

Implementation of Curriculum 2013 through Scientific and Contextual Approach as the Right Solution in Education in the 21st Century

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Education is a major milestone in human life. In the 21st century, education is said to be important because education can ensure students have the skills to learn and innovate, skills in using technology and media information, and can work, and survive by using skills for life (*life skills*).

The creation of a good life in accordance with the guidelines and principles of humanity to the role of education, In development , education constantly changing, this is due along with the changing times , marked by the advancement of technology and information.

For example in Indonesia, education in the country suffered a variety of curriculum development. Starting from the curriculum - Lesson Plan Lesson Plans detailed in Unraveling (1947), curriculum Education Plan Elementary School (1964), Primary School Curriculum (1968), Pioneer School Curriculum Development Project (PPSP) in 1973, Primary School Curriculum (1975), curriculum 1984, Curriculum 1994, Revised Curriculum 1994, Pioneering Competency Based Curriculum (KBK) 2004, Curriculum Level Education Unit (KTSP) 2006, up to curriculum 2013.

Of the various applications of the curriculum in Indonesia, curriculum implementation in 2013 is regarded as a complement curriculum mindset that has never existed. Curriculum 2013 is supported by the use of steps to strengthen the learning process by using a scientific approach and contextual so that the balance between attitudes skills and knowledge to build and Hard Skills Soft Skills can be achieved. It is also supported by a scoring system that is authentic.

Keywords : curriculum 2013, scientific approach and contextual , 21st century education

1. INTRODUCTION

Education is a major milestone in human life. The creation of a good life in accordance with the signs and principles of humanity is not separated from the role of education. In its development, education is always undergoing changes. This is caused due to the increasingly changing era characterized by rapid advances in technology and information.

Experts started their writings by exposing worries that will occur at the end of the 21st century, especially in the field of education. One of the concerns is that emerged from the writings of Prof. Michio Kaku, the author of the book "Physics Of The Future" and a lecturer at City University of New York (quoted from Brimly Lakshmana, 2015), namely:

1. Computer processors will be on all objects around us (clothes, tables, mirrors, beds, bags, glasses, etc.) can even be placed in the human body. All devices will be connected to the internet so that they can communicate with each other. Through such

conditions then there will be vehicle without a driver, virtual environments, hologram, and we can move things only by thinking.

2. The robot will become part of people's lives where they will have a lot of work to replace human tasks.
3. Map of the human body can already be described (DNA, Chromosomes, genes) so that people can live longer and deal with all diseases.
4. The vehicle does not touch the ground, all of them drift and do not use liquid fuel anymore. Travel to the moon and other planets can already be done.

The items above show that a massive transformation will occur in the pattern of human life at the end of the 21st century. It could be said that the world will experience a total change. The world market will be global as everyone will be free to be anywhere and can sell goods wherever they want without having to leave their business site, the chances becomes bigger, but on the contrary, the competition also becomes the spearhead of the global both individually, business group and the country. The key is only one, namely the utilization of advances and technological developments.

Indonesia is one of the countries that has a great opportunity to be the developed countries at the end of the 21st century. The existence of natural resources has become a contributing factor. Quoted in the article of Brimy Lakshmana, a study conducted by the McKinsey Global Institute estimates that Indonesia which is currently occupying the position of 16 world economic power could be ranked 7th in the year 2030. The economy power is supported by 113 million of skilled workforce who work in all of the economy sectors. However, the problem is whether the education system in Indonesia is currently able to prepare skilled human resources that will fill a golden opportunity at the end of the 21st century? If we see the reality of the education currently, Indonesia is still not able to compete and will most unlikely have been able to take these opportunities because the lack of qualified human resources. Qualified human resources are created from the qualified education.

The logic that occurs and must be realized is that when the world changes then the education must change, too. The learning pattern should be changed so that the education becomes relevant to the challenges and opportunities that happen in real life. The reality shows that the current required by the world of work is the ability to work in teams, the ability to solve problems, the ability to drive themselves, think critically, master the technology and be able to communicate effectively.

In the field of education, Indonesia is experiencing and implementing various development of curriculum. The curriculum that was first used in Indonesia is the curriculum of Rencana Pelajaran detailed in Rencana Pelajaran Terurai (in the year of 1947), did the changes into the curriculum of Rencana Pendidikan Sekolah Dasar (year 1964), Kurikulum Sekolah Dasar (year 1968), later became the Kurikulum Proyek Perintis Sekolah Pembangunan (PPSP) year 1973, then Kurikulum Sekolah Dasar (year 1975), Kurikulum 1984, Kurikulum 1994, an improvement of curriculum became the Kurikulum 1994, later became Rintisan Kurikulum Berbasis Kompetensi (KBK) in 2004, a refinement was conducted with the Kurikulum Tingkat Satuan Pendidikan (KTSP) in 2006, until by 2013 a curriculum that raised integrity is emerged i.e. 'Kurikulum 2013'.

Curriculum of 2013 is considered as the complete curriculum of the previous curriculum. Curriculum of 2013 is also said to be the curriculum which is able to give the right companion in order to face the educational scene in the 21st century. Why the curriculum of 2013 is considered as a proper curriculum to be used in Indonesia?, what are the methods used in the implementation of curriculum of 2013?. This article will answer the questions.

B. DISCUSSION

B.1. Introduction

In accordance with the above introduction, the reality shows that in the world of work it requires several abilities, including the ability to work in teams, the ability to solve problems, the ability to drive themselves, think critically, master the technology and be able to communicate effectively.

According to Lakshmana (2015), these capabilities are the ability of the 21st century ("21st Century Skills). To achieve this capability, then the necessary transformation of education includes:

1. The Main Task of the teacher As the Learning Planner

As a facilitator and class manager then the teacher's task is important in composing the RPP (*Rancangan Perangkat Pembelajaran*). RPP has to be well made and details as well as being able to explain all the process that will happen in the classroom including the assessment process and the target to be achieved. In drawing up the RPP, the teacher must be able to combine between the requested target in the

national curriculum, the development of 21st century skills or national character as well as the utilization of technology in the classroom.

2. Insert the element of Higher Order Thinking

Technology in this case particularly internet will greatly facilitate students to obtain information and answers to the question presented by the teacher. The solution for problems that are the knowledge and understanding can be found very easily and there is a tendency that students simply become the collector of the information. Therefore, teachers must be able to provide tasks in the level of application, analysis, evaluation and creation. This will encourage students to think critically and read the information they gather before finishing the task from the teacher.

3. The Application of the Approach Patterns and varied Learning Models

Some learning approaches such as project-based learning, inquiry based learning, as well as jigsaw model and flipped classroom can be applied by teachers to enrich the learning experience of students. One thing that needs to be understood is that the students have to know and understand the relationship between science learned in school with the real life. Students should be able to apply their knowledge to find solutions to problems in the real life. This is what makes Indonesia be ranked low (64 from 65 countries) of the PISA score in 2012, Indonesia students could not connect science with real-life problems.

4. The Integration of the Technology

Schools that have students and teachers have access to good technology should be able to make use of technology in the learning process. Students must get used to working with technology just like people who work. Often teachers complain about the facilities of the technologies they have not yet owned. Things to keep in mind is the development of the 21st century, learning can be done without the elements of the technology, but the most important is a good teacher who could develop an active and collaborative learning process. However, the teacher must of course try to master the technology in advance.

Of the four points above, we can see that there are some things need to be prepared to obtain a good education. It needs to be added that the strengthening of spiritual mental that is really carried out by elements of the nation's educators is also important. For the development and advancement of technology will not mean if it is not supported by the quality of the golden generation. These elements have an

important role in order to support education. The Curriculum of 2013 becomes the integration curriculum of the four points above and at the same time as a determinant of the success of the education in Indonesia at the moment.

B.2. About the Curriculum

The curriculum is a set of plans and arrangements concerning the objectives, content, and materials, as well as ways used as guidelines for learning activities to achieve specific educational goals.

The functions of the Curriculum

- hold an important position in education,
- reason related to the determination of the direction, content and educational process,
- which ultimately determines the kinds and quality of graduate students from the education unit

The Curriculum of 2013 is designed to prepare the Indonesian people to have the ability to live as individuals and citizen who are productive, creative, innovative, and affective as well as being able to contribute to the life of society, nation, state and world civilization.

The curriculum development, which is conducted in Indonesia, causes the internal and external challenges. Internal challenges are as follows.

1. The educational demands refer to SNP
2. In the year of 2020 until 2045 Indonesia has the potential human resource in the productive age
3. The investment of human resource through an education prepares human resource in the golden generations who are productive, creative, innovative and affective.
4. A lot numbers of human resource in the productive age is transformed into human resources who have competencies, skills, and reliable personality through a qualified education so that it becomes a golden generation of Indonesia. The following is the development of the population as the capital in Indonesia that is abstracted from the Government Regulation No. 32 by 2013.



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Table 1. The Development of the Population as the Capital

Furthermore, the external challenge of the curriculum development conducted in Indonesia, namely:

1. Future challenges
 - a. the globalization flow
 - b. environmental issues,
 - c. advances in technology and information,
 - d. the resurrection of the creative and culture industries, and
 - e. the Education Development at the international level
2. The competencies in the future, including the following:
 - a. Communicate
 - b. Think clearly and critically,
 - c. Consider a moral facet of a problem,
 - d. Be responsible citizens,
 - e. Try to understand and tolerant of different views, and
 - f. Live in a globalizing society.
3. The public perception
 - Concentrate on the cognitive aspects too much
 - Students' responsibility is too big

- Have less character value
4. Emerging negative phenomena
- Student fighting
 - Drugs
 - Corruption
 - Plagiarism
 - Cheating in examinations
 - Stirrings in society (social unrest)

B.3. The Curriculum of 2013 with Scientific Methods

The following are the changes in the curriculum of Indonesia (Permendikbud No. 64 by 2013).



Table 2. Elements of the curriculum changes

From the table above, it can be seen that the changing of the existing curriculum in Indonesia covers all aspects, starting from the content standard, process standard, assessment standard up to the standards of graduates' competencies. Each of these elements has a function and a strong influence in the achievement of the curriculum. Starting from the preparations, process, judgment to graduates produced.

The following is a table of the changes in the Curriculum of 2013 in general. In accordance with the Government Regulation No. 32 by 2013.



Table 3. The curriculum 2013 changes

The following are the changes and the subject change descriptions of each level in the Curriculum of 2013 (quoted from Permendikbud No. 64 by 2013).

Elemen	Deskripsi			
	SD	SMP	SMA	SMK
Struktur Kurikulum (Mata pelajaran dan alokasi waktu) (ISI)	<ul style="list-style-type: none"> • Holistik berbasis sains (alam, sosial, dan budaya) • Jumlah mata pelajaran dari 10 menjadi 6 • Jumlah jam bertambah 4 JP/minggu akibat perubahan pendekatan pembelajaran 	<ul style="list-style-type: none"> • TIK menjadi media semua mata pelajaran • Pengembangan diri terintegrasi pada setiap mata pelajaran dan ekstrakurikuler • Jumlah mata pelajaran dari 12 menjadi 10 • Jumlah jam bertambah 6 JP/minggu akibat perubahan pendekatan pembelajaran 	<ul style="list-style-type: none"> • Perubahan sistem: ada mata pelajaran wajib dan ada mata pelajaran pilihan • Terjadi pengurangan mata pelajaran yang harus diikuti siswa • Jumlah jam bertambah 1 JP/minggu akibat perubahan pendekatan pembelajaran 	<ul style="list-style-type: none"> • Penambahan jenis keahlian berdasarkan spektrum kebutuhan (6 program keahlian, 40 bidang keahlian, 121 kompetensi keahlian) • Pengurangan adaptif dan normatif, penambahan produktif • produktif disesuaikan dengan trend perkembangan di Industri

Tabel 4. Elements of changes and subject change descriptions of each level

From the table above, there are changes that occur from the spread of subjects at each level. Integration process (or compacting) of subjects occurs, however the learning period increases. This is because it is adapted to the the learning approach conducted. What becomes an important note in the Curriculum of 2013 is that ICT becomes an important medium.

The following will explain the learning process in the Curriculum of 2013. In accordance with Permendikbud No. 65 by 2013.

Elemen	Deskripsi			
	SD	SMP	SMA	SMK
Proses pembelajaran-an	<ul style="list-style-type: none"> • Standar Proses yang semula terfokus pada Eksplorasi, Elaborasi, dan Konfirmasi dilengkapi dengan Mengamati, Menanya, Mengolah, Menyajikan, Menyimpulkan, dan Mencipta. • Belajar tidak hanya terjadi di ruang kelas, tetapi juga di lingkungan sekolah dan masyarakat • Guru bukan satu-satunya sumber belajar. • Sikap tidak diajarkan secara verbal, tetapi melalui contoh dan teladan 			
	• Tematik dan terpadu	• IPA dan IPS masing-masing diajarkan secara terpadu	• Adanya mata pelajaran wajib dan pilihan sesuai dengan bakat dan minatnya	• Kompetensi keterampilan yang sesuai dengan standar industri

Table 5. Elements of change and change descriptions of integrated subject at each level

The learning process in the K13 does not have to be always in the classroom. It can be conducted outside of the classroom. The learning process is originally focused on Exploration, Elaboration, and Confirmation completed with Observing, Asking, Processing, Presenting, Concluding, and Creating. The note, in K13, the teacher does not become the only learning resources. Students are given the opportunity to discover by themselves what they have learned.

Distribution of subjects in the Curriculum of 2013 is generally presented in the table above. At the level of elementary (SD), all subjects are integrated into thematic. At the secondary (SMP), the subjects of science and social science are taught integrated. At the high school level (SMA) there are compulsory and optional subjects suitable with the talents and interests owned by the students. While at the level of vocational school (SMK) there are skill competencies in accordance with the industry standards.

The following table will explain the system of assessment of the results of the study and extracurricular activities that become the focus in the Curriculum of 2013 (quoted from Permendikbud No. 66 by 2013).

Elemen	Deskripsi			
	SD	SMP	SMA	SMK
Penilaian hasil belajar	<ul style="list-style-type: none"> • Penilaian berbasis kompetensi • Pergeseran dari penilain melalui tes [mengukur kompetensi pengetahuan berdasarkan hasil saja], menuju penilaian otentik [mengukur semua kompetensi sikap, keterampilan, dan pengetahuan berdasarkan proses dan hasil] • Memperkuat PAP (Penilaian Acuan Patokan) yaitu pencapaian hasil belajar didasarkan pada posisi skor yang diperolehnya terhadap skor ideal (maksimal) • Penilaian tidak hanya pada level KD, tetapi juga kompetensi inti dan SKL • Mendorong pemanfaatan portofolio yang dibuat siswa sebagai instrumen utama penilaian 			
Ekstrakurikuler	<ul style="list-style-type: none"> • Pramuka (wajib) • UKS • PMR • Bahasa Inggris 	<ul style="list-style-type: none"> • Pramuka (wajib) • OSIS • UKS • PMR • DII 	<ul style="list-style-type: none"> • Pramuka (wajib) • OSIS • UKS • PMR • DII 	<ul style="list-style-type: none"> • Pramuka (wajib) • OSIS • UKS • PMR • DII

Table 6. Elements of change and the change description of the assessment and extracurricular of each level.

From the table above, the scoring system in the Curriculum of 2013 namely competency-based. A shift occurs from the assessment through a test [assessment only based on results], developed towards authentic assessment [measure all the competencies of attitude, skills, and knowledge based on the process and results]. The Penilaian Acuan Patokan (PAP) is the achievement of learning outcomes based on the position of the score acquired against the ideal score (maximum). The assessment on the Curriculum of 2013 is not just on the level of basic competence (KD), but also on the core competencies and *SKL*, the portfolio made by students as the main instrument of the assessment.

The essential differences between the KTSP of 2006 and the Curriculum of 2013 can be seen in the following table (Permendikbud 81a about Implementation of KTSP Kur 2013).

KTSP 2006	Kurikulum 2013	Ket
Mata pelajaran tertentu mendukung kompetensi tertentu	Tiap mata pelajaran mendukung semua kompetensi [sikap, keterampilan, pengetahuan]	Semua Jenjang
Mata pelajaran dirancang berdiri sendiri dan memiliki kompetensi dasar sendiri	Mata pelajaran dirancang terkait satu dengan yang lain dan memiliki kompetensi dasar yang diikat oleh kompetensi inti tiap kelas	Semua Jenjang

Bahasa Indonesia sejajar dengan mapel lain	Bahasa Indonesia sebagai penghela mapel lain [sikap dan keterampilan berbahasa}	SD
Tiap mata pelajaran diajarkan dengan pendekatan berbeda	Semua mata pelajaran diajarkan dengan pendekatan yang sama [saintifik] melalui mengamati, menanya, mencoba, menalar,....	Semua Jenjang
Tiap jenis konten pembelajaran diajarkan terpisah [separated curriculum]	Bermacam jenis konten pembelajaran diajarkan terkait dan terpadu satu sama lain [cross curriculum atau integrated curriculum]	SD
	Konten ilmu pengetahuan diintegrasikan dan dijadikan penggerak konten pembelajaran lainnya	SD

Table 7. The differences of the Curriculum of KTSP and the Curriculum of 2013 in terms of the learning process

From the table above, it is seen that there are much development and renewal in the Curriculum of 2013 from the Curriculum of KTSP. Attitude, skills and knowledge as the key achievement on each subject. Bahasa Indonesia as a national language is used as the delivery language of the other subjects. The methods used in the Curriculum of 2013 use scientific methods which include activities of observing, asking, trying, reasoning, and presenting. These things make the students become more active in the class. Types of learning content taught are related and integrated with each other and the content of science is integrated as a driving force of other learning content.

Furthermore, the following will explain some of the changes in the Curriculum of 2013 for all subjects (in Permendikbud 81a about the Implementation of KTSP Kur 2013).

No	Implementasi Kurikulum Lama	Kurikulum Baru
1	Materi disusun untuk memberikan pengetahuan kepada siswa	Materi disusun seimbang mencakup kompetensi sikap, pengetahuan, dan keterampilan
2	Pendekatan pembelajaran adalah siswa diberitahu tentang materi yang harus dihafal [siswa diberi tahu].	Pendekatan pembelajaran berdasarkan pengamatan, pertanyaan, pengumpulan data, penalaran, dan penyajian hasilnya melalui pemanfaatan berbagai sumber-sumber belajar [siswa mencari tahu]

3	Penilaian pada pengetahuan melalui ulangan dan ujian	Penilaian otentik pada aspek kompetensi sikap, pengetahuan, dan keterampilan berdasarkan portofolio.
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Table 8. The Differences of the Curriculum of KTSP and the Curriculum of 2013 in terms of the evaluation

From the table above, the implementation of the new curriculum (2013) and the previous curriculum covers a broad range of content. From the preparation of the material up to the assessment, there are clearly many differences. The material is arranged in a balanced way containing the attitude, knowledge and skills. The learning approach is applied from observing, asking, data collecting, reasoning, and presenting results. It is ended with authentic assessment with the competence aspects of attitude, knowledge, and skills based on the portfolio.

From the explanation above, we can see the content of the Curriculum of 2013 in general, it clearly shows a big change happened in the curriculum in Indonesia. Student-centered learning will make students more active and productive so that the graduates are expected to be able to compete in the 21st century.

C. CONCLUSION

Since it is proclaimed, the Curriculum of 2013 got many challenges. There are pro and contra from any parties. Educational practitioners have a difficult task to be able to socialize it in the world of education (from the elementary, secondary, and high/vocational school). If it is viewed from the objective, concepts and contents in the Curriculum of 2013 is very appropriate with the needs of education in Indonesia currently. Hence public should be more open with the Curriculum of 2013.

The golden generation will be created through the transformation of education into a better direction. The Curriculum of 2013 is one of the transformations. Therefore, there is no reason for Indonesia not to be immediately improve the education if we do not want to be left behind. Let us improve our education to create the better Indonesia.

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