lord (SL) method, the constants A and B are calculated by minimising the criterion function defined by the difference between the characteristic curves of the items instead of the parameters of the common items (Stocking and Lord, 1983). In this method, the sum is obtained for each parameter set and the square of the difference of the sums over the items is taken. Equation 7 shows the mathematical expression for this method (Kolen and Brennan, 2014).

$$SLdiff(\theta_i) = \left[\sum_{j:V} p_{ij}(\theta_{ji}; a_{Jj}, b_{Jj}, c_{Jj}) - \sum_{j:V} p_{ij}\left(\theta_{ji}; \frac{a_{Ij}}{A}, \mathrm{A}\, b_{Ij} + B, c_{Ij}\right) \right]^2 \quad (7)$$

A : Slope constant
B : Intercept constant
p_{ij} : Item characteristic function for person i and item j
a_{Jj}, b_{Jj}, c_{Jj} : Item parameters for the jth common item in scale J
a_{Ij}, b_{Ij}, c_{Ij} : Item parameters for the jth common item in scale I
$j:V$: Indicates that the total formula is calculated on common items

SLdiff is summed over the examinees and the constants A and B are obtained by minimising the criterion given in Equation 8 (Kolen and Brennan, 2014).

$$SL_{crit} = \sum_i SLdiff(\theta_i) \quad (8)$$

Tests used in education and psychology generally do not consist of a single dimension, items are sometimes related to multiple dimensions, and there are other dimensions measured by test items other than a dominant dimension. When unidimensional equating methods are applied to multidimensional data structures, it can be interpreted that the equating relationships will contain a large amount of error due to the violation of the unidimensionality assumption (Brossman, 2010). Multidimensional equating methods should be used for multidimensional data. In this study, an answer to the question of how the magnitude of the equating errors to be obtained when multidimensional equating methods are applied to multidimensional data structures under various conditions is searched.

It is aimed to apply scale transformation methods under NEAT design using two-parameter logistic model (2PLM) and 3-parameter logistic model (3PLM) to two-dimensional simple structured test data produced

under two different common item ratios (20% and 40%) with low (0.1), medium (0.5) and high (0.9) correlation between dimensions in sample sizes of 1000 and 2000 people, and to compare the estimated equating errors (RMSE) under the conditions considered in this study. It can be interpreted that the tests used in education and psychology measure more than one latent trait and are multidimensional due to their structure. In scale transformation studies, it is generally accepted that the data are unidimensional and analysis processes are carried out through unidimensional item response theory. Scale transformation studies conducted on multidimensional data structures are quite few. In this context, it is thought that the results of this study, which aims to compare the equating errors obtained from multidimensional scale transformation over multidimensional data and under the conditions considered, will contribute to the literature. In method section, the variables and conditions considered in the research are presented in a table, and the data generation, data analysis and evaluation criteria for these conditions are explained under separate headings.

Method

Research Data

Simulation data was used in the study. The reason for this may be that it is not possible to fulfil all of the conditions (sample size, correlation between dimensions, common item ratio, parameter estimation model) in real data structures. Within the framework of the conditions in the study, data sets for both forms of the test (X and Y) and item and ability parameters were generated using R software, and dichotomous (1-0) item response data were generated from item and ability parameters using R software.

In scale transformation methods, there are studies examining the effect of sample size on equating error. Skaggs and Lissitz (1986) stated that the sample size for 3PLM should be at least 1000, Gübeş (2019) took the sample size as 1000 and 2000 in her study, and Hanson and Beguin (2002), Gök and Kelecioğlu (2014) and Kumlu (2019) took the sample size as 1000 and 3000 in their studies. In this study, the sample size was taken as 1000 and 2000.

Conditions were created so that the correlation between dimensions was low (0.1), medium (0.5) and high (0.9) in the study. High correlation between the dimensions can be shown as an evidence for the unidimensionality of the test (Zhang, 2009). Beguin and Hanson (2001) observed that an increase in the correlation between dimensions leads to an increase in the total error when multidimensional model parameter estimation is used. Gübeş (2019) applied unidimensional scale transformation methods to a two-dimensional test data and obtained higher equating errors as the correlation between dimensions decreased.

Scale transformation is performed through common items (anchor) in NEAT design. In this design, anchor form is divided into two as internal anchor and external anchor. If common items are included in the total score of the individual, it is called internal anchor, if not, it is called external anchor (Crocker & Algina, 1986; Kolen & Brennan, 2014). In this study, internal anchor test was used. Angoff (1984) and Kolen and Brennan (2014) stated that the number of common items in test forms should not be less than 20 items or 20% of the total number of items. In this study, common item ratio was taken as 20% and 40%.

There are studies examining the effect of scale transformation using 2PLM and 3PLM on equating error (Gök & Kelecioğlu, 2014; Kim & Kolen, 2006; Kim & Lee, 2006). Accordingly, it is stated that the model used has an effect on the scale transformation and test equating process. The data of this study were generated according to 2PLM and 3PLM and in this way, it was aimed to reveal the effect of the guess parameter on the equating error when 3PLM was used.

In the study, the discrimination parameter (a) was generated from a uniform distribution with values ranging between 0.6 and 2 for both forms. The difficulty parameter (b) was generated from a normal distribution with a mean of 0 and a standard deviation of 1 with values between -3 and +3, and the guess parameter (c) was generated from a uniform distribution with values between 0.01 and 0.25. Between-groups ability distribution is not considered as a condition in this study. According to the classification based on the difference between the means of ability distributions between groups, if the difference is between 0.05-0.10, it can be defined as "wide", and when it takes values of 0.25 and higher, it can be defined as "very wide" (Wang at al., 2008). However, since the NEAT design was used in this study and the average ability difference between the groups was not desired to affect the results to be obtained regarding the conditions to be examined, the difference was taken as low as 0.05. When generating the ability parameters of one of the groups, the mean was taken as 0 and the standard deviation as 1, and when generating the ability parameters of the other group, the mean was taken as 0.05 and the standard deviation as 1, and the ability parameters were generated to show a multivariate normal distribution. In Table 1, the variables and conditions within the framework of the study are explained.

As seen in Table 1, a total of 24 (2x3x2x2) conditions were examined in this study, including sample size (2 conditions), correlation between dimensions (3 conditions), common item ratio (2 conditions) and

parameter estimation model (2 conditions). In the literature, it was observed that at least 50 iterations were performed for each data set in order to make the research results consistent and stable (Hanson & Beguin, 2002) and 50 iterations were performed for each data set in this study.

Table 1. Variables and Conditions in the Study

Variables	Conditions	Number of Conditions
Sample size	1000-2000	2
Correlation between dimensions	0.1-0.5-0.9	3
Common item ratio	%20-%40	2
Parameter estimation model	2PLM-3PLM	2

Data Anaysis

In the study, 1200 (24x50) data sets for both forms of the test (X and Y) were generated in R software in order to compare the equating errors obtained from mean-mean (MM), mean-sigma (MS) and Stocking Lord (SL) scale transformation methods. Dichotomous (1-0) item response data were generated from the item and ability parameters produced using the mirt package (Chalmers, 2012) in R software. For both forms of the test, multidimensional and simple structure parameter estimations were performed separately for 2PLM and 3PLM in IRT PRO 4.2 software. Markov Chain Monte Carlo (MC-MC) method was used for parameter estimation. In order to set the parameters obtained from both forms on the same scale, scale transformation was performed by using the mean-mean, mean-sigma and Stocking Lord methods, which are separate calibration methods over the MIRT based on the parameters of the items in the first form and the common item parameters in the second form. Linkmirt software (Yao, 2009) was used for multidimensional scale transformation. The softwares used in the study was run through batch script with R software in order to analyse 50 iterations of the data sets at one time. Slope (A) and intercept (B) constants were obtained by using MM, MS and SL scale transformation methods, and then the Root Mean Squared Error (RMSE) value, which gives the amount of error of the transformed item and ability parameters for each scale transformation method, was calculated. The RMSE values estimated after each iteration for item and ability parameters were averaged separately to obtain a single RMSE value for each parameter. The mathematical expression for the calculation of the RMSE value is given in Equation 9.

$$RMSE\left(\tau_j\right)=\sqrt{\frac{\sum_{r=1}^{R}\left(\tau_{jr}-\tau_j\right)^2}{R}} \tag{9}$$

τ_j : True value of parameter j

τ_{jr} : Estimated value of parameter j for repeated data set (r=1, 2, 3, ..., R)

R : Number of iterations

Results and Discussion

Multidimensional scale transformation was performed over the data obtained from both forms within the framework of the conditions in the research by using 3PLM and 2PLM respectively, and the findings obtained were interpreted under separate headings respectively.

Results on RMSE Values Obtained When Scale Transformation is Performed Using 3PLM

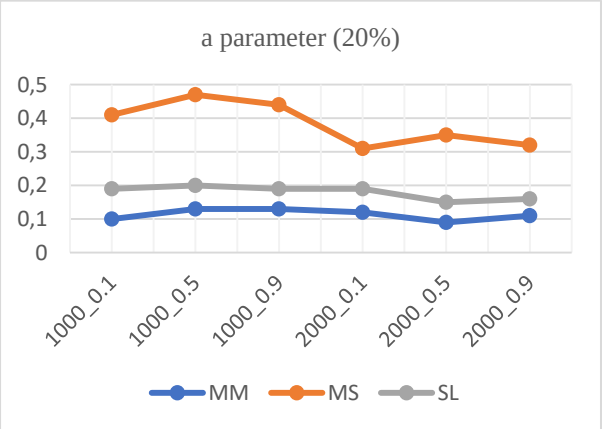
The RMSE values for the item and ability parameters obtained as a result of the multidimensional scale transformation process performed over 3PLM on both forms, including the discrimination parameter a, difficulty parameter b and the ability parameter theta, are given in Table 2.

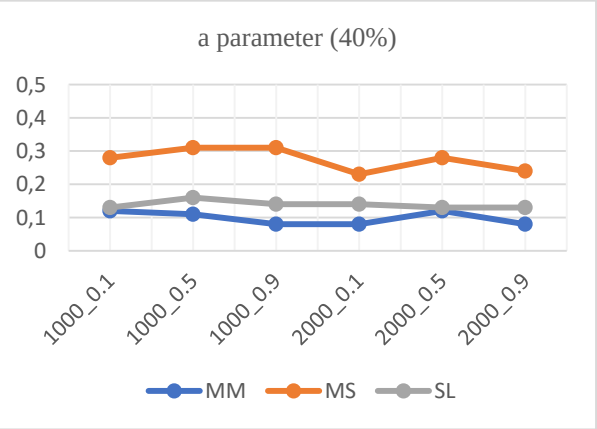
Table 2. RMSE Values of Scale Transformation Methods Using 3PLM

Correlation Between Dimensions	Sample Size	Common Item Ratio	RMSE Value								
			a			b			theta		
			MM	MS	SL	MM	MS	SL	MM	MS	SL
0.1	1000	%20	0.10	0.41	0.19	0.21	0.33	0.25	0.15	0.22	0.20

		%40	0.12	0.28	0.13	0.15	0.20	0.18	0.11	0.15	0.13
	2000	%20	0.12	0.31	0.19	0.15	0.25	0.32	0.11	0.18	0.28
		%40	0.08	0.23	0.14	0.11	0.25	0.28	0.07	0.17	0.22
0.5	1000	%20	0.13	0.47	0.20	0.26	0.39	0.34	0.18	0.25	0.29
		%40	0.11	0.31	0.16	0.14	0.28	0.24	0.10	0.19	0.18
	2000	%20	0.09	0.35	0.15	0.17	0.32	0.23	0.12	0.23	0.17
		%40	0.12	0.28	0.13	0.15	0.20	0.18	0.07	0.10	0.09
0.9	1000	%20	0.13	0.44	0.19	0.21	0.35	0.28	0.14	0.24	0.23
		%40	0.08	0.31	0.14	0.13	0.29	0.26	0.09	0.18	0.20
	2000	%20	0.11	0.32	0.16	0.17	0.33	0.29	0.12	0.23	0.24
		%40	0.08	0.24	0.13	0.10	0.21	0.25	0.07	0.15	0.20

When Table 2 is examined, it is seen that the RMSE value decreases as the sample size increases for all methods in the analyses using 3PLM. Similarly, it can be interpreted that the increase in the common item ratio is effective in obtaining lower RMSE values in general. When the RMSE values obtained for the methods are analysed, it is seen that the RMSE values for the mean-sigma method are higher than the other methods for all parameters. This supports the findings obtained by Atar and Yeşiltaş (2017). In addition, it is seen that the lowest RMSE values are obtained from the mean-mean method. While this is consistent with the findings of Ogasawara (2000) and Gök and Kelecioğlu (2014), which show that the mean-mean method yields better results than the mean-sigma method, it conflicts with the finding reported by Baker and Al-Karni (1991) and Hanson and Beguin (2002) that characteristic curve methods produce lower errors than moment methods. When the correlation between dimensions is 0.1 (low), the sample size is 2000 (high) and the common item ratio is 40% (high), the RMSE values of the mean-mean and mean-sigma methods are the lowest for all parameters. In the Stocking-Lord method, the lowest RMSE values for all parameters were obtained in conditions with correlation between dimensions of 0.5 (medium), sample size of 2000 (high) and common item ratio of 40% (high). Figure 1 shows the RMSE values obtained under all conditions as a result of multidimensional scale transformation using 3PLM for a, b and theta parameters, respectively.





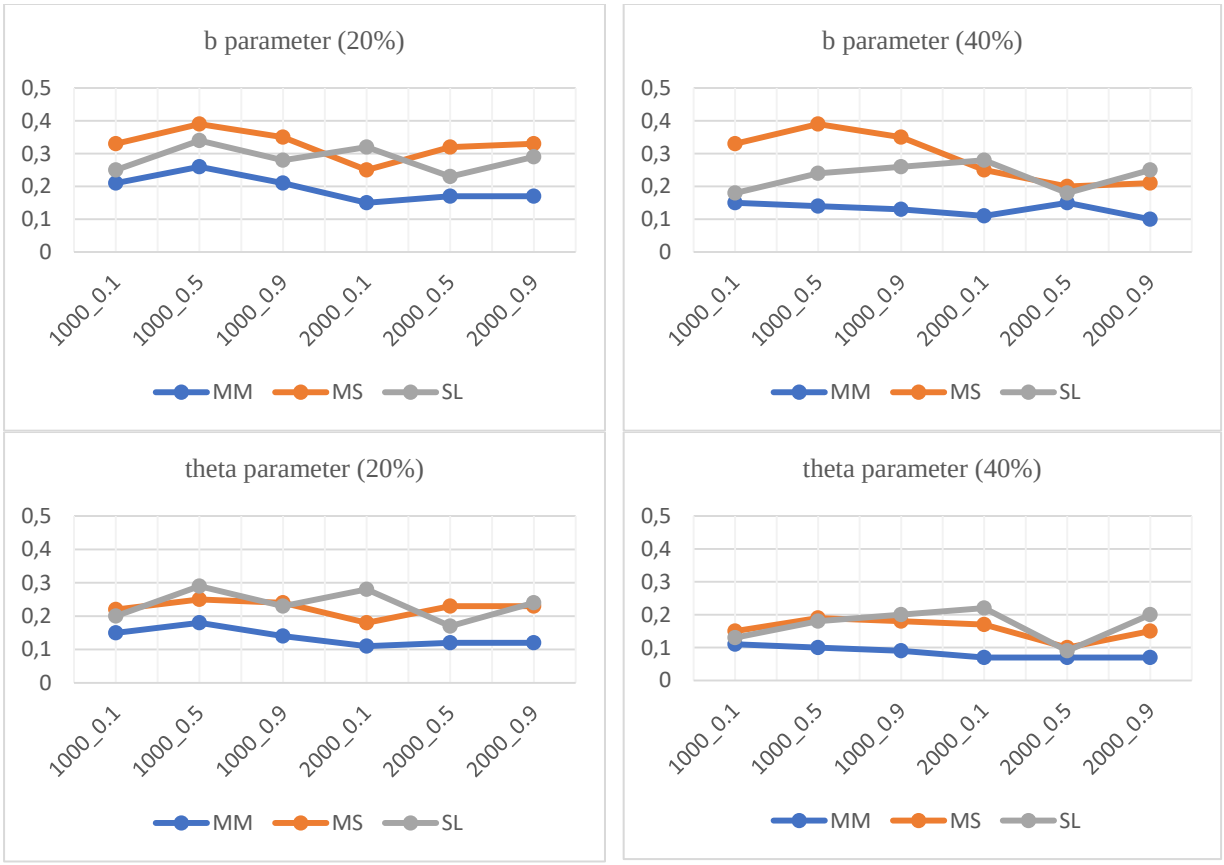


Figure 1. RMSE Values of Scale Transformation Methods Using 3PLM

Figure 1 shows that the lowest RMSE values for a, b and theta parameters, respectively, were obtained from the mean-mean method when the common item ratio was 40% and the sample size was 2000. When the sample size and common item ratio are constant, it can be interpreted that increasing the correlation between dimensions has a relatively decreasing effect on the RMSE values obtained from a and b parameters. The reason for this is that the increase in the correlation between dimensions strengthens the unidimensional characteristic of the test, and this situation is thought to provide more consistent estimation of the parameters of the test items.

Results on RMSE Values Obtained When Scale Transformation is Performed Using 2PLM

RMSE values for item and ability parameters obtained when multidimensional scale transformation was performed on both forms using 2PLM are given in Table 3.

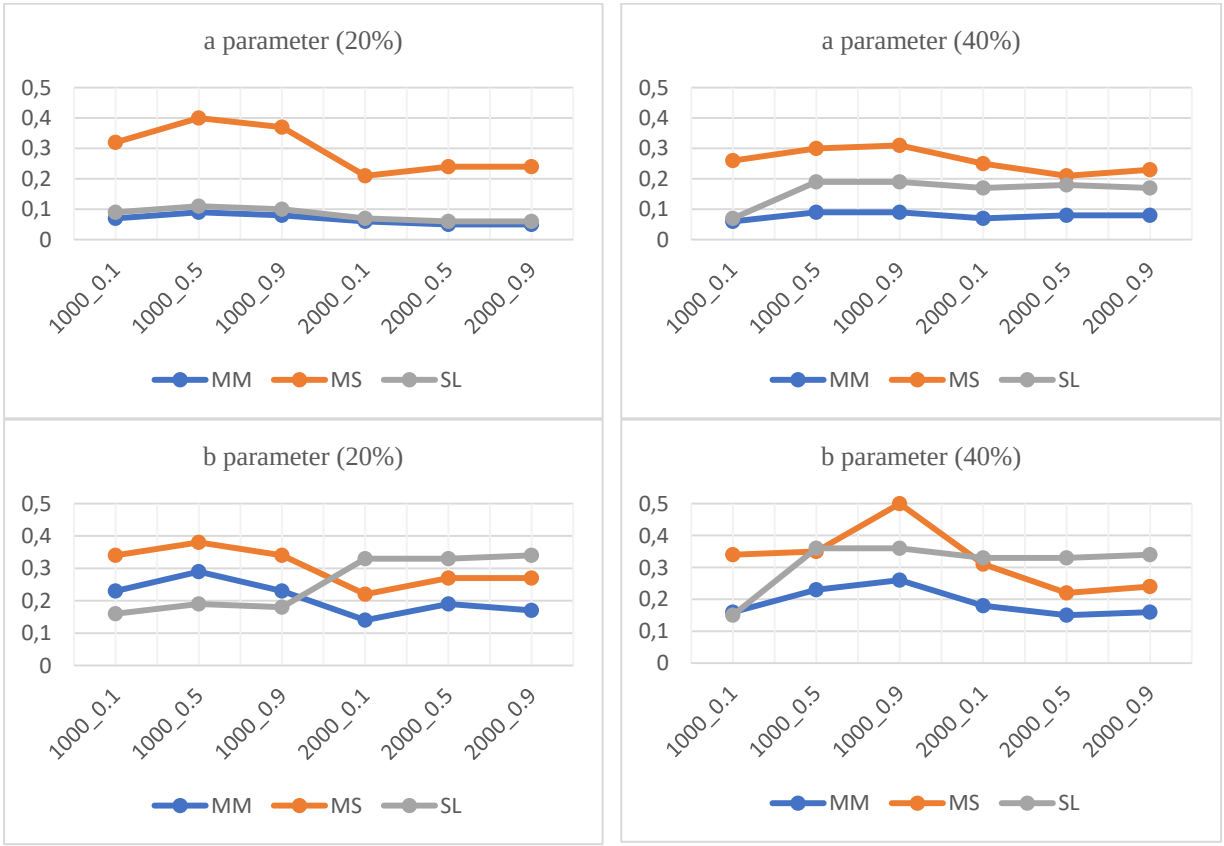
It is seen that the RMSE value decreases as the sample size increases for all scale transformation methods in the analyses using 2PLM as in 3PLM in Table 3. In addition, it can be interpreted that the increase in the common item ratio has a decreasing effect on the RMSE values obtained from the mean-mean and mean-sigma methods and an increasing effect on the RMSE values obtained from the Stocking-Lord method. When the RMSE values obtained for the methods are analysed, it is seen that the values for the mean-sigma method are higher than the other methods. When the correlation between dimensions was 0.1 (low), sample size was 2000 (high) and common item ratio was 20% (low), RMSE values of all methods were the lowest for all parameters.

Table 3. RMSE Values of Scale Transformation Methods Using 2PLM

Correlation Between Dimensions	Sample Size	Common Item Ratio	RMSE Value								
			a			b			theta		
			MM	MS	SL	MM	MS	SL	MM	MS	SL
0.1	1000	%20	0.07	0.32	0.09	0.23	0.34	0.16	0.16	0.25	0.11
		%40	0.06	0.26	0.07	0.16	0.34	0.15	0.11	0.24	0.11
	2000	%20	0.06	0.21	0.07	0.14	0.22	0.14	0.10	0.16	0.10

		%40	0.07	0.25	0.17	0.18	0.31	0.33	0.12	0.21	0.19
0.5	1000	%20	0.09	0.40	0.11	0.29	0.38	0.19	0.19	0.27	0.15
		%40	0.09	0.30	0.19	0.23	0.35	0.36	0.17	0.25	0.21
	2000	%20	0.05	0.24	0.06	0.19	0.27	0.15	0.13	0.21	0.10
		%40	0.08	0.21	0.18	0.15	0.22	0.33	0.09	0.15	0.20
0.9	1000	%20	0.08	0.37	0.10	0.23	0.34	0.18	0.16	0.26	0.15
		%40	0.09	0.31	0.19	0.26	0.53	0.36	0.19	0.34	0.21
	2000	%20	0.05	0.24	0.06	0.17	0.27	0.15	0.11	0.20	0.11
		%40	0.08	0.23	0.17	0.16	0.24	0.34	0.11	0.17	0.20

When RMSE values according to parameter estimation models are analysed, it is seen that RMSE values for discrimination parameter are lower in 2PLM for all methods. When the RMSE values for difficulty and ability parameters are analysed, it is seen that the values for Stocking-Lord method are lower in 2PLM, while lower values are obtained in 3PLM for other methods. In this context, it can be interpreted that generally lower RMSE values are obtained when 2PLM is used. This finding is consistent with the finding of Kaskowitz and De Ayala (2001) that 3PLM estimates parameters a and b with higher error. In cases where 2PLM is used as a parameter estimation model, this may be explained by the fact that more stable item parameter estimates are obtained in large samples (Bökeoğlu at al., 2022). Figure 2 shows the RMSE values obtained under all conditions as a result of multidimensional scale transformation using 2PLM for a, b and theta parameters, respectively.



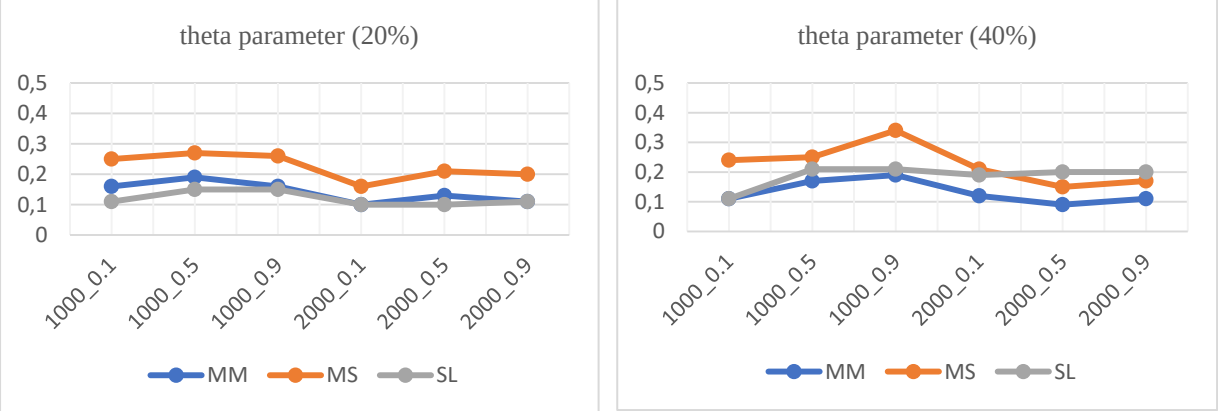


Figure 2. RMSE Values of Scale Transformation Methods Using 2PLM

According to Figure 2, it is seen that the lowest RMSE values for a and b parameters are generally obtained when the sample size is 2000 and the common item ratio is 20%. For the discrimination parameter, the lowest RMSE value was obtained from the mean-mean method when the correlation between dimensions was 0.5 and 0.9, while for the difficulty parameter, the lowest RMSE value was obtained from the mean-mean and Stocking-Lord methods when the correlation between dimensions was 0.1. The lowest RMSE value for the ability parameter was obtained from the mean-mean method when the common item ratio was 40% and the correlation between dimension was 0.5 in a sample size of 2000. When the RMSE values of the scale transformation methods were compared, values obtained from the mean-sigma method were found to be higher.

Conclusion and Recommendations

In this study, it was aimed to compare the equating errors of mean-mean, mean-sigma and Stocking-Lord scale transformation methods under various conditions (sample size, correlation between dimensions, common item ratio and parameter estimation model) using multidimensional item response theory. For this purpose, data were generated according to various conditions by taking into account the conditions considered in previous national and international studies and it was investigated which of these conditions produced the least error.

As a result of the analyses, it was seen that the increase in the sample size and the common item ratio had a decreasing effect on the equating errors, and the low correlation between the dimensions led to low equating errors due to the structure of the data and the methods used. Obtaining low equating errors at high sample sizes is consistent with the findings in the literature (Atar & Yeşiltaş, 2017; Hanson & Beguin, 2002). In addition, the findings obtained from the study are consistent with the finding that the increase in the correlation between dimensions causes an increase in the equating error when multidimensional scale transformation is performed (Beguin & Hanson, 2001; Gübeş, 2019). In addition, in cases where 3PLM was used, the increase in the common item ratio decreased the equating errors.

Estimates with the lowest equating error were obtained in the condition with a sample size of 2000 and the correlation between dimensions was 0.1 when both 2PLM and 3PLM were used. In addition, higher equating errors were obtained when the mean-sigma method was used for both models. In the estimation of the discrimination parameter, lower RMSE values were obtained when 2PLM was used for all methods. In the estimation of difficulty and ability parameters, lower values were obtained in 2PLM for Stocking-Lord method, while lower RMSE values were obtained in 3PLM for mean-mean and mean-sigma methods. It is concluded that the equating errors obtained from the mean-mean and Stocking-Lord methods are lower when the 2PLM is used, and from the mean-mean method when the 3PLM is used. This finding coincides with the findings of Ogasawara (2000), Gök and Kelecioğlu (2014), and conflicts the study by Baker and Al-Karni (1991), who found that the method with the least error is Stocking-Lord. The parameter estimation model caused differences in the equating errors and in determining the scale transformation method with the least error. In this case, it can be interpreted that guess success affects the parameter estimation and also affects the equating error.

In order to be able to interpret and generalise the results of a research correctly, the conditions in the research and their interactions with each other should be taken into consideration. Considering the conditions and the results obtained in this study, it is understood that attention should be paid to the selection of sample size, common item ratio and correlation between dimensions in multidimensional scale transformation. When the results of the research are evaluated in general, it can be interpreted that the scale transformation method with the lowest equating error can be obtained by using the mean-mean method when the sample size is 2000 and the correlation between dimensions is 0.1. Equating errors of all methods decreased due to the fact that the error related to parameter estimation decreased in large samples and more stable estimations were made.

According to the results of the study, the performance of the scale transformation methods differed according to the conditions considered, thus there is no definite conclusion about which method will give the best result. It is important that the findings obtained in scale transformation studies are consistent with the findings of previous studies. Using many methods together and comparing the results will help in choosing the most appropriate method (Hanson & Beguin, 2002).

This study is limited to sample size, common item ratio, correlation between dimensions, parameter estimation method conditions and certain levels of these conditions. A similar study can be conducted by considering the condition of ability distribution between groups. This study was conducted with simulation data. Similar studies can be carried out using real data. By generating simulation data similar to the conditions of real data, the errors obtained from both data types can be compared. In this way, possible differences and errors due to the use of real data or simulation data can be revealed. In addition to the RMSE value used as an evaluation criterion in this study, comparisons can be made using different evaluation criteria such as standard error of equating and bias.

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