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EXAMINATION OF ASSESSMENT AND EVALUATION ACTIVITIES OF SECONDARY SCHOOL 9TH AND 10TH GRADE PHYSICS TEXTBOOKS IN TERMS OF REVISED BLOOM TAXONOMY AND SCIENCE LITERACY COMPETENCE LEVELS: A SAMPLE OF TURKEY[i]

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Abstract:
The purpose of this research is to examine assessment and evaluation activities of secondary school 9th and 10th grade physics textbooks in Turkey according to the revised Bloom Taxonomy and PISA science literacy competence levels. In this study document review, a qualitative research method was used. Within the scope of the study, assessment tools of 9th and 10th grade secondary school physics textbooks which are recommended by the Ministry of Education (Turkey) to be used in the 2017-2018 academic year were examined. As a result of the study, assessment and evaluation activities of 9th and 10th grade physics textbooks were found to meet generally 1, 2, 3 and 4 levels of PISA Science literacy competence levels. Moreover, when the same activities were examined according to the revised Bloom Taxonomy, the vast majority of the assessment activities are at the factual and conceptual level of the knowledge accumulation dimension, and at the applying and understanding sub-dimensions of the cognitive process dimension.

Keywords: physics education, assessment and evaluation

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1. Introduction

The PISA (Program for Student Assessment) is a three-year screening research of the knowledge and skills gained by 15-year-old children in leading industrialized countries (The Ministry of National Education (MoNE) National PISA Report, 2005]. PISA is one of the most comprehensive researches organized by the Organization for Economic Co-Operation and Development (OECD) (MoNE National PISA Report, 2015).

PISA focuses on the ability of young people to use their knowledge and skills to overcome the challenges they face in everyday life (MoNE National PISA Report, 2010). As a result of this research, different countries and cultures can be compared and specialty services can be utilized. With the PISA exam, answers to the following questions are sought (MoNE National PISA Report, 2005):

- To what extent are the students in the age group of fifteen ready to solve the problems they will face in the information society?
- To what extent do the students in the age group of fifteen understand when they read complex reading material that they will face in everyday life?
- To what extent do students in the age group of fifteen use what they learn in school mathematics and science lessons in a world order based on technology and scientific development?
- To what extent do the students in the age group of fifteen have the knowledge and skills necessary to participate effectively in community life?
- To what extent do the factors such as interest to the course, way and motivation of learning, observed in students in the age group of fifteen affect performance?

1.1 PISA Science Literacy

In the light of new developments and updates in science and technology, the importance of science education in reaching a modern society is quite high. PISA's scientific assessments are not only about how well the achievements in curricula and programs are learned, but also about the application of knowledge and skills to the real life. In this context, the assessment field is expressed as "science literacy".

PISA has identified three different competency areas for science literacy. The skills expected from students in relation to science competency in the context of assessing science literacy; "*Explain Phenomena Scientifically*", "*Design and Evaluate Scientific Enquiry*", and "*Interpret of Data and Evidence Scientifically*". (MoNE National PISA Report, 2016).

1.2 Competency Levels of PISA Science Literacy

PISA has identified three different competency areas for four different assessment frameworks for science literacy. According to this definition, students are evaluated according to seven different levels. These levels are shown in Table 1.

Table 1: Competency Levels of PISA Science Literacy

Level	Descriptor
6	At Level 6, students are able to use content, procedural and epistemic knowledge to consistently provide explanations, evaluate and design scientific enquiries, and interpret data in a variety of complex life situations that require a high level of cognitive demand. They can draw appropriate inferences from a range of different complex data sources, in a variety of contexts and provide explanations of multi-step causal relationships. They can consistently distinguish scientific and non-scientific questions, explain the purposes of enquiry, and control relevant variables in a given scientific enquiry or any experimental design of their own. They can transform data representations, interpret complex data and demonstrate an ability to make appropriate judgments about the reliability and accuracy of any scientific claims. Level 6 students consistently demonstrate advanced scientific thinking and reasoning requiring the use of models and abstract ideas and use such reasoning in unfamiliar and complex situations. They can develop arguments to critique and evaluate explanations, models, interpretations of data and proposed experimental designs in a range of personal, local and global contexts.
5	At Level 5, students are able to use content, procedural and epistemic knowledge to provide explanations, evaluate and design scientific enquiries and interpret data in a variety of life situations in some but not all cases of high cognitive demand. They draw inferences from complex data sources, in a variety of contexts and can explain some multi-step causal relationships. Generally, they can distinguish scientific and non-scientific questions, explain the purposes of enquiry, and control relevant variables in a given scientific enquiry or any experimental design of their own. They can transform some data representations, interpret complex data and demonstrate an ability to make appropriate judgments about the reliability and accuracy of any scientific claims. Level 5 students show evidence of advanced scientific thinking and reasoning requiring the use of models and abstract ideas and use such reasoning in unfamiliar and complex situations. They can develop arguments to critique and evaluate explanations, models, interpretations of data and proposed experimental designs in some but not all personal, local and global contexts.
4.	At Level 4, students are able to use content, procedural and epistemic knowledge to provide explanations, evaluate and design scientific enquiries and interpret data in a variety of given life situations that require mostly a medium level of cognitive demand. They can draw inferences from different data sources, in a variety of contexts and can explain causal relationships. They can distinguish scientific and non-scientific questions, and control variables in some but not all scientific enquiry or in an experimental design of their own. They can transform and interpret data and have some understanding about the confidence held about any scientific claims. Level 4 students show evidence of linked scientific thinking and reasoning and can apply this to unfamiliar situations. Students can also develop simple arguments to question and critically analyse explanations, models, interpretations of data and proposed experimental designs in some personal, local and global contexts.
3.	At Level 3, students are able to use content, procedural and epistemic knowledge to provide explanations, evaluate and design scientific enquiries and interpret data in some given life situations that require at most a medium level of cognitive demand. They are able to draw a few inferences from different data sources, in a variety of contexts, and can describe and partially explain simple causal relationships. They can distinguish some scientific and non-scientific questions, and control some variables in a given scientific enquiry or in an experimental design of their own. They can transform and interpret simple data and are able to comment on the confidence of scientific claims. Level 3 students show some evidence of linked scientific thinking and reasoning, usually applied to familiar situations. Students can develop partial arguments to question and critically analyse explanations, models, interpretations of data and proposed experimental designs in some personal, local and global contexts.

2.	. At Level 2, students are able to use content, procedural and epistemic knowledge to provide explanations, evaluate and design scientific enquiries and interpret data in some given familiar life situations that require mostly a low level of cognitive demand. They are able to make a few inferences from different sources of data, in few contexts, and can describe simple causal relationships. They can distinguish some simple scientific and non-scientific questions, and distinguish between independent and dependent variables in a given scientific enquiry or in a simple experimental design of their own. They can transform and describe simple data, identify straightforward errors, and make some valid comments on the trustworthiness of scientific claims. Students can develop partial arguments to question and comment on the merits of competing explanations, interpretations of data and proposed experimental designs in some personal, local and global contexts.
1 a	At Level 1a, students are able to use a little content, procedural and epistemic knowledge to provide explanations, evaluate and design scientific enquiries and interpret data in a few familiar life situations that require a low level of cognitive demand. They are able to use a few simple sources of data, in a few contexts and can describe some very simple causal relationships. They can distinguish some simple scientific and non-scientific questions, and identify the independent variable in a given scientific enquiry or in a simple experimental design of their own. They can partially transform and describe simple data and apply them directly to a few familiar situations. Students can comment on the merits of competing explanations, interpretations of data and proposed experimental designs in some very familiar personal, local and global contexts.
1 b	At Level 1b, students demonstrate a little evidence to use content, procedural and epistemic knowledge to provide explanations, evaluate and design scientific enquiries and interpret data in a few familiar life situations that require a low level of cognitive demand. They are able to identify straightforward patterns in simple sources of data in a few familiar contexts and can offer attempts at describing simple causal relationships. They can identify the independent variable in a given scientific enquiry or in a simple design of their own. They attempt to transform and describe simple data and apply them directly to a few familiar situations.

Source: MoNE National PISA Report, 2016

1.3 Revised Bloom Taxonomy

In 1995-1996, experts led by Anderson and Krathwohl worked on the first taxonomy that Bloom had prepared and presented a new classification (Anderson et al., 2010)

1.4 Knowledge Dimension

In the revised taxonomy, the knowledge dimension is organized to support the sub-structure of the cognitive process dimension from simple to complex. This new approach does not only associate knowledge with a content, but also to treat it as a knowledge accumulation that helps fulfill cognitive processes (Anderson et al., 2010).
The knowledge dimension resembles sub-steps of the information step in the original taxonomy. The knowledge dimension is divided into four sub-steps.

1.5 Factual Knowledge

It can be expressed as the type of knowledge that covers all the essential elements that are used while trying to understand related skills and to act coherently and systematically (Anderson et al., 2014). At this stage, students define a discipline and include the basic knowledge they need to know in order to solve the problem they encounter in the discipline.

1.6 Conceptual Knowledge

It includes knowledge of the relationships between information of categories and classification and more complex and organized knowledge forms. Schemes include models that are obtained as a result of mental models and theories and provide a more systematic understanding of the relationship between the organized form of a given subject and the subject's pieces of information (Anderson and Krathwohl, 2014).

1.7 Procedural Knowledge

It a kind of information about how to do something and which way or order to follow while doing it. Operational information also includes information on constraints used when making determinations about the conditions and the appropriate time (Anderson and Krathwohl, 2014).

1.8 Metacognitive Information

Metacognitive knowledge refers to knowledge of the individual about one's own cognition. It involves the knowledge of the students about themselves through strategic, cognitive tasks, contextual, and conditional information (Krathwohl, 2002).

1.9 Cognitive Process Dimension

The classification called the cognitive domain in the original Bloom Taxonomy is organized as a cognitive process dimension by making some changes, in which four steps have been renamed and the two steps have been repositioned. Cognitive process dimension refers to the action dimension of the achievements. The categorization of cognitive goals involves thinking skills from simple to difficult. At this dimension there are six steps involving mental processes.

A. Remember

It is the process of retrieving the knowledge, material, or objectives given to the student from long term memory. Remember can be factual, conceptual, procedural, and metacognitive knowledge as well as a combination of several (Anderson et al., 2014).

B. Understand

A new meaning that is created by the students by structuring information presented in various forms shows the students attain level of understanding (Anderson ve Krathwohl, 2014, p. 91). Understanding is a process of extracting conclusions from messages containing verbal, written and graphical communication (Krathwohl, 2002).

C. Apply

Applying is a step that involves putting together the items given in the educational process to reveal a coherent or functional whole. The important point is to determine both the process of research and problem solving (Ayvacı and Türkdoğan, 2010).

D. Analyze

Analyzing involves dividing the material into its constituent parts and explaining how one part relates to the other part or entire (Mayer, 2002).

E. Evaluation

It is defined as making judgments based on criteria and standards. The evaluation category includes cognitive processes called checking (control in terms of internal consistency) and critiquing (judgment based on external criteria). The most important thing that distinguishes judgment from evaluation is that evaluııtion uses performance standards based on clearly defined criteria in (Anderson et al., 2014).

F. Create

The creation step involves organizing the pieces together in a way never before, so that the pieces will form a whole. Students are often able to perform creation based on own previous knowledge and to coordinate own experience and develop individual skill (Anderson et al., 2014).

1.10 Success Status of Turkey's in PISA Science Literacy

After the first time participation in the PISA assessment exam in 2003 Turkey has made progress on science, math and reading skill areas and could increase scores and has taken a place in upper ranks among the countries. However, according to the PISA 2015 report, in contrast to these developments Turkey declined to the performance of 2003. It is obvious that there are more than one factor in assessing Turkey's current success. One of them is that the level consistency of the assessment approach that is being used in Turkey with the PISA. In this regard, analysis of the current success of Turkey will become easier by comparing assessment approaches of the Ministry of Education and the PISA.

2. Methodology

In this study document review, a qualitative research method was used. Document review includes analysis of written materials containing information on the cases or phenomena that are aimed for examination (Yıldırım and Şimşek, 2013).

2.1 Purpose of the Study

In this study, assessment and evaluation activities of 9th and 10th grade secondary school physics textbooks which are recommended by the Ministry of Education to be used in the 2017-2018 academic year were examined. In this context, assessment and evaluation activities of the secondary school 9th and 10th grade physics textbooks used in Turkey were compared by examining the PISA science literacy and the revised Bloom Taxonomy competence levels. The answers for the following question were sought in the study:

- How are the assessment results of assessment and evaluation activities of 9th and 10th grade physics textbooks of Ministry of Education according to the revised Bloom Taxonomy?
- How are the assessment results of assessment and evaluation activities of 9th and 10th grade physics textbooks of Ministry of Education according to the PISA science literacy competence levels?

2.2 Data Collection

Secondary school 9th and 10th grade physics textbooks, were published by the Ministry of Education, were reached through the official website, and were examined. In the scope of the study, the textbooks in Table 2 were examined.

Table 2: Examined Physics Textbooks

The name of the book	Authors	Publisher
Secondary School Science High School Physics 9	Hasan Bacak, Ilke Erzacan, Süleyman Semih Gök, Tahsin Demirciler, Veli Yügünt	MoNE
Secondary Physics 10 textbook	Yaşar Aydoğdu, Erdal Dedeoğlu	Ada Publishing

2.3 Analysis of Data

"*Unit preparation questions*", "*sample questions*" and "*end of unit assessment questions*" in 9th and 10th grade physics textbooks were determined and tables of specifications were prepared.

The tables of specifications obtained from the data obtained were examined by the researcher, two experts in the field of physics education to ensure the reliability of the study the collected data were classified thematically, and the findings were analyzed by content analysis.

The results obtained were calculated by the formula of agreement and the ratio of the data that have agreement. By using Agreement = Agreement / (Agreement + Disagreement) * 100 formula, 93% agreement was calculated for researcher and expert in terms of the revised Bloom Taxonomy and 96% in terms of the PISA Science Literacy competence level. This ratio indicates that the consistency of research data obtained by two different experts is high (Miles and Huberman, 1994, as cited in Şahin, 2011)

3. Results

3.1 Assessment of assessment and evaluation activities of MoNE's 9th and 10th grade physics textbooks in terms of the Revised Bloom Taxonomy

In this part of the study, assessment and evaluation activities were evaluated and tabulated in terms of frequency and percentage according to the revised Bloom Taxonomy's "knowledge accumulation dimension" and "cognitive process dimension". Assessment of six assessment and evaluation activities of secondary school 9th grade physics textbook according to the revised Bloom Taxonomy is given in Table 3..

Table 3: Assessment of Assessment-Evaluation Activities in 9th grade Physics textbook according to the Bloom Taxonomy

	Knowledge accumulation	Cognitive Process Dimension							
		Remember	Understand	Apply	Analyze	Evaluation	Create	T.	%
Unit 1	Factual	35	5	0	0	0	0	40	83.33
	Conceptual	2	4	0	0	1	0	7	14.58
	Operational	0	0	1	0	0	0	1	2.08
	Metacognitive	0	0	0	0	0	0	0	0
	Total	37	9	1	0	1	0	48	100
	Percentage	77.08	18.75	2.08	0	2.08	0		
Unit 2	Factual	14	13	1	0	0	0	28	35.44
	Conceptual	2	13	30	2	0	0	47	59.49
	Operational	0	2	0	1	1	0	4	5.06
	Metacognitive	0	0	0	0	0	0	0	0
	Total	16	28	31	3	1	0	79	100
	Percentage	20.25	35.44	39.24	3.79	1.26	0		
Unit 3	Factual	17	6	6	0	0	0	29	41.42
	Conceptual	1	7	26	2	2	0	38	54.28
	Operational	0	0	1	1	1	0	3	4.28
	Metacognitive	0	0	0	0	0	0	0	0
	Total	18	13	33	3	3	0	70	100
	Percentage	25.71	18.57	47.14	4.28	4.28	0		
Unit 4	Factual	11	3	0	0	0	0	14	20
	Conceptual	0	11	21	7	1	0	40	57.14
	Operational	0	1	3	9	0	0	13	18.57
	Metacognitive	0	1	0	2	0	0	3	4.28
	Total	11	16	24	18	1	0	70	100
	Percentage	15.71	22.85	34.28	25.71	1.42	0		
Unit 5	Factual	2	9	0	0	0	0	11	15.27
	Conceptual	1	15	12	14	0	0	42	58.33
	Operational	0	4	8	5	0	0	17	23.61
	Metacognitive	0	0	0	1	1	0	2	2.77
	Total	3	28	20	20	1	0	72	100
	Percentage	4.16	38.88	27.77	27.77	1.38	0		
Unit 6	Factual	1	5	0	0	0	0	6	10.24
	Conceptual	0	14	4	6	0	0	24	41.37
	Operational	0	8	11	8	0	0	27	46.55
	Metacognitive	0	0	0	1	0	0	1	1.72
	Total	1	27	15	15	0	0	57	100
	Percentage	1.72	46.55	25.86	25.86	0	0		

When Table 3 is examined, it is seen that assessment-evaluation activities on conceptual knowledge dimension in units 2, 3, 4 and 5 are higher than the other dimensions when assessment-evaluation activities in the 9th grade physics textbook are evaluated according to the knowledge accumulation dimension of the revised Bloom Taxonomy. It is observed that the assessment and evaluation activities in the first unit are collected in the factual information dimension and the assessment and evaluation activities in the sixth unit are in the factual, conceptual and operational dimensions in percent.

It is also noteworthy that the assessment and evaluation activities on the metacognitive level are low in percentage and that it is not included in each unit. When the assessment and evaluation activities in the units are evaluated according to the cognitive process dimension of the revised Bloom Taxonomy, it is also noteworthy that the questions are at the level of remembering, understanding and analyzing, which are the sub-steps of the taxonomy, and that in terms of upper steps, the questions in the evaluation level are less in percent and there is no question at creating level.

Assessment of assessment and evaluation activities of the six units of the 10th grade physics textbook of secondary school according to the revised Bloom Taxonomy is given in Table 4.

Table 4: Assessment of Assessment-Evaluation Activities in 10th grade Physics textbook according to the Bloom Taxonomy

	Knowledge accumulation	Cognitive Process Dimension							
		Remember	Understand	Apply	Analyze	Evaluation	Create	Total	%
Unit 1	Factual	12	18	0	1	0	0	31	38.75
	Conceptual	1	25	9	9	0	0	44	55
	Operational	0	1	0	4	0	0	5	6.25
	Metacognitive	0	0	0	0	0	0	0	0
	Total	13	44	9	14	0	0	80	100
	Percentage	16.25	55	11.25	17.5	0	0		
Unit 2	Factual	33	10	0	1	0	0	44	34.64
	Conceptual	4	12	5	25	0	0	46	36.22
	Operational	0	3	12	21	0	0	36	28.34
	Metacognitive	0	0	0	1	0	0	1	0.78
	Total	37	25	17	48	0	0	127	100
	Percentage	29.13	19.68	13.38	37.79	0	0		
Unit 3	Factual	33	6	0	5	0	0	44	39.28
	Conceptual	0	13	6	14	0	0	33	29.46
	Operational	0	5	17	11	0	0	33	29.46
	Metacognitive	0	0	0	2	0	0	2	1.78
	Total	33	24	23	32	0	0	112	100
	Percentage	29.46	21.42	20.53	28.57	0	0		
Unit 4	Factual	28	16	0	3	0	0	47	31.54
	Conceptual	1	15	1	24	0	0	41	27.51
	Operational	0	11	24	26	0	0	61	40.93
	Metacognitive	0	0	0	0	0	0	0	0
	Total	29	42	25	53	0	0	149	100
	Percentage	19.46	28.18	16.77	35.57	0	0		

When Table 4 is examined, when the measurement and evaluation activities in the 10th class physics textbook are evaluated according to the knowledge accumulation dimension of the renewed Bloom Taxonomy, the questions in the 2, 3 and 4 units are distributed as a percentage of the factual, conceptual and transactional dimension. In the first unit, it is seen that the questions on the dimension of factual information are more than the other dimensions. It is noteworthy that there are only three questions in the metacognitive dimension. When it is evaluated according to the cognitive process dimension of the revised Bloom Taxonomy, it is noteworthy that the questions are mostly in the level of remembering, understanding and analyzing which are the sub-steps of the taxonomy, and that questions in the evaluation level are low in percent.

When the assessment-evaluation activities included in the 9th grade physics textbook are evaluated, "Explain the purpose and field of physics?" Was coded as a question at the level of factual remembering according to the revised Bloom Taxonomy; "*You want to work to find the type of substance in which a solid object is formed in the form of an enclosed sphere with a space in it*. *Describe the operations you are going to do with items?* " was coded as a question at the level of operational analysis according to the revised Bloom Taxonomy.

When the assessment-evaluation activities in the 10th grade physics textbook are evaluated, "*If the depth of the water in the wave tub is increased, the wavelength of the waves decrease*?" was coded as a question at the level of conceptual analysis according to the revised Bloom Taxonomy.

3.2 Assessment of assessment and evaluation activities of MoNE's 9th and 10th grade physics textbooks in terms of the PISA Science Literacy Competence Levels

In this part of the study, assessment and evaluation activities which were evaluated in terms of the revised Bloom Taxonomy in the previous step were assessed according to PISA's Science Literacy competence levels. The assessment of the questions in the 9th grade physics book according to the PISA Science Literacy competence levels is given in Table 5.

Table 5: Assessment of Assessment and Evaluation Activities of 9th Grade Physics Book according to the PISA Science Literacy Competence Levels

PISA Science Literacy Competence Levels														
Units in the Book		**1**		**2**		**3**		**4**		**5**		**6**		**Total**
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**
9th Grade	Unit 1	28	58.3	16	33.3	1	2.08	3	6.2	0	0	0	0	48
	Unit 2	24	30.3	17	21.5	8	10.1	23	29.1	6	7.5	1	1.26	79
	Unit 3	24	34.2	12	17.1	16	22.8	16	22.8	1	1.4	1	1.4	70
	Unit 4	23	32.8	5	7.1	15	21.4	24	34.2	3	4.28	0	0	70
	Unit 5	10	13.8	10	13.8	25	34.7	22	30.5	2	2.77	3	4.16	72
	Unit 6	0	0	28	48.2	20	34.4	7	12.06	3	5.1	0	0	58
Total N		109		88		85		95		15		5		

When Table 5 is examined, most of the assessment and evaluation activities in units 1, 2 and 3 in the 9th grade physics textbook are composed of the first level questions. The most questions at the 2nd competence level are in unit 6, at 3rd competence level in unit5 and at 4th competence level in unit 4. Also, it is noteworthy that the questions at the 5th and 6th competence levels are very few in percentage.

The assessment of the questions in the 10th grade physics book according to the PISA Science Literacy competence levels is given in Table 6.

Table 6: The assessment of the questions in the 10th grade physics book according to the PISA Science Literacy competence levels

PISA Science Literacy Competence Levels														
Units in		**1**		**2**		**3**		**4**		**5**		**6**		**Total**
The Book		**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**
10th grade	Unit 1	30	37.5	27	33.7	17	21.2	6	7.5	0	0	0	0	80
	Unit 2	39	29.5	69	52.2	18	13.6	6	4.5	0	0	0	0	132
	Unit 3	42	37.8	31	30	26	23.4	12	10.8	0	0	0	0	111
	Unit 4	35	22.4	46	29.5	61	39.1	14	9	0	0	0	0	156
Total N		146		173		122		38		0		0		

When Table 6 is examined, it can be seen that most of the questions in units 1 and 3 are at 1st and 2nd competence levels, most of the questions in unit 2 are at 2nd competence level, and most of the questions in unit 4 are at 3rd competence level in percentage. It is also noteworthy that there is no questions at the 5th and 6th competence levels which are the upper levels of science literacy.

While assessment and evaluation activities in the 9th grade physics textbook were evaluated according to the PISA Science literacy competence levels; "*Density, radius and mass of a metallic sphere is 5 g/cm3, 4cm and 900g respectively." Accordingly, what is the volume of the inner space of the sphere? (π = 3)* "was coded as a question at 4th competence level.

The question in the 6th of the 9th grade physics textbook: *Most of you have could have seen that it is easy to wrap plastic containers with plastic foils to preserve food and plastic foils hold containers tight. However, if your container or your hand is wet or the container is metal, the plastic foil will not hold the container. How do you explain the cause of this phenomenon, taking into account how the insulators and conductors are charged and what grounding is?* was coded at 5th competence level.

While questions in the 10^{th} grade physics textbook were evaluated according to the PISA Science literacy competence levels; "*How to find equivalent current, voltage and resistance in serial and parallel electric circuits?*" was coded at 2nd competence level and "*What does conductor and insulator mean*?" was coded at 1st competence level.

4. Discussion and Conclusion

In this study, assessment and evaluation activities of the 9th and 10th grade physics textbooks recommended by the MoNE for the 2017-2018 academic year were evaluated according to the revised Bloom Taxonomy and PISA Science Literacy competence levels.

As a result of the research, although the PISA determined the competence levels of science literacy as 6 levels, the assessment and evaluation activities of 9th and 10th grade physics textbooks were found to be at level 1, 2, 3 and 4. This result is consistent with the MoNE PISA National Report (2016). According to the report, it is stated that the students who participated in the evaluation are at level 2, 3 and 4.

In addition, when the assessment and evaluation activities of the 9th and 10th grade physics textbooks were examined according to the revised Bloom Taxonomy, it is seen that the majority of the questions are at the factual and conceptual levels in the knowledge step and the assessment and evaluation activities are at the level of understanding and applying in the cognitive process step. According to Ayvacı and Türkdoğan (2010), according to the upper steps of Bloom Taxonomy, the questions will lead the student to think systematically about a certain situation. In addition, students will be able to better analyze and interpret the situations they encounter in daily life. This situation in secondary school physics textbooks does not match the PISA concept of "*applying information and skills to real life situations*", which is the point of view on science literacy.

When both the results of the research are evaluated together, the students who are educated by MoNE's assessment-evaluation activities in physics textbooks can not go beyond certain patterns by interpreting directly given information or processes. In the current assessment and assessment approach, students can not interact with competence levels such as getting new information from the information, evaluating that information and getting new results. This is a guiding element in interpreting our success rank in the PISA exams.

4.1 Recommendations

In this context, based on the assessment and evaluation approach of the Physics Education Program renewed in 2017, rather than increasing quantity, it is necessary to increase the quality of the assessment and evaluation activities in the textbooks. Rather than making them to solve a mathematics question, students need to be confronted with assessment tools that increase the ability of reasoning, create new knowledge, and question and evaluate information.

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