

# Comparison Analysis of Elementary Science Curriculum in Indonesia and Singapore

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**Abstract.** Education in Indonesia and in Singapore is different. The curriculum in Indonesia and Singapore has its own advantages and disadvantages. Especially in science subjects in elementary schools. This study aims to (1) see the fundamental differences between the curricula in Indonesia and in Singapore, (2) so that further it can be seen whether something that is said to be better can be adopted in Indonesia (3) the next goal is the opportunity for improvement with this comparison can be a reference for continuing to make improvements. This research is a literature study (Library Research). Sources of data are divided into primary data and secondary data and then use descriptive analysis techniques to provide a better picture for the purposes of this study. This research resulted in findings that (1) in the curriculum in Indonesia, it prioritizes socio-cultural and religious-based applications, while the science curriculum in Singapore prioritizes the context of understanding and applying science. (2) Understanding the concept and character development of students to be active and interested in science is something that is very good. (3) The application of the Science Curriculum in Singapore provides an opportunity to improve the education system in Indonesia so that it is properly systemized and has more specific goals.

**Keywords:** Curriculum, Education, Science

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## INTRODUCTION

Education which is one of the important aspects in improving the Human Resources (HR) of a country, of course, will always receive special attention. According to Putra (2015) Education is one of the most urgent components of life. In various developed countries in the world, education has even placed education as a priority for the country's development. Countries with advanced economies, in addition to continuing to develop an education system that makes it easier for their people, also continue to improve the quality of the results of the education process. However, until now it is still common to find differences of opinion regarding the education system or even the curriculum which forms the basis for the development of the educational process in a country. Of course these differences lead to positive things that can continue to improve the quality of education itself.

Indonesia as a developing country also continues to improve the quality of education and its education system from generation to generation. The preparation of the education curriculum from the Ministry of Education of the Republic of Indonesia which can then serve as a guide for all educational institutions in Indonesia, of course, aims to equalize standards and is expected to produce the same goals in the end. As a country with a very high level of pluralism with more than 700 ethnic backgrounds, it is certainly not an easy thing to equalize standards from the western tip of Indonesia to the eastern tip of Indonesia. Therefore, acceptable references from developed countries that have succeeded in creating educational curricula of good quality can of course be a good reference for Indonesia even though sometimes they cannot be adopted one hundred percent similarly because they have to adjust to the characteristics of the nation as well.

As with the education curriculum in Indonesia and in Singapore, which of course is clearly different. Singapore is one of the countries that has made progress in the field of education. (Syakrani, et al. 2022). The curriculum in Indonesia and Singapore has its own advantages and disadvantages. Especially in science subjects in elementary schools. In 2018 PISA published that the results of students' knowledge in terms of reading, mathematics and science were low compared to Singapore. Especially in the field of science, Indonesia got a score of 396 while Singapore got a score of 551. The subject of the PISA assessment consists of basic literacy tests in

reading, mathematics and science regardless of the national curriculum (Pratiwi, I. 2019). Of course, this is a quite far comparison because the knowledge taught in elementary schools is very important. Each country has its own science curriculum in elementary schools. As is the case in Indonesia, in the independent curriculum, Natural Sciences and Social Sciences are combined, namely to become IPAS. Meanwhile, in Singapore, science subjects are independent subjects. According to Afriansyah, A. (2016) The Government of Singapore, through its education policy, seeks to internalize ideal imaginations about the identity of citizen who should be.

If you look simply at the differences between the curricula implemented in Indonesia and those implemented in Singapore, it is the purpose and context itself. According to Rahman Y. A. (2017) Pancasila is a principle or basis that has been established in the curriculum in Indonesia. Science education in Singapore has the view that it is important to provide stimulus to students so they can love their knowledge first and encourage them to become a generation that has a high sense of curiosity so they can deepen learning independently without any coercion or excessive encouragement from external sources. themselves. Meanwhile, in the curriculum that Indonesia implements, socio-cultural aspects are still strongly felt. The point is the link between Natural Sciences itself and social, religious and cultural aspects which are expected to encourage students not to forget their goal of processing as individuals so that they can be more useful for their nation and country. According to Manopo & Rahajeng R. (2020) Almost all countries produce their own textbooks. This reflects the beliefs and culture of the country's mathematics education and indirectly shows the construction of mathematical ideas by students as an influence on how the structure and presentation of textbooks is made.

It can be understood that the country of Singapore with an area that is more or less like DKI Jakarta Province, is of course simpler in implementing standardization and controlling the education system. Unlike the case with Indonesia, which also needs to pay attention to cultural and social aspects in society, because students who study from elementary school to a minimum of high school can process well and become good individuals in society so that in the future they can help their regions to develop into more well, instead of being an individualist and less sensitive to social issues in the midst of the community where he lives or comes from. These fundamental differences do not necessarily mean that the Indonesian curriculum is worse than the curricula of developed countries such as Singapore. Due to the characteristics of the nation and the difference in the area of the country which is so much simpler and smaller than Indonesia, of course, it also provides its own challenges and twists which if applied in a copy-paste manner may not necessarily produce the same quality. For this reason, this study aims to see the fundamental differences between the curricula in Indonesia and in Singapore. So that it can be seen in theory.

## METHOD

The author uses a qualitative approach in completing this research. The Qualitative Approach itself is a research procedure that produces descriptive data in the form of written or spoken words from people and observed behavior (Taylor, Bogdan, & DeVault, 2015). The nature of qualitative research in this research is library research or library research. Research that is literature study means using literature such as books, scientific journals, and articles that are both digital and printed to help writers complete research. According to Danandjaja, (2014) library research or library research, namely through the collection of data that is literary in nature, or studies carried out to solve a problem is basically based on critical and in-depth analysis of relevant library materials.

The data sources used in this study are divided into two types, namely primary data and secondary data. The preliminary data of this research is in the form of the Independent Curriculum implemented in Indonesia and the Primary Science Curriculum (Science Syllabus Primary) implemented in Singapore. At the same time, the secondary data used in this research is in the form of scientific journals which contain previous studies which can be an important reference for the author in completing this research.

This research then uses descriptive analysis techniques. The descriptive analysis technique itself can provide a good explanation with clear, systematic, critical, analytical, and

objective information related to the theme of this research, namely the comparison of the Science Curriculum of elementary schools in Indonesia with the Science Curriculum in Singapore.

## RESULTS

### Merdeka Belajar Curriculum of Indonesia (Elementary School Science)

Each country has its own education policy. This policy can be overcome through the secondary school curriculum which is seen as the foundation for educational reforms aimed at achieving quality learning outcomes (Muhtadi, D. et al. 2021). Through the Decree of the Minister of Education, Culture, Research and Technology of the Republic of Indonesia Number 56/M/2022 concerning Guidelines for Implementing Curriculum in the Framework of Learning Recovery, a new Curriculum was established which later became educational guidelines for Early Childhood Education, Basic Education, and Secondary Education, known as the name of the Independent Curriculum. The educational structure of Basic Education in the Merdeka Curriculum itself includes 2 (two) main activities, namely intra-curricular learning and projects to strengthen the profile of Pancasila students.

According to Setiani, I. (2021) One of the goals of national education is to develop the potential of students to become human beings who have faith and are devoted to God Almighty, have noble character, are knowledgeable, capable, healthy, independent, creative, become democratic and responsible citizens. In particular, intracurricular learning that is applied in each subject, has goals that refer to learning outcomes or in other words, learning outcomes. Regarding education management in Indonesia, it will be brought to a standard institution that is continuous with the place where the teaching and learning process is carried out. (Nasution, T. et al. 2022). Meanwhile, the project to strengthen the profile of Pancasila students has objectives based on the Graduate Competency Standards.

Through this curriculum, the government also regulates the amount of learning load for students for all subjects based on the length of time teaching and learning activities. Furthermore, it is also explained in detail regarding the time allocation for each subject that is applied to Elementary Schools (SD/MI) according to their level from grade 1 to grade 6. In summary, it can be seen that in grade 1 to grade 2 SD, students are more directed to education personality and the basics of arithmetic and language. This means that at this level the main concentration of education is in the formation of the character of students and providing the basics of education which will become the foundation for the next level. Natural Science lessons are only given to elementary school students in grade 3. And even then they are still one, which is called IPAS (Natural and Social Sciences). Science lessons given to grades 3 elementary school to grade 5 alone only have an allotted time of approximately 17% of the total 1044 available time allocations or 5 to 29 (weeks) for the total in a year. While the basic characteristics and language education of students in elementary schools are still the main focus of children's education with an allotted time of around 45%.

Even until students sit in grade 6 elementary school chairs, the time allotted for science is only around 17% the same as grades 3 to grade 5 but with a difference in total time allocation of 928. That means that grade 6 elementary school students in Indonesia are actually burdened with decreased study time allocation compared to grades 3 to grade 5. Through a simple calculation of the time allocation specified in the Merdeka Curriculum for Elementary Schools in Indonesia, it is clear that student character education is prioritized and is the main focus of Elementary School education.

Even for Natural Sciences (IPA), it is still one unit with Social Sciences (IPS) lessons or both if combined are called IPAS. In the Independent Curriculum, the separation between science and social studies is only applied to junior high school or a junior high school education and is continued in greater depth in upper secondary or senior high school education. As has been discussed in the initial paragraph, namely regarding the structure of learning, this Ministerial Decree is also explained regarding assessment or assessment and learning principles that must be followed in accordance with the Independent Curriculum. It is sounds like what Royani, A. et al. (2022) that Learning outcomes are designed to face the global market era (AEC). The learning principles adhered to in the Independent Curriculum are designed to take into account

developments based on the level of achievement of students, build capacity to become learners, learning processes that support competency and character development, learning that is relevant according to environmental and cultural contexts, also with future-oriented learning that sustainable.

While the assessment principle applied is in the form of collecting and processing information on learning outcomes to find out the learning achievements of the students themselves. Some of the assessment principles applied are assessment which is an integrated part of the process, an assessment which is designed and implemented according to its function, assessment is designed proportionally and fairly and validly, assessment through reports on learning progress or student achievement, and the last is an assessment used by students, students, educators, and also include parents or guardians of students. The government through the Ministry of Education and Culture is also implementing the Project to Strengthen Pancasila Student Profiles as contained in the Free Learning Curriculum for Elementary and Secondary Education. It is also like what Novalita, R. (2017) said that Education is one aspect that plays an important role in human life. Moreover, education is one of the important pillars for the civilization of a nation. Based on this Decree, it is also clearly stated that strengthening the profile of Pancasila students is required to be applied at least 20% to 30% of the student study load time allocation. The time allocation was also accompanied by projects whose minimum allocations had also been stipulated in the Ministerial Decree.

Based on the explanation above, we can see that the real plot goals of education in Indonesia are on the basis of developing the character of the Human Resources (HR) itself. Based on the data obtained, we can see that the government attaches great importance to character development from an early age in Indonesia. Even for Natural Sciences (IPA) in Elementary School education it still does not stand alone and is presented together with Social Sciences (IPS). Furthermore, regarding the implementation mechanism, the Merdeka Curriculum is divided into me:

1. Implementing several parts and principles of the Independent Curriculum without changing the Education unit curriculum.
2. Implementing the Independent Curriculum using teaching tools from the Central Government
3. Implementing the Independent Curriculum by being welcome to develop various teaching tools by each educational unit.

### **Singapore Science Curriculum**

The Ministry of Education, Singapore, or the Singapore Ministry of Education in 2014 issued a Curriculum called Science Syllabus Primary (Primary Science Curriculum). This curriculum guide, first it is presented through a framework that guides the implementation of the Science Curriculum in Singapore. The science curriculum seeks to nurture students as inquirers. The starting point is that children are curious and want to explore things around them. The science curriculum capitalizes on and seeks to encourage this spirit of curiosity. The ultimate goal is for students who enjoy science and value science as an important tool in helping them explore their natural and physical world.

Apart from focusing on developing students' curiosity, this curriculum is also a guide that designs their teaching staff to become inquiry leaders in science classes. It is hoped that educators will be able to instill learning motivation and science values in their students. In this curriculum, it is explained that educators or teachers are facilitators and role models of the inquiry process in the classroom. Teachers create a learning environment that will encourage and challenge students to develop their curiosity. This framework will ultimately lead to a student-centered teaching and learning approach as an inquirer or a highly curious person. The following table provides an explanation of each domain that makes up the learning framework and practice of science education in Singapore:

**Table 1.** Explanation of Each Domain that Makes Up the Learning Framework and Practice of Science Education

<b>Knowledge, Understanding and Application</b>	<b>and Skills and Process</b>	<b>Ethics and Attitude</b>
1) Scientific phenomena, facts, concepts and principles	<b>Skills</b> 1) Observing 2) Comparing	1) Curiosity 2) Creativity
2) Scientific vocabulary, terminology and conventions	3) Classify 4) Using tools and equipment	3) Integrity 4) Objectivity 5) Open-mindedness
3) Scientific instruments and equipment including engineering and safety aspects	5) Communicate 6) Summing up 7) Formulate hypotheses 8) Predict	6) Perseverance 7) Responsibility
4) Scientific and technological applications	9) Analyze 10) Generate possibilities 11) Evaluate <b>Process</b> 1) Creative problem solving 2) Decision maker 3) Inquiry (problem investigation)	

The main target that shown on the table is similar with the research by Leni, N. (2019) said In 2002, the education sector contributed 3.6% to Singapore's economy. The government targets the growth of the education sector to reach 5% of Singapore's current economy. It is interesting to see the contents of the table which explains the learning framework and science practices applied in the Singapore Education system, that the main focus of learning is the development of a mindset that underlies students to continue to feel thirsty in the world of science. Through the existing concepts, it can be understood that the development of curiosity which is highlighted is a fundamental strategy to attract students' interest so that they can be more interested in learning science.

So that the excessive burden on students through a series of standard allocations of study time is no longer a definite reference because it is the curiosity and curiosity of students that encourages them to continue to explore the knowledge they need themselves. Because it is similar with research by Mustika, D. (2022) said that Basic education is an important part of the education system level. Through basic education, students are equipped with scientific concepts, moral cultivation, character building and other basic knowledge needed in social life. The practice is tiered according to the level of education applied.

Apart from looking at the framework of the education system, the science curriculum from Singapore also has objectives that can be described as follows:

1. Give students experiences that build their interest and stimulate their curiosity about their environment
2. Equip students with basic scientific terms and concepts to help them understand themselves and the world around them
3. Provide opportunities for students to develop skills, habits of mind and attitudes necessary for scientific inquiry
4. Prepare students to use scientific knowledge and methods in making personal decisions
5. Help students appreciate how science affects people and the environment

Based on these objectives, we see that the main motivation for implementing this curriculum is the development of students' thinking patterns, which from an early age fosters a sense of curiosity and stimulates their own interest in learning. According to Ridlwan, M. & Asyari. (2021) The implemented curriculum adjusts to how to shape the child's character. At first,

students were encouraged to care about and be more knowledgeable about the scientific phenomena around them by being equipped with the basic sciences given at school. It doesn't stop there, this concept is also expected to trigger a scientific basis of thinking from students so that they can make personal decisions based on the natural sciences and scientific methods taught to them. In the end, it is hoped that they can become individuals who value science more and can apply it well in their lives.

## RESULT

### Analysis of Differences in Science Curriculum in Indonesia and Singapore

Through a general description of each of the existing curricula in Indonesia and the curriculum implemented in Singapore, we can take an analysis that forms the basis of the differences in the curricula of the two countries. The analysis is presented in table form below:

**Table 2.** Analysis of Differences in Science Curriculum in Indonesia and Singapore

No.	Analysis	Indonesia	Singapura
1	<b>Science Learning Objectives in Elementary School</b>	<ol style="list-style-type: none"> <li>1) Project-based learning for the development of soft skills and character (faith, piety, and noble character; mutual cooperation; global diversity; independence; critical reasoning; creativity).</li> <li>2) Focus on essential material so that there is sufficient time for in-depth learning of basic competencies such as literacy (one of which is scientific literacy) and numeracy.</li> <li>3) Flexibility for teachers to carry out learning according to students' abilities (teach at the right level) and make adjustments to the context and local content.</li> <li>4) The Ministry of Education and Culture provides 7 main themes that need to be developed into modules with hats; and more specific goals:                             <ol style="list-style-type: none"> <li>1. Wake up the body and soul.</li> <li>2. Engineering and technology to build the Unitary State of the Republic of Indonesia.</li> <li>3. Unity in Diversity.</li> <li>4. Sustainable lifestyle.</li> <li>5. Local wisdom.</li> <li>6. Entrepreneurship.</li> <li>7. The voice of democracy.</li> </ol> </li> </ol>	<p>Science Education Curriculum in Singapore to prepare our students to become adequate citizens, capable of functioning and contributing to the improvement of a technology-driven world. Central to the curriculum framework is the inculcation of the spirit of scientific inquiry. The investigation is based on three: integral domains of (a) Knowledge, Understanding and Application, (b) Skills and Process and (c) Ethics and Attitudes. These domains are very important for science practice. The curriculum design seeks to enable students to view the pursuit of knowledge as meaningful and rewarding. The investigation is thus based on knowledge, problems and questions related to the role that science plays in everyday life, society and the environment. The science curriculum seeks to nurture students as inquirers. The starting point is that children are curious and want to explore things around them. The science curriculum capitalizes on and seeks to spark this spirit of curiosity.</p>

		<p>The goal is students who enjoy science and appreciate science as a important tool in helping them explore their natural and physical world.</p>
<p><b>2 Learning Stages</b></p>	<p>Science and social studies subjects are combined into one at the elementary level because elementary school-age children tend to see everything as a whole and integrated. In addition, they are still in the concrete/simple, holistic, and comprehensive thinking stage, but not in detail. The combination of science and social studies lessons is expected can trigger children to be able to manage the natural and social environment in one unit. Science began to be taught in Phase B (class III) to strengthen students' awareness of the surrounding environment, both from natural and social aspects. The thematic approach is still used, but it is not mandatory. Education units may use other approaches according to their conditions and needs.</p> <p>In teaching science, there are two approaches pedagogical: deductive and inductive approaches. The teacher's role in the deductive approach is to present a concept with associated logic and provide examples of its application. In this approach, students are positioned as passive learners (only receiving material). In contrast, in an inductive approach, students are given more flexible opportunities to make observations, conduct experiments and are guided by the teacher to build concepts</p>	<p>The teacher is the leader of the investigation in science class. Science teachers provide the joy and value of science to their students. They are facilitators and role models of the inquiry process in the classroom. Teachers create a learning environment that will encourage and challenge students to develop their curiosity. Teaching and learning approach centered around students as investigators. provide students with experiences that build on their interests deep and stimulate their curiosity about their surroundings</p> <ol style="list-style-type: none"> <li>1. equip students with basic scientific terms and concepts to help them understand themselves and the world around them</li> <li>2. Provide opportunities for students to develop the skills, habits, thoughts and attitudes necessary for scientific investigations</li> <li>3. prepare students to use scientific knowledge and methods in making personal decisions help students appreciate how science affects people and the environment</li> </ol>

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		<p>based on their knowledge. Inquiry-based learning has a role important in science education. It is based on the recognition that science is essentially question driven, open process, accountable and predictable frame of mind. Therefore students need to get personal experience in applying scientific inquiry so that the fundamental aspects of this science can be entrenched in him.</p>
3	<b>Cognitive Assessment</b>	<p><b>Learning Outcomes of Natural and Social Sciences (IPAS)</b> <b>PHASE A (Class 1-2)</b></p> <ol style="list-style-type: none"><li>1) Students identify and ask questions about what is in themselves and conditions in the home and school environment and identify simple problems related to everyday life.</li><li>2) Students optimize the use of the five senses to make observations and ask questions about living things and changes in objects when given treatment.</li><li>3) Students use the results of observations to explain simple causal patterns using several media.</li><li>4) Students recognize the human body, such as the five senses, and how to treat it. Students elaborate on an understanding of the concept of time, day and night and get to know the names of the days, the names of the months, weather conditions in relation to their daily activities.</li><li>5) Students are able to describe the identity of themselves and the people around them, their roles</li></ol>

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The aim is for students to appreciate the relationship between different themes/topics and thereby enable the integration of scientific ideas. The five themes chosen were: Diversity, Cycles, Systems, Energy and Interaction. These themes cover core concepts in both the life and physical sciences. This body of concepts has been chosen because it provides a broad-based understanding of environment, and it will help build a foundation students can rely on for further study. Although the contents of the syllabus are organized into 5 themes, the topics under each theme are not to be seen as compartmentalized blocks of knowledge. In general, there are no clear boundaries between these themes. There may be general topics for different themes. Therefore, a conscious effort is needed to show the relationship between themes whenever possible. To help teachers and students appreciate and understand the themes, key takeaways, and key questions of question 2 are included for each theme. These important takeaways and questions can guide teachers and engage



- and responsibilities as members of the family/group/school so that they can accept the differences that exist between humans. Students describe themselves and their families chronologically using the media they choose.
- 6) Students can describe objects in the surrounding environment as part of the natural and artificial environment, describe their own location, and make floor plans
  - 7) simple at home and school.
  - 8) Students reflect healthy living behaviors by participating in maintaining the cleanliness and health of the surrounding environment.

### **Learning Outcomes of Natural and Social Sciences (IPAS)**

#### **PHASE B (Grades 3-4)**

- 1) Students analyze the relationship between the shape and function of body parts in humans (five senses).
  - 2) Students can create simulations using simple charts/tools about the life cycle of living things.
  - 3) Students can identify problems related to the preservation of natural resources in the surrounding environment and their relation to efforts to preserve living things.
  - 4) Students identify the process of changing the form of matter and changing forms of energy in everyday life. Students
- students in uncovering the important ideas at the heart of each theme. They can also use these questions to ask more specific questions for each topic under each theme. Another feature of the syllabus is the spiral approach. It] is characterized by revisiting concepts and skills across levels and with increasing depth. The spiral approach makes it possible learning of scientific concepts and skills to suit cognitive development. It therefore helps students build on their existing understanding of concepts and facilitates gradual mastery of skills. The focus of each theme is given below. Differences There are various kinds of living and non-living things in the world. Man seeks to organize this incredible diversity of biological and non-living things in order to better understand the world in which he lives. There is a common thread that connects all living things and is the unifying factor of the diversity of non-living things that helps humans to classify them. This theme shows the importance of maintaining diversity. The key takeaways and key questions for "Diversity" are: There is a wide variety of life and nonliving matter around us.
1. Humans can classify living and non-living things based on similarities and differences better understand them.
  2. Maintaining the diversity of living things around us ensures their continued survival.

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- identify sources and forms of energy and explain the process of changing forms of energy in everyday life (for example: heat energy, electricity, sound, light).
- 5) Students take advantage of the phenomenon of magnetism in everyday life and demonstrate how various types of forces affect the motion of objects.
  - 6) Students are able to carry out roles and responsibilities as part of family members and school members and describe how social interactions occur around their homes and schools.
  - 7) Students identify a variety of natural landscapes and their interrelationships with community professions.
  - 8) Students describe the occurrence of the water cycle and are able to show the location of the city/regency and province where they live on a conventional/digital map.
  - 9) Students describe biodiversity, cultural diversity, local wisdom and its conservation efforts.
  - 10) Students get to know the culture, history (both the figures and the periodization) in the province where they live and make connections with the current context of life.
  - 11) Students recognize their needs or wants, the value of currency and demonstrate how money is used to get the value of the benefits needed.
  - 12) Students are able to make works to apply the
- Processes are complex operations that require the use of several skills. At the basic level, the processes expected of students are:
1. Creative Problem Solving  
It is the process of analyzing a problem and selecting innovative and relevant solutions to improve or change the problem situation.
  2. Decision Making  
Decision making is the process of establishing and applying criteria to choose from among alternatives that appear to be the same. The process of setting criteria involves considering consequences and values.
  3. Investigation  
It involves formulating questions or hypotheses, devising fair means and employing those means to find out answers to questions or to verify hypotheses.
- Class material 3-4
1. Diversity
    - Diversity of living and non-living things (general characteristics and classification)
    - Material diversity
  2. Cycle
    - Cycles in plants and animals (life cycle)
    - Matter and water cycle
  3. System
    - Factory system (Parts and functions of plants)
    - Human system (Digestive system)
  4. Interaction
    - Interaction of forces (magnets)
  5. Energy
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principles of wants and needs and their relation to money.	➤ Forms and uses of energy (Light and heat)
<b>Learning Outcomes of Natural and Social Sciences (IPAS)</b>	<b>Class 5-6</b>
<b>PHASE C (Grades 5-6)</b>	<b>1. Cycle</b>
1) Respiratory system in creatures.	➤ Cycle in plants and animals (Reproduction)
2) The digestive system in living things.	➤ Cycle of matter and water (water)
3) Human circulatory system.	<b>2. System</b>
4) How to maintain a healthy body properly.	➤ Plant systems (respiratory and circulatory systems)
5) The interdependence relationship between biotic-abiotic components can affect the stability of an ecosystem in the surrounding environment.	➤ Human system (respiratory and circulatory system)
6) The concept of waves (sound and light).	➤ Cell system
7) The threat of an energy crisis that may occur and suggest individual and collective efforts that can be made to save energy use, as well as the discovery of alternative energy sources that can be used using existing resources around them.	➤ Electrical system
8) The solar system works and its relation to the earth's rotation and revolution.	<b>3. Interaction</b>
9) Changes in natural conditions on the earth's surface occur as a result of natural factors and human actions, identify lifestyles that cause environmental problems and predict their impact on social and economic conditions.	➤ Force interactions (frictional forces, gravitational forces, forces in springs)
	➤ Interaction in the environment
	<b>4. Energy</b>
	➤ Forms and uses of energy (Photosynthesis)
	Energy conversion

Evidence that education is a means to create changes in human civilization that are getting better for all world civilizations. It is inevitable that each country has its own characteristics (Muslih & Nur K. 2021). Through the table presented, it can be seen that there are fundamental differences using benchmarks in the form of learning objectives, learning stages, and cognitive assessment. The differences presented above are of course not without clear reasons but arise based on experience and curriculum development in each country accompanied by their

respective constraints. As discussed earlier, the main obstacle to the development of a good education system in Indonesia lies in the area of the majority of islands with a high degree of pluralism. Indonesia, which is made up of hundreds of ethnic groups, is definitely different from Singapore, whose population can be said to be more homogeneous with a much smaller area.

## CONCLUSION

Based on what has been researched and described in the previous section, the writer can conclude the following points:

1. The difference that can be seen clearly in the Science Curriculum of Indonesia and Singapore is the purpose and framework. The goal of the independent curriculum in Indonesia can be said to be a lofty goal that prioritizes the personality development and character building of students. So it is not surprising that in elementary school education, Natural Sciences (IPA) subjects are still not independent and are presented together with Social Sciences (IPS) subjects. Even with this combination, the percentage of learning time allocation can be said to be very small, namely, 17% and it is only found by students in grade 3 of elementary school. Meanwhile, Singapore has a different view. This country implements an inquiry education system that encourages teachers to become role models or role model for students and can instill a higher sense of student curiosity. The main focus of the objectives of the Singapore science curriculum is to form individuals who have a high curiosity about Natural Sciences and make them personal references in making decisions. So it is expected to produce a generation that is sensitive to the environment based on the scientific understanding that has been instilled.
2. The application of the concept implemented in Singapore regarding students' growing curiosity about Science is an excellent part and can be an example to be applied to the Education Curriculum in Indonesia in the future. Concepts that encourage students to be more interested and sensitive to their surroundings based on Natural Sciences and foster their interest in learning or their curiosity will encourage students to study independently so that they are no longer dependent on the time allocation for learning determined by the government.
3. There are opportunities for improvement which can be an opportunity for Indonesia to improve the quality of education in Indonesia. From the results of this comparison, we can understand that both countries are developing character education, but from a different perspective. Indonesia uses a socio-cultural point of view while Singapore uses a scientific point of view. But it is not impossible that the two can be collaborated in the future. Character education for students based on knowledge and personal formation in accordance with socio-cultural aspects, is deemed appropriate for the development of human resources in the future.

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