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The Impact of Curriculum Changes Towards 4.0 Revolution

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ABSTRACT

This article will discuss the effects of the curriculum change towards revolution 4.0. Through the study of the writings made, it is found that the impact of curriculum changes can be explained through four main factors namely; impact on teachers, impact on students, impact on education and impact on the industry. These factors need to be taken into account to ensure the successful implementation of a curriculum. The impact of the curriculum change towards the Industrial Revolution 4.0 can generally address the dependence on energy sources that will significantly change the future of the working world. Therefore, if complex new technologies are not heavily weighted, it can cause Malaysia to lag behind in global competition.

Key Words: Curriculum Change, Revolution 4.0, Impact, Global Competition

1. INTRODUCTION

The Fourth Industrial Revolution (Industry 4.0) involves automation technology giving new challenges to all sectors in the country that require them to make changes in line with the digital transformation to remain competitive. Previously, the first industrial revolution depends on the use of vapour-powered machines. The second industrial revolution involves electric power. Followed by a third industrial revolution based on information technology and computer as its pillars.

However, Industry 4.0 covers the discovery of new technologies such as automation, Internet of Things (IoT), analysis and big data, simulation, system integration, robotic and cloud utilization that will accelerate the development of the modern world landscape. This revolution marks the emergence of cyber-physical systems involving a whole new capability for humanity, a new technology machine and method. In other words, automation technology is seen as a technological capability that does not necessarily involve human beings directly. (Afandi Ahmad, 2017)

Industry 4.0 can also address dependency on energy sources which will significantly change the future of the world of work. So, if the complex new technological challenge is not given due weight, it can cause Malaysia to lag behind in global competition.

2. WHAT IS CURRICULUM

The curriculum stands for all the intended learning goals and it includes experiences, teaching methods, teaching materials and planned assessment techniques (Thomas, Sands and Brubaker, 1968: 6). In addition, according to Taba (1962), the curriculum is a design for learning. While Tanner & Tanner (1975), stated that the curriculum is a planned and guided learning experience and expected to learn outcomes through systematic reconstruction of knowledge and experience. It means that the curriculum contains two fields used to educate. These fields are. content and activity and it work for achieving learning objectives. The curriculum development process occurs when it is found that the existing curriculum cannot meet the needs of a country or even to face it the changes that are happening nowadays. The reforms implemented are possible also due to several other factors such as the desire to build one curriculum which has local values and at the same time, there are elements universality.

Ministry of Education Malaysia (MOE) always trying to improve quality achievement in education. Curriculum always reviewed, monitored and updated for ensuring that it is always relevant to the will current. According to Azalya (2003), to face the challenge of globalization, Malaysians need equipped with a wide range of basic skills education and training as well as has a wide range of common skills including the ability to communicate, master multilingual, critical and innovative thinking.

Therefore, education curriculum should always be according to the timescales to make sure students who have been issued not only have knowledge and mastering skills 21st century to face the challenges of the era globalization at this time.

3. THE IMPACT OF CURRICULUM CHANGES

The curriculum is an educational plan that keeps track of the changes. In the context of education in Malaysia, planning and developing curriculum is based on the philosophy and goals of the country's education that determine the direction of direction, the foundation and the source of inspiration to all efforts and plans in the field of education. The curriculum or scope of the content of a lesson is important in the country education system. As a rapidly developing country, Malaysia needs a curriculum that is flexible and appropriate to create a dynamic educational system in line with the ideals and aspirations of the country (Kamaruddin Haji Hussin, 1994). The development of the curriculum does not happen independently for no reason to influence it. It happens in line with the progress of society and nation and it is considered a dynamic and balanced pro.

In this article, the impact of curriculum changes can be explained through four main factors namely; impact on teachers, impact on students, impact on education and the impact on the industry

3.1 THE IMPACT ON TEACHERS

Nowadays, students learn collaboratively and without borders. This makes students more active, creative, motivative and dynamic. Therefore, teachers should equip themselves with the latest information and teaching methods learning. According to Noriati (2009), innovating teachers should not be bound by any means and always think outside of the box to find a more effective approach. The effect of curriculum change on teachers is from the aspect of willingness such as;

1. Teacher workload increases

According to Syed Sofian & Rohany (2010), the implementation of various reforms in education has made the roles and responsibilities of teachers greater, challenging and complex. Growing challenges and responsibilities, new curriculum and co-curriculum changes in the education system have led teachers to make changes in their work and early retirement. Referring to the newspaper clipping, Utusan Malaysia, January 23, 2008, former Education Minister, Datuk Seri Hishammuddin Tun Hussein revealed that teachers in the workload of today are too heavy. The increasing responsibility and workload of teachers lead teachers to play a variety of tasks in carrying out their duties.

2. Teacher work is less supportive of management

The previous studies show that there is a significant relationship between support organizations with stress, commitment, attitude, motivation and job satisfaction (Zulkafli, 2007; Halimah, 2006; Rasidah & Surwati, 2010; Arenawati , 2002). According to Halimah (2006), school support is one of the factors that helps teachers' attitude and motivation. Organizations that are concerned about the welfare of workers will receive a reply in the form of committed employees and able to perform their off-take behaviour (Rasidah & Surwati, 2010). So organizational support does play an important role in helping teachers overcome their problems.

3. Teacher attitude towards change and level of knowledge differ

In general, Nurul Huda (2013) notes that the involvement of teachers in the process of curriculum innovation in schools varies as well as challenges and obstacles in implementing them effectively. The implementation of innovation in the curriculum faces barriers as there is anxiety, conflict, insecurity and teachers' difficulty in changing existing practices to new practices. There is still a psychological barrier such as uncertainty in the use of sophisticated tools including electronic tools as well as computer and telecommunications technologies.

4. Development of professionalism of teachers

According to Dato 'Seri Mahdzir Bin Khalid in the Early Document of the Master Plan on Professionalism Development (2016), the improvement of the quality of education is the focus of the Ministry of Education Malaysia (MOE) in the process of transformation of the National Education System. The quality of educators should also be strengthened through ongoing training so that they can develop human capital that meets the National Transformation Agenda 2050

(TN50). In this regard, KPM is willing to assist educators with guidance and professional development planning on an ongoing basis. The Teacher Training Professional Development Plan (PIPPK) is proof of MOE's commitment to helping to improve the knowledge, skills and value of Education Service Officers.

3.2 THE IMPACT ON STUDENT

Meeting the challenges of Industry 4.0 or the Fourth Industrial Revolution, students must be out of habit. According to Afandi Ahmad (2017), in preparation for the industry challenge 4.0, students should consider the following actions;

1. **Sharpen complex problem-solving skills.**
   In this case, complex problems are measured through the widest range of conflicts involved, the depth of analysis and knowledge required, the unique issue involvement, the standardization of standards, the needs of users, and the various impact impacts are required. Therefore, students' cognitive flexibility is indispensable to address the complex aggressive and holistic.

2. **Clean up spoken, written communication skills**
   With IoT as a pulse, the ability to communicate effectively and verbally and in writing is critical. Once upon a time, face to face meetings, but today our discussion is everywhere. Many conflicts due to communication, through language and communication art aspects, are not examined. With misunderstandings, teamwork, leadership and problem-solving are inhibited.

3. **Strengthen yourself as a leader and team member**
   Solving complex problems across the discipline thoroughly requires excellent teamwork, as a team leader and team member. In addition to technical knowledge, charisma and innovative leadership is a recipe for teamwork success.

4. **Get into yourself with emotional intelligence**
   For Industry 4.0, smart enough is not enough. Excellent worker not only needs to be skilful and full of wisdom but also needs to be emotional. Emotional intelligence is the ability to identify and manage the emotions of others and the other with three key advocates of awareness, networking and emotional control.
5. **Take advantage of all the opportunities, always creative**
   Opportunities in the Industrial Age 4.0 are like gold scattered on the streets, just waiting for those who come quoting it. With Industry 4.0 emphasizes that for smart manufacturing, the human resources that will fill it must be wise to take the opportunity, be creative and innovative in making suggestions and take risks.

3.3 THE IMPACT ON EDUCATION

According to Hida Taba (1962), Technology has changed and is changing not only the face of the earth and the institutions of our society but man itself. The statement clearly shows that technological developments have brought about a rapid change in human life on earth. Therefore curriculum development should be aligned with the development of the world and the development of the world. The content of education curriculums that emphasize science subjects and technical or vocational skills of skilled manpower is needed in this technologically advanced era. (Ee Ah Meng, 1995).

Through the MOE, the government has also restructured the higher education system to enable it to respond to the need for nation-building in accordance with the nine challenges in Vision 2020. The government has also developed strategies and plans to ensure that Higher Education Institutes (HEIs) are encouraged to undertake change and achieve excellence to face the competition posed by the global education market. The objective of these plans is to ensure that Malaysian universities achieve world-class status and operate as a hub for higher education in the Southeast Asia region (Ministry of Higher Education, 2007).

According to Selvaraj, Anbalagan & Azlin (2014), the current trends in Malaysian higher education are based on four factors impact:

1. **Globalization**

Globalization implies the opening of local and nationalistic perspectives to a broader outlook of an interconnected and interdependent world with free transfer of capital, goods and services across national frontiers. According to Knight (2002), in today's era of globalization, knowledge is increasingly a commodity that moves between countries. The growth of the knowledge-based economy has led not only to competition among employers worldwide for the best brains but also among the institutions that train the best brains.

2. Teaching and Learning
Teaching and learning are one of the strategies included in the National Higher Education Strategic Plan (NHEAP) 2007–2010. In order to ensure a stable and strong institution, dynamic and relevant curricula and pedagogy are needed. A well-designed higher education curriculum should include creativity, innovation, leadership and entrepreneurship. It should equip students with appropriate skills to enable them to compete with the challenging global market. Peer review and industry collaboration must be enhanced in curricula development and evaluation.

3. Governance
Higher education in Malaysia has grown tremendously since independence in 1957 to meet the demand for quality education. In order to produce sufficient graduates to meet the manpower requirements of the nation's economic growth and to portray Malaysia as an education hub, especially in South East Asia, the MOE has formulated two education plans, the NHESP beyond 2020 and the NHEAP 2007–2010.

4. Knowledge-Based Society
The fundamental objective of the education system is to ensure that all Malaysian students, be they in primary schools, secondary schools or in higher education, are equipped with the knowledge and skills required to be successful in life. In an effort to develop a holistic individual, the government spelt out its national education philosophy in 1996

3.4 THE IMPACT ON INDUSTRY

The importance of curriculum change to the revolution of 4.0 can indirectly affect the economic pattern of a country. This is because changes to the goodwill create a skilled workforce in line with industry needs. With a systematic curriculum change, a country will quickly achieve developed country status. Both, meet the needs and needs of students who change from time to time.

In this Industry 4.0 era, there will be some changes happened especially in the industrial field. With those programs, the students and teachers are going to take advantages out of it by having insights on how the current situation is in the industry.

Education 4.0 is coined to be the future of education which responds to the need for Industry 4.0 where man and machine align to enable new possibilities. In order to be aligned with the Industry 4.0, education sectors must be well prepared to train the students – known as talents – especially in the higher level to be ready for this new era of industry.

4. CONCLUSION

As mentioned earlier, the curriculum reflects the wishes of the people and the ideology of a country. In Malaysia, unity is the basis of the nation's educational philosophy. It is consistent with what Razak's Statement (1956), the Education Act 1961 and the Reporting Cabinet (1979) suggested. Any form of organized curriculum reform will not have the expected results if not followed by restructuring in other areas, cooperation between agencies in the Ministry of Education and attention to its implementation.

The process of changing the curriculum as its ever-changing nature is also influenced by the factors that stimulate the human reaction involved in its interests. The aspiration to change the curriculum reflects the educational needs of the nation's own advancement. In fact, the factors that influence the formation and development of the curriculum are elements that are interconnected with each other. It can be argued that the factors affecting the development of the curriculum themselves reflect the idealism and change of the needs of society and country, through institutions that will pursue culture or create new civilizations.

The impact of the curriculum change towards the Industrial Revolution 4.0 can generally address the dependence on energy sources that will significantly change the future of the working world.

Therefore, if complex new technologies are not heavily weighted, it can cause Malaysia to lag behind in global competition. However, there are some things that need to be addressed for each change that is being implemented as discussed; impact change on teachers, students, education and industry. This is because the overall factor will ensure the successful implementation of a curriculum.

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