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Examining Curriculums in Terms of Healthy Nutrition Outcomes in the Context of Class Level*

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Abstract: This study aimed to examine the healthy nutrition outcomes gained by curriculums introduced and implemented in 2018, focusing on grades and lesson durations. The study employed a qualitative research strategy and used the document review technique.. The data, collected from the analysis of six different curricula, were evaluated using content analysis. Through analysis, 38 healthy nutrition outcomes were identified and categorized under themes after coding. The lesson duration and grade level evaluation findings indicate that healthy nutrition outcomes were not evenly distributed across class levels.The Science Curriculum (SC) does not include any healthy nutrition learning outcomes for the 5th grade, and the Physical Education and Games Curriculum (PEGC) excludes them for the 2nd grade. Similarly, the Secondary School Biology Curriculum (SSBC) includes such learning outcomes only in the 9th grade. Regarding lesson durations, the average time allocated to healthy nutrition outcomes was determined as 2.5–3 hours in the Life Sciences Curriculum (LSC), 1.5–3 hours in the SC, 1.5–2.5 hours in the Secondary School Physical Education and Sports Curriculum (SEPESC), and 8.5 hours in the SSBC. However, lesson durations were not specified for the learning outcomes in PEGC and SEPESC. These results emphasize the need to distribute outcomes more equitably and systematically across class levels in alignment with pedagogical principles. Furthermore, organizing healthy nutrition outcomes with spiral structure is recommended to ensure learning continuity and prevent incomplete understanding. This study highlights the importance of adopting a planned and systematic approach in curriculum design to enhance the effective integration and balanced distribution of healthy nutrition outcomes.
***Keywords**:* Healthy nutrition, Achievement, Curricula.

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Introduction

The living conditions provided to individuals impact their ability to grow and develop in a healthily from childhood, as well as genetic characteristics (Konca et al., 2019). Healthy living conditions are proportional to healthy nutrition. Healthy living conditions are proportional to healthy nutrition. Healthy nutrition forms the basis of a healthy life process. For this reason, living a healthy life is related to healthy nutrition. Healthy nutrition contributes to the mental and physiological state of individuals (Tayhan Kartal et al., 2019). According to İrcal-Sümbül (2009), the nutritional factor is also very important in maintaining a healthy life in addition to physical activity and sleep patterns. Teaching individuals how to maintain a healthy nutrition process and the effects of this process on healthy life can be considered as the basic step for a healthy life cycle. The importance of an effective education and training process in teaching the requirements of healthy nutrition for maintaining a healthy life cannot be ignored. As a matter of fact, an effective education and training process means a good nutritional habit transferred to future generations (Pekşen Akça et al., 2013). An effective education process can play an active role in teaching a subject and reaching target behaviours. The harmony between the process of reaching the targeted behaviours and the objectives can be considered as a precondition for a quality teaching. At all levels of education, an education process that is compatible with the objectives of the curriculum is ensured by education programmes (Erbagcı & Kaf, 2020). The organisation of education and training activities as a whole is defined as a curriculum (Pratt 1980). Educational programmes, which include learning objectives, content arrangements, teaching methods, evaluation processes and learning experiences, consist of behaviour, learning outcome or outcome-based objectives (Burul, 2018). Outcome, which is among these objectives, is a concept that has been emphasised in recent years (Yakar, 2016).

Education programs, which aim to provide students with the attitudes and skills needed to acquire knowledge and solve the problems they will encounter, structure the phenomenon of attainment as concrete and measurable goals to be achieved in the education process (Kaptan, 1999). Therefore, in the planning of the educational process, it is critical that educational programs set goals that aim to provide attitudes and skills for students' needs and that these goals are transformed into concrete achievements through curriculum. In the planning of the educational process, the curriculum, as well as educational programs, provide concrete contents that enable students to reach the determined goals (Laska & Gürbüztürk, 2019). While education programs, which are prepared in a wider framework than curriculum, determine the policies and objectives of education, the curriculum focuses on the in-class and out-of-class practices of a course (Özdemir, 2009). On the other hand, curriculum makes education programs applicable (Küçükahmet, 2003) by detailing the learning objectives, content, teaching methods and assessment tools for a specific course (Dönmez & Zorluoğlu, 2020). Demirel (2013) defined the curriculum as all activities related to the teaching of the course aimed to be gained by individuals inside and outside the school according to a plan. The objectives constitute an important dimension of the curriculum. The achievable goals and behaviours in the curricula should be consistent within themselves (Sıcak & Arsal, 2014). The consistency between objectives and behaviours has an important place in terms of providing effective and efficient teaching. This consistency is directly related to the knowledge and skills that individuals gain through formal and informal activities in the learning process (Elmas et al., 2021). The permanent effect and instructive dimension of the activities performed during the education process reveal how important learning outcomes are in achieving the desired outcomes (Black & William, 2009). In this context, the objectives of the curriculum not only transfer knowledge, but also stand out as an important factor that supports the application of the relevant subjects to life (Akın, 2007). While preparing the objectives, the content of the course should be carefully considered and the excess of concepts and objectives that will make it difficult for students to make sense of the information should be avoided (Cangüven et al., 2017; Demir, 2020). Therefore, it can be said that a curriculum prepared by avoiding the excess of concepts and

acquisitions is effective in realising an efficient learning process. The curriculum structured by avoiding the redundancy of concepts and outcomes aims to improve individuals' ability to access information and to equip them with the necessary skills to lead a healthy and safe life, just like the Life Sciences Curriculum (LSC) (MoNE, 2018a). LCS aims to raise individuals who recognise themselves and the environment in which they live, use information and communication technologies appropriately, and have the awareness of living a healthy and safe life to ensure an effective and efficient education and training process (MoNE, 2018a).

The main objective of the SC is to raise science literate individuals who can research, think critically, question, and find solutions to the problems they will face (MoNE, 2018b).SEPESCC is aimed to raise individuals who gain health-enhancing skills and attitudes by staying away from habits that affect physical and mental health (MoNE, 2018c). The aim of the PEGCC and the PESCC (Secondary School Grades 5, 6, 7 and 8) is to prepare students for the next levels of education by providing them with the concepts and skills that will develop healthy life skills along with the basic movements they will use throughout their lives (MEB, 2018d; MEB, 2018e). Furthermore, SEBCC aims to know the basic theories, principles and experiments related to biology; to raise individuals who can use biology knowledge and practices in daily life, discuss and evaluate socioscientific issues, research, think, question, and produce (MoNE, 2018f). Each of the related learning outcomes corresponds to the objectives in the curriculum. These outcomes in the curriculum not only enable students to think and question critically, but also include elements that provide them with the skills to have a healthy life process. The learning outcomes serve as a guide on what and how to teach students in the learning process. For this reason, the adequacy of the objectives in the curriculum according to the grade levels plays an important role in regulating the learning-teaching process to respond to the needs by providing an efficient and permanent education process according to the determined objectives. In this context, structuring the outcomes in the curricula according to the grade levels ensures the effective teaching of subjects such as nutrition, which is of lifelong importance, and the permanence of education on these subjects (Çolak, 2019). Thus, the adequacy of the achievements related to nutrition in the curriculum is important in terms of having correct nutritional knowledge and gaining positive eating habits. In this context, this study aimed to determine the distribution of the learning outcomes related to healthy nutrition in the curricula of HLBLC, FBLC, BEODLC, OBESLC and BLC, which were published and entered into force in 2018, according to the grade level. Based on the aim of the research, the main problem statement was “How do the learning outcomes related to healthy nutrition in different curriculums of primary and secondary education show a distribution according to the grade level”. Answers to the following sub-problems were sought within the framework of this main problem.

1. How do the learning outcomes related to healthy nutrition in different curriculums vary according to grade level?
2. How do the average lesson hours of the acquisitions related to healthy nutrition in different curriculums vary according to the grade level?

Method

Research Design

This study was designed qualitative research model and it was conducted with the document analysis technique. Qualitative research is a paradigm in which mutual interaction and relationship are emphasised and data are collected through interviews, observations and written materials (Balcı, 2018). Document analysis is a technique that includes the process of collecting data from written records and documents by saving time and resources for the

researcher (Karasar, 2016; Şimşek, 2009). Since examining the gains related to healthy nutrition in different curricula with the document review technique enables this study to be handled from a multidimensional and comprehensive perspective; in this study, the gains related to healthy nutrition in the curricula published and included in the curricula that came into force in 2018 were examined in terms of grade level and average course hour duration.

Data source

In this study, six different curricula published and implemented in 2018 were examined as data sources. The reason for examining the curricula of different courses as a data source was to ensure that nutrition outcomes were analysed not only through a single curriculum, but also through various curricula to provide a more holistic perspective on the subject.

Data Analysis

The content analysis method was used to analyse the data according to the stages of the document analysis approach. Reaching the relationships that can explain the data obtained was a basic aim of content analysis (Yıldırım & Şimşek, 2013). Content analysis is the process of analysing published materials thematically in specified categories (Duran & Kenanoğlu, 2020). In the curriculum examined through content analysis, 38 learning outcomes related to nutrition were identified, and each learning outcome was coded by creating themes for the learning outcomes. The opinions of two experts in the field were taken to ensure consensus among the coders regarding the coded acquisitions and the themes created. According to the expert opinions, the percentage of agreement/disagreement regarding the coding of the acquisitions was determined as 90% and the percentage of agreement regarding the themes created for the acquisitions was determined as 85%. In order for a research to be reliable, it was sufficient for the percentage of agreement to be at least 70% (Miles & Huberman, 1994).

In this research, the coded learning outcomes and the themes related to the learning outcomes were categorised and presented in a Table 1 as unit/learning areas, theme, grade level, frequency, and average lesson hour duration as part of the content of the curriculum. While determining the average course hours for the learning outcomes, the total course hours given in the subject area related to the learning outcome were divided by the total number of learning outcomes. Thus, the average lesson time for each outcome was calculated.

Findigns

In this part of the study, the results of the analysis of 38 learning outcomes related to healthy nutrition in the curricula of different courses published in 2018 were presented.

Table 1
The Distribution of Healthy Eating Outcomes in LSC According to Grade Level and Lesson Hour Duration

Curriculum /Unit	Theme	Grade	Learning outcomes	f	Average lesson hours
"Life Science/Healthy Life"	Basic Principles of Healthy Living	1	Awareness of health protection	4	3
			Selection of foods and drinks that are beneficial for health		3
			Balanced and regular nutrition		3
			Preparing food by paying		3

			attention to hygiene rules		
	Healthy Life Cycle: Nutrition and Hygiene	2	Factors affecting healthy development	4	3
			Preparing a balanced nutrition list		3
			Cleaning for a healthy life		3
			Consuming seasonal food		3
	Conscious Consumption and Nutrition	3	Conscious consumption behaviour	3	2.5
			Nutrition according to the seasons		2.5
			Healthy eating		2.5
Total				**11**	**31.5**

According to Table 1, a total of 11 learning outcomes related to healthy nutrition were determined in the Healthy Life unit of the Life Science Curriculum. Four of these learning outcomes were within the scope of 'basic principles of healthy life' and 'healthy life cycle: nutrition and hygiene' themes. The results in Table 1 showed that there were three learning outcomes under the theme of 'conscious consumption and nutrition' for the 3rd grade, which aimed to provide students with skills such as exhibiting conscious consumer behaviours when purchasing food and beverages, eating foods suitable for the seasons, and eating adequate and balanced nutrition to protect their health. When the results in Table 1 were analysed in terms of average lesson hour duration, it was seen that the average lesson hour duration for each learning outcome was three hours for the 1st and 2nd grades. At the 3rd grade level, the average lesson time for the healthy eating outcome was 2.5 hours.

Table 2
Class Level and Lesson Hour Distribution of Healthy Eating Outcomes in SC

Curriculum /Unit	Theme	Grade	Learning Outcomes	f	Average lesson hours
'Science Curriculum' / 'Earthlings and Life'	Sensory organs and healthy nutrition	3	Maintaining the health of the sense organs	1	2
	Nutrition, health and responsibility awareness	4	Relationship between sustainable vitality and nutrient content	6	3
			Water and mineral analysis in foods		3
			Awareness of consuming natural and fresh food		3
			Relationship between health and balanced nutrition		3
			Harmful habits and health awareness		3
			Taking responsibility for harmful habits		3
	-	5	-	-	-
	Body health during adolescence	6	Adolescence healthy life strategies	2	2
			Nutrition for system health		2
	Healthy development	7	Healthy living strategies in embryonal development	1	2
	Biotechnology and human health	8	Effects of biotechnology on humanity	1	1.5
Total				**11**	**27.5**

When Table 2 was analysed, one outcome related to the theme of 'sense organs and healthy nutrition' was observed at the 3rd grade level of the science curriculum. Moreover, one outcome each for the 7th and 8th grades was related to the themes of 'healthy development' and 'biotechnology and human health'. According to Table 2, 6 objectives related to nutrition at the

4th grade level were associated with the theme of 'nutrition, health and responsibility awareness'. At the 6th grade level, 2 objectives related to nutrition were matched with the theme of 'body health in adolescence', while there were no objectives related to healthy nutrition for the 5th grade. When Table 2 was analysed in terms of average lesson hours, the average lesson hours of each outcome related to healthy nutrition in grades 3, 6 and 7 were two hours each. Furthermore, it can be seen that the average lesson hour duration of each outcome related to nutrition was three hours in the 4th grade and one and a half hours in the 8th grade.

Table 3
The Distribution of Healthy Eating Outcomes in The SSPESC by Grade Level and Duration of Class Hours

Curriculum /Unit	Theme	Grade	Learning Outcomes	f	Average lesson hours
"Physical Education and Sports"/"Active and Healthy Life"	Nutrition and Movement: The Key to a Balanced Life	9	Relationship between healthy eating and physical activity	1	1.5
	Active Living and Nutrition Awareness	10	Physical activity for a healthy life Obtaining nutrition information from the right sources	2	1.5 1.5
	Knowing the Principles of Healthy Eating Preventing Harmful Habits	11	To explain the principles of healthy nutrition To explain the nutritional habits that affect physical and mental health	2	1.5 1.5
	Negative Aspects of Active Living and Addictions	12	Health hazards of a sedentary life The negative effects of harmful habits on athletes	2	2.5 2
Total				**7**	**12**

According to Table 3, there was only one outcome under the theme of "nutrition and movement: the key to a balanced life". "Under the theme of 'active life and nutrition awareness', there were two learning outcomes at the 10th grade level that mentioned the necessity of regular physical activity for a healthy life and emphasized the importance of obtaining information from the right sources for a healthy diet. Moreover, the results in Table 3 showed that there were two learning outcomes at the 11th and 12th grade level, each focusing on explaining the basic principles of healthy nutrition and drawing attention to learning the factors that can negatively affect physical and mental health. These learning outcomes were associated with the themes of "preventing harmful habits by knowing the principles of healthy nutrition" and "negative aspects of active life and addictions" respectively. Table 3 shows that the average lesson hour time for each result linked to good nutrition was one hour for the ninth, tenth, and eleventh graders. At the 12th grade level, this situation was observed to be 2.5 hours for the outcome coded "the harm of sedentary life to health" and two hours for the outcome coded "the negative effects of harmful habits on athletes".

Table 4
Distribution of Healthy Eating Outcomes in SSPEGC by Grade Level and Duration of Class Hours

Curriculum/Unit	Theme	Grade	Learning Outcomes	f	Average lesson hours
"Physical Education and Play"/"Active and Healthy Life"	Nutrition in Active Living	1	To gain healthy eating habits for participation in games and physical activities	1	-
	-	2	-	-	-
	Nutrition in Active Living	3	Nutrition before and after the activity	1	-

	Planned Nutrition	4	Individual nutrition program preparation	1	-
Total				**3**	**-**

When Table 4 was examined, it was seen that one outcome in the curriculum at the 1st and 3rd grade level was related to the importance of proper nutrition while participating in games and physical activities within the scope of the theme of "nutrition in active life". Besides, one outcome for the 4th grade was associated with the theme of "planned nutrition" and no nutrition outcome for the 2nd grade was identified in the SSPEGC. Table 4 shows that the average lesson hour duration was not calculated since the lesson hour durations of the learning outcomes related to healthy nutrition were not given on a subject basis in SSPEGC.

Table 5
Distribution of Healthy Nutrition Outcomes by Grade Level and Lesson Hour Duration in PEGC

Curriculum /Unit	**Theme**	**Grade**	**Learning Outcomes**	**f**	**Average lesson hours**
"Physical Education and Sports" / "Active and Healthy Life"	*Physical Activity and Nutrition: Energy Management and Informed Choices*	5	Relationship between physical activity and nutritional requirements	1	-
		6	Knowledge of nutrients that provide energy for physical activities	1	-
		7	Preparing individual nutrition program for physical activities	1	-
		8	Demonstrate conscious nutrition behaviors for physical activity	1	-
Total				**4**	**-**

According to the results in Table 5, a total of four learning outcomes related to healthy eating were identified at the 5th, 6th, 7th and 8th grade levels. These outcomes were related to the theme of "physical activity and nutrition: energy management and conscious choices", one at each grade level. Moreover, when Table 5 wes examined, it was seen that the average lesson hour duration of the acquisitions related to healthy nutrition in PEGC was not calculated since the lesson hour duration is not given in the curriculum on the basis of subject.

Table 6
Class Level and Lesson Hour Duration Distribution of Healthy Nutrition Outcomes in SSBC

Curriculum /Unit	**Theme**	**Grade**	**Learning Outcomes**	**f**	**Average lesson hours**
"Biology"/ "Basic Components in the Structure of Living Things"	Basic Components of Living Things and Healthy Nutrition	9	Knowledge of organic and inorganic compounds	2	8.5
			Food components and healthy eating		8.5
	-	10	-	-	-
	-	11	-	-	-
	-	12	-	-	-
Total				**2**	**17**

When Table 6 was examined, it was seen that only two learning outcomes in the 9th grade level of the biology curriculum were related to healthy nutrition, while there were no learning outcomes related to nutrition in the other grade levels. Table 6 showed that two learning outcomes in the biology curriculum were related to the theme of "basic components of living things and healthy nutrition". Furthermore, the learning outcomes related to healthy nutrition in the SSBC reflect an average of 17 hours of lesson time.

Conclusion, Discussion and Recommendations

The results of this study revealed differences in the distribution of healthy nutrition outcomes in different curricula that came into effect as of 2018. One of these differences was that the healthy nutrition outcomes in the curricula were not distributed equally according to the grade level. For example, while there were no outcomes related to healthy nutrition in the fifth grade of the science course curriculum, and in the second grade of the primary school physical education and games course, there were only relevant outcomes in the ninth-grade level for the biology course. This may be because the cognitive capacities and learning needs of students were considered when preparing curricula (Özçelik, 2014). There may not be any learning outcomes related to healthy nutrition for every grade level. However, curriculums should be structured gradually, equipped with learning outcomes appropriate to students' development and grade levels, and designed in a planned and systematic manner in line with pedagogical principles to facilitate the achievement of learning objectives (Avcı, 2014). Ursavaş et al. (2020) emphasized the importance to structure curriculum learning outcomes to enhance cognitive growth of students. The fact that the outcome related to a multidisciplinary subject such as healthy nutrition was not available at every grade level may be due to the uncertainty about which discipline the subject can be handled in (MEB, 2018g). At the same time, the outcomes related to healthy nutrition were not included in some grade levels may be due to the difference in pedagogical approaches (Niess, 2006). Studies conducted in the literature on the examination of the outcomes included in the curriculum (Deveci, 2018; Doğan and Burak, 2018; Ertan, 2013; Gültekin and Burak, 2019; Özata Yücel and Özkan, 2013; Akar and Keyvanoğlu 2016; Zorluoğlu et al., 2020; Efe and efe, 2018; Kuzu et al., 2019; Taşcı, 2023) confirmed this difference. According to the results, some grade levels did not include achievements related to healthy nutrition may be due to the spiral structure (Sünbül, 2011) not being taken into consideration sufficiently in the preparation of the curriculum. The spiral structure was a system that aimed to ensure continuity in learning by repeating and expanding achievements following grade levels and ensuring that the subjects continued in continuation of each other (Kılıç, 2019). In this context, the results obtained from this research, it was thought that revising the achievements in the curriculum following the spiral structure to cover all grade levels (Kılıç, 2019) can be beneficial in preventing incomplete or incorrect learning in learning concepts related to healthy nutrition.

The results revealed that the lesson hours vary from curriculum to curriculum and from grade level to grade level. For example, while the mean lesson hour duration for healthy nutrition outcomes in LSC varies between 2.5 and three hours, this duration was 8.5 hours in SSBC. At the same time, the mean lesson hour duration for healthy nutrition outcomes varied between 1.5-3 hours in SC and 1.5-2.5 hours in SSPESC. However, in some curricula (PEGC and SSPESC), lesson hour durations were not specified on an outcome basis. This situation indicated that the curriculum has a deficiency in terms of providing consistency and guidance in practice (Ursavaş, Aytar, & Alpay, 2020). In other studies examining the outcomes in different curricula in the context of course hours (Deveci, 2018; Demircioğlu et al., 2015; Akar and Keyvanoğlu 2016; Yayla and Yayla, 2017; Özcan and Kaptan, 2018; Ursavaş et al., 2020; Taşcı, 2023), it was emphasized that the course hours for the outcomes were insufficient. As a result, it was recommended that the achievements for healthy nutrition should be organized in a way that facilitates the attainment of learning objectives. In addition, a more planned and systematic approach should be adopted in line with pedagogical principles in the preparation of teaching programs. This can not only increase students' knowledge about healthy nutrition but can also support their ability to apply this information throughout life (Çolak, 2019). The recommendations developed based on the findings of the research are presented below:

- Healthy nutrition outcomes included in curricula should be organized in a balanced manner to prevent interruptions in the learning process and to reinforce knowledge systematically.

- Since the absence of specified course durations in some curricula may lead to inconsistencies in the implementation of outcomes, the lesson durations allocated for healthy nutrition outcomes should be defined and standardized across the curriculum.
- Researchers focusing on this subject could conduct studies evaluating the alignment of current outcomes with the Türkiye Yüzyılı Maarif Education Model (2024) and propose updates accordingly.

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