

**THE EFFECT OF VOCATIONAL EDUCATION CURRICULUM
TOWARD THE FULFILLMENT OF 21ST CENTURY NEEDS : A
LITERATUR REVIEW**

PAPER



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ABSTRACT

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Globalization era is constantly growing rapidly, both in terms of science, technology, society, and culture. Therefore, the development of the curriculum is as a response towards various developments of the globalization era. One of the curriculum that continues to be brewed in Indonesia is the vocational education curriculum. One of supporting factor of the vocational education curriculum development is the need of world work. The curriculum is expected to concoct education as a bridge toward the fulfillment of Stakeholder need in particular that leads to fulfillment 21st century needs.

The researcher will use qualitative research by looking the data from goverment information, online news, journal, and several experted research. The researcher hopes that this research can be a benchmark for the curriculum development of vocational education in Indonesia.

Keywords : Vocational Education Curriculum, The Fulfillment of 21st Century Needs, Curriculum Development, Curriculum Effect

CHAPTER 1

INTRODUCTION

A. Background of Problems

The current trend in nowadays life is all about technology. With the rapid growth of technology development through time, every aspects of human life are also developing. One aspect that should be accounted is education. Students need to develop thinking skills, knowledge and social competencies as it is needed in today's life and work environments. The essential life and career skills in 21st Century are flexibility, adaptability, initiative, self-direction, social and cross-cultural skills, productivity, accountability, leadership, and responsibility. These are could be the competencies that that students are expected after completing their educational program.

In Indonesia, the curriculum is developed to directs the learners to achieve career competencies including essential social life competencies. This one could be found at vocational education program with proportion 40% of knowledge and 60% of skills.

Based on the data of Competency Standards of SMK / MAK in Indonesia, the competencies that must be achieved by the students already lead to the needs of the 21st Century . Students are equipped with work skills that are based on the 21st Century needs. However, there are still some obstacles that hinder the process of achieving the standard competency , such as differences in teacher reputation, lack of competent teachers, inequalities in facilities and infrastructure, and too many students in some fields of study, resulting in the increased educated workforce in the field of science. Therefore, there needs to be continuity between several elements, namely government, society, and educational institution. For example, with the government coordinating cooperation between industrial companies or stakeholders with educational institutions, equitable distribution of

teachers in their fields, provision of facilities and infrastructure that support student learning processes, such as technology adapted to industrial use.

B. Identified Problems

1. Achieving of Vocational Curriculum to the 21st Century needs.
2. Some corrections toward Vocational Curriculum in Indonesia.
3. Expectation for Vocational Curriculum in Indonesia in the future.

C. Research Objectives

1. To know achieving Vocational Curriculum to the 21st Century needs.
2. To identified some corrections towards Vocational Curriculum in Indonesia
3. To describe my expectation for Vocational Curriculum in Indonesia in the future.

CHAPTER II

LITERATURE REVIEW

A. Vocational Education Curriculum

The interpretation of the curriculum always evolves with the development of the current era followed by the development of science and technology and the development of human needs as the subject of education. According to Robert Zais in *Curriculum; Principles and Foundation* (1976, page 24) , the curriculum is not only a written document, but its meaning is also more valuable in the process of implementing its functions in the learning process. In addition, referring to one of the principles of curriculum development “Principle of Relevance”, there should be a link between the components of the curriculum to the needs of learners. Associated with vocational education curriculum, Prof. Dr. H. Mukhidin, ST., M. Pd in book with title “*Kurikulum Pembelajaran Pendidikan Kejuruan* (2016, Page. 9) suggests that the competencies developed must be relevant to the following:

1. The challenge of global competition that embraces competitive and cooperative skills in the 21st Century ;
2. Effective and efficient employment skills that are globally competitive;
3. The need for an education outcome that has an Entrepreneur spirit, in response to the basic form of globalization that emphasizes the economic element, more specifically in the International trading;
4. Changes in values and norms in society due to the rapid advances in information technology and transportation, so the impact of cross culture should be responded wisely.

The concern for vocational education is to guide individuals preparation of social practices and concepts in many ways to secure an effective work performance and to extend it to another instances of practice.

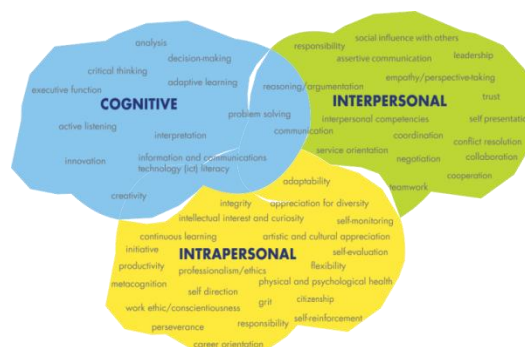
B. 21st Century Competencies

The definition of 21st Century competencies are associated with growth in the cognitive, interpersonal, and intrapersonal domains. Cognitive competencies, such as critical thinking, analyzing, and problem solving have been regarded as the indicators of success. Students are increasingly concerning soft skills, such as teamwork and leadership skills, and hard skills, such as knowledge and skills.

The Conference Board of Canada has identified employability skills in three areas: 1) Fundamental Skills (Communicate, Manage Information, Use Numbers, Think, and Solve Problems); 2) Personal Management Skills (Demonstrate Positive Attitudes and Behaviors, Be Responsible, Be Adaptable, Learn Continuously, Work Safely); and 3) Teamwork Skills(Work with Others, Participate in Projects and Tasks). It has also profiled innovation skills in the following areas:

1. Creativity, problem-solving, and continuous improvement skills
2. Risk-assessment and risk-taking skills
3. Relationship-building and communication skills
4. Implementation skills

These are visualized in a picture below:



Picture 1: “21st Century skills” grouped into three broad Domains

Bloom also identified as same as those one in his own developed Taxonomy in which he consider the Interpersonal aspect as Pshycomotor and Intrapersonal aspect as Affective.

Based on 21st Century Competencies Jounals, that the most prominent 21st Century competencies have been shown to offer measurable benefits in several areas of life are associated with critical thinking, communicate, collaboration, and creativity and innovation.

1. Critical Thinking

Critical thinking in the 21st Century is described as the ability to design and manage projects, solve problems, and make effective decisions using a variety of tools and resources (Ontario, page. 12). Critical thinking is the way of students to acquire, process, interpret rationalize, and critically analyze of often conflicting information to the point of making an informed decision and taking action. In the other hand, digital tools and resources can support the process of critical thinking, when used to relevant learning experiences that allow students to discover, use, or create new knowledge. But the knowledge in Digital Era is demanding students with thinking skills to think logically and to solve problem by identifying and describing the problem, critically analyzing the information, and so on till taking action.

2. Communication

Communication context refers not only to the ability to communicate effectively, orally, in writing, and with a variety of digital tools, but also to listening skills.

3. Collaboration

Collaboration context requires the ability to work in teams, learn from and contribute to the learning of others, use social networking skills, and demonstrate empathy in working with diverse others.

4. Creativity and Innovation

In case creativity is described as the pursuit of new ideas, concepts, or product that meet a need in the world. But innovation contains elements of creativity and is described as the realization of a new idea in order to make a useful contribution to a particular field.

The Boston-based Center for Curriculum Redesign (CCR) published a Character Qualities Framework that identifies six essential character qualities, those are mindfulness, curiosity, courage, resilience, ethics, and leadership (Ontario, Page.14). The case for CCR's framework focus on Character building by arguing that facing the challenges of the 21st Century requires a deliberate effort to cultivate in students personal growth and the ability to fulfill social and community responsibilities as global citizens. Furthermore, demonstrating that non-academic, intrapersonal competencies such as perseverance, grit, tenacity, and a growth mindset have a strong relationship with an individual's capacity to overcome challenges and achieve long-term success. Referring to Seema Sanghi on the Handbook of Competency Mapping (2007, Page 12) has visualized an iceberg about Skills, there are Hard Competencies (Knowledges and Skills) and Soft Competencies (Motives, Traits, Self-Concept, Attitudes, Values, Self-Images).

According to the European Commission's key competencies for lifelong learning include metacognition in Metacognitions- cognitive and Social Dimensions Journals that John Flavell in 1979 published "Metacognition and Cognitive Monitoring: A New Area of Cognitive-Developmental inquiry". He defined metacognition as "knowledge" and cognition about "cognitive phenomena". Learning to learn is described as the ability to pursue and persist in learning and to organize one's own learning including through effective management of time and information, both individually and in groups. This competence includes awareness of one's learning process and needs, identifying available opportunities and the ability to overcome obstacles in order to learn successfully. This competence means gaining, processing, and assimilating new

knowledge and skills as well as seeking and making use of guidance. Learning to learn engages learners to build on prior learning and life experiences in order to use and apply knowledge and skills in a variety of context: at home, at work, in education and training. Motivation and confidence are crucial to an individual’s competence.

In learning process, that have term “entrepreneurship” as provision of learners to be Entrepreneur. An entrepreneurial mindset not only entrepreneurial skills developed by formal education but also a culture in which real-world organizations welcome entrepreneurship change and a culture of life long learning.

Ontario described that there is a renewed vision for education that achieved higher order skills like critical thinking, communication, innovation, creativity, collaboration, and entrepreneurship (2016, Page. 14-15). These are the attributes that employers have been prepared. Sometimes the entrepreneurship is considered as a result of a combination of competencies, in the interpersonal, intrapersonal, and cognitive domains (e.g., creativity and innovation, collaboration or teamwork, leadership, perseverance).

Ontario Vision/BudgetBased on Results of Public Consultations (2014)	ATC21S (2012) (Summary of International Frameworks)	Fullan and Scott (2014) The Six Cs
<p>“Achievement also means raising expectations for valuable, higher- order skills like critical thinking, communication, innovation, creativity, collaboration, and entrepreneurship.” (<i>Achieving Excellence</i>, p. 3)</p> <p>“[O]ur learners will also need to develop characteristics such as perseverance, resilience, and imaginative thinking to overcome</p>	<p>Ways of Thinking</p> <ol style="list-style-type: none"> 1. Creativity and innovation 2. Critical thinking,problem solving, decision making 3. Learning tolearn, metacognitio n <p>Ways of Working</p> <ol style="list-style-type: none"> 1. Communication 	<ol style="list-style-type: none"> 1. Character –“qualities of the individual essential for being personally effective in a complex world including: grit, tenacity, perseverance, resilience, reliability, and honesty.” (Fullan & Scott, 2014, p. 6) 2. Citizenship –“thinking like global citizens, considering global issues based on a deep understanding of diverse

<p>challenges. Combined with a deep sense of compassion and empathy for others, our learners will develop the skills and knowledge they need to become actively engaged citizens.” (<i>Achieving Excellence</i>, p. 5)</p> <p>“To achieve success, Ontario will:… Foster more young entrepreneurs in Ontario schools by increasing training in innovation, creativity, and entrepreneurship. . . .” (<i>Achieving Excellence</i>, p. 6)</p> <p>“By 2025... Ontario will be a world leader in higher-order skills, such as critical thinking and problem solving, which will allow Ontario to thrive in the increasingly competitive global marketplace.” (<i>2014 Ontario Budget</i> [Sousa, 2014], p. 9)</p>	<p>2. Collaboration (teamwork)</p> <p><i>Tools for Working</i></p> <ol style="list-style-type: none"> 1. Information literacy 2. Information and communication technology literacy <p><i>Living in the World</i></p> <ol style="list-style-type: none"> 3. Citizenship – local and global 4. Life and career (including adapting to change; managing goals and time; being a self-directed learner; managing projects; working effectively in diverse teams; being flexible; producing results; guiding and leading others) 5. Personal and social responsibility (including cultural awareness and competence) 	<p>values with genuine interest in engaging with others to solve complex problems that impact human and environmental sustainability.” (Fullan & Scott, 2014, p. 6)</p> <ol style="list-style-type: none"> 3. Communication – the “mastery of three fluencies: digital, writing, and speaking tail or ed for a range of audiences.” (Fullan & Scott, 2014, p. 6) 4. Critical Thinking – “critically evaluating information and arguments, seeing patterns and connections, constructing meaningful knowledge and applying it in the real world.” (Fullan & Scott, 2014, p. 7) 5. Collaboration – “the capacity to work interdependently and synergistically in teams with strong interpersonal and team-related skills including effective management of team dynamics, making substantive decisions together, and learning from and contributing to the learning of others.” (Fullan & Scott, 2014, p. 6) 6. Creativity – “having an ‘entrepreneurial eye’ for economic
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		<i>dsocial opportunities, asking the right questions to generate novel ideas, and demonstrating leadership to pursue those ideas into practice.” (Fullan&Scott,2014,p.7)</i>
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Table 1. Sample Competencies and Framework

The implementation of 21st Century Competencies framework to guide teaching and learning will require innovative thinking and/or action in the following:

- a. The focus of Curriculum is significant reviews or curricula to embed 21st Century competencies are required and are being undertaken by a growing number of countries.
- b. The focus of Teaching is “Deeper Learning” practices and new learning partnerships are required for students to develop 21st Century competencies.
- c. Teaching Strategies is a broad repertoire of pedagogical strategies that required to support the emphasis on deep learning and new learning partnerships. Teacher not only present information but they also learn along with students and help them become more skillful problem recipients of knowledge. They are decision makers about the nature and structure of their own learning.
- d. The Role of Technology. In addition to developing students technological skills, technology-enabled teaching and learning practices play a significant role in supporting the development of the full range 21st Century competencies.

Connections between digital tools and resouces, key transformational learning practices or contexts, and competency development can visualed on the table below :

Technologies	Key Transformational Learning Practices/Contexts	21st Century Competencies
<p>Social and Collaboration Support knowledge building</p> <p>Examples:</p> <ul style="list-style-type: none"> • Blogs • Online discussions • File sharing 	<ul style="list-style-type: none"> • Authentic audiences • Student voice and choice • Student creation and iteration of knowledge (deeper learning) • New partnerships in learning • Inquiry-based learning (including project- and problem-based learning) • Timely, descriptive feedback 	<ul style="list-style-type: none"> • Communication • Collaboration • Negotiation • Leadership • Intellectual openness • Conscientiousness • Critical thinking • Digital citizenship
<p>Hybrid and Mobile Broaden access to education beyond the school walls</p> <p>Examples:</p> <ul style="list-style-type: none"> • Tablets • Laptops • Cloud technology 	<ul style="list-style-type: none"> • Student-driven inquiry • Self-directed learning • New partnerships in learning • Equity of access • Authentic, real-world learning tasks 	<ul style="list-style-type: none"> • Responsibility • Productivity • Analysis • Decision making • Information literacy
<p>Visualization Help students to master abstract concepts</p> <p>Examples:</p> <ul style="list-style-type: none"> • 3D printers • Interactive maps • Graphing tools • Concept mapping tools 	<ul style="list-style-type: none"> • Differentiated instruction • Student discovery/mastery • Elimination of barriers to higher-order thinking • Learner autonomy • Timely, descriptive feedback 	<ul style="list-style-type: none"> • Coordination • Communication • Metacognition • Analysis • Numeracy • Problem solving and reasoning

<p>Storytelling and Creation Develop students as knowledge creators and communicators</p> <p>Examples:</p> <ul style="list-style-type: none"> • Video/music production tools • Presentation tools 	<ul style="list-style-type: none"> • Student choice and voice • Student creation and iteration of knowledge (deeper learning) • New partnerships in learning • Authentic, real-world learning tasks and audiences 	<ul style="list-style-type: none"> • Communication • Collaboration • Intellectual interpretation • Creativity • Innovation • Digital literacy • Digital citizenship
<p>Immersive Media and Simulation Situating learning in real-world and augmented realities</p> <p>Examples:</p> <ul style="list-style-type: none"> • Virtual worlds • Interactive games 	<ul style="list-style-type: none"> • Authentic, real-world learning tasks • Student creation • Student discovery/mastery • Personalized learning • Timely, descriptive feedback 	<ul style="list-style-type: none"> • Cooperation • Conflict resolution • Curiosity • Grit and perseverance • Self-efficacy, initiative • Problem solving and reasoning • Creativity and innovation • Critical thinking

Table 2. Connections between digital tools and resources, key transformational learning practices/contexts, and competency development

The exposure that has been conveyed about 21st Century competencies is expected to form the skills of learners to be able to compete globally. The following comparative skill is needed in the 20th century and 21st Century in the table below:

	20TH CENTURY	21ST CENTURY
Number Jobs / Lifetime	1-2 jobs	10-15 jobs (US Department of Labor 2004)
Job Requirement	Mastery of one field	Simultaneous mastery of many rapidly changing fields
Job competition	Local	Global
Work Model	Routine; hands-on; fact based	Non-routine; technical; creative; interactive
Education Model	Institution centered; formal degree attainment is primary goal	Learner centered; self-directed, lifelong learning is primary goal
Organizational Culture	Top down	Multi-directional (bottom-up, top down, side to side, etc.)

Table 3. Differences Character between 20th Century and 21st Century

In the table, its described clearly that many differencies about skills in 20th century and 21st Century , which the people have to reach out. The educational assessment for the 21st Century needs to accept the challenge of assessing relations between persons and domains through a focus on appreciative system.

CHAPTER III

METHOD

The Preparation of this paper is based on a literature study to find some relevant theory related to the case or the problems found. The reference contains about: Vocational Education Curriculum in Indonesia, 21st Century Competencies, and the Effect for Vocational School. This reference can be found from books, journals, articles, and websites on the internet.

CHAPTER IV

RESULT AND FINDINGS

A. Implementation of Vocational Education Curriculum in Indonesia

Vocational education in Indonesia is currently being fanned by its development. This is driven by the rapidly growing industry in Indonesia. Indonesia is one of the countries with foreign attractiveness to develop high product, such as the number of industrial factories in Cikarang industrial area, Karawang, Bekasi and surrounding areas. It is a scourge that makes demands for vocational education development in Indonesia. Along with these developments, followed by the development of education that leads to the formation of human resources that can compete globally.

The reality that Indonesia is still a developing country. Based on data obtained from the website of the Central Bureau of Statistics in March 2017 the number of poor people in Indonesia as much as 27.77 million higher than the previous year. This fact encourages the promotion of vocational education in the hope that students from the poor can work immediately after completing their education because they have been equipped with skills to work immediately.

However, government efforts are still experiencing obstacles such as the number of uneducated unemployed from SMK. The equation of majors between vocational and university cause SMK graduate can not compete with university graduate. Referred from the online page *Kompasiana*, Director General of Training and Productivity in Labor Departement, Drs. Bambang Sartrio Lelono, MA said that during this time, the unemployment rate of vocational high school graduates is quite high due to low qualifications and inconsistency with the needs of the labor market.

A few of the obstacles that have been exposed certainly get a rapid response from the government through concrete steps in improving vocational education in

Indonesia. Procurement of partnership cooperation between educational institutions and industry. Based on an online news that the president Jokowi through the minister of industry to encourage partnership with the industry in the form of link and match and there have been 166 industries (national companies damn multinational) who have established cooperation relationship with SMK in Indonesia. The government also equips students from vocational education with a certificate, which is a written legal proof of the competencies that have been possessed by learners based on the qualifications given by accreditation educational departement. The certificate is as magnetism for industry or other employment in absorbing the graduated from vocational education.

Curriculum innovation continues to be pursued to perfect the vocational curriculum. We can look at the University of Hawai'i Maui College, USA, the university is designing curriculum innovations in collaboration with professionals and expert workers from companies / industries. It aims to overcome the labor gap. The highlight of this curriculum is funding for industry-based research and afterward getting certified. In conclusion, the curriculum innovation that is successfully applied is 1) the flipped & tech-enhanced classroom and 2) the accelerated certificate curriculum. Based on the report, the results of the implementation of this curriculum innovation from 2014 to 2016 managed to absorb 28% of students get a job immediately after graduation.

However, at the vocational school level in Indonesia students only get industry experience during the PKL (*Program Kerja Lapangan*) and in college many problems affected by various courses. For example, graduated from electro education program at UPI, they are difficult to work in the industrial world because of bringing the educational background that is considered incompetent. In fact, when they are required to make the final examination (*TA*) in accordance with the field of science, PKL, PPL, until finally doing research in vocational field. In other fields such as tourism, in a journal entitled *Shaping Tourism Higher Education Curriculum-Strategy to Develop Skills for Tomorrow's Jobs*. Europe develops a curriculum on tourism higher education. In the field of

entrepreneurship, Stanford University, USA, makes an innovation to their higher education curriculum by designing and implementing innovation and entrepreneurial-based curriculum. As a result, according to an article entitled Inside StartupU: How Stanford Develops Entrepreneurial Students (Beth, 2015) graduates and Stanford University students have made about 39,900 businesses active in the Silicon Valley of the United States. To strengthen its curriculum innovation, the Hasso Plattner Institute of Design at Stanford, an institution that focuses on teaching on design thinking, the institute is also known as the d.school, this institute is the center for innovators and for those who want to think as innovator. In line with Stanford University, University Tenaga Malaysia adopted the curriculum. In the journal Entrepreneurship Education in an Engineering Curriculum (Karim, 2016) discusses curriculum innovations conducted at the engineering faculty of the University of Tenaga Malaysia (UNITEN) by integrating learning in engineering faculty with entrepreneurship education.

The expectation to develop vocational education in Indonesia in order to encourage the needs of the 21st Century is the refinement of the vocational education curriculum based on the 21st Century needs. The majors that was developing in vocational education are directed and needed in the 21st Century rotation, as well as the equity of workplace in various sector and region.

CHAPTER V

CONCLUSION

The needs of globalization era will never stopped and accompanied by the development of science and technology. As a concrete manifestation, continuous improvement is required, especially in vocational education curriculum. The improvement is not only refers to the 21st Century needs, but also to create generation whose has life skills in responding every global development.

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