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Abstract

Science courses are of great importance in terms of the continuity of societies in general. States are a course that is specifically addressed by keeping them separate from ideological situations among students' courses. For this reason, the course is constantly updated by the institution that carries out planning within the framework of programs. The year 2024 appears as the last period that science course programs have experienced seriously. The programs of 2005, 2013, 2018, including the period after 2000 when radical changes were experienced in science courses, are evaluated in the study. In particular, the year 2024 was tried to be evaluated in detail. It is stated that especially the opinions of teachers are very serious during the examination of the curriculum. For this reason, the evaluation of the 2024 curriculum is provided in our study.

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Research Article

Renewed 2024 Science Schedule for Science Teachers Opinions on the Course Teaching Program *

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Abstract

Science courses are of great importance in terms of the continuity of societies in general. States are a course that is specifically addressed by keeping them separate from ideological situations among students' courses. For this reason, the course is constantly updated by the institution that carries out planning within the framework of programs. The year 2024 appears as the last period that science course programs have experienced seriously. The programs of 2005, 2013, 2018, including the period after 2000 when radical changes were experienced in science courses, are evaluated in the study. In particular, the year 2024 was tried to be evaluated in detail. It is stated that especially the opinions of teachers are very serious during the examination of the curriculum. For this reason, the evaluation of the 2024 curriculum is provided in our study.

Keywords: Science, science course, curriculum

1. INTRODUCTION

Science can be defined in order to examine the nature, universe, facts and events by observing them and to enable the discovery of the world by obtaining new information. Science plays an important role in the economic development of countries and increases in welfare levels. As a matter of fact, advances in many fields such as science, engineering, medicine, and technology are realized thanks to the education of science and science, making life much simpler and better quality (Karasu, 2019: 41). In this context, countries that have sufficient awareness train new technologies and units that can solve problems with their existing knowledge in order not to lag behind the technological and scientific developments in the world and to contribute to the aforementioned developments. In addition, it attaches great importance to science education. Within the framework of the objectives of the 21st century education systems, the issues in the student-centered, research-based education processes gain importance in the Science course, teaching them how to access the information rather than giving the information directly with the students. Science is an effort to systematically examine the observed and seen nature and natural events, and to predict the events that have not yet been discovered and observed. Since every situation and event in nature is included in the subject of science, science is considered an important part of life. Science deals with living and non-living things. In addition to these, it includes principles, generalizations, facts, natural phenomena and theories (Aydoğdu & Kesercioğlu, 2005: 27; Öztürk & Özdemir, 2020; Varlık, 2024).

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As a free citizen and members of a society governed by democracy, it is expected that the solutions to be given regarding social problems will be brought. This is possible with their knowledge of science. As the process progresses, it becomes a necessity to train individuals within the framework of science literacy in order to prepare the new generation for the coming years in the world of technology, which develops and integrates with our lives. Not all students are expected to choose a profession for technology and science, but it is possible to understand the knowledge related to science and to apply the skills directly or indirectly in each profession (Topsakal, 2005: 27). In summary, science is in front of more and more people in all areas of life. For this reason, it affects people, societies and the world much more. In order to provide adequate science education, it is essential that the concepts in science can be transferred and learned effectively and completely. The aforementioned concepts lay the groundwork for learning science concepts at a much higher level and integrating them into life in daily life. From this point of view, it is very important to provide effective science education in primary and secondary education periods (Dykstra, 1986: 853). Within the framework of science education, individuals can get to know their environment much better. With science education, it is possible to become aware of what occurs in daily life. It is observed that individuals who have gained awareness of their environment and the world have started to love the world much more. It is seen that the individuals mentioned are much more interacting with their environment. From this point of view, as a result of the situation, individuals can use their knowledge and develop their creativity in the problems they face by reasoning. It is stated that the learning activities of individuals who develop skills and knowledge within the framework of science have become much easier in all other fields and as a result of the whole process, individuals have been able to learn to learn with science (Köse, 2010: 33).

When we look at the basic objectives of science education, there are some qualities that are expected to be gained from the students when the mentioned objectives are achieved after the science education given to the students. The mentioned qualities are listed below (Yoğurt, 2001: 67):

The qualities that science education, which is stated to be carried out within the framework of the objectives of the 2018 Science Course Curriculum, are expected to provide to students are stated below (Ministry of National Education, 2018):

- To gain knowledge within the framework of astronomy, physics, chemistry, biology, earth and environmental sciences, engineering and science applications,
- To ensure that skills related to scientific processes are used while exploring nature and understanding nature's relationships with people,
- Gaining awareness about sustainable economy and development, national and cultural values and scientific ethics,

Science course curricula envisage teaching lessons in learning environments that place students at the center. It involves the use of inquiry- and research-based learning strategies so that students can learn information in a permanent and meaningful way in learning environments outside and inside school. He benefits from informal learning environments. It envisages the realization of in-class performances under the guidance of the teacher. Students are expected to carry out school activities together with their peers. The constructivist approach is taken as a basis in the teaching programs developed based on the 2005 programs. Within the framework of the approach to techniques and methods used in grades 3-8, which are prepared in accordance with constructivist approaches in science curricula, the 5E learning model is a teaching model that includes more research-based constructivist approaches and experimental activities (Boddy, et al., 2003).

In addition to the fact that sciences are conceptual, the concepts mentioned must be understood correctly and created in the mind. In cases where the mentioned formations are not provided, various misconceptions and misconceptions of concepts may occur. Science is taught by combining many

combinations. Scientific process skills are evaluated as a part of courses intertwined with experiments and science. At the same time, the information is structured meaningfully and accurately. Learning occurs as a result of the relationships of many such combinations. Frederiksen et al., (1999) distinguishes between derived and source models. The first of the mentioned distinctions, the source model, can be revealed simply by its own formations. The second one, produced models, is created by being influenced by the source models. The communication that occurs between these two formations provides learning. The communications in question consist of much deeper modeling rather than superficial ones.

It is observed that in textbooks, a table or visuals for comparison purposes are used to show different information or similarities in order to attract the attention of students. In addition to all these, the books have an original book structure with texts and visuals that emphasize daily life, which can have a high visual impact on students and stimulate reading demand (Kete & Acar, 2007: 223). The aims of carefully preparing the scope of science course curriculum, the individual roles of teachers and students, strategies and methods, and measurement and evaluation techniques should be especially reflected in the textbooks prepared.

Science is of great importance to ensure the continuity of states and societies. In today's technological world, science is developing rapidly. Individuals need to develop and constantly update themselves in order to find a place for themselves in the rapidly developing technological world. For this reason, it is observed that science education is of great importance. Science and technology are the cornerstones of today's world. These subjects, which are at the center of life, need to be taught to students efficiently and effectively. For this reason, science and technology curriculums need to remain up- to-date.

Changes in educational programs can affect all educational processes. Especially if teachers cannot keep up with the changes or are dissatisfied, the educational process may be negatively affected. For this reason, teachers' opinions should be taken into account when changing programs.

Purpose of the research developments in technological and scientific fields cause educational programs to change and renew. During this process, teachers need to keep up with changes, scientific developments and program changes. The aim of the study is to understand what the programs of the 2024 Science course mean for teachers.

2. METHOD

2.1.Research Model

In this study, a mixed method research model is used to determine both quantitative and qualitative data of the opinions and thoughts of 5th, 6th, 7th and 8th grade science teachers who take the course for the renewed Science Course Curriculum. The mixed research method includes the collection, analysis and interpretation of qualitative and quantitative research data within a single study or studies (Leech & Onwuegbuzie, 2009, p.266). The mixed research method creates a positive opportunity in terms of eliminating the deficiencies of the methods, if any, and increasing the reliability of the research with the analysis results between the two methods. Johnson and Onwuegbuzie (2004, p.20) state that the interpretations of the research may be insufficient by using the qualitative method in the study, so this deficiency can be eliminated with the numerical data obtained by conducting quantitative research. In our study, both qualitative and quantitative data were applied simultaneously, the data were analyzed separately and the proximal parallel design of the mixed research method was used because the results were interpreted jointly.

2.2. Population and Sample

The population of the study consists of 146 science teachers working in secondary schools affiliated to the Ministry of National Education operating throughout the province of Sivas.

2.3. Data Collection Process

In this study, a mixed research design with both quantitative and qualitative data is used to obtain more detailed data results. A semi-structured interview form was used to collect the qualitative data of the research. Within the scope of the study, 9 questions were asked to the science course teachers, who are the implementers of the program, about the Renewed Science Course Curriculum. The interview questions were prepared by three experts in the field after creating a theoretical framework and conducting a literature search, taking expert opinion. While preparing the interview questions, criteria such as open-ended and understandable questions, non-directive questions, alternative and different types of questions, and logical adjustment of the questions were taken as basis. The answers given by the teachers were not interfered with in any way. The interview form prepared for this purpose was applied to 10 science teachers working in secondary schools affiliated to the Ministry of National Education in Sivas. Face-to-face or online interviews lasted 25-30 minutes with each teacher and the interviews were recorded in line with the teachers' permission. The audio recordings were later transcribed. In order to collect the quantitative data of the study, the Revised Science Course Curriculum Evaluation Scale was used. According to the demographic characteristics of the people participating in the scale, the variables according to the achievements, content status, educational process status and measurement-evaluation process were investigated The scale prepared for this purpose was applied to 146 science teachers working in secondary schools affiliated to the Ministry of National Education in Sivas.

2.4. Data Analysis

Quantitative and qualitative data analysis techniques were used in the analysis of the data. IBM SPSS 22.0 statistical analysis software was used for the analysis of quantitative data. SPSS 27 analysis program was used for the analysis of quantitative data. In the quantitative analysis, descriptive statistics such as arithmetic mean, standard deviation and statistical techniques such as one-way variance or independent sample t-test were used. As a result of the data analysis, the Cronbach alpha coefficient of the scale was found to be 0.957. The fact that the Cronbach alpha coefficient obtained from the study is greater than 0.70 indicates that the scale is highly reliable. For the analysis of quantitative data; Skewness and kurtosis statistical values are calculated to determine the conformity to the normal distribution. The adequacy of the normal distribution is often accepted when the skewness and kurtosis values are in the range of +3 to -3 (Groeneveld & Meeden, 1984). Therefore, in this study, it was accepted that the scores obtained from the scale were normally distributed and parametric analysis methods were used in the analysis. Independent groups t-test and one-way analysis of variance (ANOVA) were used in the analysis. Content analysis method was used in the analysis of qualitative data. The purpose of content analysis is to present the collected data to readers in an organized and interpreted manner. The reason for choosing the content analysis method in this study is to make detailed analyzes of the data. Qualitative research analyses are carried out at the same time as the data collection process (Creswell, 2013). As the data obtained in this study were collected, analyzes were made simultaneously. Direct quotations from the answers given by the teachers participating in the study to each question one by one were turned into written data. These transcribed data were checked by another researcher. If there is error, incorrect or incomplete data, it has been corrected. In this way, the reliability of the researcher's codes has been increased. The data of the questions and answers in the interview form recorded within the scope of the research were recorded in tables one by one. Codes were created in accordance with these data processed in the table. After the data were coded, the ones that had common aspects between these codes were examined. Codes that are similar to each other are brought together and combined under themes.

3. FINDINGS

3.1. Findings Regarding Quantitative Analysis

In this section, the quantitative analysis findings obtained from the participants were evaluated. The participants' Renewed Science Course Curriculum Evaluation Scale scores were compared according to demographic variables. “Are there any significant differences in terms of gender, length of service, educational background, field of graduation, participation in in-service training?” The data obtained regarding the sub-problem are presented in this section.

Table 1. Distribution of participants' personal information

		n	%
Gender	Woman	71	48,6
	Male	75	51,4
Education Status	License	107	73,3
	Graduate	39	26,7
Uptime	1-5 years	11	7,5
	6-10 years	53	36,3
	11-15 years	51	34,9
	16-20 years	16	11,0
	21 years and older	15	10,3
Location of the School	Province	70	47,9
	County	38	26,0
	Village	36	24,7
	Called	2	1,4
Participate in an in-service training course on science curriculum or teaching	Yes	119	81,5
	No	27	18,5
Do not think the in-service training course is sufficient	It wasn't enough at all	13	8,9
	It was kind of enough	16	11,0
	It was partially enough	52	35,6
	It was quite enough	32	21,9
	It was more than enough	8	5,5

When the distribution of personal information of the participants is examined, it is seen that 71 of the participants are female and 75 are male. While there are 107 people with undergraduate education, there are 39 people at the graduate level. There are 11 people with a service period of 1-5 years, 53 people with 6-10 years, 51 people with 11-15 years, 16 people with 16-20 years, and 15 people with 21 years and above. While the number of participants working in the province is 70, 38 people work in the district, 36 people in the village and 2 people in the town. While there were 119 people who attended the in-service training course on science curriculum or teaching, 27 people did not attend this course. There are 13 people who think that the in-service training course is not enough at all, 16 people who think it is somewhat sufficient, 52 people who think it is partially sufficient, 32 people who think it is quite sufficient and 8 people who think it is very sufficient.

Table 2. Comparison of the revised science curriculum evaluation scale according to gender

	Gender	N	Average	SS	t	p
Renewed Science Curriculum Evaluation Scale	Woman	71	4,1931	,59796	1,671	,097
	Male	75	3,9994	,78421		
Benefits	Woman	71	4,2359	,65348	1,048	,296
	Male	75	4,0950	,93763		
Content	Woman	71	4,1831	,69245	1,202	,231
	Male	75	4,0356	,78475		
Learning-Teaching Process	Woman	71	4,3169	,60792	1,771	,079
	Male	75	4,0967	,86495		
Assessment and Evaluation	Woman	71	4,0634	,82297	2,078	**,039**
	Male	75	3,7711	,87370		

As can be seen in Table 2, it was determined that there were statistically significant differences according to gender only in the measurement and evaluation sub-dimension in the independent groups t-test, which was made to compare the science curriculum evaluation scale, which was renewed according to the gender of the participants ($p<0.05$). Accordingly, the average measurement and evaluation of women is higher than that of men.

Table 3. Comparison of the revised science course curriculum evaluation scale according to the educational status

	Education Status	N	Average	SS	F	p
Renewed Science Curriculum Evaluation Scale	License	107	4,0923	,71622	,001	,970
	Graduate	39	4,0972	,67918		
Benefits	License	107	4,1215	,81453	1,073	,302
	Graduate	39	4,2788	,80524		
Content	License	107	4,1075	,75626	,000	,996
	Graduate	39	4,1068	,71276		
Learning-Teaching Process	License	107	4,1776	,75236	,479	,490
	Graduate	39	4,2756	,77331		
Assessment and Evaluation	License	107	3,9813	,86036	2,541	,113
	Graduate	39	3,7265	,83813		

As can be seen in Table 3, it was determined that there were no statistically significant differences in the one-way variance test performed to compare the science curriculum evaluation scale, which was renewed according to the educational status of the participants ($p>0.05$). Accordingly, the average evaluation of the renewed science curriculum of the participants at the undergraduate and graduate education levels is similar.

Table 4. Comparison of the evaluation scale of the science course curriculum renewed according to the length of service

	Uptime	N	Average	SS	F	p
Renewed Science Curriculum Evaluation Scale	1-5 years	11	4,1136	,51068	,162	,957
	6-10 years	53	4,0542	,68072		
	11-15 years	51	4,1487	,77209		
	16-20 years	16	4,0208	,71265		
	21 years and older	15	4,1083	,72935		
Benefits	1-5 years	11	3,9091	,64005	,659	,621
	6-10 years	53	4,1392	,78854		
	11-15 years	51	4,2255	,86747		
	16-20 years	16	4,0391	,91483		
	21 years and older	15	4,3583	,72251		
Content	1-5 years	11	4,2424	,57428	,518	,722
	6-10 years	53	4,0314	,70260		
	11-15 years	51	4,1830	,86040		
	16-20 years	16	3,9688	,72064		
	21 years and older	15	4,1667	,59761		
Learning-Teaching Process	1-5 years	11	4,3636	,59544	,580	,677
	6-10 years	53	4,0849	,72712		
	11-15 years	51	4,2745	,79570		
	16-20 years	16	4,2031	,81761		
	21 years and older	15	4,2667	,79881		
Assessment and Evaluation	1-5 years	11	4,0909	,65559	,596	,666
	6-10 years	53	3,9434	,81318		
	11-15 years	51	3,9281	,89272		
	16-20 years	16	3,9271	,84321		
	21 years and older	15	3,6111	1,07028		

As can be seen in Table 4, it was determined that there were no statistically significant differences in the one-way test of variance for the comparison of the science course curriculum evaluation scale, which was renewed according to the service period of the participants (p>0.05). Accordingly, the average evaluation of the renewed science course curriculum of the participants with different service periods is similar.

Table 5. Comparison of the revised science course curriculum evaluation scale according to the location of the school

	Location	N	Average	SS	F	p
Renewed Science Curriculum Evaluation Scale	Province	70	4,1732	,62048	,952	,417
	County	38	4,1031	,67407		
	Village	36	3,9294	,87870		
	Called	2	4,0833	,29463		
Benefits	Province	70	4,2464	,70228	,472	,702
	County	38	4,0822	,87393		
	Village	36	4,0868	,95329		
	Called	2	4,1875	,79550		
Content	Province	70	4,2262	,65018	1,708	,168
	County	38	4,1009	,71085		
	Village	36	3,8843	,91445		
	Called	2	4,0833	,11785		
Learning-Teaching Process	Province	70	4,2607	,70124	1,485	,221
	County	38	4,2829	,59324		
	Village	36	3,9861	,97458		
	Called	2	4,6250	,53033		
Assessment and Evaluation	Province	70	3,9643	,81546	,915	,435
	County	38	4,0132	,90160		
	Village	36	3,7269	,90865		
	Called	2	3,5833	,35355		

As can be seen in Table 5, it was determined that there were no statistically significant differences in the one-way variance test performed to compare the revised science course curriculum evaluation scale according to the location of the school where the participants worked (p>0.05). Accordingly, the average evaluation of the renewed science course curriculum of the participants working in provinces, districts, villages and towns is similar.

Table 6. Comparison of the renewed science course curriculum evaluation scale according to the participation in the in-service training course on science course curriculum or teaching

	Course Participation	N	Average	SS	t	p
Renewed Science Curriculum Evaluation Scale	Yes	119	4,1429	,67466	1,787	,076
	No	27	3,8765	,79985		
Benefits	Yes	119	4,2532	,75798	2,868	**,005**
	No	27	3,7685	,93458		
Content	Yes	119	4,1485	,73287	1,411	,160
	No	27	3,9259	,77119		
Learning-Teaching Process	Yes	119	4,2584	,72262	1,847	,067
	No	27	3,9630	,86520		
Assessment and Evaluation	Yes	119	3,9132	,85861	-,002	,998
	No	27	3,9136	,87751		

As can be seen in Table 6, it was determined that there were statistically significant differences only in the sub-dimension of achievements in the independent groups t-test, which was made to compare the renewed science course curriculum evaluation scale according to the participants' participation in the in-service training course on science curriculum or teaching (p<0.05). Accordingly, the average evaluation of the renewed science course curriculum is higher than the participants who

participated in the in-service training course on the curriculum or teaching of the science course compared to those who did not attend the course.

Table 7. Comparison of the revised science course curriculum evaluation scale according to the state of thinking that the in-service training course is sufficient

	Don't think the course is enough	**N**	**Average**	**SS**	**F**	**p**
Renewed Science Curriculum Evaluation Scale	It wasn't enough at all	13	3,4038	1,00554	8,827	**,000**
	It was kind of enough	16	4,0964	,58526		
	It was partially enough	52	4,0729	,53810		
	It was quite enough	32	4,4635	,54509		
	It was more than enough	8	4,6458	,26258		
Benefits	It wasn't enough at all	13	3,4038	1,07669	9,600	**,000**
	It was kind of enough	16	4,4063	,54867		
	It was partially enough	52	4,1274	,67677		
	It was quite enough	32	4,5977	,53857		
	It was more than enough	8	4,8281	,29834		
Content	It wasn't enough at all	13	3,4231	1,11516	7,478	**,000**
	It was kind of enough	16	3,9479	,76671		
	It was partially enough	52	4,1058	,57643		
	It was quite enough	32	4,4531	,57771		
	It was more than enough	8	4,7292	,21708		
Learning-Teaching Process	It wasn't enough at all	13	3,7500	1,08493	4,612	**,002**
	It was kind of enough	16	4,1875	,64226		
	It was partially enough	52	4,1490	,64027		
	It was quite enough	32	4,5547	,61806		
	It was more than enough	8	4,7188	,33905		
Assessment and Evaluation	It wasn't enough at all	13	3,1538	1,19308	4,628	**,002**
	It was kind of enough	16	3,7708	,75492		
	It was partially enough	52	3,9167	,71286		
	It was quite enough	32	4,2344	,83372		
	It was more than enough	8	4,2708	,64818		

As can be seen in Table 7, it was determined that there were statistically significant differences in the one-way science course curriculum evaluation scale and the sub-dimensions of the renewed science course curriculum evaluation scale and the achievements, content, learning-teaching process, measurement and evaluation sub-dimensions in the one-way variance test conducted to compare the renewed science course curriculum evaluation scale according to the participants' thought that the in-service training course was sufficient ($p<0.05$). Accordingly, the average evaluation of the renewed science curriculum of the participants who think that the in-service training course is very sufficient is higher.

3.2. Findings on Qualitative Analysis

In this section, qualitative analysis, findings and interpretation of the findings regarding the interviews conducted to determine the opinions and attitudes of science teachers about the changes in the renewed science curriculum are included. As a result of the analysis of qualitative data, 9 themes were determined for the 2024 Science curriculum. These themes are as follows: 1) General views about SFBS, 2) Goals and achievements of SFBS, 3) SFBP content, 4) SFBP educational situations/teaching methods, 5) SFBP out-of-class learning, 6) SFBP assessment practices, 7) SFBÖP positive aspects, 8) SFBP negative aspects, and 9) SFBÖP making changes. The findings and

interpretations obtained as a result of the qualitative analysis are presented below in accordance with the themes and subcategories. The findings were supported by directly quoting the answers given during the interviews.

3.2.1. Findings on teachers' general views on the 2024 SFP

In this section, the findings regarding the general opinions of teachers about the 2024 SFBP are presented. The subcategories for this theme and their percentage and frequency values are presented in Table 8.

Table 8. Teachers' general views on the 2024 SFP

Theme	Code	f
General Views on 2024 YFBÖP	Prepared in accordance with advancing science and changing life conditions	10
	Don't think it's good that the curriculum is so simplified	8
	Don't think it's not good for the curriculum to be so simplified	2
	A good perspective in terms of emphasis on values education	6
	Contributes to the development of 21st century skills	6
	It is a suitable program in terms of associating the subjects with daily life	4
	Good relocation of the units	2
	Encouraging students to actively participate by increasing experiments/activities	3
	Based on a student-centered and constructivist approach	7
	Fully focused on learning	1
	To raise competent and virtuous individuals	1
	In general, there are a lot of positive aspects	10

According to Table 8, when the general opinions of teachers about the 2024 SFBP are evaluated, it is seen that the program has been prepared in accordance with the advancing science and changing life conditions, thinking that it is good that the curriculum has been simplified so much, thinking that it is not good for the curriculum to be simplified so much, a good perspective in terms of focusing on values education, contributes to the development of 21st century skills, it is a suitable program in terms of associating the subjects with daily life, It has been observed that the location of the units is generally reported positively in terms of being good, encouraging the student to participate actively by increasing the experiments/activities, and creating them to raise fully learning-oriented, competent and virtuous individuals based on a student-centered and constructivist approach. The most positive opinions expressed by the teachers were that the 2024 SFBÖP program was prepared in accordance with the advancing science and changing life conditions, simplified, centered on the student and prepared based on a constructivist approach. Below are sample sections for teachers' general opinions, themes and sub-categories about the 2024 SFP.

> *"In general, I can't say that this simplification of the curriculum is a very good work in my opinion. However, I can say that it is positive for students in cases such as changing or removing some topics or adding new topics. I positively support that values education is given a lot of space in the new program and that science education is associated with these values education. If we make a general assessment, I think that the targeted new production program will make a positive contribution to our age and developing technology."* (G1)

3.2.2. Findings on science teachers' views on the goals and achievements in the renewed FBDÖP in 2024

In this section, the findings regarding the opinions of science teachers regarding the goals and achievements in the renewed FBDÖP in 2024 are presented. The subcategories for this theme and their percentage and frequency values are presented in Table 9.

Table 9. Views of science teachers on the goals and achievements of the renewed FBDÖP in 2024

Theme	Code	f
Objectives and Achievements in the Renewed FBDÖP in 2024	Outcomes have been replaced by a new expression as "Learning outcome"	9
	There was a simplification of 35.9% in the gains	10
	In some units, the achievements could not be linked	3
	Moving away from the spiral program	2
	The achievements have been prepared in accordance with the changing world age and developing technological developments	3
	By adding scientific process steps, students have been introduced to a model in which they take a more active role in high-level skills such as analysis, synthesis and evaluation	3
	Achievements are embodied in the form of experiments and observations	4
	By making gains, living is suitable for the model and associated with daily life	1
	It aims to raise a science literate student by directing them to question, critical thinking and problem solving	3
	Outcomes are appropriate to the student level	2
	It is aimed to achieve the desired goals in a longer time with less gain	3

According to Table 9, when the opinions of science teachers regarding the objectives and achievements in the FBDÖP, which was renewed in 2024, were evaluated, a new expression was introduced as "learning output" instead of the achievements, there was a simplification of 35.9% in the achievements, in some units, the connection with the achievements could not be established, the spiral program was moved away, the achievements were prepared in accordance with the changing world age and developing technological developments, the scientific process steps were added and the analysis of the students A model of taking a more active role in high-level skills such as synthesis and evaluation has been introduced, the achievements have been embodied in the form of experiments and observations, they are in accordance with the model of living by making achievements and are associated with daily life, it aims to raise a science literate by directing the student to question, critical thinking, problem solving, the achievements are appropriate to the student level and it is aimed to achieve the desired goals in a longer time with less achievements. Below are sample sections for the theme and sub-categories of the objectives and achievements in the renewed FBDÖP in 2024.

> *"In the new curriculum, a new expression has been introduced as learning outcome instead of achievements. I think that it is not appropriate for me to reduce the achievements by 35.9% and simplify them too much, because students should learn the topics in a spiral model in a way that gradually expands, I think that in the new system, the achievements are very simplified, so they are removed from a spiral program. I would like to say that the fact that there are disconnections in some units among the gains is a wrong design from my point of view. For example; The relationship between the cell and the support and locomotion system in the 5th grades."* (G1)

3.2.3. Findings on science teachers' views on the renewed FBDÖP content in 2024

In this section, the findings regarding the opinions of science teachers regarding the content of the FBDÖP, which was renewed in 2024, are presented. The subcategories for this theme and their percentage and frequency values are presented in Table 10.

Table 10. Science teachers' views on the content of the renewed FBDP in 2024

Theme	Code	f
FBDÖP Content Renewed in 2024	Some units have been replaced, while others have been removed from the program	10
	Subjects and units are placed in accordance with the spiral model	10
	All systems in density in grade 6 are homogeneously distributed in some classes	9
	Topics related to daily life such as heat, temperature and pressure have been removed	9
	A model close to the 2013 program model was designed	1
	13 different skills such as observation, prediction, hypothesis have been added	4
	Topics are associated with everyday life	6
	Increased number of experiments and activities	4
	Smart boards are given a front	2
	Holistic education approach has been adopted	2

According to Table 10, when the opinions of science teachers regarding the content of the FBDÖP, which was renewed in 2024, were evaluated, some units were changed in the content of the FBDÖP, some were removed from the program, the subjects and units were placed in accordance with the spiral model, all systems in the 6th grade were distributed homogeneously to some classes, subjects related to daily life such as heat, temperature and pressure were removed, and a model close to the 2013 program model was designed, 13 different skills such as observation, prediction and hypothesis have been added, the subjects have been associated with daily life, the number of experiments and activities has been increased, smart boards have been given priority and a holistic education approach has been adopted. Below are sample sections for the theme and sub-categories of the renewed FBDÖP content in 2024.

> *"I would like to say that it is a positive situation that the subject of pressure is removed from the elective class, but I would like to state that the subjects of cell and support movement system are taken in 5 classes and the relationship between these two countries is a situation that challenges me the most. In general, it is seen that the removal or relocation of some countries has become positive in terms of the program. For example, it is a very ideal situation to take the subject of weight from 7 to 5 grades, but I would like to say that it is a wrong practice to take the subject of living things from 5 grades to 3 grades of primary school. I think that the removal of the issue of heat and temperature in daily life from secondary school is a situation that pleases me the most, and it has been a more ideal move to include this subject in the list. Because children could not think coldly due to their age and could not understand and interpret graphic questions, so it was a very successful study to transfer this subject to high school."* (I1)

3.2.4. Findings on the Opinions of science teachers on the educational situations/processing methods determined by the renewed FBDÖP in 2024

In this section, the findings regarding the opinions of science teachers regarding the educational situations/teaching methods determined by the FBDÖP, which was renewed in 2024, are presented. The subcategories for this theme and their percentage and frequency values are presented in Table 11.

Table 11. Opinions of science teachers on the educational situations/teaching methods determined by the renewed FBDÖP in 2024

Theme	Code	f
Determined Training Statuses/Processing Methods of the Renewed FBDÖP in 2024	The student is active and in the center, the teacher is more of a guide	8
	The teacher curriculum provides students with an environment to explore, do research and make self-inventions	8
	More space is given to experiments and laboratory studies	5
	Pragmatism is based on the philosophy of education	2
	The textbooks are divided into two modules	1
	An environment has been created for students where they can use the steps of the scientific process	3
	The science engineering part is based on activities that can be done by doing and living	2
	Topics are given in a way that is related to daily life	6

According to Table 11, when the opinions of science teachers regarding the educational situations/teaching methods determined by the FBDÖP, which was renewed in 2024, are evaluated, the student is active and the teacher is more of a guide in the center, while the teacher provides the teaching environment by making students discover, research and self-invent. Experiments and laboratory studies were given more space, textbooks were divided into two modules, pragmatism was based on the philosophy of education, an environment was created for students where they could use the steps of scientific processes, the science engineering part was based on activities that can be realized by doing and living, and the topics were given in a way that they could be associated with daily life. Below are sample sections for the theme and sub-categories of the determined educational situations/teaching methods of the FBDÖP, which was renewed in 2024.

> *"I would like to state that the new program is suitable for the conditions of the contemporary world as the student is a model by actively doing and living. In this model, I would like to say that teachers are more in the role of guides, not in a role that conveys their experience and experience to the students, but in a role that guides them and prepares them for life. Now, we, as teachers, are not in the role of teaching students knowledge, but in the role of a key guide that enables them to find the information themselves, to research and discover it. The Teacher Curriculum provides students with an environment to explore, research and teach by making self-inventions. In the new science curriculum, it is aimed to provide a teaching environment that gives more space to experiments and laboratory studies."* (G1)

3.2.5. According to science teachers, findings on the status of sufficient out-of-class learning environments in the renewed FBDÖP in 2024

In this section, according to Science teachers, the findings regarding the adequate inclusion of out-of-class learning environments in the FJPP, which was renewed in 2024, are presented. The subcategories for this theme and their percentage and frequency values are presented in Table 12.

Table 12. According to science teachers, the situation of giving enough space to out-of-class learning environments in the FBDÖP, which will be renewed in 2024

Theme	Code	f
Providing Sufficient Inclusion in Out-of-Class Learning Environments in the Renewed FBDÖP in 2024	Yes, there is enough space	10
	A learning environment is designed where the subjects are intertwined with daily life with travel and observation	10
	It offers the opportunity to experiment, research and examine in a laboratory environment	8

According to Table 12, when the situation of giving enough space to out-of-class learning environments in the FBDÖP, which was renewed in 2024 according to science teachers, was

evaluated, it was seen that all teachers thought that out-of-class learning environments were sufficiently included in the program. In the program, a learning environment where the subjects are intertwined with daily life is designed with excursions and observations, and the opportunity to conduct experiments, research and examinations in the laboratory environment is offered. Below are sample sections for the theme and sub-categories of the status of adequate inclusion of out-of-class learning environments in the FSKOP, which will be renewed in 2024.

> *"Yes, it has been included. It is seen that the achievements of the environment and climate course, which is an elective course from the elective course, are gradually added to all science classes, so that the environment, which is a very big problem of today, is covered at all levels. Since we do not have a laboratory, there are no materials in it, we only have the chance to do demonstration experiments with the facilities at hand, we make trips in order to raise awareness on important days as trips and observations. For example; On October 4, World Animal Day, I can say that we do not observe the animals in the reader's garden. I would like to point out that we engage science topics with everyday life through prayer trips in the schoolyard or around the school. In addition, we make trips to some museums and historical artifacts if financial opportunities are provided, but I can say that we postpone these trips due to financial impossibility. As a program, all facilities such as trips, observations and laboratories have been added to the program, but in general, we can say that many factors such as the infrastructure conditions of the schools, financial impossibilities, material deficiencies are the factors that negatively affect the implementation of these parts."* (M1)

3.2.6. Findings on teachers' opinions on the evaluation practices determined in the renewed FBDÖP in 2024

In this section, the findings regarding the teachers' opinions on the evaluation practices determined in the renewed FBDÖP in 2024 are presented. The subcategories for this theme and their percentage and frequency values are presented in Table 13.

Table 13. Teachers' views on the assessment practices determined in the renewed FBDÖP in 2024

Theme	Code	f
Evaluation Practices Determined in the Renewed FBDÖP in 2024	Process evaluation, not result-oriented	10
	Conducting open-ended exams	10
	Implementation of a product evaluation model, such as a portfolio	6

According to Table 13, when the teachers' opinions on the evaluation practices determined in the renewed FBDÖP in 2024 were evaluated, it was seen that among the evaluation practices determined, there was process evaluation rather than result-oriented evaluation, open-ended exams and the application of product evaluation models such as portfolios. Below are sample sections for the theme and sub-categories of evaluation practices determined in the renewed FBDÖP in 2024.

> *"The new production program is designed to have a process-based assessment model, which I can say is of course a positive development for the students. In my opinion, I would like to point out that students should still be evaluated as a result-oriented exam system as well as process-based evaluation, that is, I think it is not correct to evaluate students only based on the process, I definitely recommend that the work done in this process be evaluated with a product or an exam. Although the application of the open-ended exam system in recent years makes sense in student measurement, I do not think it is a suitable exam mode for our education system because as a result of open-ended written and process-based evaluations, students take multiple-choice exams in central exams, and a complete contradiction is seen here. In this case, I can say that it needs to be corrected. In addition, in open-ended exam evaluations, I see this as a mistake: Not every question is an open-ended question, the purpose is a short answer, and it is quite clear that we confuse the questions with open-ended questions. For this reason, I envisage that teachers will be given the necessary training in open-ended exams."* (I1)

3.2.7. Findings on the positive aspects of the renewed FBDP in 2024 according to science teachers

In this section, findings on the positive aspects of the renewed FBDP in 2024 according to Science teachers are presented. The subcategories for this theme and their percentage and frequency values are presented in Table 14.

Table 14. According to science teachers, the positive aspects of the renewed FBDÖP in 2024

Theme	Code	f
Positive Aspects of the Renewed FBDÖP in 2024	Including values education and associating it with science education	6
	It is a program that puts the student at the center, makes them active, and offers a learning environment by doing and living	10
	Allowing the student to develop as a whole in all aspects	9
	It is a program that is associated with daily life	7
	Learning integrity is ensured by changing or removing some units.	10
	Giving enough space to travel-observations and experiments	9
	Inclusion of scientists	4
	Introduction of a process-based evaluation model	6
	Dedicating more time to achievements	3
	Introduction of science technology design applications	3
	Providing the opportunity to use high-level steps of scientific process steps	7
	Providing interdisciplinary learning opportunities	3
	Addition of Science Engineering designs at the end of each unit	2

As can be seen in Table 14, when the positive aspects of the FBDÖP, which was renewed in 2024 according to science teachers, are evaluated, it is important to include values education and associate it with science education, to be a program that puts the student at the center, to make them active, to offer a learning environment by doing and living, to allow the student to develop as a whole in all aspects, to be a program associated with daily life, to learn by changing or removing some units. The positive aspects of the program are to ensure integrity, to give sufficient space to travel-observations and experiments, to include scientists, to introduce a process-based evaluation model, to allocate more time to achievements, to introduce science technology design applications, to provide the opportunity to use high-level steps of scientific process steps, to provide interdisciplinary learning opportunities and to add science and engineering designs at the end of each unit. Below are sample sections for the theme and sub-categories of the positive aspects of the FBDÖP, which will be renewed in 2024.

> *"Including values education and associating it with science education. Students will graduate adapted to science in a daily developing world. It is a program for developing scientific perspectives and it is a program for discovery. It is a program that puts the student at the center and makes them active. To enable the student to develop as a whole in all aspects. Learning integrity is ensured by relocating or removing some units. Giving enough space to travel-observation and experiments. Inclusion of scientists. It has been a curriculum that has adapted to the developing and changing science in today's world."* (S1)

3.2.8. Findings on the negative aspects of the renewed FBDP in 2024 according to science teachers

In this section, findings on the negative aspects of the FBDÖP, which was renewed in 2024 according to Science teachers, are presented. The subcategories for this theme and their percentage and frequency values are presented in Table 15.

Table 15. According to science teachers, the negative aspects of the renewed FBDÖP in 2024

Theme	Code	f
Negative Aspects of the Renewed FBDÖP in 2024	Preparation of the program without sufficient consultation of the teachers	9
	Too much simplification of achievements	7
	The budget and infrastructure of some schools are not suitable for this program	10
	Insufficient training for the service provided to teachers	6
	Inability to establish a relationship or connection between some units	8
	Removal of some units and such as heat-temperature, pressure	8
	Implementation of the program directly throughout the country without being implemented in pilot schools	3
	Lack of laboratories or lack of materials in schools	10
	The assessment is process-oriented, but the exams are multiple-choice	3
	Lack of proportional coordination between science and mathematics	1
	Out-of-school learning spaces are not suitable for every school	4
	The number of students in the school is high	2

As can be seen in Table 15, when the negative aspects of the FBDÖP, which was renewed in 2024 according to science teachers, are evaluated, it is seen that the program was prepared without taking the opinion of the teachers, the achievements were simplified too much, the budget and infrastructure of some schools were not suitable for this program, the trainings were not sufficient for the service provided to the teachers, the relationship or connection could not be established between some units, some units were removed and the program was piloted, such as heat-temperature and pressure. The negative aspects of the program are that it is applied directly throughout the country without being applied in schools, there are no laboratories or lack of materials in schools, the evaluation is process-oriented but the exams are multiple choice, there is no proportional coordination in the subjects between science and mathematics, out-of-school learning areas are not suitable for every school and the number of students in the school is high. Below are sample sections for the negative aspects, theme and sub-categories of the renewed FBDÖP in 2024.

> *"The program is implemented directly throughout the country without being implemented in pilot schools. Some schools are not suitable for this program as infrastructure requirements. Lack of laboratories in schools or lack of supplies. Lack of financial means of schools for excursions. Lack of adequate facilities for students in rural areas to access information, For example, the internet, encyclopedias, etc. Implementation immediately without informing teachers with enough programs and without getting ideas. Insufficient training for the service provided to teachers. Removal of some units and such as heat-temperature, pressure. Inability to establish a relationship or connection between some of its units"* (G1)

3.2.9. Findings on the changes requested to be made in the renewed FBDÖP in 2024 according to science teachers

In this section, according to Science teachers, the findings regarding the changes to be made in the renewed FBDÖP in 2024 are presented. The subcategories for this theme and their percentage and frequency values are presented in Table 16.

Table 16. According to science teachers, the changes to be made in the renewed FBDÖP in 2024

Theme	Code	f
Changes Requested to be Made in the Renewed FBDÖP in 2024	Giving too much in-service training to teachers	8
	Improving the infrastructure and readiness of schools	9
	Adding living things, magnetism, buoyancy, pressure, heat, and temperature in spiral form	10
	Change the duration of class hours	4
	Ensuring that the program is embraced and believed by all training partners	3
	Develop a blended assessment model that is both process-based and outcome-oriented	7
	Provide some mathematical calculations and formulas	5
	Request links between topics	6
	I would get opinions from individual teachers and design accordingly.	4
	Remove audio topic from 8th graders	2
	Piloting	4
	Add the topic of evolution	2

As can be seen in Table 16, when the changes to be made in the renewed FBDÖP in 2024 are evaluated, according to Science teachers, it is important to provide teachers with a lot of in-service training, to make the infrastructure and readiness of schools more ready, to add living things, magnetism, buoyancy, pressure, heat and temperature in a spiral form, to change the duration of the lesson hours, to ensure that the program is adopted and believed by all education partners, It was seen that they wanted changes to be made in terms of developing a mixed assessment model that is both process-based and result-oriented, providing some mathematical calculations and formulas, asking for connections between subjects, taking individual opinions from teachers and designing accordingly, removing the sound topic from 8th grades, piloting and adding the topic of evolution. Below are sample sections for the theme and sub-categories of the changes to be made in the renewed FBDÖP in 2024.

> *"I wouldn't make changes to the way the program is taught, but I wouldn't make enough changes to the way the program is taught, but for the teachers to gain enough experience and experience in the program. I would like to give them a lot of in-service training. I would make the infrastructure and readiness of the schools more ready. Magnetism, buoyancy, I would like to add. Instead of removing the topics of pressure, heat and temperature even though they are related to daily life, I would add these topics to the science curriculum in a spiral way again. I would have the Living Unit come back to middle school"* (G1)

4. CONCLUSION

The opinions of science teachers about the 2024 Renewed Science Curriculum were examined. Within the scope of the research, teachers about the new program; The changes it brings, in terms of content/content in terms of learning outcomes/outcomes, in terms of learning-teaching processes/trends, in terms of measurement and evaluation process/learning evidence, out-of-school practices and the renewed science curriculum in terms of all aspects were examined.

The majority of the teachers participating in the study stated that the outcomes changed in terms of learning outcomes. Teachers stated that there was a simplification of approximately 35.9% in learning outcomes. In addition, they stated that these simplifications are suitable for the students and that the subjects will be more comfortable in the learning process and that they are suitable for the student level and expressed positive opinions. There are studies in the literature that the reduction and simplification of the achievements in the 2018 Science Curriculum in the literature are seen as positive (Erkol et al., 2022; Ürek & Çoramık, 2022). It is seen that the opinion supports our study.

Some of the teachers who participated in the research found that values education was sufficiently included in the content/content section of the renewed curriculum and that it was associated with science education. It is seen that the inclusion of values in the science curriculum in

the literature greatly contributes to the internalization of values and the implementation of values (Tekbıyık & Akdeniz, 2018). In addition, some of the teachers expressed their positive opinion that scientists should be included in each unit or at the end of the unit. The majority of the teachers participating in the research expressed positive and negative opinions by removing, adding or changing some topics in the content dimension. For example, the topic of mitosis and meiosis is chapter 7. Grade 8. They again told the class that it was appropriate for their cognitive level. Güneş and Güneş (2005) stated in their study that the subject of mitosis and meiosis was perceived as difficult by the students. However, they stated that they did not find it appropriate to remove issues associated with daily life such as the issue of pressure, the issue of living things, and the issue of heat and temperature.

In the study, some of the teachers stated that the students were more active in the process due to the fact that it included activity-centered learning, learning by doing, experimental studies and holistic learning practices, that the program was suitable for the constructivist approach, and that research and inquiry-based learning teaching activities were the positive aspects of the program. In the literature; In the research conducted by Çıray et al., (2015), it was stated that teachers had a positive attitude regarding the inclusion of a research-inquiry-based teaching approach in the 2018 curriculum. His opinion supports our study. Some teachers, on the other hand, stated that the duration of the lesson hours given in the program would not be sufficient to implement all the activities in the new program and that some activities could not be carried out. Ayvacı and Durmuş (2013) emphasized this view in their research that teachers cannot use the methods and techniques in which the student is at the center in the lessons due to the concern of raising the achievements. It supports the study.

As a result of the evaluation opinions, some teachers stated that the crowded classrooms, the individual differences in the classes, the physical conditions of each school are not suitable, the living conditions of the students are negative, the teachers are not experienced enough about process-oriented activities, and the contradictions caused by the result-oriented exams in the central exams are the negative consequences of process-oriented evaluation. In his study in the literature, Ulu (2017) stated that the process-oriented evaluation method proposed in the program could not be applied adequately due to the time constraints of the 2013 program and the impossibilities of the children. His opinion supports our study.

The teachers who participated in the research stated that the education process in general, excursions, observations and practices intertwined with nature can be applied in the program and will provide more permanent learning for students. Sarişan-Tungaç and Ünaldı-Coral (2017) supported the result we found in the research by stating that it is necessary to carry out out-of-school learning practices because science teachers learn the lessons efficiently, attract the attention of the students, offer concrete experiences, and make the student more active and use their five senses actively in the process. However, some teachers stated that it is difficult to implement out-of-school practices due to reasons such as insufficient physical infrastructure of schools, lack of laboratories and materials, unsuitable economic conditions, lack of time, parental permission security problems. Ocak and Korkmaz (2018) stated that they were concerned about the security problems that may occur in out-of-school learning environments.

As a result, according to science teachers, the FBDÖP, which was renewed in 2024, should include values education and associate it with science education, be a program that puts the student at the center, make them active, offer a learning environment by doing and living, allow the student to develop as a whole in all aspects, be a program associated with daily life, give enough space to travel-observations and experiments, and include scientists, Features such as the introduction of a process-based evaluation model, the opportunity to use high-level steps of the scientific process steps, the provision of interdisciplinary learning opportunities and the addition of science engineering designs at the end of each unit have been determined as positive aspects. According to science teachers, the

features of the FBDÖP, which was renewed in 2024, such as the simplification of the achievements, the inability to establish a relationship or connection between some units, the removal of some units, and the fact that the evaluation is process-oriented and the exams are multiple-choice, such as heat-temperature and pressure, were seen as negative aspects. It is very important to consider these positive and negative features observed in line with the revision of the renewed program.

The suggestions to be made within the framework of the study are listed below. In this context;

- With science education, it can be ensured that the necessary studies are carried out in order to understand the concept of science and technology more clearly in the society.
- The science laboratories or infrastructures of the schools can be equipped with the activities envisaged by the program and the materials to be used in the construction of these activities.
- Teachers, who are the practitioners of the curriculum, can be organized for comprehensive in-service trainings, especially on methods and techniques, measurement and evaluation techniques, and gaining the skills in the program.
- Öğretim programları değiştirilirken öğretmenlerin görüşlerinin daha çok dikkate alınması sağlanabilir.
- The support of academicians and experts on the subject can be obtained in order to make the in-service training seminars given to teachers on the introduction and implementation of the curriculum in more detail, in the form of studies in which teachers actively participate, and to be more efficient.

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