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SCIENCE LESSONS WITH DAILY LIFE RELATED: LIFE-BASED LEARNING MODEL

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Abstract: Associating the information intended to be learned in line with the achievements of the science course with daily life, following current situations, and developing solutions to possible problems are among the important skills that students should acquire. This study aims to determine the level of science teachers' ability to establish a real life relationship with the subjects in which students have difficulty in their lessons. The research was conducted with a case study, one of the qualitative research methods. The participants consisted of 13 science teachers selected by criterion sampling method. Data were collected through semi-structured interviews and analyzed descriptively. The findings of the study were evaluated within the scope of the difficulties experienced in relating the lesson to daily life, current thoughts, experiences, and life-based learning approach and two important conclusions were drawn. The first one is that students experience learning difficulties in subjects that teachers characterize as unrelated to daily life. The second is that most of the teachers are aware of the life-based learning approach, but they have difficulties in implementing it and cannot adopt it sufficiently.

Key words: Science education, life-based learning, associating with life, science teachers.

1. Introduction

The technological infrastructure that develops as a result of the inferences brought by the age sheds light on scientific studies to a great extent and enables the development of these studies. The acquisition of the phenomenon of science to individuals from an early age is realized by integrating it into education and training processes. While providing this integration, students encounter some problems, and one of these problems is that the abstract concepts in the course outcomes cannot be concretized and they cannot establish a connection between science subjects and daily life, resulting in a decrease in their interest in the course and a decrease in their academic outputs (Gilbert et al, 2011; Rofii et al., 2018). For this reason, there is a need for learning methods that overcome the problems experienced in learning abstract concepts and help to establish a relationship between science and real life, attract students' interest and increase their motivation, and include practices that enable the development of not only the knowledge dimension but also the skill dimension. One of these methods is the Life-Based Learning (LBL) approach, which offers students active learning opportunities in the process.

The first studies on the Life-Based Learning (LBL) approach, which is an output of the constructivist learning approach adopted in the educational process, started in the early 1980s (Barker & Millar, 1999). In educational studies, it was started to be used in chemistry courses by a group of chemistry teachers and science educators in 1983 (Bennett & Lubben, 2006). In the application dimension of the life-based learning approach, practices such as developing activities or assessment and evaluation tools are frequently used (Bortnik et al., 2021; Broman & Parchmann, 2014; Nasırlıel & Ünal, 2021; Prins et al., 2018). Alternative methods and the preparation of these applications are basically based on a common goal: associating information with examples from daily life. In this way, the process can be carried out in a way to develop life skills in the integration of analytical thinking, decision-making, creative thinking, entrepreneurship, communication, and teamwork. As a result of constructivist practices, materials and tools prepared based on life-based learning can improve students' academic achievement (Rusçuklu & Özer, 2018; Ulusoy & Onen, 2014), attitudes towards the course (Assi & Cohen, 2023), literacy levels (Bennett et al, 2007; Keskin & Çam, 2019), increase their motivation (Kuhn & Müller, 2014) and improve their conceptual understanding (Dori et al., 2018; Karslı & Saka, 2017; King &

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Henderson, 2018; Swirski et al., 2018). In the studies conducted, it was observed that academic achievement was focused on the most among these learning outcomes, followed by attitude toward the course (Kabuklu & Kurnaz, 2019). It can be characterized as an expected result that a student who is successful in the science course and feels the power of success will develop a positive attitude towards the course.

The Science Curriculum aims to raise students as science-literate individuals who are eager to get to know nature, who have a developed sense of curiosity about the situations around them, who can approach problem situations with a critical perspective, who can produce solutions to problems by making inferences by actively using scientific process skills, and who can use these outcomes within the scope of science lessons. The concept of science literacy (MoNE, 2018), which is handled within the framework of these inferences, requires individuals not only to learn textbook information in their learning situations but also to have a high level of awareness of the situations around them and to be able to make associations between daily life and the course. In this way, they will be able to develop a predictive approach to problem situations that they may encounter in their daily lives, and they will be evaluated as having acquired the root values intended to be acquired within the scope of the course.

Looking at the literature, it is seen that many national and international studies have been examined within the scope of life-based learning, context-based learning, and REACT strategy, which is widely used in the implementation phase of these approaches (Genç et al., 2023). In studies in which these concepts are handled as a whole, it has been determined that chemistry, physics, biology, and environment subjects are preferred more than other subject areas (Kabuklu & Kurnaz, 2019). In science, where the internal structure of matter, the functioning of the order in the universe, the inner world of living things, and their relations with the environment are examined, it is known that the subjects consist of life itself. In this sense, the integration of the lesson with the daily life in which the prior knowledge is formed, and the student's associating the knowledge with his/her own life will make the teaching fun, effective and permanent (Paige et al., 2016; Yılmaz et al., 2022). Most importantly, students will learn to learn and try to open the ajar door of science with their own hands. The main goal is to awaken in students this desire and happiness to learn. Teachers should be proficient in the life-based learning approach, creating environments that connect course outcomes with everyday life and offering opportunities for students. In this context, students will be able to shape the knowledge they gain within the framework of the learning outcomes and real life associations in a way that can shed light on both their present and future with the help of the teacher.

In recent review studies, it has been observed that the research on the subject is mostly conducted with secondary school students and quantitative methods, while the research with qualitative methods and teachers is below expectations (Arık Güngör & Saraçoğlu, 2023; Genç et al., 2023; Kabuklu & Kurnaz, 2019). The biggest role in the adoption and use of the life-based learning approach belongs to the teacher. While preparing their students for the future, teachers touch their lives and leave traces of their own knowledge. Therefore, it is thought that this study, which aims to examine the level of science teachers' ability to associate course content with daily life within the framework of the life-based learning approach, will contribute significantly to the literature. The study aims to determine the distribution of the subjects that students have difficulty in terms of units at the middle school level with the opinions of science teachers and to determine the level of establishing real life relationships with the subjects that students have difficulty in the lessons. In line with this purpose, the questions sought to be answered are as follows:

1. According to science teachers, what are the most difficult subjects for students?

2. From the perspective of science teachers, what are the reasons why students have difficulty in the course?

3. Are science topics suitable for associating with daily life?

4. How do science teachers include daily life applications in their teaching?

5. What are science teachers' evaluations of the life-based learning approach?

2. Method

2. 1. Research Model

This study was conducted with a case study, one of the qualitative research methods. Case study is a qualitative research method in which the situations realized in the process are investigated by examining them comprehensively and in depth with various data collection tools (interviews, documents, observations, reports) (Creswell, Plano & Clark, 2007; Yıldırım & Şimsek, 2013; Yin, 1984). Qualitative research designs make it appropriate to explain the situations in the studies and to draw relevant interpretations. In this way, the study is carried out more strongly and the importance of events and phenomena is emphasized (Yıldırım & Şimşek, 2006). The reason why this method is preferred by researchers is that the most prominent feature of the method is to examine the situation examined in its own context with its qualities (Ersoy, 2016).

2.1.1. Participants

The criterion sampling method, which is one of the purposeful sampling methods, was used to determine the study group. In the criterion sampling method, people, events or situations with the qualities determined in relation to the problem or purpose of the study are utilized (Büyüköztürk et al., 2009). The criterion determined for the sample of the study is the science teachers working in the current academic year. Because in this study, it was aimed to examine the views of science teachers about associating science lessons with daily life and life-based learning. Here, it is important that the science teachers selected for the sample have a good command of the curriculum and are on duty. Thirteen science teachers, 10 (76.9%) female and 3 (23.1%) male, participated in the study.

Table 1. *Demographic Characteristics of Participants*

Participants	Gender	Education Level	Duration of experience	Organization worked for
P1	Woman	License	1 Year	State
P2	Woman	License	5-10 Years	Special
P3	Woman	License	1 Year	State
P4	Woman	License	1 Year	Special
P5	Woman	License	5-10 Years	State
P6	Woman	License	10-15 Years	State
P7	Male	License	20+ Years	State
P8	Woman	License	10-15 Years	State
P9	Woman	License	5-10 Years	State
P10	Woman	License	10-15 Years	State
P11	Male	License	10-15 Years	State
P12	Male	Master's Degree	15-20 Years	State
P13	Woman	Master's Degree	20+ Years	State

2. 2. Data Collection

Within the scope of the study, data were collected with a two-part interview form developed by the researchers. The interview form was developed to examine science teachers' associations of science subjects with daily life and life-based learning. The interviews were conducted using the interview form developed by considering the purpose of the study. The first part of the interview form includes demographic information and open-ended questions, while the second part includes tables including the association of life-based learning with the 5th, 6th, 7th, and 8th grade units of the science course. The open-ended questions and tables in the interview form were created by three science teachers and two

academicians in line with the data obtained from the literature review. In the first stage of the interview form, the first pilot application was conducted and the interview form was reorganized and finalized according to the results obtained. In the second stage, the second pilot application was conducted with the finalized form. The science teachers to whom the interview form was applied participated in the study voluntarily.

2. 3. Data Analysis

The descriptive analysis method was used to analyze the data in the study. In the descriptive analysis method, the data are summarized and interpreted after being organized according to the determined themes. In this type of analysis, direct and frequent quotations are used to reflect the opinions. The main purpose of descriptive analysis is to present the findings to the reader in a summarized and interpreted form (Yıldırım & Şimşek, 2013). The data obtained in the study were organized within the framework of the research questions with the descriptive analysis method. Then, the data were processed according to the thematic framework and evaluated by three science teachers and an academician by examining them semantically separately to ensure reliability and validity. As a result of the evaluations, the validity and reliability were made according to the Miles and Hubermann (1994) calculation model and it was found to be 95%. In this coding audit, which also provides internal consistency for validity and reliability, it is expected that the inter-coder consensus should be at least 80% (Miles & Huberman, 1994; Patton, 2002). After the analysis, the data were defined and supported with direct quotations. The organized data were grouped and finalized and the findings of the study were drawn. Direct quotations were included to reflect the views of the pre-service teachers participating in the study appropriately (Yıldırım & Şimşek, 2006) and the internal validity of the study was also tried to be ensured with this method.

3. Results

Within the study, the opinions of science teachers about the life-based learning approach were analyzed under certain categories and the findings of the data obtained are presented in this section. Regarding the first research question, "According to science teachers, what are the subjects that students have the most difficulty with?", a look at the 5th, 6th, 7th, and 8th grade subjects from the teachers' perspective in the context of daily life is given below, respectively.

Table 2. *Science teachers' evaluations of the 5th grade subjects in terms of difficulty and relation to daily life*

5th Grade	Do students have difficulty in learning the subject?			Can it be associated with daily life?		Do you associate it with daily life?	
	Yes	Partly	No	Yes	No	Yes	No
Sun, Earth, and Moon	3	7	3	12	1	12	1
Living World	1	3	9	13		13	
Force Measurement and Friction	6	5	2	13		13	
Matter and Change	3	7	3	13		13	
Propagation of Light	2	8	3	13		13	
Human and Environment	1	3	9	13		13	
Electric Circuit Elements	3	6	4	12	1	12	1

When the teachers were asked to evaluate the units at the 5th grade level according to the level of difficulty, daily life relationships, and the level of establishing the link between their course-life relationships in line with the content of the acquisitions, it is seen that the most difficult unit is the "Measurement of Force and Friction" unit, while the least difficult units are the "World of Living

Things" and "Human and Environment" units. Teachers generally stated that Grade 5 topics and concepts are units that can be associated with daily life and that they also make associations in their lessons. Sample statements are given below.

> *"I think they have difficulty in understanding physics topics because they are generally more abstract. Maybe they have driven a toy car at home many times and have experienced that it is more difficult to drive on the carpet, but when we say that it is due to friction in the lesson, for some reason they cannot do it, it is very interesting..." (P5)*
>
> *"The living things in the environment are exemplified as plants, animals, fungi, microscopic creatures. Most of the things covered in the unit are in the environment... Since sampling is easy, they learn easily." (P11)*

Table 3. *Science teachers' evaluations of 6th grade subjects in terms of difficulty and daily life relationship*

6th Grade	Do students have difficulty in learning the subject?			Can it be associated with daily life?		Do you associate it with daily life?	
	Yes	Partly	No	Yes	No	Yes	No
Solar System and Eclipses	2	5	6	10	3	12	1
Systems in Our Body	3	6	4	13		13	
Force and Motion	4	5	4	13		13	
Matter and Heat	1	6	6	13		12	1
Sound and Properties		4	9	13		12	1
Systems in Our Body and Health		1	12	13		13	
Transmission of Electricity	2	5	6	13		13	

When the teachers were asked to evaluate the units at the 6th grade level according to the level of difficulty, daily life relationship and establishing the link between their own course-life relationships in line with the content of the learning outcomes, it is seen that the most difficult unit is the "Force and Motion" unit, while the least difficult units are the "Sound and Its Properties" and "Matter and Heat" units. In addition to these findings, teachers generally stated that Grade 6 topics and concepts are units that can be associated with daily life, while some teachers stated that the "Solar System and Eclipses" unit is not suitable for making adequate associations with daily life. Sample statements about the teachers' associations between learning outcomes and daily life in their lessons are given below.

> *"I support solar and lunar eclipses with videos, otherwise it is difficult to associate them because they are a bit abstract...When talking about sense organs, eye dissection is done... Various situations such as two students pushing the teacher's desk at the same time and pulling it in different directions are shown. Depending on the movement of the table and the direction of movement, students are enabled to reach gains such as compound force, direction, direction..." (P9)*
>
> *"Preparing models with electrical and circuit elements, using conductive and insulating materials in experiments, projecting with different modeling." (P10)*

Table 4. *Science teachers' evaluations of the 7th grade subjects in terms of difficulty and relation to daily life*

7th Grade	Do students have difficulty in learning the subject?			Can it be associated with daily life?		Do you associate it with daily life?	
	Yes	Partly	No	Yes	No	Yes	No
Solar System and Beyond	2	8	3	10	3	9	4
Cell and Divisions	7	5	1	6	7	7	6

Force and Energy	9	3	1	12	1	11	2
Pure Matter and Mixtures	4	5	4	13		13	
Interaction of Light with Matter	6	2	5	13		13	
Reproduction, Growth and Development in Living Things	3	3	7	12	1	12	1
Electric Circuits	3	5	5	13		13	

When the teachers were asked to evaluate the units at the 7th grade level according to the level of difficulty, daily life relationship and establishing the link between their own course-life relationships in line with the content of the acquisitions, it is seen that the most difficult unit is the "Force and Energy" unit, while the least difficult unit is the "Reproduction, Growth and Development in Living Things" unit. Teachers generally stated that 7th grade subjects and concepts were difficult for students. They stated that the units can be associated with daily life, but the units "Solar System and Beyond" and "Cell and Divisions" are not suitable for making adequate associations with daily life. In addition, teachers stated that they made associations between learning outcomes and daily life in their own lessons, but they could not give enough space to the subject-concept-daily life relationship in "Solar System and Beyond", "Cell and Divisions" and "Force and Energy" units. Sample statements of the teachers are given below.

> *"I explain NASA studies, I bring a telescope to the classroom and ask them to make observations, we talk about space travel… The subject remains a bit abstract because we cannot show concepts such as chromosome DNA to children, they cannot see it in real life." (P2)*
>
> *"I can show chromosomes and the number of cells formed in mitosis and meiosis with play dough." (P3)*
>
> *"Mass-weight can only be given as an example from daily life. Apart from that, concept teaching is done because they are abstract concepts." (P11)*
>
> *"It is very difficult to illustrate cell division topics from daily life, unfortunately, there are no examples that can give the exact equivalent." (P12)*

Table 5. *Science teachers' evaluations of 8th grade subjects in terms of difficulty and daily life relationship*

8th Grade	**Do students have difficulty in learning the subject?**			**Can it be associated with daily life?**		**Do you associate it with daily life?**	
	Yes	**Partly**	**No**	**Yes**	**No**	**Yes**	**No**
Seasons and Climate	6	5	2	12	1	13	
DNA and the Genetic Code	5	7	1	4	9	7	6
Pressure	9	2	2	13		13	
Matter and Industry	1	7	5	13		11	2
Simple Machines	9	1	3	13		13	
Energy Conversions and Environmental Science		5	8	13		13	
Electric Charges and Electric Energy	3	7	3	12	1	11	2

When the teachers were asked to evaluate the units at the 8th grade level according to the level of difficulty, daily life relationship and the level of establishing the link between their own course-life relationships in line with the content of the learning outcomes, it is seen that the most difficult units are "Seasons and Climate", "Pressure" and "Simple Machines", while the least difficult units are "Matter

and Industry" and "Energy Transformations and Environmental Science". Teachers generally stated that the 8th grade subjects and concepts were created in a way that could be associated with daily life, but that the "DNA and Genetic Code" unit was not suitable for making adequate associations with daily life. In addition, it was also found that teachers attach importance to the association of learning outcomes and daily life in their lessons, but they could not give enough space to the subject-concept-daily life relationship in "DNA and Genetic Code", "Matter and Industry" and "Electric Charges and Electric Energy" units. Sample statements of the teachers are given below.

> *"In order to make it more permanent, I make the rotation model of the sun come alive, we talk about weather events." (P2)*
>
> *"We can drop purple cabbage juice on acid or base and make separators from their colors." (P3)*
>
> *"The subject is not actually related to daily life, it is a bit abstract, but I explain nucleotides such as adenine and thymine with the cards I prepared so that children understand." (P4)*
>
> *"Why drinking mineral water relaxes him when his stomach has difficulty digesting..." (P7)*
>
> *"DNA, genes, codes are abstract concepts that are difficult to teach, modeling can be done, but concepts are difficult to concretize and teach..." (P10)*

After the determination of the association of the difficult subjects with daily life, the findings related to the research question "What are the reasons why students have difficulty in the course from the perspective of science teachers?" are given in Table 6.

Table 6. *Science teachers' opinions on the difficulties experienced by students in science lessons*

Code	Distribution	Sample Expression
Abstract Concepts	P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P12	*"They have problems in understanding and memorizing phenomena that they cannot see with their eyes and that are not concretized." (P1)*
Associating the Use of Concepts in Daily Life	P1, P2, P3, P4, P5, P6, P7, P8, P12	*"...they don't see the dynamometer in daily life, we use more digital ones, we use scales, but they rarely see the dynamometer we explain in class in daily life, so maybe they have difficulties." (P6)*
Developmental Features	P1, P2, P4, P5, P7, P8, P11, P13	*"...because they do not read enough books, their thinking skills are very weak. Therefore, they do not develop logical intelligence and cannot be productive in reasoning and thinking skills." (P11)*
Inability to Observe	P1, P2, P4, P5, P6, P7, P8, P12	*"...it is because some topics are topics that they cannot directly observe such as mitosis and meiosis." (P2)*
Mathematical Operations	P5, P6, P8, P9, P10, P13	*"Children are not good enough at creating graphical drawings that require calculation." (P9)*
Class Interest	P1, P2, P5, P7, P12	*"...they don't make effort because they want to study less." (P1)*
Education System	P6, P7, P8	*"...in education right now, if the child does everything, it is accepted." (P8)*
Learning Terms	P10, P12	*"They have difficulties in understanding science-specific terms such as pressure and space." (P10)*
Language Problem	P3, P8	*"Because most of the children are refugees and they know very little Turkish." (P3)*
The Nature of Science	P5	*"...there is a perception that if it is a scientific fact, it is always true and will always remain so. They are not very familiar with the nature of science." (P5)*

When the teachers' statements in Table 6 revealing the reasons for students' difficulties in the science course are analyzed, it is seen that the most frequently mentioned reason is that the course contains abstract concepts (11 teachers). In addition to this, it comes to the forefront in the teachers' statements that students mostly have difficulties in associating the use of concepts in daily life (9 teachers), not

being able to make observations (8 teachers), concepts and facts not being appropriate for students' developmental characteristics (8 teachers) and mathematical operations (6 teachers). In addition, teachers also mentioned problems arising from interest in the lesson (5 teachers), the education system (3 teachers), learning terms (2 teachers), language problems (2 teachers) and the nature of science (1 teacher).

Based on the difficulties experienced by the students in their lessons, the teachers' opinions on the research question "Are the subjects of the science course suitable to be associated with daily life?", which emerged in line with the suggestion of associating the course with real life, are given in Table 7.

Table 7. *Science teachers' views on associating science subjects with daily life*

Code	Distribution	Sample Expression
Science is Compatible with Daily Life	P1, P2, P3, P4, P5, P6, P7, P9, P10, P12	*"...what we call science is teaching in daily life, science equals our daily life experiences..." (P6)*
Increasing Interest in the Lesson	P1, P2, P3, P4, P5, P6, P9, P11, P12, P13	*"...children who do not understand when I explain the subject directly, for example, when I explain diseases through the diseases in people they can see around them, they pay more attention." (P1)*
Providing Permanent Learning	P1, P2, P3, P4, P6, P9, P13	*"...I think that some abstract subjects can be taught more permanently with this association." (P2)*
Compatibility of Science Curriculum with Daily Life	P3, P5, P7, P8, P12	*"In the current curriculum, it is easier to relate it to daily life." (P7)*
Improving Life Skills	P10, P11, P12, P13	*"... it is of great importance in raising individuals who research, question, find solutions to the problems they encounter, have high-level thinking skills, can produce information and use it when necessary, have the ability to use technology effectively, and express themselves well." (P10)*
Being Suitable for Analogical Thinking	P2, P8	*"Associating with daily life, analogy is good. It is also good in daily life, it is already a very good thing in science because analogy is our hand and foot. I mean, we always use analogies when we explain something..." (P8)*

When Table 7, which reveals teachers' opinions on the association of science lessons with daily life, is examined, the most common statements are that science lessons are compatible with daily life (10 teachers) and that lessons associated with daily life increase students' interest (10 teachers). In addition to increasing interest, teachers also stated that lessons associated with daily life provide permanent learning (7 teachers), that the curriculum is compatible with daily life (5 teachers), that it develops life skills (4 teachers), and that science is suitable for analogical thinking on the basis of associating the course with daily life (2 teachers).

Based on the opinions of the teachers who expressed their views on the intertwining of the course with daily life, the findings related to the research question "How do science teachers include daily life applications during subject expression?", which examines the level of teachers' ability to put this relationship into practice in their lessons, are analyzed in Table 8.

Table 8. *The methods used by science teachers to associate science with daily life in their lessons*

Code	Distribution	Sample Expression
Sample Event Narration	P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P12, P13	*"...When I teach the subject, I bring news about space technologies and the rocket that was recently applied. I make them watch videos about the agenda. I tell them about the research that have been put forward more recently from daily life." (P3)*

Using Different Methods	P2, P3, P5, P6, P7, P8, P9, P11, P12	*"...the planets made of dough are very beautiful, I don't want ready-made dough, I tell the children, flour, salt, water, add a little vinegar if you want, the dough doesn't crack... Learning by doing and experiencing takes place." (P8)*
Experiments and Observations	P2, P5, P6, P7, P8, P9, P12	*"Since all concrete experiments conducted in the classroom create an experience for the students, it is the most important part of associating with daily life. In addition, asking them to give examples from their out-of-school lives increases retention." (P9)*
Visual Materials	P1, P2, P3, P5, P7, P8, P12	*"...I help them learn better with visuals, videos, animations, games related to the subject on the smart board." (P2)*
Inventive Learning	P2, P11	*"I associate it with the Invention Strategy." (P11)*

When the statements in Table 8 are analyzed, it is seen that the most frequently used method is the sample event narration (12 teachers). In addition to this method, it was also observed that there were teachers who used experiments and observations (7 teachers) and visual materials (7 teachers) in their lessons. The table shows that the least preferred method in this regard is learning by discovery (2 teachers). In addition to these methods, teachers also stated that they used different methods (9 teachers).

The findings related to the research question "What are science teachers' evaluations of the life-based learning approach?" are given in Table 9.

Table 9. *Science teachers' evaluations of the life-based learning approach*

Code	Distribution	Sample Expression
Knowing Concept Applications	P1, P2, P3, P4, P5, P6, P7, P9, P10, P11, P12	*"For example, we are currently dealing with the subject of pressure, let's say everyone has traveled more or less by car in relation to open-air pressure, if the car is going up a hill, climbing a mountain or going down a mountain, you feel that your ear is blocked and then suddenly opens. When we explain the formation mechanism of this through the ear model or shape, we associate it with daily life." (P7)*
Establishing a Relationship between Science and Life	P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P13	*"They learn about the systems in our body and their own organs." (P13)*
Knowing the Concept Definition	P1, P2, P3, P5, P6, P7, P8, P11, P12, P13,	*"...in my opinion, life-based learning is a form of learning in which the information is related to real life, even directly from life, and supported in this way. It also means that students can use what they learn in every moment of their lives. Thus, it is an approach that provides both the opportunity to teach the subjects more easily and to make students love the lesson." (P2)*
Increasing Interest in the Lesson	P1, P2, P3, P4, P9, P10, P13	*"In lessons that we associate with daily life, students' interest and interest in the lesson increases. Class participation increases." (P13)*
Meeting Science Program Outcomes	P1, P2, P4, P5, P7	*"They both participate more in the lesson, and they can adapt what they learn to their own lives and use it in their real lives. I fulfill all the requirements of the outcome in terms of the program and provide permanent learning." (P4)*
The Method is not Always Applicable	P6, P11	*"...at the moment, it is insufficient in practice, my students do not think too much about it." (P11)*

When the headings in Table 9 are examined, it is seen that teachers' views on the life-based learning approach are mostly shaped within the scope of establishing a relationship between science and life and that they know the applications of the concept (11 teachers). In addition, it is seen that there are teachers who know the concept (10 teachers), except for one teacher who knows its applications but does not know the definition of the concept. When the opinions of the teachers were examined, it was seen that

the approach increased the interest in the lesson (7 teachers), while the concept met the science program outcomes (5 teachers). In the table, it is seen that the least mentioned topic (2 teachers) is that the method cannot always be applied.

4. Discussion and Conclusion

In this research, which aims to examine in-depth the levels of establishing real life relationships with the subjects that students have difficulty in science lessons, the interviews with teachers were evaluated within the scope of determining the association of the subjects that students have difficulty with daily life on the basis of units, the difficulties experienced in associating the lesson with daily life, current thoughts, experiences and life-based learning approach, and two important results were revealed. The first one is that students experience learning difficulties in subjects that teachers characterize as unrelated to daily life. The second is that most of the teachers are aware of the life-based learning approach, but they have difficulty in implementing it and cannot adopt it sufficiently.

When the questionnaire data are analyzed, it was seen that the teachers mostly characterized the 5th grade subjects as being related to daily life and that they themselves related to them, yet the students had the most difficulty in learning the subjects of Measurement of Force and Friction. Regarding this situation, the teachers stated that the dynamometer used in the lesson is different from the measuring instruments such as scales and balances that students encounter in daily life, so this concept, which cannot be associated with daily life, causes learning difficulties in students. They also stated that although students had certain experiences in daily life about friction, they could not establish this association in the lesson. In a study conducted by applying an achievement test, Yüzbaşıoğlu and Kurnaz (2022) concluded that students were inadequate in associating friction force with daily life. In this sense, activities such as bringing a dynamometer to the classroom, introducing it to the students, having them build a simple dynamometer and making measurements with the dynamometer they made themselves, giving them the opportunity to experience the concept and associate it with daily life, and organizing car races on different surfaces for the friction force, as stated by some teachers, can make the subject easier to understand.

Regarding the 6th grade topics, teachers generally stated that students had some learning difficulties, that they characterized the topics as relatable to daily life and that they themselves related them. For Solar System and Eclipses, it is noteworthy that some teachers both characterized the topic as not relatable to daily life and stated that they themselves related it, thus their efforts to relate the lesson to daily life are noteworthy. When considered with other grade levels, Grade 6 stands out as the level at which students experience the learning process most easily.

At the 7th grade level, it was concluded that students had difficulties in the subject area of Physical Phenomena such as Force and Energy, Interaction of Light with Matter. In addition, in response to the students who had difficulty in learning the subject of Cells and Divisions, it was revealed that the teachers mostly characterized this subject as not relatable to daily life and could not relate it almost half of the time. Differently from the interviewed teachers, Whitaker (2014), starting from the same problem, taught the topic of division by providing a skit environment for students to perform; Shelden et al. (2021) presented a virtual laboratory to students on the same topic and provided them with the opportunity to observe cell divisions through virtual experiments using real cellular images. When compared with other grade levels, it was observed that Grade 7 stood out as the level at which students had the most learning difficulties.

At the 8th grade level, as in other grade levels, it was observed that students had learning difficulties in the subjects of Pressure and Simple Machines from the subject area of Physical Phenomena, despite the fact that the teachers characterized the subjects as relatable to daily life and stated that they themselves were relatable. The same situation was also observed in the topic of Seasons and Climate. In addition, it is noteworthy that although teachers characterized the topic of DNA and Genetic Code as unrelated to daily life and could not relate it half of the time, students had partial difficulty in learning the topic. In the study of Şaşmaz Ören et al. (2023) on DNA and Genetic Code with scientific scenarios including examples from daily life, it was stated that students were able to associate the lessons with their daily

lives by writing science diaries. In this sense, as seen in other classroom subjects, it can be mentioned that various methods can be utilized to associate the lesson with daily life.

In general, it was found that science teachers could not realize the relationship between daily life and the course at the desired level as the grade level increased, while students had difficulty in learning the subjects in proportion to the increasing grade level. Teachers stated that students had the most difficulty in 5th, 7th and 8th grade subjects, while they had the least difficulty in 6th grade. It was concluded that the units that were most difficult for students at each grade level were from the Physical Phenomena subject area. In the study conducted by Tuncel and Fidan (2018) using the opinions of students, it was revealed that students had the most difficulty in learning the units in the Physical Phenomena subject area, supporting the results of this study. In the study, teachers also stated that most of the 7th grade topics were not related to daily life and that they also had difficulty in making associations. This situation can be interpreted as a negative consequence of the intensity of the curriculum and the exam-oriented system (Akça & Beşoluk, 2023; King & Henderson, 2018).

Science teachers mentioned that the course content contains abstract concepts, students' inability to perform and understand mathematical operations, low interest and motivation in the course due to some prejudices, insufficient developmental characteristics, inability to understand unobservable phenomena, They reported that they had difficulties in associating knowledge with daily life due to the lack of conceptual learning and various misconceptions, the negative effects of the education and examination system, the lack of understanding of the nature of science, the problem of language skills in multicultural environments, and the use of concepts in daily life. Problems experienced due to abstract concepts (Ecevit & Özdemir Şimşek, 2016), incompatibilities during the teaching of subjects in science and mathematics courses (Aytekin & Aydın, 2017), prejudices against the course (Demirtaş & Güler, 2019), conceptual misconceptions (Yıldız, 2022), negativities arising from the education and examination system (Akça & Beşoluk, 2023), lack of mastery of the nature of science (Hastürk et al., 2014), and problems arising from language problems (Kayacan & Güneş Koç, 2021) support the results of this study as science teaching problems revealed by various studies.

The opinions of science teachers regarding the relevance of the science course to daily life are that the course is directly related to daily life, suitable for analogical thinking and even daily life itself. Teachers stated that the science curriculum is compatible with relating the course to daily life, that students' life skills can be developed in subjects related to daily life, that the retention of information is ensured, and that their interest in the course increases. It is known that contextualizing the classroom environment and integrating science with the real world and daily life will be beneficial in terms of providing an effective education in order to raise students who have developed critical thinking and problem-solving skills, which are life skills (Çelik & Öner Armağan, 2021; King & Henderson, 2018; Lupión-Cobos et al., 2017; Sevian et al., 2018; Yoon et al., 2012). In addition, teachers stated that students' exam-oriented focus does not allow them to learn by doing and experiencing, and therefore, most of the time, the information is based on rote memorization and does not go beyond theory. In this context, the need to abandon the exam-oriented system emerges and is seen as an important problem complained by teachers (Akça & Beşoluk, 2023). Providing a more flexible educational environment where students can feel the excitement of the knowledge they will acquire is important for the realization of meaningful learning.

Teachers stated that they used various methods such as experimentation and observation, various visual materials that would attract students' attention, sample event narrations, and learning by discovery in the application phase while associating the lesson with daily life. They stated that they started from the experiences of the students during the association with daily life and thus, more permanent, easy, active participation learning was provided by having fun with increasing interest in science for the students; In terms of the program, they stated that both the course hours and interdisciplinary transitions in the courses need to be updated in order to make life-based practices. Students' ability to make sense of the natural world by establishing relationships with the environment and daily life in the science course shows that learning has taken place (King & Henderson, 2018; Paige et al., 2016). Lessons associated with daily life increase students' motivation towards the lesson and provide permanent and meaningful learning (De Jong, 2008; Kuhn & Müller, 2014; Lupión-Cobos et al., 2017; Ulusoy & Onen, 2014; Swirski et al, 2018), it is seen as a necessity by teachers to update the curriculum in a way that will allow life-based learning and interdisciplinary interactions and to reduce its intensity (Akça & Beşoluk, 2023).

When the ideas of science teachers about the life-based learning approach were analyzed, it was concluded that most of them already knew this approach within the scope of definitions and practices. In addition, it was observed that some teachers performed life-based practices unknowingly, even though they did not know the definition of the approach scientifically. Teachers mentioned the relationship between science and experience and stated that this approach increased interest in science lessons and made it easier to reach the outcomes. However, the teachers stated that although they knew about this approach, they considered themselves inadequate at the implementation stage and that they thought that they would have difficulties due to the characteristics of the environment and the differences in students' experiences. The same problem was also mentioned in the studies conducted by Davidsson and Granklint-Enochson (2021); İlhan et al. (2015); Lupión-Cobos et al. (2017); Vos (2014). In this context, it can be said that knowing the life-based learning approach is of no use to students if they do not apply it effectively; therefore, it is one of the responsibilities of teachers to discover, understand, adopt and implement how to realize life-based learning in a context.

In the national and international studies in the literature that overlap with the results of this research on associating the science course with daily life, it is found that students' levels of associating knowledge with daily life are insufficient (Abebe et al., 2023; Broman & Parchmann, 2014; Derman & Senemoğlu, 2021; Gilbert et al, 2011; Vos, 2014; Yılmaz & İnce Aka, 2022; Yoon et al., 2012) and that teachers could not adopt the life-based learning approach sufficiently and had difficulties in its implementation (Avargil et al., 2012; Davidsson & Granklint-Enochson, 2021; İlhan et al., 2015; Lupión-Cobos et al., 2017; Vos, 2014). In fact, the main focus here is on teachers before students. Because the responsibility of a student's learning and making his/her knowledge permanent and associating it with his/her daily life is largely on the teacher. The question "Teacher, what is strawberry?" asked by a teacher from Bursa working in Diyarbakır while explaining the subject through the example of strawberries in his lesson and what happened afterwards offers a different perspective on this issue (İlmak, 2021). The teacher is not content with showing a picture to his students who have never eaten strawberries, but ensures that strawberry cultivation begins in an entire village. In this lesson, instead of taking exams, students take notes from the strawberry seedlings given to them by their teachers and finally taste a strawberry for the first time. In the process, it is seen that the teacher touches the lives of her students and integrates her lessons with their daily lives. In this context, while it is one of the aims of education to ensure that both scientific concepts and a word spoken by the teacher move from abstract to concrete and gain meaning in the student's mind, reflecting the information to the daily life of the students away from memorization should be one of the ultimate goals of every teacher as in the example.

Following the results of the study, it is recommended that necessary in-service trainings should be provided for teachers to adopt the life-based learning approach and courses on life-based learning practices should be offered to pre-service teachers during pre-service education. In addition, updating the science curriculum in a way that is coordinated with the curricula of other courses, especially mathematics, and in a way that allows teachers to relate the information to daily life is seen as a necessary step towards solving the problems experienced.

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