# Investigation of Life Science Course Outcomes in Terms of Philosophy for Children Approach*

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## Abstract

The study aims to examine the suitability of the Philosophy for Children approach to the learning outcomes of the Life Science course. In the study, the learning outcomes of the Life Science course, in which the Philosophy for Children approach can be applied, were determined, and a lesson plan example was presented. In the study, an analytical research method was adopted. 2018 Life Science Curriculum outcomes were accepted as documents, and document analysis was used as a data collection method. The researcher created a checklist that includes the outcomes of the Life Science course. The list evaluated whether or not the outcome is suitable for the Philosophy for Children approach and which philosophical concept it might be associated with was reviewed by a different Philosophy for Children instructor other than the researcher. The obtained data were analyzed by descriptive analysis. The evaluations of the researcher and the field expert revealed that Philosophy for Children practices could be done in 72 learning outcomes out of a total of 148 outcomes. The philosophical concepts that emerged after the examination were divided according to the units. Emerging concepts were; rule, responsibility, punishment, friendship, respect, communication, care, love, respect, belonging, time, diligence, freedom, individual and society, good-bad, nature-human, life-death, kindness, and balance. While a single concept can be handled for outcomes, more than one can also be addressed. When the concepts are examined and the Life Science course is thought to be an interdisciplinary course, the course offers important opportunities for the use of the P4C approach. These opportunities cover a wide area such as values education, moral education, citizenship education, science education, and media literacy. It is suggested that the P4C approach should be applied in the Life Science course, taking into account the relationship between outcome and philosophical concepts. Limitations of the P4C approach were mentioned, and a lesson plan example was prepared for one of the Life Science course outcomes.

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# INTRODUCTION

Life Science is a course in which natural and social facts and events are tried to be conveyed to the child in a community for the first time after the family. The Life Science course, which fits very well with its name, is prepared to satisfy the child's life and natural curiosity. The Life Science course, in which the truth is taught, is built on three learning areas: individual, society, and nature (Karabağ, 2009; Ministry of National Education [MoNE], 2018). The experiences related to the meaning of the world from the child's birth are at the center of the Life Science course.

In the Life Science course curriculum, the human being with its biological, psychological, social, and cultural aspects is considered both the subject and the object of change. The themes continued with the same naming for three years; It takes place to reinforce the gains and to add new ones on top of previous learning (Kaya, 2018). Education systems primarily aim to develop thinking skills in individuals. For this purpose, curricula are reorganized, and learner-centered approaches and methods constitute the basic philosophy of the programs. Life Science course is also a required course affected by this trend. Thinking skills (problem-solving, decision-making, etc.) are among the basic life skills in the Life Science course curriculum, which started being implemented in 2018. Developing thinking skills should be based on "how" children should think, not "what" they should think. "Philosophy for Children" (P4C) approach, one of the thinking education programs, appears before us on how children should think and how they can operate their thinking processes.

### Philosophy for Children (P4C)

We can trace the basis of Philosophy for Children (P4C) to Heraclitus, who preferred playing games with children to managing cities with adults, or to Socrates, who used the question-answer method to give birth to noble knowledge in their souls in the lively and compelling dialogues he formed with young people (Taşdelen, 2014). The P4C approach was systematically first introduced by Matthew Lipman in the 1970s. Lipman, who teaches philosophy and logic at Columbia University in the USA, noticed that the thinking skills of university students were weak and thought that the reason for this weakness should be sought in childhood (Smith, 2010). This thought led Lipman to investigate whether philosophical thinking based on conceptual and mental evidence could be taught to children. Matthew Lipman, who obtained positive results from his research, established an institute called "*The Institute for Advancement of Philosophy for Children*" in 1974 to develop the field of P4C (Vansieleghem & Kennedy, 2011).

P4C has its aims, content, method, and evaluation process. The aims of P4C are being able to think independently, being an attentive citizen, supporting personal development, developing language, speaking and discussion skills, and conceptualizing philosophy (UNESCO, 2007). Philosophical concepts, problems, or questions constitute the focus of P4C; in other words, it's content. These are usually included in a text. Texts, stories for children, novels, newspaper reports, etc. way it could be. In P4C, various discussion techniques are used, especially the Socratic method. The evaluation phase of P4C can be focused on all elements of the process, such as the teacher, group, or individual, or it can be focused on children's discussion process and thinking skills. In P4C, the teacher is the person who introduces children to different options through questions and supports them in explaining their views by justifying them. He not only knows philosophy but also reveals his knowledge at the right time by asking the right questions and arouses curiosity in children (Lipman, Sharp, & Oscanyan, 1980).

P4C is a thinking education program that develops children's thinking skills and allows them to focus on how they learn rather than what they learn. The program carries the educational aims of both constructivism and Socratic inquiry (Golding, 2007). In this context, it is applied in more than 50 countries in the world in terms of supporting the development of empathy, collaborative thinking, self-confidence, not being afraid of failure, self-control, academic success, reading and listening comprehension, critical and creative thinking, reasoning and metacognitive skills (Gregory, 2008).

P4C is an educational approach to developing children's thinking capacities (Lipman, 2003). In this approach, children are directed to ask and answer philosophical questions under the guidance of an adult. In P4C, children mutually discuss philosophical concepts such as happiness, right, wrong, right, justice, equality, and freedom through their daily life experiences or stories related to their lives. Children define these concepts by reasoning through thought-provoking questions and establish relationships between ideas and concepts and everyday life (Worley, 2009). P4C is the construction of images through children's dialogue and discussion, based on a relevant text, a story, a newspaper article, or daily life experiences, and evaluating by combining what they read with their own experiences. The role of the teacher in this process is to guide children to different options and to support them in explaining their views with reasons (Direk, 2014; Lipman, Sharp, & Oscanyan, 1980). Trickey and Topping (2004) systematically reviewed the literature review of skills and values that impact P4C. These skills and values are logical reasoning, reading comprehension, math skills, self-esteem, self-worth, listening skills, self-expression, creative thinking, and cognitive/emotional intelligence.

The Life Science course, which deals with the human as a whole through the P4C approach, will be the elements of significant harmony and integration. The Life Science course, which is built on three learning areas: individual, society, and nature, includes many concepts of academic philosophy. Philosophy is a mental process realized by humans as a product of human-human and human-nature interactions. Children engaging in philosophy activities in the Life Science course will provide them with training in correct thinking, self-expression, judgment, and participation in discussion. Philosophy activities in the Life Science course will allow collective debate for children. In this way, children will share the responsibility of having a discussion activity with their friends and learn to respect different views by exploring different perspectives.

The Life Science course has an essential structure in that it allows different and real-life stories to be processed through various disciplines and that early individuals can find elements from their own lives (MoNE, 2009). In this sense, the Life Science course can be considered a ground where the P4C approach will sprout. Because the P4C approach helps the child to make sense of himself, his environment, the world, and the universe through philosophical questions based on his experiences. As can be understood from these definitions, it is significant to present the content of the Life Science course through the P4C approach. It can be said that the approach will contribute to children's cognition, language, and social skills in many ways.

It is thought that the P4C approach, which has been applied in schools in many countries in recent years, can be used in the teaching process of the Life Science course. The fact that children do philosophy activities in the Life Science course can provide them with training in correct thinking, self-expression, judgment, and participation in discussion. Philosophy activities in the Life Sciences course offer children the opportunity to experience collective discussion; It will contribute to the children's sharing the responsibility of having a discussion activity with their friends and be respectful of different opinions by exploring diverse perspectives (Özdemir, 2021). P4C approach will support children to be inquisitive and inquisitive instead of blindly accepting what they see and experience, to evaluate themselves by making judgments about right and wrong, direct themselves to what is beautiful, and gain ethical values (Daniel & Auriac, 2011; Lipman, 2003; Worley, 2009).

Since the Life Science course is based on an interdisciplinarity teaching system, it is fed from different disciplines. In particular, the information obtained from disciplines such as science, economy, history, geography, values, citizenship, and democracy constitute the content of the Life Science course. In this context, studies in the literature suggest that the P4C approach can be used as an approach in values education, moral education, citizenship, media, and democracy education (Bleazby, 2006; Burgh & Yorshansky, 2011; Cam, 2014; Cleary, 2011; Garcia-Moriyon, etc., 2020; Garrat & Piper, 2011; Lomaca & Chiado, 2019; Splitter, 2011) will be a guide for the association between the Life Science course and P4C. In the studies, the applicability of the P4C approach was discussed based on the philosophical concepts related to morality, values, media literacy, and citizenship. In the research on social studies and science courses (Akkocaoğlu-Çayır, 2021; Dunlop,

2016; Ferreira, 2004; Özdemir, 2021; Pala, 2022), the subjects included in the Life Science course were included. In the research conducted by Pala (2022), the 10-week practice was conducted for the "Technology and Life" unit in the social studies textbook. Technology is one of the subjects of the Life Science course. When the literature is examined, studies aim to develop students' various skills by applying the P4C approach in the Life Science course (Boyraz, 2019; Kaya, 2020). In addition, some studies prepare P4C activities suitable for the outcomes of Life Science lessons (Akkocaoğlu-Çayır, 2021; Özdemir, 2021). In this context, it is considered essential to reveal whether all the outcomes of the Life Science course are suitable for the P4C approach. In this way, a guide that can aid teachers in the Life Science course will be revealed. The research aims to determine the outcomes of the Life Science course in which the P4C approach can be applied and to present an activity example. In this context, the research questions are as follows:

1) Which learning outcomes of the Life Science course are suitable for the P4C approach according to grade level?

2) Which learning outcomes of the Life Science course are suitable for the P4C approach according to the units?

3) What are the philosophical concepts that stand out in the learning outcomes of the Life Science course, which are suitable for the P4C approach?

## METHOD

### Research Model

In the study, an analytical research method was adopted. In the analytical research method, documents, and records are analyzed regarding various ideas (Mcmillan, 2004). Most educational research is classified as quantitative and qualitative research. Studies that do not fit these two classifications are called analytical studies. Analytical research includes qualitative and quantitative research features and is classified as historical analysis, legal analysis, concept analysis, and mixed method research. The researcher identifies, explores, and then synthesizes the data to understand the concept or a past event that is directly observable/unobservable. Context is essential in interpreting the data obtained. The analytical research model, which does not require direct interaction, is generally based on documented data collection and analysis (Mcmillan & Schumacher, 2014). Document analysis makes sense as a systematic process of examining or evaluating documents, and exploring and interpreting data to gain understanding and develop empirical knowledge (Bowen, 2009). For this reason, document analysis can be used as a method in a study, it can also be used as a data collection technique (O'Leary, 2017). In this context, the 2018 Life Science Curriculum outcomes were accepted as documents, and document analysis was used as a data collection technique.

### Data Sources and Data Collection Tool

The research data source is the Life Science course curriculum, which was implemented in 2018. The curriculum is open to everyone on the website of the Board of Education (TTKB). In the program consisting of 30 pages, only the unit titles and outcome statements were the research subjects. The researcher transferred the outcomes, unit titles, and different grade levels to a separate examination file. In this way, a checklist of Life Science course outcomes was created. The list includes columns on whether the outcome suits the P4C approach and which philosophical concept it may be associated with. An example of the checklist is presented in Table 1.

**Table 1. Checklist example**

| Outcome Number | Outcomes | For P4C | | Philosophical Concept(s) |
|---|---|---|---|---|
| | | Yes | No | |
| LS.1.1.12 | Follows school rules. | X | | Rule, Punishment |
| LS.2.1.1 | S/he introduces him/herself with different features. | X | | Ego, Identity, Empathy |
| LS.3.5.8 | Researches Atatürk's personality traits. | | X | |

The checklist was completed due to the examinations carried out by the researcher on the outcomes. After the researcher conducted his study, the outcomes were examined by a different field expert, and the checklist was completed. The field expert who carried out the review is an experienced lecturer as a P4C facilitator. The researcher is also a field expert who completed his doctoral thesis on P4C in the Life Science course and conducted P4C training at various times.

### Validity and Reliability of the Research

Instead of validity and reliability, the concepts included in a qualitative study, such as trustworthiness, transferability, invariability, and confirmability (Lincoln & Guba, 1985), were emphasized in the current study. For the study's trustworthiness, sample statements and outcomes related to the units are included in the findings section. The method of study for transferability is given in a clear and detailed manner; accessing the documents, the data included and excluded from the study, and the analysis process are presented in detail. Two field experts worked separately for the compatibility of the units and outcomes examined within the scope of the research with the P4C. For confirmability, the notes on the data analysis process of the study are kept under the control of other researchers.

### Data Analysis

In the examination with the help of the checklist, firstly, the outcomes were evaluated according to Bloom's taxonomy. It was agreed that the acquisitions at the knowledge, comprehension, and practice level are generally unsuitable for P4C activities. For example, knowledge-based outcomes such as "LS.1.1.9 Recognizes the school staff." or "LS.1.5.1 Knows where s/he lives" were evaluated as acquisitions unsuitable for P4C. It has been observed that such gains are generally higher at the first-grade level. After the researcher and the field expert carried out the evaluations at separate times, the researcher compared the checklist completed by the field expert with his list. The intercoder reliability calculation was carried out using the formula suggested by Miles and Huberman (2015). As a result of the analysis, the percentage of agreement between encoders was determined as .82. Reliability calculations of over 70% are considered reliable for research (Miles & Huberman, 2015). The result obtained here was accepted as reliable for the study. Then, a meeting was held with the field expert, and a consensus was reached on the relevant philosophical concepts after discussing the outcomes. The obtained data were analyzed by descriptive analysis. The data is systematically described in the descriptive analysis according to previously determined themes. The descriptions are explained, interpreted, and some results are reached in the context of cause-effect relationships (Yıldırım & Şimşek, 2008).

## RESULTS

The Life Science course 2018 curriculum consists of 6 units and 148 outcomes. In the research, firstly, it was tried to reveal the suitability of the Life Science course outcomes with the P4C approach. The number of outcomes according to the units and grade levels in compliance with P4C is presented in Table 2.

**Table 2. Number of outcomes according to units and grade levels**

| Units Grade levels | Life in Our School | | Life in Our Home | | Healthy Life | | Safe Life | | Life in Our Country | | Life in Nature | | Total Outcome | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No |
| 1 | 4 | 13 | 3 | 4 | 4 | 3 | 2 | 5 | 1 | 6 | 4 | 4 | 20 | 33 |
| 2 | 8 | 3 | 5 | 4 | 3 | 4 | 2 | 4 | 2 | 6 | 6 | 3 | 26 | 24 |
| 3 | 6 | 4 | 6 | 2 | 2 | 3 | 5 | 2 | 3 | 6 | 4 | 2 | 26 | 19 |
| Total | 18 | 20 | 14 | 10 | 9 | 10 | 9 | 11 | 6 | 18 | 14 | 9 | 72 | 76 |

When Table 2 is examined, it can be said that 72 outcomes out of 148 are suitable for P4C. Considering the grade levels, it is seen that 20 acquisitions are suitable for P4C activities, although most outcomes are at the first-grade level (n:53). This situation is considered to be expected. So much so that the process of preliminary reading and writing teaching and the fact that the age group does not have much information causes the first-grade outcomes to be more at the level of knowledge and comprehension. Twenty-six outcomes are considered suitable for P4C activities at the second and third-grade P4C activities. It can be said that as the grade level increases, more P4C activities can be included in the Life Science course.

As seen in Table 2 is examined in the context of the units; the outcomes related to the unit include "Life in Nature" (60.8%) and "Life in Our Home" (58.3%); It is seen that more outcomes from the units are appropriate. "Life in Our School" (47.3%) and "Healthy Life" (47.3%) units are proportionally equal. They are followed by "Safe Life" (45%) and "Life in Our Country" (25%), respectively. The research has tried to reveal the appropriate acquisitions for the P4C approach and the philosophical concepts they are related to. In this context, the achievements deemed appropriate in each unit, and the associated philosophical concepts are given in order of unit.

### Unit 1: Life in Our School

The Life in Our School unit consists of a total of 38 outcomes. In 18 of these outcomes, the P4C approach can be carried out in the teaching process. The outcome statements and the associated philosophical concepts are presented in Table 3.

**Table 3. The outcomes of the Life in Our School unit and philosophical concepts**

| Outcome statements | Philosophical Concept(s) | Grade Levels |
|---|---|---|
| Participates in the process of determining the classroom rules. | Rule, Punishment | 1 |
| Follows school rules. | Rule, Punishment | 1 |
| Follows the rules of courtesy when communicating at school. | Rule, Caring | 1 |
| Willing to participate and play games. | Friendship, Solitude | 1 |
| S/he introduces him/herself with different features. | Ego, Identity, Empathy | 2 |
| Respect individual differences. | Respect, Difference | 2 |
| Participates in decision-making processes on classroom issues. | Participation, Democracy | 2 |
| Follows the rules of working with the group in the classroom and in school activities. | Rule, Solitude, Cooperation | 2 |
| S/he expresses him/herself in understandable and clear language when communicating at school. | Communication, | 2 |
| Follows the rules of listening when communicating at school. | Rule, Communication | 2 |
| S/he obeys the rules while playing games with his/her friends at school. | Rule, Solitude | 2 |
| At school, s/he spends his/her money consciously in line with his needs. | Consumption, Need | 2 |
| Recognizes strengths and aspects that need to be strengthened. | Ego, Identity | 3 |
| S/he realizes how his/her behavior affects him/herself and his/her friends. | Caring, Empathy | 3 |
| S/he notices how the behavior of his/her friends affects him. | Friendship, Empathy | 3 |
| Comprehends the points to be considered in the friendship process. | Friendship | 3 |
| Recognizes the individual and social contributions of the school. | Education | 3 |
| Makes original suggestions for the effective and efficient use of school resources. | Consumption, Need | 3 |

In Life in Our School Life unit, getting to know the school and its operation, obeying the school rules, communicating at school, getting to see the school's immediate environment, participating in the decision-making processes in the classroom, helping with friends, and participating in group activities, drawing a sketch of the classroom and the school, researching the history of the school, and there are issues such as expressing their needs through democratic means. School life, the first structure with systematic, hierarchical rules, in which children are included after the family, offers many opportunities for P4C. Considering the topics in terms of P4C, it can be said that associations can be made with philosophical concepts such as rule, caring, consumption, need, friendship, respect for differences, and empathy. For example, for the outcome of "S/he introduces him/herself with different features." philosophical inquiries can be made on the outcome by carrying out on self or being himself. After presenting a stimulus, inquiries can be deepened by asking, "What makes me me?; Which features make us exist?; How can I be myself?" such questions.

### Unit 2: Life in Our Home

The Life in Our home unit consists of 24 learning outcomes. Fourteen of these outcomes were deemed appropriate for P4C activities. The outcome statements and the philosophical concepts associated with them are presented in Table 4.

**Table 4. The outcomes of the Life in Our Home unit and philosophical concepts**

| Outcome statements | Philosophical Concept(s) | Grade Levels |
|---|---|---|
| Understands the importance of family life. | Belonging, Existence-Absence | 1 |
| Follows the rules of courtesy when communicating with family members at home. | Rule, Carefully | 1 |
| Distinguish between wants and needs. | Consumption, Need, Freedom | 1 |
| Understands the importance of kinship relations. | Respect-Love, Helpfulness | 2 |
| At home, he realizes his duties and responsibilities. | Responsibility, Freedom | 2 |
| Participates in family decision-making processes. | Participation, Democracy | 2 |
| S/he is sensitive to people around him who need help. | Helpfulness, Good-Bad | 2 |
| List their wants and needs in order of priority. | Consumption, Freedom, Need | 2 |
| Compares the characteristics of the childhood periods of family elders with the parts of their childhood. | Time, Change | 3 |
| S/he gives examples of the importance of neighborhood relations for his/her family and himself. | Me and Others, Empathy | 3 |
| S/he fulfills his/her duties and responsibilities at home. | Responsibility, Diligence | 3 |
| S/he makes original suggestions for the effective and efficient use of resources at home. | Consumption, Need, Wealth-Absence | 3 |
| S/he gives examples of the contributions of being planned to his personal life. | Time, Planning, Responsibility, Freedom | 3 |
| While meeting his wishes and needs, S/he protects his and his family's budget. | Consumption, Need, Caring | 3 |

The Life in Our Home unit; is family, family life, family budget, kinship relations, family relations, responsibilities, and resources, such as the knowledge and skills children may encounter daily. In this context, it can be said that daily life actions are related to many philosophical concepts. When Table 4 is examined, P4C activities can be carried out by associating many philosophical concepts such as existence-absence, belonging, responsibility, freedom, consumption, empathy, helpfulness, time, need, and good-bad with the outcomes of the Life in Our Home unit. For example, philosophical inquiries on responsibility and freedom can be carried out to the learning outcome of "fulfilling duties and responsibilities at home." P4C sessions can be conducted by presenting an appropriate stimulus with questions such as "What can happen if responsibilities are not fulfilled?; Do our responsibilities hinder our freedom? What does freedom mean?"

### Unit 3: Healthy Life

The Healthy Life unit consists of a total of 19 learning outcomes. Nine of these outcomes were deemed appropriate for P4C activities. The outcome statements and the associated philosophical concepts are presented in Table 5.

**Table 5. The outcomes of the Healthy Life unit and philosophical concepts**

| Outcome statements | Philosophical Concept(s) | Grade Levels |
|---|---|---|
| S/he realizes the precautions he should take to protect his health. | Balance, Freedom | 1 |
| S/he chooses foods and drinks that are beneficial for his health. | Moderation, Knowing-Not Knowing | 1 |
| S/he is fed in accordance with the meals and balanced throughout the day. | Balance, Freedom | 1 |
| S/he obeys etiquette while eating. | Rule, Punishment | 1 |
| Prepares a list of meals suitable for a balanced diet. | Balance | 2 |
| S/he obeys etiquette while eating. | Rule, Punishment | 2 |
| Explain the necessity of cleaning for a healthy life. | Happiness, Cleanliness-Pollution | 2 |
| Demonstrates conscious consumer behavior while purchasing food and beverages. | Consumption, Freedom, Need | 3 |
| S/he eats adequate and balanced nutrition to maintain their health. | Balance | 3 |

Healthy Life unit; emphasizes the necessity of paying attention to personal hygiene by comprehending the relationship between nutrition and children's health with topics such as personal care, balanced nutrition, food groups, etiquette, and conscious consumption. In this context, "balance" comes to the fore from a philosophical point of view. "Can't we eat whatever we want?; Isn't freedom to do what we want?; What is it to be measured? Why should we act in moderation?" such questions can be used as questions to deepen the inquiry.

### Unit 4: Safe Life

The Safe Life unit consists of 20 learning outcomes in total. Nine of these outcomes were deemed appropriate for P4C activities. The outcome statements and the associated philosophical concepts are presented in Table 7.

**Table 7. The outcomes of the Safe Life unit and philosophical concepts**

| Outcome statements | Philosophical Concept(s) | Grade Levels |
|---|---|---|
| Follows safety rules at school and home. | Rule, Punishment | 1 |
| S/he obeys the traffic rules on his way to and from school. | Rule, Punishment, Responsibility | 1 |
| S/he helps individuals who need assistance in traffic. | Helpfulness, Good-Bad | 2 |
| Be sensitive about the safe use of technological tools and equipment. | Technology-People, Responsibility | 2 |
| Introduces traffic signs and signposts. | Knowing-Not Knowing | 3 |
| Gives examples of the necessity of obeying the rules in traffic. | Rule, Punishment, Responsibility, Freedom | 3 |
| Explains what to do in an emergency and who to ask for help. | Good-Bad | 3 |
| Explains what to do when someone threatens their safety and who to ask for help. | Good-Bad | 3 |
| S/he gives examples of what he can do when faced with a situation that threatens his safety in his daily life. | Good-Bad | 3 |

Safe Life unit has content aimed at gaining knowledge, skills, and attitudes about daily dangerous situations children may encounter. It is an essential unit for them to lead a safe life at school, at home, in traffic, on the street, and in their relations with technology. In this context, interrelated concepts such as "rule-punishment-freedom-responsibility" stand out for P4C activities. In addition, the concepts of good and bad in the learning outcomes of the third grade can be used for P4C

activities. For example, we can deepen the acquisition and make philosophical inquiries by asking questions such as; "How do we decide whether a person is good or bad? Is it good/evil behavior? Is it on purpose?" for the outcome that "Explains what to do when someone threatens their safety and who to ask for help."

### Unit 5: Life in Our Country

The Life in Our Country unit consists of 24 learning outcomes. Six of these outcomes were deemed appropriate for P4C activities. The outcome statements and the philosophical concepts associated with them are presented in Table 8.

**Table 8. The outcomes of Life in Our Country and Philosophical Concepts**

| Outcome statements | Philosophical Concept(s) | Grade Levels |
|---|---|---|
| S/he realizes in our country that, he lives with people from different cultures. | Diversity, Respect | 1 |
| Researches the cultural heritage items in the immediate environment. | Time, Belonging | 2 |
| S/he respects the lifestyles and habits of people from different cultures in our country. | Diversity, Respect | 2 |
| Recognize the administrative units and managers in the immediate vicinity. | Knowing-Not Knowing | 3 |
| Explains the form of government of our country. | Manage-To Be Managed | 3 |
| S/he establishes a relationship between developing his country and fulfilling his duties and responsibilities. | Responsibility, Freedom, Duty | 3 |

Life in Our Country unit contains topics from the past to the future, such as the general characteristics of our country, the life of Atatürk, the management style of our country, national and religious holidays, different cultures, and cultural heritage items. In this context, it is thought that P4C sessions can be conducted with concepts such as difference, respect, time, management, responsibility, and freedom. For example, discussions on epistemology can be conducted on the concepts of knowing-not knowing, which are preferred for learning outcomes that "Recognize the administrative units and managers in the immediate vicinity." In this outcome, inquiries can be made on the contribution of getting to know the administrative units and managers, based on whether the information learned at school is essential and what it will do to understand.

### Unit 6: Life in Nature

The life in Nature unit consists of 23 learning outcomes. The P4C approach can be applied in the teaching process of 14 of these outcomes. The outcome statements and the philosophical concepts they are associated with are presented in Table 9.

**Table 9. The outcomes of Life in Nature unit and philosophical concepts**

| Outcome statements | Philosophical Concept(s) | Grade Levels |
|---|---|---|
| S/he takes care to protect the animals and plants in his immediate vicinity. | Life-Death, Carefully | 1 |
| Be sensitive about keeping nature and its environment clean. | Nature-Human | 1 |
| Distinguish the materials that can be recycled. | Consumption, Need | 1 |
| Comprehends the changes in nature according to the seasons. | Time, Change | 1 |
| Compares the conditions necessary for the survival of plants and animals. | Life-Death | 2 |
| Realizes the importance of growing plants and feeding animals. | Knowing-Not Knowing | 2 |
| Gives examples of the effects of natural elements in the immediate environment on human life. | Nature-Human, Good-Bad | 2 |
| It contributes to the recycling of consumed materials. | Consumption, Need | 2 |
| Explains natural events and measures that can be taken against natural disasters. | Knowing-Not Knowing | 3 |
| Investigates the effects of the shape and movements of the Earth on human life. | Knowing-Not Knowing | 3 |
| Understands the importance of plants and animals in terms of human life. | Knowing-Not Knowing | 3 |
| S/he gives examples of the influence of people on natural elements from his immediate surroundings. | Nature-Human, Good-Bad | 3 |
| Takes responsibility for protecting nature and the environment. | Responsibility, Nature-Human | 3 |
| S/he gives examples of the contribution of recycling to himself and the environment he lives in. | Consumption, Need | 3 |

Life in Nature unit reflects the content of positive and negative results that may occur due to nature-human interaction with all-natural elements around and living together with human beings. P4C sessions on nature-human interaction can be conducted in the unit. Concepts such as life-death, consumption, need, time, good-bad-knowing-not knowing, and responsibility are seen as t concepts. For example, inquiries on natural philosophy can be made for the outcome that "He gives examples of the influence of people on natural elements from his immediate environment." As a result of nature-human interaction, about the damages that people have done to nature to make their life easier, P4C activities can be carried out by asking questions such as, "Is it more important that people make life easier, or is it more important to protect nature?"

The word cloud regarding the emerging concepts is presented in Figure 1 when a general look at the outcomes of the Life Science course that are suitable for P4C.



**Figure 1. Word cloud for prominent concepts**

When Figure 1 is examined, it can be said that concepts such as rule, punishment, responsibility, and freedom come to the fore. In addition, concepts such as consumption, need, good-bad, balance, empathy, respect, friendship, happiness, and nature-human are also suitable for P4C activities. When the concepts are examined, it is seen that they are related to the root values such as friendship, self-control, respect, love, responsibility, and helpfulness (MoNE, 2018). Therefore, the P4C approach in the Life Science course can also contribute to values education.

## DISCUSSION AND CONCLUSION

In this research, which was carried out to reveal how the P4C approach can be applied as a teaching approach in the Life Science course, it has been shown that the P4C approach can be applied in 72 of the 148 Life Science course outcomes. The philosophical concepts that emerged after the examination were divided according to the units. Emerging concepts; rule, punishment, responsibility, freedom, friendship, respect, love, communication, carefully, belonging, time, diligence, consumption, happiness, individual and society, good-bad, nature-human, life-death, and balance. While a single concept can be handled in outcomes, more than one can also be addressed. For example, the concepts of responsibility, rule, punishment, and freedom can be taken together in an activity to be prepared for, "It gives examples of the necessity of following the rules in traffic." It can be said that the Philosophy for Children approach can be used in many acquisitions in the Life Science course.

In the Life Science course, children will experience how to think in these disciplines with the P4C approach while gaining knowledge and skills in history, geography, economics, science, and ethics. Communication skills will also develop during this experience. As a result of the research, it can be said that some values in the Life Science curriculum can be taught through the P4C approach. It is seen that the concepts such as love, respect, responsibility, empathy, and good-bad are associated with values or moral education and P4C activities to be carried out on these concepts will emphasize the ethical reasoning approach in values education. There are many studies on values education through the P4C approach (Cam, 2014; Garcia-Moriyon, etc., 2020; Lomaca & Chiado, 2019).

The topics of citizenship, democracy, and media literacy also constitute the content of the life science course. Philosophical concepts such as rule, punishment, freedom, duty, responsibility, democracy, and diversity emerged in this research and can be used in P4C pieces of training on these topics. In the studies carried out in the literature, discussions were made on the necessity of addressing these concepts in P4C sessions (Bleazby, 2006; Burgh & Yorshansky, 2011; Cleary, 2011; Dombaycı, 2014; Garrat & Piper, 2011; Splitter, 2011). For example, in his work, Dombaycı (2014) discussed what the basic concepts of democratic citizenship education should be in P4C. These concepts include government, justice, law, freedom, democracy, authority, family, law and crime, friendship, diversity, human nature, cooperation, etc. is handled. The concepts are the common themes of political philosophy and democratic citizenship and are discussed in the social inquiry dimension of philosophy (Dombaycı, 2014). As a result of this research, it is seen that similar concepts have been reached in the dimension of citizenship education, especially in the unit of Life in Our Country.

In the research on P4C approach in social studies and science courses (Akkocaoğlu-Çayır, 2021; Dunlop, 2016; Ferreira, 2004; Özdemir, 2021; Pala, 2022) concepts such as justice, need, consumption, rules, human-animal, human-nature, human-technology, balance, scientific process, friendship, respect have emerged. In the research conducted by Pala (2022), the 10-week practice was conducted for the "Technology and Life" unit in the social studies textbook. Technology is one of the subjects of the Life Science course. Ferreira (2004) conducted research on P4C in teaching basic science process skills to fifth-grade students and conducted P4C sessions on the concepts of discovery/invention, living things, classification, observation, and inference. In this study, it was concluded that the outcomes in the Life in Nature and Healthy Life units, which can be related to the science course are in accordance with the P4C approach on concepts such as balance, vitality, and life/death.

When the studies in the literature in which the P4C approach is used in the Life Science course are examined, it can be said that similar results have been reached. In the research carried out by Kaya (2020), P4C activities were prepared for the outcome of "S/he introducing himself with different features" in the Life in Our School unit. Activities have been associated with philosophy through concepts such as identity, change, self-awareness, and empathy. In the research conducted by Boyraz (2019), P4C activities were prepared with the outcomes of Safe Life and Life in Our Country units. When the concepts associated with the outcomes are examined, it is seen that the concepts such as rule, responsibility, duty, good-bad, knowing, and not-knowing are used. Similar findings were obtained in this study.

A philosophical topic or concept should be associated with the outcome to prepare a P4C activity for the Life Science course outcomes. This association will provide a framework for possible questions during the inquiry. While organizing the activities, stimuli that may attract students' attention, contain dilemmas, and have philosophical content should be identified or recreated. Based on these stimuli, open-ended questions should be prepared that will lead students to dilemmas, enrich the discussion environment in the classroom, and deepen their thoughts. While preparing the questions, care should be taken to ensure they are suitable for Phil Cam's Question Quadrant. In this quadrant, closed/open-ended questions about the text will initiate philosophical discussion (Cam, 2003). Preparing notes for the teacher on possible answers and questions from the students is recommended. At the same time, they are being designed so that the teachers can use the activities efficiently. In addition, the approximate duration of each step will be a guide for teachers. A lesson

plan has been prepared for the outcome: "S/he gives examples of what s/he can do when faced with a situation that threatens his/her safety in daily life." Situations threatening security in daily life, peer pressure, terrorism, war, and natural disasters are stated in the outcome. The lesson plan made up of the stages suggested by Fisher (2007) is presented as an appendix.

Although the P4C approach has many positive gains, the approach has some limitations in practice. Limitations; time, facilitator training, class size, the physical environment, and lack of activity. In terms of time, P4C sessions are a process that requires long dialogues and patience. This process can sometimes be spread over several course hours. In addition, teachers should adopt the role of the teacher in the P4C approach and be able to put it into practice. This can be achieved with qualified P4C facilitator training. Classroom size and physical environment are important limitations of the P4C approach. It is impossible to apply the approach in crowded and physically narrow classrooms as in contemporary teaching methods and techniques. One of the important elements in the implementation of the approach is the classroom layout. Since it will be implemented with a horseshoe, circle, or "U" shaped classroom layout, the classroom should be physically comprehensive. In addition, when the class size exceeds 20 students, it will be inevitable to experience problems with classroom management since too much thought, and therefore noise will occur. For this reason, applying it in a qualified way is very difficult in classes with more than 20 students. Based on this study, Life Science course activity books can be prepared for teachers. In this way, teachers can conduct P4C sessions in their classrooms.

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No potential conflict of interest was declared by the authors.

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**APPENDIX**

A sample lesson plan for P4C in the life sciences course

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**Lesson:** Life Sciences
**Class Level:** 3
**Duration:** 40+40
**Unit:** Safe Life
**Concepts:** Good-Bad
**Outcome:** HB.3.4.6. S/he gives examples of what s/he can do when faced with a situation that threatens his/her safety in daily life.
*Extraordinary situations, Peer pressure, people and groups that are the source of crime, terrorism, and what to do during war, earthquake, and flood are emphasized.*

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**First lesson**
**FOCUSING EXERCISE**
At the beginning of the lesson, the teacher reminds the class of the rules that must be followed for P4C.
**SHARING A STIMULUS**
The lesson begins with a video of one of the earthquakes. After watching the video, the lesson starts with the following question.
**THINKING TIME**
**Question:** Do you think the earthquake is bad? Why?
**Note for the teacher:** A short inquiry is made on this question. Students are less likely to say, "earthquake is not bad". At this point, when students use the argument "the earthquake is bad because people die", they are asked to estimate the number of people who lost their lives in the 7.4 magnitude earthquake in 2016 in Japan and the 7.4 magnitude earthquake in 1999 in Gölcük. After the estimates are received, the actual numbers are announced. (Gölcük earthquake: 17.480 people, Japan: No loss of life). In Japan, people did not die in the earthquake; the question should be asked aren't earthquakes in Japan bad? **(Approximately 15-20 min.)**
**QUESTIONING**
**Question:** Is earthquake bad for people in Japan too?
**Question:** What could be the reasons for such a significant difference in the number of casualties despite the earthquakes of the same intensity in two different countries? **(Approximately 10 min.)**
**Note for the teacher:** Students' answers should be written on the board. Inquiries are continued based on the answers given. Alternative ideas should be sought; the teacher should act as if they are part of the group.
**DISCUSSION**
**Conceptual Question:** Can the words good and bad have different meanings? **(Approximately 10 min.)**
**Note for the teacher:** While earthquakes cause significant damage in one country, it does not work in another. In this case, it is not the bad earthquake but people's choices. Houses built with the wrong materials in the wrong areas are damaging. It would be more correct to use the word harmful for natural events such as earthquakes/floods here, not the word bad. Students will be expected to realize that they should not use the word bad for natural events such as earthquakes or consciousness. It is not right to use the concept of good instead of useful, beautiful, right; bad instead of harmful, ugly, wrong. Good and bad concepts are moral and can only be used for human behavior.

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**Second Lesson**
**Sub-questions:** Is it correct to use the words good/bad for natural events or phenomena without consciousness or intention, such as earthquakes, floods, and wars? If not, what should we use instead? **(Approximately 20 min.)**
**Note for the teacher:** Examples can be given for students to find concepts such as beneficial/harmful, true/false, and beautiful/ugly.
**PLENARY**
**Question for the Outcome:** What should we do to avoid situations such as earthquakes or floods with the least damage? What measures should we take? **(Approximately 20 min.)**
**Note for the teacher:** Ask students to summarize what has been said. The students should ask for individual answers regarding disasters such as earthquakes and floods, and a to-do list should be written on the board.