PROCEEDING

THE 8th INTERNATIONAL CONVENTION OF INDONESIAN ASSOCIATION OF TECHNOLOGICAL AND VOCATIONAL EDUCATION (APTEKINDO) AND 19TH INDONESIAN CONGRESS OF FT/FPTK-JPTK

ISBN : 978 - 602 - 74864 - 1 - 6

August, 3-6 2016
Medan, Indonesia

Published :
Faculty of Engineering State University of Medan
Association of Technological and Vocational Education (APTEKINDO) - 2016

UNIVERSITAS NEGERI MEDAN UNIMED

APTEKINDO
Asosiasi Pendidikan Teknologi dan Kejuruan Indonesia

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

RISTEKDIKTI

RAVTE
Regional Association for Vocational Teacher Education in East and Southeast Asia

EDUCATIONAL TECHNOLOGY AND VOCATIONAL IN ASEAN ECONOMIC COMMUNITY, INTERNATIONAL CONFERENCE PROCEEDINGS

3-6 August 2016
Auditorium State University of Medan, Medan, North Sumatera, Indonesia

FACULTY OF ENGINEERING
STATE UNIVERSITY OF MEDAN
NORTH SUMATERA, INDONESIA

ISBN:

Published by:
Faculty of Engineering
State University of Medan
Jln. Willem Iskandar, Psr V Medan 20222;
Telp (061) 6636757; Fax. (061) 6613319-6614002
Website: http//www.aptekindo.unimed.ac.id

In Collaboration With:
Association of Technological and Vocational Education (APTEKINDO)

Preface

We feel thankful to Allah for the blessing so that the book of proceeding of National Seminar completely compiled in relating to the 8th National Convention of Indonesian Association of Technological and Vocational Education (APTEKINDO) and 19th Indonesian Congress of FT/FPTK-JPTK 3 - 6 August 2016 in State University of Medan.

The main objectives of the seminar is to improve the capability in vocational technology in theme: **The role of educational technology and vocational in Asean Economic Community (AEC)** which is adopted from the researches in order to upgrade the graduates to be International standard so that the output of LPTK-PTK be able to compete in AEC. Therefore, the National seminar, convention and workshop of Indonesian LPTK-PTK may emerge the thoughts how to strength the role of LPTK to improve the quality of the vocational teachers in Indonesia.

Hopefully this proceeding book will be useful to develop technology, art, and culture. This book also can be as a reference to intensify the National development.

The committee would express our gratitude to all participants and stakeholders in supporting the National seminar, convention and workshop of Indonesian LPTK-PTK

Medan, 6 August 2016
Chairman,

Prof. Dr. Abdul Hamid K, M.Pd.
NIP. 195802221981031001

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IMPROVEMENT OF TECHNOLOGY AND VOCATIONAL EDUCATION AND REGIONAL DEVELOPMENT REQUIREMENTS

Hasan Maksum
FT UNP Padang
hasan_maksum@yahoo.co.id

ABSTRAC : *Growth of technological science and communications which quickly give change picture that happened globally having implication and impact to development of area. First implicate, is needed by anticipation for the execution of investment so that limited development fund can be used in an optimal fashion. Both Implication, with investment partake to accompany skilled man power practice and education, in this case if less precise will generate the problem of activity to educate or train energy which have been educated at Education of Technology and is Vocational. Furthermore, require to be taken by stages to conduct technological monitoring newly in such a manner so that is swiftly conducted by adjustment in the form of restructuring in quality and investment Education of Technology of Vocational as energy to support investment. Realizing collaboration of area resources for in improving the quality of Education of Technology and needed by Vocational of role from various good side of local government and society to be created harmonious integrity among world Education of Technology and is Vocational, corporate world and local government.*
Keyword :Technology and Vocational Education and Regional Development

I. INTRODUCTION

Rapid development of Science and Technology has influenced the type and quality of jobs in various fields. Automatically, it requires a competence of Human Resources (HR) which are produced by educational institutions, either secondary or higher education. Technology and Vocational Education has to adjust itself continuously with regional development. Therefore, it is expected that the mission of Technology and Vocational Education in preparing its graduates is relevance with the needs of regional development.

Technology and Vocational Education is one of the sub-systems within the national education system. A number of current problems encountered in Technology and Vocational Education such as, (1) non optimal achievement of graduates competencies, (2) low quality of graduates, (3) the need to adjust the relevance between the graduates and regional requirement, (4) lack of concern from industry in Indonesia to the Technology and Vocational Education, and (5) inadequate facilities and infrastructures to support learning process.

Effectuation of the decrees of Minister of National Education No. 232/U/2000 and No. 045/U/2002 influence the operation of Technology and Vocational Education as the following:

1. Requirement to adjust a new paradigm of education management by emphasizing on competence, university autonomy, accountability, evaluation and accreditation.
2. Operation of education program by considering the shift of educational management system, from centralization to decentralization while maintaining the spirit of nationalism and unity.

The implementation of regional autonomy policy has wide impacts on the Technology and Vocational Education. These include providing local autonomy with vocational education personnel in

terms of quantity and quality, and also fulfilling the demands of diversified vocational education personnel. Therefore, Technology and Vocational Education have to be reorganized, reoriented and repositioned with the spirit of regional autonomy.

Shortage of trained and skilled personnel has led to the decrease of productivity and being not able to manage production system optimally, hence leading to high cost economy problems which in turn reducing the competitiveness of product sales and comparative advantage in producing a commodity. It is widely known, in development of a region, inadequacy in quantity and quality of vocational labors is one of the main reasons of the scarcity of resources and inefficiencies. Regarding to the efficiency of resources utilization, the importance of Technology and Vocational Education is understandable.

Vocational labors are the links in implementation of Science and Technology. Trained and skilled labors as the operators of technology implementation have a key position to increase production rate. Application of new techniques or new machines in the process of technological transformations will require Technology and Vocational Education which follows those transformations. A recent rapid progress in the field of biological technology, automotive engineering, materials technology, and electronics technology, particularly robots and television has pointed the importance of Technology and Vocational Education; yet will cause uncertainty in designing the curriculum for Technology and Vocational Education itself.

Besides the rapid changes in science and technology, Technology and Vocational Education must also consider the diversity of each region requirement for its graduates. Population and available resources in each region are not spread evenly both quality and quantity, so that regional development and applications of the technology that accompanying it vary from area to area. Local custom or tradition also requires adjustments in the application of technology and management locally. Regarding to this local or regional aspect, the Technology and Vocational Education requires regionalization of Technology and Vocational Education requirement.

This paper is limited to the qualitative aspects of the relevance of Technology and Vocational Education in conjunction with regional development. The main reason of this limitation is the uncertainty factors due to rapid change of technology and production techniques. Therefore, the formulation of objectives is more general and not specific. Moreover, this qualitative discussion is caused by unavailability of a detailed study in predicting the requirement of vocational education personnel. Like the national level, the so-called men power planning cannot be done as well at the regional level. However, rough estimation of labor requirement for the sector, subsector, and the program can be derived from the formulation of development program and policy, and employment elasticity.

For those reasons above, this analysis approach in the development of Technology and Vocational Education is linked to regional development, in the form of presentation of the

development of regional development and technological changing which in turn give an implication in the development of that Technology and Vocational Education.

II. CHALLENGES AND PROBLEMS

Challenges

1. The existence of the ASEAN free trade (AFTA) and the coming of Asia Pacific free market (APEC) cause much impact on the Technology and Vocational Education, in terms of quality improvement, recruitment and placement as well as the needs of teachers in every region in Indonesia.
2. A change in government policies on Technology and Vocational Education. These policies have influenced the effectiveness of existing vocational school, facilities and infrastructure improvement, utilization of the business and industry in a dual system education, effectiveness and improvement of teacher training's capability and the effectiveness of the number of students per class in the vocational education and training, as well as a wide range of potential impacts.
3. The existence of a new paradigm in national education in the context of crisis management, community empowerment and the creation of intelligent Indonesian civil society.
4. The existence of education decentralization as representation of balance authority's policy between central and local as a logical consequence of the Act No. 22 and 25 in 1999. It also influences on improving the welfare, quality, career development and teacher's placement those previously managed by the center then moved to the local government.
5. The existence of regional autonomy, which has impacts on financial management and education budgets, more dominated by local budget and partly subsidized by the central government. Therefore, decision-making processes related to the recruitments and placements of teachers are referring to particular regional policies.

Problems

The evaluation of development implementation and analysis of regional development issues are emphasized on economic development due to its closed relation to the Technology and Vocational Education. Development in the economic field during the new era (Orba) and the reformation era, regardless of the many issues those needed to be refined again, has shown encouraging results. Equitability of development and its results through fulfilling of basic needs approach, which are the provision of food, clothing, shelter, education, health, employment and income, has been able to improve welfare and standard of living. Provision of food, clothing and shelter has increased each year, with the price where the people are able to buy.

Potential problems for increasing the income per capita in the future are the limitation and declining of the agricultural sector to support income increase and employment opportunities. These require an overview for the use of new technologies through investment of irrigation, high quality seed production, agricultural machinery and other things, so it can contribute to both income increase and employment opportunities.

Expansion of employment opportunities still seems to be relying on agriculture sector, which is expected to evolve to industrial sector. Meanwhile, the constructions or buildings show a declining trend in providing jobs opportunities due to the government policy in reducing the budget for government buildings or offices as the impact of monetary crisis in Indonesia previously. By studying the industrial growth over the years, the progress in industrial sector was still limited to small industries and handicrafts. Products from various industries are mainly still in the form of raw materials which have to compete in overseas markets with synthetic materials which are more competitive in price and quality.

III. DEVELOPMENT OF REGIONAL DEVELOPMENT AND TECHNOLOGY

The development of regional economy cannot be separated from the characteristic of the national economy which is overseas market oriented. Primary commodities (agriculture and mining) are marketed inside the country as well as overseas. Similarly, food commodities are not only sold in the region, but also in the surrounding provinces and islands. Therefore, external and global economics factors also influence the regional economy.

On the other hand, the world economy is affected by the rapid development of science and technology. The discoveries on biological technology have been able to lower the production costs. Development of materials technology has affected the demand for metals such as lead, zinc, iron, aluminum, and steel. Alloy, plastic and steel with great strength and superior properties have replaced the pure metal as they can reduce weight and cost. Communications satellite weighing only 20 kilograms has replaced sea-cable communication system of 150,000 tons, and fiber optic has replaced copper as telephone wire. New type of ceramic compound has replaced the metal turbine in aircraft engine due to greater strength and heat resistance at high temperatures, reducing cost, and solving the corrosion problem as well.

The invention of micro chips has reversed the comparative advantages of the availability of low cost labors in developing countries. Initially, developed countries cannot compete in production costs due to their high wages, and as a result, many factories are relocated and built in the developing countries. By invention of micro chips, robots and automatic production systems can reduce production costs and avoid human errors in production. As the result, many the factories are then rebuilt in developed countries, whereas the same factories in developing countries cannot compete with the robot power. Therefore, as production of materials, the development of automation and robotics require restructuring in developing countries investment.

The regions that oriented to the overseas market for both primary and secondary products are also influenced by the revolution of biological technology, materials technology, and electronic technology. Regions require adjustment and restructuring of investment and relevance in the development of Technology and Vocational Education, at least in the long-term planning. Also, the use of advanced technologies in agriculture, industry and the processing and manufacturing industry, electronics technology, tourism, education and healthcare industries.

Agricultural production will shift from producing consumption products to producing seed or brood stock of crops, livestock, farm, plantation and fisheries. In addition, the composition or type of commodities produced more varied not only in food commodity but also high added value commodities, such as horticulture and flowers.

Development strategy in the industrial sector is directed toward the production of finished goods. Rubber and latex are processed into finished goods, such as gloves, rubber for medical used, foam rubber, tires and other rubber products. Similarly, raw materials of spices such as cinnamon, pepper and nutmeg are processed into final products for domestic and export consumption. In addition, it is also required to develop industries for agricultural machinery, water pumps and components of processing plants.

Development of Technology and Vocational Education as an educational service industry is a long-term strategy after the development of education as a service. The reason for development toward an educational service industry is that because each region has comparative advantage in intellectual development, and this activity has been successfully developed since the date before Independence Day. Therefore, in long term, the development of education will be directed toward a service industry.

The use of advanced technologies to support the development of agriculture, manufacturing, electronics, tourism, education and the healthcare industries will not only affect the planning of capital investment, but also investment in Technology and Vocational Education. Thus, it is required further cooperation with the local labor department, an activity that has been initiated by the labor department.

IV. CLOSING

Rapid development of science and technology as described above is intended to illustrate the global changes that have impact and implication to the regional economy development which has domestic and overseas market orientation. The first implication, it is necessary to have anticipation in investment program to optimize the limited development budget. The second implication, with the investment following education and training of skilled workers, in this case if the investment is inappropriate it will create problems in the activities to educate or train the personnel who have been educated in Technology and Vocational Education. Therefore, it is necessary to create steps for monitoring new technologies for quickly adjusting in term of restructuring in the investment and relevance of Technology and Vocational Education as supporting the power to the investment.

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Certificate

This is to certify that

Hasan Maksum

Has participated as

PRESENTER

International Seminar

"The Role of the Technological and Vocational Education in Asean Economic Community (AEC)"

at the 8th National Convention of Indonesian Association of Technological and Vocational Education (APTEKINDO)
and 19th Indonesian Congress of Engineering Faculty / FPTK-JPTK
Medan, 3 - 6 August 2016

Organized by

Faculty of Engineering - State University of Medan

Medan, 6 August 2016

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