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Triple Helix Collaboration: Optimising the Quality of Human Resources in the Digital Age through the Teaching Practitioner Programme

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Abstract. Changes in work patterns and trends in work skills needs caused by automation and increasingly sophisticated technology cause humans to be able to adapt quickly. It cannot be denied that there are changes in labor needs by the industrial world that must be responded to by higher education institutions. Higher education institutions are required to improve the quality of human resources to reach a superior level. In line with this phenomenon, this study aims to review how a government policy can encourage the integration of higher education, industry, and government to create quality human resources. The literature study method was used to obtain various information that became the focus of the study. The study results found that industry can encourage changes in government policy and demand innovation and transformation of higher education in producing superior resources as output by qualifications and needs. This study implies that universities, government, and industry have their respective roles and functions in the integration that encourages the birth of quality and superior human resources.

Keywords: triple helix collaboration, human capital quality, automation and technology, higher education, government policy

INTRODUCTION

The labor market is undergoing significant changes triggered by the Industrial Revolution 4.0, characterized by large-scale automation and widespread technology use, especially in the industrial sector. These developments necessitate diverse skills among prospective workers to meet complex job qualifications. Prasetyo and Trisyanti (2018) state that the convenience of the Industrial Revolution is accompanied by the threat of unemployment due to automation. Salleh and Puteh (2017) emphasize the importance of 21st-century skills to produce quality graduates.

Education plays a crucial role in addressing the challenges of the Industrial Revolution 4.0 by creating quality human resources. Given the rapid and dynamic changes in the labor market, the education paradigm must evolve to adapt to these changes. The key to success lies in changing the perceptions of prospective workers to develop new skills. Rahayu (2021) states that Indonesia focuses on developing human resources, aligning education with industry needs, and utilizing technology for this industrial era.

The industrial sector, a significant employment provider, requires specific qualifications not all workers possess. Universities should adjust their curricula to meet the demand for advanced or new skills, producing superior human resources. According to Putriani and Hudaidah (2021), the changes caused by the Industrial Revolution 4.0 require Indonesia's education system to be revitalized to face current and future challenges. Higher education institutions should see this as both an opportunity and a challenge, especially for vocational education aimed at producing skilled labor capable of competing in the labor market.

Education is essential for driving economic growth and prosperity and is a vital area of public investment. Higher education levels correlate positively with a better quality of life, employment opportunities, and lower unemployment rates. However, achieving quality education depends on funding availability. Ershova et al. (2019) found that higher education financing in developed countries differs significantly. Investment in education is a critical factor in improving competitiveness, leading to sustainable economic growth. Sun et al. (2018) revealed that governments should utilize revenue from natural resources to increase investment in education to improve human resource quality.

Quality education can only be achieved with the government's role. Automation and technology adoption have raised concerns about graduates' ability to meet job qualifications. The government, as a policy maker, must respond to labor market demands and align the competencies taught in higher education. The goal is to integrate higher education, industry, and government to create quality human resources.

Conceptualization of Competitive Human Resources

The concept of a country's advantage, first proposed by Adam Smith in his work "An Inquiry Into the Nature and Causes of the Wealth of Nations" (1776), known as Absolute Advantage, refers to a country's ability to produce goods and services using fewer resources than other countries. This concept is the basis for international trade, where differences in production efficiency between countries are the main trigger for exchanging goods and services in the global market. However, in 2014, Rita Gunther McGrath's book "The End of Competitive Advantage" asserted that sustainable competitive advantage can no longer be achieved by conventional means. The strategies proposed by Porter, such as breaking down the value chain into its components, are now faced with challenges in the face of current economic dynamics. In an increasingly connected and fast-changing economy, collaboration among stakeholders is the key to facing common challenges and creating sustainable added value.

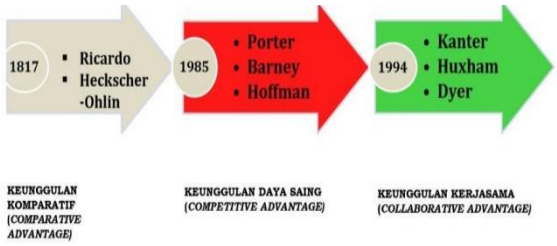

Figure. 1 Conceptualization of Competitive Human Resources

Collaboration has become a new paradigm in the business world, which has shifted from competition to cooperation. In this context, Apple teaming up with IBM and Xerox with Fuji Film, even though they were previously competitors, shows that collaboration is now considered more important than competition. This change occurred due to the understanding that in today's social economy, power lies in cooperation and openness, rather than in tension and restraint of resources. The shift from "Assertiveness" to "Empathy" and the removal of boundaries between departments and organizations is a response to the demand for flexibility and adaptability in the face of rapid change.

Teaching Practitioner Programme Concept

The Teaching Practitioner Programme, initiated by the Ministry of Education, Culture, Research and Technology of the Republic of Indonesia, is a concrete step to deal with these changes. The program aims to connect the academic and industrial worlds by encouraging active collaboration between expert practitioners and champion lecturers in higher education. The exchange of knowledge and experience between the two parties is expected to improve the relevance of the higher education curriculum to industry needs and assist students in acquiring skills and knowledge that match the demands of a dynamic labor market. This is especially important given the results of a Willis Towers Watson survey that cited the difficulty of Indonesian companies in finding work-ready graduates and the latest data from the Central Bureau of Statistics that shows a high unemployment rate among the labor force.

Although the Teaching Practitioner Programme is still in its early implementation phase in 2022, there is an excellent opportunity to make policy improvements so that the program can have a tangible impact on improving the quality of education. Therefore, this study will identify the potential and constraints in implementing the program and offer practical and effective policy recommendations to achieve the objectives of the Teaching Practitioner Programme. With the right policy development, the program can make a significant contribution to reducing the gap between the world of education and the world of work, as well as preparing university graduates to compete in an increasingly complex and global labor market.

METHODOLOGY

In order to find relevant studies, the researcher collected literature to obtain as much information as possible related to the research topic. The approach used was a literature study, which focused on theoretical analyses and references from relevant scientific literature. The data sources include books, scientific articles, papers, and journals relevant to the research topic. The data collection technique was carried out by searching for information on essential points or variables that were the focus, then recording them from various sources that have been mentioned.

Content analysis was used to identify patterns and findings relevant to the research topic. To ensure accuracy and consistency in the data collection and analysis process, cross-checking literature sources and re-reading the collected literature were conducted. This aims to prevent and overcome misinformation due to limited knowledge or understanding of the researcher.

RESULT AND DISCUSSION

The problem faced by the world of education today is how to adapt and prepare human resources to face challenges in the future. Education quality cannot be improved independently by educational institutions; it must involve contributions from other parties, such as industry and government. In this context, there is a recognition that producing quality human resources through higher education is not only the responsibility of educational institutions but also the result of synergy with industry needs.

One of education's main goals is to achieve humanity's welfare, which is reflected in the ability and skills individuals have to utilize their knowledge to achieve a prosperous life. This can be realized if human resources have the qualifications and skills to fill employment opportunities in various industrial sectors. The industry concept here is not limited to a narrow definition but covers a broader and more flexible spectrum.

To create an education that is in line with the demands of the industrial world, there is a need for policies that support the revitalization and improvement of the education system. Along with the Industrial Revolution era, educational institutions must be directed to produce technically competent human resources and have a strong character. A successful education is one that can create quality individuals with high competitiveness in a dynamic labor market.

The complexity of producing quality human resources means that contributions from various parties are needed. As a regulator and policy setter, the government has a vital role in setting the direction and targets of the economy, including creating enough jobs to accommodate population growth and economic development.

In the Indonesian context, the government has set an ambitious target of creating ten million jobs by 2023. This step shows the government's seriousness in dealing with the changes brought about by the industrial revolution. Therefore, higher education institutions in Indonesia must be able to respond by producing quality graduates who can fill the available job opportunities.

The Triple Helix model is a relevant framework for understanding how quality human resources are produced through collaboration between universities, industry, and government. Through the synergy of these three parties, it is expected to create an educational ecosystem that is responsive and adaptive to the labor market's needs and can produce qualified graduates ready to compete in the era of the Industrial Revolution.

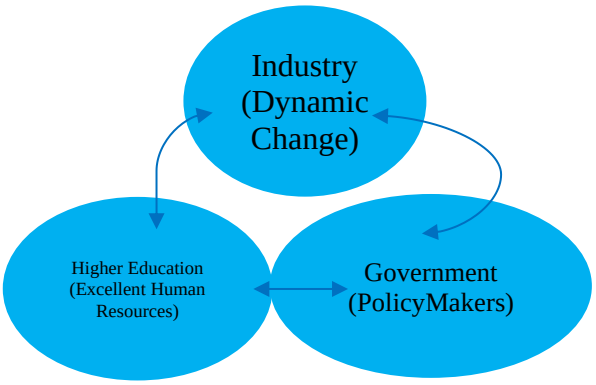

Figure 2. Triple Helix Model of the Role of Universities, Government, and Industry in Improving the Quality of Human Resources in the Digital Age

Through the Triple Helix concept, effective collaboration between universities, government, and industry will produce quality human resources that meet the needs of the labor market. Each party has a specific role that can support the realization of this goal.

Firstly, industry plays a vital role as the main driver in determining the competencies and qualifications required by the labor market. By providing an overview of the required competencies, the industry can guide universities in designing a curriculum relevant to the world of work. The presence of qualified and competent workers will increase the quantity and quality of production and open up employment opportunities for individuals with the appropriate skills.

Second, universities are vital in producing quality human resources by providing educational services. They must be able to adapt to the needs of a dynamic labor market, especially in developing skills that are in line with industrial development. Through education, individuals can fulfill their life needs and have selling points that are useful for themselves and the surrounding community.

Third, as a policymaker, the government has a crucial role in determining the direction of education today and in the future. Revitalization of the education system must always be done in order to adapt to dynamic changes. The role of the government covers various aspects, such as education services to the community, provision of education facilities, assistance to education providers, cooperation with various related parties, and provision of education funds.

Through supportive policies, the government can create a conducive environment for the growth of education and employment opportunities. Ease of access for the private sector and businesses in terms of licensing can also expand the labor market, increasing labor absorption in various sectors. Thus, synergistic collaboration between universities, industry, and government is the key to creating qualified human resources ready to compete in the era of the Industrial Revolution and dynamic global change.

Teaching Practitioner Programme

The Teaching Practitioner Programme is an initiative undertaken by the government to increase collaboration between industry and higher education. As part of the Merdeka Belajar Kampus Merdeka Programme, this program brings experienced practitioners from various professional fields and industries to collaborate with lecturers to provide students with a more diverse and relevant learning experience. This collaboration between practitioners and lecturers aims to enrich classroom learning with a practical perspective that can help students understand the application of the material learned in the context of the world of work.

In addition to providing a dynamic, competitive, collaborative, and participatory learning experience for students, the Teaching Practitioner Programme also allows universities to collaborate directly with workplace practitioners. This enables the implementation of more practical and applicable learning to industry needs. The program also aims to bridge the gap between universities and the world of work so that students can be better prepared to face the challenges and demands of work after graduation.

Overall, the process flow of the Teaching Practitioner Programme consists of two main parts. Firstly, universities collaborate with practitioners to design and organize practical and applicable learning. Secondly, practitioners and lecturers work together in the classroom to share knowledge and experience, thus enriching students' learning experiences and helping them understand the practical application of the material learned. Thus, the Teaching Practitioner Programme is expected to positively contribute to better-preparing students to enter the world of work.

Teaching Practitioner Programme Policy Development

In policy development at the level of the main issues related to implementing the Teaching Practitioner Programme, several steps can be taken to ensure that the policy can be implemented effectively and provide maximum benefits. The following are the steps for policy development at the university level:

1) **MOU is signing with DUDI (Business and Industry World):** Universities can collaborate with DUDI, who have experience collaborating with universities. The focus of this collaboration can be on certain faculties as an initial step or pilot project—for example, the collaboration between UNNES and BNI Regional Office 05 Semarang.
2) **Recruitment of Practitioners from DUDI:** After the MOU is signed, the next step is to recruit practitioners from DUDI who have collaborated with the university. This aims to synchronize qualifications between industry needs and the existing curriculum at the university, thus ensuring the relevance of learning materials to the world of work.
3) **Evaluation of the Teaching Process:** During the process of teaching practitioners, it is essential to conduct an evaluation using indicators that have been agreed upon by both parties, namely the university and DUDI. The presence of lecturers in the learning process is also crucial in this evaluation.
4) **Joint Curriculum Development:** Based on the results of the evaluation of the teaching process, the next step is to conduct joint curriculum development between the university and DUDI. This process ensures that learning materials can be continuously adapted to the development of the world of work and industry needs.
5) **Evaluation of Learner Quality:** After implementing the standard curriculum, an evaluation is conducted again to assess whether the changes can improve learners' quality. This evaluation is essential to evaluate the effectiveness of the implementation of the teaching practitioner policy in improving the quality of education in the university.

By following these steps, implementing the teaching practitioner policy can become more applicable, provide maximum benefits for students, and create effective collaboration between universities and the world of work.

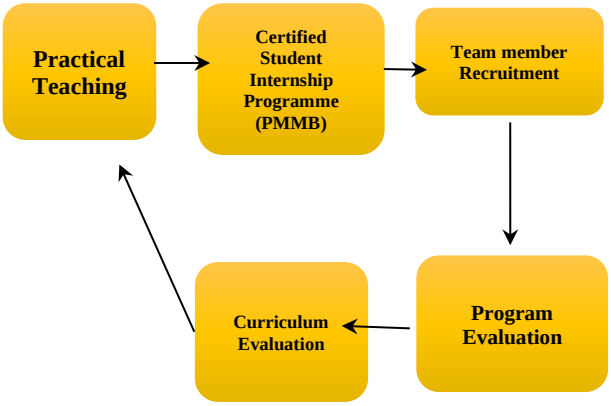

Figure 3. Implementation Flow of the Teaching Practitioner Programme

Functional planning is required to ensure effective implementation when running a teaching practice program. The importance of detailed recording of all processes undertaken must be noticed, as this provides an opportunity for in-depth evaluation. Consistent and ongoing evaluation is critical in ensuring that programs can be continuously improved and adapted to evolving needs. This process should be conducted regularly, and the evaluation results should be used for improvement and development at each stage. With this approach, the teaching practitioner program can provide maximum benefits to students and industry and ensure its sustainability and effectiveness in bridging the gap between education and work.

CONCLUSION

This study confirms that adapting to changing work patterns and skill needs triggered by technological advances and automation is crucial. Universities, government, and industry have a crucial role in ensuring the availability of qualified human resources in line with labor market dynamics. Universities need to continuously adapt to the evolving needs of industry and the labor market, while the government is responsible for revitalizing the education system to suit future needs.

The importance of collaboration between universities, government, and industry is highlighted in this study. Solid cooperation between these three sectors is critical to creating excellent human resources. The role of each party in this integration is crucial, and they must continue to work together within a framework that is evaluated and developed on an ongoing basis. Implementing policies such as the Teaching Practitioner Programme is one concrete example of this cooperation, which aims to improve the quality of education in Indonesia.

As such, this study reinforces the importance of Tripel Helix collaboration between universities, government, and industry and highlights the urgency of such cooperation in facing future challenges. Sustainable and result-oriented cooperation will effectively advance the education system and prepare resilient human resources to face ongoing changes.

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