



AN INVESTIGATION INTO CLASSROOM TEACHERS' ATTITUDES TOWARDS LIFE SCIENCE TEACHING ACCORDING TO VARIOUS VARIABLES

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Abstract:

This study was conducted to find out if classroom teachers' attitudes towards life science teaching differ according to gender, teaching experience, and school location where they work. The study was carried out in Serinhisar and Acıpayam districts of Denizli in the 2021-2022 academic year. The data collection tools of the study were "The Life Science Teaching Attitude Scale" developed by Sarıkaya, Özgöl and Yılar (2017) and "Personal Information Form" designed by the researcher. According to the results obtained in the study, no significant difference was found in the classroom teachers' attitude scores in the "loving" and "caring" subscales and their life science teaching total attitude scores. As a result of the analysis performed in terms of different variables (gender, teaching experience, school location where teachers work), no significant difference was found. In the findings, there was a significant difference only in the "appreciation" subscale scores according to the variables including gender, teaching experience and school location where teachers work. In the study, it was found that the classroom teachers' attitudes towards life science teaching were at a high level and no difference was found in the subscales of "loving" and "caring" among the attitude subscales. A significant difference was found only in the "appreciation" subscale.

Keywords: classroom teacher, life science, attitude

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1. Introduction

New generations start their education life with pre-school period, and then continue with primary school, middle school, and high school. The later process of their education lives goes on with university education. Preschool and primary school periods, which are the starting points of the education process, are considered momentous periods. Primary school, as one of the critical steps of the education process, has an important place in the transition to other education steps. Primary school education provides courses in line with a specifically designed curriculum aiming to reach certain outcomes. One of these courses is the life science course. The life science course is included within the scope of the pivot subjects. It is an essential goal of the life science course that the individual can cope with the problems s/he encounters in real life, adapt to the society s/he lives in and develop healthy relationships.

Life science refers to the ability of individuals to know themselves adequately, adapt to daily life and keep up with their environment (Çilenti, 1988; Binbaşoğlu, 2003; Öztürk and Kalafatçı, 2016). In addition, life science includes the ability of individuals to acquire skills and attitudes that enable them to be in harmony with themselves and their social environment (Şimşek, 2014). Also, the life science course sprouted with the need for the students to understand the place they live in, adapt to this place without compromising their own personality and become mature, and sometimes with the need to develop (Toğrulca, 2019:26). According to Sönmez (1996), it is defined as a process of establishing a connection with natural and social reality based on evidence. Life science is also viewed as a course that allows for the development of the child in all aspects (MoNE, 2005). With this course, the child learns about life, himself and his environment (Güven, 2010). As can be understood from these definitions, the life science course, that has existed since the foundation of the republic, is a lesson that will enable children to understand themselves, their environment and society with a holistic understanding.

Life science course has been included in the primary school curriculum since the foundation of the republic. It is a course that has been taught in the first three grades of primary schools starting from 1926. In the years of 1936, 1948, 1968, 1998, 2005, 2009, 2015 and 2018, the life science course curriculum underwent changes. Today, the life science course continues to be taught in primary schools. The aim of the life science course curriculum is to enable individuals to live in harmony with society and to protect the environment in which they live. Units and topics have been designed accordingly. The 2018 Life Science curriculum can be said to include topics that exist within the scope of life science such as objects of daily life use, environment, safety, and family (Oker & Tay, 2019). Above all, it is possible to simply describe life science as a basic life skills course. It is a course that endeavours to introduce the skills that will help children not only to meet their individual needs but also to meet their social needs (Koç, 2020).

Looking at the structure of the life science curriculum (MoNE, 2018), it is seen that the program aims, basic life skills and values are included. In addition, learning outcomes and units have been devised to achieve all these. The digital technological developments

brought by the 21st century have led to changes and developments in the educational approach in primary schools, as in every education level. These changes and developments have differentiated the aims, content and teaching-learning process of the life science course, as in every course. Together with the learning process based on the constructivist understanding that started in 2005, remarkable changes have taken place in the life science curriculum. Starting from 2005, some alterations were made to the life science curriculum in the years of 2009, 2015 and 2018. Beginning with objectives and learning outcomes, some adjustments were made to the content and teaching-learning process as well as skills and values. These revisions would yield positive or negative attitudes and behaviours in terms of learners and teachers. Teachers, students and parents will be the ones who will be most affected by these positive or negative attitudes. From this point of view, more positive attitudes towards the life science course will be beneficial for each stakeholder in the following processes.

Attitude is a mental, emotional, and behavioural reaction predisposition that an individual builds personally or depending on his/her experience, motivation and learning related to any object, social issue or situation around him/her (Can, 2020). In order to have an attitude towards a certain event or situation, individuals do not need to have a direct experience with that situation. They can also have an attitude on some issues indirectly (by hearing from others or based on the information they have obtained from broadcast media) (Baysal, 1981). Attitude can shape mental as well as emotional states. It also affects our behaviour. Experiences that begin in childhood affect later processes in life. While this happens sometimes depending on the person himself, it can also depend on objects, events, lifestyles, society etc. There are important turning points in people's lives. Foremost among these are the periods such as childhood, youth, school life, and business life. The school period occupies a substantial place among them. What we experience and learn shapes our future. There are many situations, events or people that also affect the lives of teachers in the education process. Since teachers are important building blocks of the educational process, their attitudes affect many situations or people. Among these, children, families and the lessons they teach are at the forefront. In the background of this situation, the attitudes they adopted in the past periods are of great importance. Classroom teachers play such an important role that they can be called as architects of the primary school period. The effects of classroom teachers on children continue not only in the primary school period but also in the following periods.

In the process of teaching the lessons in primary schools, the attitudes of teachers are reflected positively or negatively on the attitudes of students, a situation which is supported in the literature through several studies. It is possible to observe this reflection on some courses intensely while on some other courses there is no effect at all. Life science is among the courses in which we can specifically observe what kind of attitudes students have towards the course. According to Tiryaki (2018), it was reported that there is no positive or negative significant difference in the attitudes of third-grade primary school students towards the life science course. Çetin (2020) conducted a study in order to determine the attitudes of primary school second and third-grade students towards the

life science lesson. As a result of the study, a significant difference was found between the total attitude scores and the subscale scores in favour of male students. Oker and Tay (2019) revealed that primary school second and third-grade students' attitude levels towards the life science course were positively high. According to Coşkun and Öztürk (2015), on the other hand, students' attitudes towards life science were negative. Sarı (2020) determined that there was a significant relationship between the second and third-grade primary school students' attitudes towards the life science course and their social skill levels. In the study carried out by Çetin (2018), no significant difference was found in the total attitude scores of preservice classroom teachers towards the life science teaching course and in the subscales of loving, appreciation, caring according to gender and general academic achievement.

In the studies conducted about the life science course, the opinions of the students and preservice teachers are specifically addressed. No research findings on the attitudes of classroom teachers working at primary schools towards teaching life science have been encountered in the available sources. Being aware of the attitudes of classroom teachers toward life science teaching is essential in terms of realizing the objectives of the life science course to a higher extent.

In this direction, this study aims to find answers to the following questions so as to determine the attitudes of classroom teachers toward the life science course:

- 1) What are the attitude levels of classroom teachers who teach the first, second and third grade students at primary school towards life science teaching?
- 2) Do the attitudes of classroom teachers who teach the first, second and third-grade students at primary school towards life science teaching differ according to:
 - a) Gender,
 - b) Teaching experience,
 - c) School location where they work?

3. Material and Methods

This study, which was conducted with the aim of investigating whether the attitudes of classroom teachers who teach the first, second and third grades at primary school towards the life science course differ according to certain variables, was designed around the survey model, one of the quantitative research methods. *"Survey method is a research approach that is used to reveal the past or current situation as it is"* (Karasar, 2012: 77). Survey method is *"one of the models that we can use when we need to determine the attitudes, actions, opinions and beliefs of individuals"* (Aypay, 2015). In this study, this model was chosen in order to determine the attitudes of classroom teachers towards the life science course. With the survey method, it is also possible to see the changes in the attitudes of the classroom teachers towards the life science course that they have been teaching from the past to the present (Aypay, 2015).

3.1 Population and Sample

The population of the study consisted of classroom teachers working in the district centres and villages of Serinhisar and Acipayam districts of Denizli province in the 2021-2022 academic year. Information about the study population is presented in Table 1.

Table 1: Number of Classroom Teachers According to the School Location Where They Work

School Location	1st Grade	2nd Grade	3rd Grade	Total
District Centre	20	15	31	66
Village	23	52	28	103
Total	43	67	59	169

Since all of the subjects in the study population were reached, no sampling method was used. All of the 169 classroom teachers in the population working in Serinhisar and Acipayam district centres and villages, where the study was conducted, were reached.

Table 2: Distribution Percentages of Classroom Teachers in terms of Various Variables

Variable	Category	N	%
Gender	Female	99	58,6
	Male	70	41,4
Grade	1st Grade	43	25,4
	2nd Grade	67	39,6
	3rd Grade	59	34,9
Teaching Experience	1-5 years	-	-
	6-10 years	12	7,1
	11-15 years	91	53,8
	16 years and above	66	39,1
School Location	District Centre	66	39,1
	Village	103	60,9

In Table 2, the frequency and percentage distribution of the classroom teachers involved in the research process are given in terms of the above-mentioned variables. Looking at the distribution of the classroom teachers in Serinhisar and Acipayam districts in terms of gender, it is seen that 58.6% of them are female and 41.4% of them are male. The number of female teachers is higher than male teachers. As for the distribution of the classes/grades they teach, 25.4% of the teachers teach the first graders, 39.6% of them teach second graders, and 34.9% of them teach third graders. 7.1% of the classroom teachers have a teaching experience between 6-10 years, 53.8% between 11-15 years, and 39.1% 16 years or more. In terms of teaching experience, the number of classroom teachers with 11-15 years of experience is higher than the other teachers. In terms of the school location where they work, 39.1% of the teachers work in the district centre while 60.9% of them work in the villages. As can be seen, the number of classroom teachers working in the villages is higher in terms of the school location where they work.

3.2 Data Collection Tool

The data of the study were collected using a scale developed by Sarıkaya, Özgöl, and Yılar (2017). These researchers were asked for their permission to use the scale for data collection in this study. Upon getting the necessary permission, the scale was implemented. The scale consists of two parts. The first part contains a personal information form that includes questions related to the variables determined by the researcher. The second part, on the other hand, involves the scale items. The scale consists of three subscales and 24 items. The items numbered 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12 refer to the subscale of "loving" while items numbered 13, 14, 15, 16, 17, 18, 19 and 20 are related to the subscale of "appreciation", and the items numbered 21, 22, 23 and 24 constitute the subscale of "caring". While the items in the "loving" and "appreciation" subscales have positive features, the items in the "caring" subscale have negative features. The subscales were named based on the contents of the items in that subscale (Sarıkaya et al., 2017).

Table 3: Reliability Values of the Life Science Teaching Attitude Scale

Subscales of The Attitude Scale	Sarikaya, Özgöl and Yılar, 2017 (Cronbach Alpha internal consistency coefficient)	The Present Study (Cronbach Alpha internal consistency coefficient)
Loving	0.89	0.87
Appreciation	0.87	0.78
Caring	0.86	0.91
Scale Total	0.93	0.88

According to Table 3, the total Cronbach Alpha internal consistency coefficient of the life science teaching attitude scale developed by Sarıkaya, Özgöl, and Yılar (2017) was found to be 0.93. Looking at the Cronbach Alpha internal consistency coefficient of the subscales of the scale, it was calculated as 0.89 for the "loving" subscale, 0.87 for the "appreciation" subscale, and 0.86 for the "caring" subscale (Sarıkaya, Özgöl, & Yılar, 2017). As a result of the implementation of the scale in this study, the total reliability coefficient of the life science teaching attitude scale was 0.88. The Cronbach Alpha internal consistency values of the subscales of the scale were determined as 0.87 for the "loving" subscale, 0.78 for the "appreciation" subscale and 0.91 for the "caring" subscale.

3.3 Data Collection

Necessary official permissions to conduct the study were obtained through correspondence with Denizli Provincial Directorate of National Education. The data of the study were gathered from classroom teachers teaching the first, second and third grades at primary school and working in Denizli province Serinhisar and Acıpayam district centres and villages in the fall semester of the 2021-2022 academic year.

3.4 Data Analysis

The data of the study were collected through the implementation of the "Life Science Teaching Attitude Scale" to classroom teachers working in Serinhisar and Acipayam district centers and villages in the fall semester of the 2021-2022 academic year.

Four negative items in the "Caring" subscale of the scale were reversed and scored. Calculations related to the data obtained from the scale were performed in the SPSS 26.00 (Statistical Package of Social Science) statistical program. With this program, the arithmetic means of the total scores of the scale and the sum of the arithmetic means of the subscales of loving, appreciation and caring were calculated. It is possible to determine the normality distributions of the data through Kolmogorov-Smirnov test (Mertler & Reinhart, 2017, p.33) and ShapiroWilk statistics (Pituch & Stevens, 2016, p.228). Accordingly, normality distribution analysis for the attitude total scores of the classroom teachers teaching the first, second and third grades towards life science teaching and the subscale scores was performed through Shapiro-Wilk test. As a result of the analysis, non-parametric statistical techniques were used because the data did not show normal distribution. Since the normality assumption was not met, the Mann-Whitney U test was used instead of the t-test for independent groups (Ho, 2014). Kruskal-Wallis is the non-parametric equivalent of one-way analysis of variance (ANOVA). Kruskal-Wallis test was performed because the data did not have normal characteristics (Miller, 2009: 123). While the Mann-Whitney U test was used to determine whether the total attitude scores and subscale scores of the classroom teachers towards the life science lesson differ according to the variables of "gender" and "school location where teachers work", Kruskal-Wallis statistical technique was used to understand whether the scores differ according to the variable of "teaching experience". In order to interpret the findings of the study, the discrete variables in the scale were converted into continuous variables by dividing the number of intervals by the number of options and adding the obtained result starting from the lowest value. When the four ranges in the scale are divided into five options, a value of 0.80 is obtained. Upon adding this value to the lowest value, the range between 1.00-1.79 was interpreted as "totally disagree", the range between 1.80-2.59 as "disagree", the range between 2.60-3.39 as "partially agree", the range between 3.40-4.19 "agree" and between 4.20-5.00 "totally agree".

Table 4: Options and Score Ranges in the Evaluation of the Findings of the Life Science Teaching Attitude Scale

Options	Raw Scores	Score Ranges
Totally agree	5	4.20 – 5.00
Agree	4	3.40 – 4.19
Partially agree	3	2.60 – 3.39
Disagree	2	1.80 – 2.59
Totally disagree	1	1.00 – 1.79

4. Results

Statistical analyses related to the data obtained as a result of the study were performed considering the research questions designed by the researcher. The findings of the study were revealed through the evaluation of the analyses conducted. In the process of interpretation of the findings by the researchers, tables regarding the findings obtained for each research question were prepared and explanations of these findings were presented under the tables. In this study, it was attempted to explain and evaluate the level of the classroom teachers' attitudes toward life science. For this purpose, information about the attitudes of the classroom teachers who teach the first, second and third grades towards life science teaching is presented in Table 5.

Table 5: Results of the Descriptive Statistics Regarding the Classroom Teachers' Total Attitude Scores towards Life Science Course and Their Subscales Scores

Grade	Subscales	N	\bar{X}	SD
1st Grade	Loving	43	4,53	,30
	Appreciation	43	4,43	,36
	Caring	43	4,34	,66
	Total	43	4,47	,33
2nd Grade	Loving	67	4,61	,24
	Appreciation	67	4,63	,28
	Caring	67	4,41	,56
	Total	67	4,58	,23
3rd Grade	Loving	59	4,42	,40
	Appreciation	59	4,19	,44
	Caring	59	4,02	,82
	Total	59	4,28	,40

According to Table 5, looking at the total attitude scores of the classroom teachers teaching the first, second and third grades towards the life science course, the teachers had the opinion indicating the option "totally agree". According to the findings obtained, in terms of each grade level, the classroom teachers teaching the first and second grades expressed their opinions as "totally agree" considering the subscales of "Loving", "Appreciation", "Caring" and "Total". However, while the classroom teachers teaching the third grade stated "agree" regarding the "appreciation" and "caring" subscales, their opinions about the "loving" subscale and "total" attitude were at the "totally agree" level. When the findings are examined, it is seen that the attitude level of the classroom teachers towards the life science course is positive and at a high level.

Table 6: Mann-Whitney U-Test Results Regarding the Total Attitude and Subscale Scores of The Classroom Teachers Towards Life Science According to Gender

Subscale	Gender	N	Mean Rank	Rank Some	U	P
Loving	Female	99	79,75	7895,50	2945,5	0.09
	Male	77	92,42	6469,50		
Appreciation	Female	99	74,76	7401,50	2451,5	0.00
	Male	77	99,48	6963,50		
Caring	Female	99	84,42	8358,00	3408	0.85
	Male	77	85,81	6007,00		
Total	Female	99	79,01	7822,00	2872	0.05
	Male	77	93,47	6543,00		

Table 6 demonstrates that considering the attitudes of the classroom teachers according to gender, there is no significant difference between the opinions of the teachers in general. Findings also show that there is no significant difference in the subscales of "loving" ($U = 7895.5$; $p > 0.05$), "caring" ($U = 8358$; $p > 0.05$) and the general total attitudes ($U = 2872$; $p > 0.05$) of the classroom teachers according to gender. However, it was determined that there was a significant difference in the views of the classroom teachers in the subscale of "appreciation" ($U = 2451.5$; $p < 0.05$) according to the gender variable. When the mean rank values were examined to determine in whose favour this difference was in terms of gender, the mean rank values of the male classroom teachers (99.48) were higher than those of the female classroom teachers (74.76). According to this result, it can be concluded that male classroom teachers value life sciences lesson more than female classroom teachers.

Table 7: Kruskal Wallis H Test Results Regarding Total Attitude and Subscale Scores of The Classroom Teachers towards Life Science Course According to Teaching Experience

Subscales	Teaching experience	N	Mean Rank	sd	χ^2	p
Loving	1- 10	12	92,83	2	1,809	0.40
	11- 15	91	88,42			
	16 and more	66	78,86			
Appreciation	1- 10	12	83,48	2	17,124	0,00
	11- 15	91	98,74			
	16 and more	66	66,17			
Caring	1- 10	12	88,21	2	,422	0,81
	11- 15	91	86,72			
	16 and more	66	82,05			
Total	1- 10	12	90,71	2	7,094	0.02
	11- 15	91	93,30			
	16 and more	66	72,52			

As can be seen in Table 7, considering the findings about whether there is a difference in the attitudes of the classroom teachers in terms of their teaching experience or not, no significant difference was observed in the subscales of "loving" ($\chi^2 = 1,809$; $p > 0.05$) and "caring" ($\chi^2 = 0.422$; $p > 0.05$). It was determined that there was a statistically significant

difference in the participants' scores of the subscale of "appreciation" ($\chi^2 = 17,1245$; $p < 0.05$) according to the teaching experience variable. Mann – Whitney U statistical test was used to determine in whose favour this difference was considering the variable of teaching experience, and as a result of the results obtained, in the subscale of "appreciation" ($U = 1849$; $p < 0.05$), the class teachers with 11-15 years of teaching experience were reported to have more positive attitude compared to those with 16 years and more teaching experience. It was also examined if there was a significant difference between the total attitude score of the scale and the teaching experience of the classroom teachers. The findings showed that there was a significant difference between the total attitude scores and teaching experience ($\chi^2 = 7,094$; $p > 0.05$). Mann – Whitney U statistical analysis was conducted to see in whose favour this significant difference was in terms of teaching experience. The results showed that the total attitude scores of the participants with 11-15 years of teaching experience (93.30) were higher than the total attitude scores of the teachers with 16 years and more teaching experience (72.52). The fact that the difference in the subscales of "appreciation" and general total attitude scores of the classroom teachers are in favour of the classroom teachers with 11-15 years of teaching experience can stem from the fact that the teachers with this experience are professionally mature and their experience is at the best level. On the other hand, those with 16 years and more teaching experience are considered to be about to reach a professional satisfaction level.

Table 8: The Mann-Whitney U-Test Results Regarding the Total Attitude and Subscale Scores of The Classroom Teachers Towards the Life Science Lesson According to the School Location Where They Work

Subscales	School Location	N	Mean Rank	Rank Sum	U	p
Loving	District centre	66	82,35	5435,00	3224	0.57
	Village	103	86,70	8930,00		
Appreciation	District centre	66	71,98	4751,00	2540	0.00
	Village	103	93,34	9614,00		
Caring	District centre	66	84,83	5599,00	3388	0.97
	Village	103	85,11	8766,00		
Total	District centre	66	79,41	5241,00	3030	0.23
	Village	103	88,58	9124,00		

In Table 8, considering the findings related to the classroom teachers' attitudes towards the life science course according to the school location where they work, there was no significant difference in the subscales of "loving" ($U = 3224$; $p > 0.05$) and "caring" ($U = 3388$; $p > 0.05$).

As in the other variables, a statistically significant difference was found in the attitudes of the classroom teachers in the subscale of "appreciation" ($U = 2540$; $p < 0.05$) according to the school location variable. In order to determine in whose favour this difference was in terms of the locations, the mean rank values were examined. The mean rank value of the classroom teachers working in the village was found to be 93.34 while the mean rank value of the classroom teachers working in the district centre was (71.98),

which shows that the difference was in favour of those working in the village. Based on this finding, it was concluded that the teachers working in villages had a higher level of appreciation towards the life sciences education than those working in the district centre. On the other hand, no significant difference was found between the total attitude scores towards life science teaching ($U = 3030$; $p > 0.05$) and the school location where the teachers work.

4. Results and Discussion

Looking at the results obtained regarding the attitudes of the classroom teachers towards the life science course in general, it was found that the classroom teachers love, appreciate and care for the life science course. This finding is similar to the results obtained in the studies carried out by Gündüz (2020) and Çetin (2018). In another study conducted on the attitudes of primary school second and third-grade students towards the life science lesson, their attitude level was also found to be at a high level (Oker & Tay, 2020). In the study conducted by Taş (2022), it was reported that the majority of the students regarded life science as an enjoyable and informative lesson, a finding which is in line with the results of this study.

When the "appreciation" subscale of the attitudes towards the life science scale was examined in terms of gender, it was found that the mean rank values of the male teachers were higher than those of the female teachers. It can also be seen in the results of the study conducted by Çetin (2020) that there was a significant difference in favour of male students in the total attitude scores and subscale scores of primary school second and third-grade students towards the life science course. In other words, as in the male classroom teachers in this study, a significant difference was found in favour of male students. In the research findings carried out by Gündüz (2020), on the other hand, a significant difference was found in the life science teaching attitude scale total scores and the "caring" subscale according to the gender of the preservice classroom teachers. When the source of this significant difference is examined, it is seen that it is in favour of female teacher candidates. No difference was found in the "appreciation" subscale. The fact that the difference was found in the caring subdimension and in favour of women indicates that female teacher candidates care more about the lesson. In this study, on the other hand, the fact that the male teachers had higher scores than female teachers in the subscale of appreciation is so noteworthy to require further studies. No significant difference was found between the life science teaching scale total attitude scores and gender.

Considering the attitudes of the classroom teachers according to their teaching experience, it was determined that the participants with a teaching experience between 11-15 years had a more positive attitude regarding the "appreciation" subscale compared to the teachers with other teaching experience levels. The reason underlying this can be due to the fact that classroom teachers are in the maturation process of their profession in their teaching experience between 11-15 years. Another remarkable finding is that the

classroom teachers working in the villages had a higher level of appreciation considering the life science teaching than those working at the district centres. It is seen that this finding contradicts the results obtained in the study conducted by Çetin (2020). Among the second and third-grade primary school students, it was observed that the attitudes of the students studying in the city and district centres were higher than those studying in the villages. Considering this situation, it can be inferred that the higher level of "appreciation" of the teachers working in the villages may be due to the fact that the environment in the village life is more comfortable and more authentic.

5. Suggestions

Based on the findings reached in the study, the following suggestions are made:

- Studies that compare classroom teachers and classroom teacher candidates can be conducted.
- Quantitative and qualitative research can be conducted on the attitudes of classroom teachers working in villages and city centres towards the life science lesson.
- A qualitative research can be conducted with classroom teachers to find out the effect of teaching experience on their attitudes towards life science.

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Conflict of Interest Statement

The authors declare no conflicts of interest.

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Selçuk Şimşek, Harun Teksöz
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