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Decision Support System Course in Developed and Developing Countries

Syaichul Fitrian Akbar[a,1,*], Halizah Binti Awang[b,2]
[a] Graduate School, Universitas Negeri Malang, Malang, Indonesia
[b] Fakulti Pendidikan Teknikal dan Vokasional, Universiti Tun Hussein Onn Malaysia, Batu Pahat, Johor, Malaysia
[1] syaichulfitrian@gmail.com; [2] halizah@uthm.edu.my

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ABSTRACT

The development of technology and information influences the needs of society and the transformation of the labor market so that higher education is involved in intense competition, including higher education. For this reason, this study observes the higher education system in both developed and developing countries, especially in the teaching of decision support systems (DSS). The method used is descriptive and critical studies by considering the guidelines proposed by Kitchenham and adjusted to the literature review, consists of two main stages: planning and implementation. The research founds that the higher education system in developed countries is ready to face globalization. Developed countries also prepare higher education systems for their students to be able to master 21st century skills, such as creative, innovative, ability to think critically, ability to solve problems, excellent communication skills, and be able to work in groups. On the other hand, the higher education system in developing countries has to face their local problems. This study is far from perfect; therefore, suggestions are given to other researchers to reveal more detail, more focus, structured, or developed with a far better approach or method.

I. INTRODUCTION

The development of technology and information has an influence on people's needs and the transformation of the labor market, so higher education is involved in intense competition. The phenomenon makes a paradigm shift in the higher education system, where education is one of the most significant challenges in the whole world [1]. The strength of a nation is based on the quality of its Education [2]. Therefore, preparations need to be made to face the future, because in the future there will be intense and competitive competition. In the future, there will always be changes along with the development of technology and information that occurs continuously. The education system needs to be prepared to deal with endless changes in the future by continuing to look for ways to provide relevant improvements.

Education is the most potent force for cultivating human capital and promoting modernization [3]. The education system will largely determine the future of the country. Enhancing the quality of national education is needed to ensure the future development of the country [4]. Education is the most potent weapon that can be used to change the world [4].

Higher education is the highest level of academic education before employment, the main channel to enhance knowledge and ability, and an essential component of the education system [5]. Higher education contributes to national development through the dissemination of specialized knowledge and skills [6]. Higher education must be dynamic and continuously enter uncharted domains so that the university is considered an essential form of investment in the country's development.

Higher education is of vital importance for the country, as it is a powerful tool to build a knowledge-based society of the 21st Century [7]. When a country can provide skilled people to the outside world, then the country can be changed from a developing country to a developed country easily and quickly [8].

This paper reports have three goals to know: the description of the higher education system in developed countries, the description of the higher education system in developing countries, and the decision support system syllabus in developed and developing countries that related to the higher education system. Based on that, it can be know how the syllabus of the decision support system in the higher education system between developed and developing countries.

II. Literature Review

A. Education Curriculum

The curriculum has a concept that always develops, along with the development of education. The value of the curriculum cannot be seen only from written documents, but also must be assessed from its implementation in the classroom [9]. The curriculum is not merely a written teaching plan but is a function that operates in the classroom, guidelines, and regulations on the environment and activities in the classroom [9].

To understand the education curriculum, it is necessary first to understand the concept between curriculum and education. Education is a tool to provide stimuli so that human potential develops according to what is expected [9]. Education is also often interpreted as a human effort to humanize humans, to be able to fulfill their duties as human beings and as citizens. Education can occur through human interaction with the environment, both physically and socially [9].

There are three curriculum concepts, namely (1) curriculum as substance, (2) curriculum as a system, and (3) curriculum as a field of study [9]. The curriculum acts as a plan for students' learning activities. Curriculum as a system or also known as a curriculum system, is part of the school system, education system, and even the community system. The result of the curriculum system is the arrangement of a curriculum. The curriculum as a system serves to maintain the curriculum to stay dynamic. The curriculum, as a field of study, aims to develop knowledge about curriculum and curriculum systems.

Based on this education curriculum, a study was conducted to find out the description of the higher education system in developed and developing countries. Thus, it can be seen how the higher education system between developed and developing countries, so can be used as a reference for developing countries to enhance their higher education system.

B. The Decision Support Systems Course

Decision support system is an area of Information Systems (IS) disciplines focused on supporting and enhancing managerial decision making [1]. Furthermore, a decision support system is a software-based system that supports decision making activities, both business and organization [10]. Decision support systems are a mature technology and have proven their usefulness in business [10]. Another researcher state that decision support systems are used as a tool to improve decision making processes in complex systems, especially if the information is uncertain or incomplete [11]. Decision making is basically a systematic approach to the core problem in finding facts, looking for alternatives, and in making the right decisions [12]. Decision support systems are recognized in higher education because they are able to perfect decisions that are still hesitant by conducting data mapping to be used professionally [1].

Decision support systems have contributed to the improvement of business organizations' decision making processes and through the development of decision models that cover all areas of business organization activities and connect them to database systems, so as to provide appropriate information for decision making [13]. Based on the current understanding, a decision support system is a tool that can help to provide decision recommendations based on algorithms derived from an understanding of the application of domains based on predetermined criteria to support managerial decision making.

Decision support systems here are courses that are topics related to the higher education system in developed and developing countries. The study was conducted based on the syllabus available online, both in developed and developing countries. The result can be a material discussion for a more in depth study.

III. Method

The method used is a descriptive study and critical study by taking into account the guidelines and adjusted to the literature review, which consists of 2 main stages, namely planning and implementation [14]. In the first stage, namely planning, consists of 3 stages, namely (1) selection of studies, (2) determining the criteria of the topic of study, (3) defining categories for conducting an analysis. The second stage implemented the planning formulation.

The first stage in the planning phase is determining journals and conferences related to Educational Sciences, Education Journal, Education and Learning, Arts & Educational Research, Multidisciplinary Research and Development, International Journal of Education, International Education Research, Journal of Research, Engineering Technology Science and Research, and Information Systems. Related journals and conferences are education, research, and information systems. The purpose of this stage is to select relevant journals and conferences as a consistent, systematic review, so that methodologically more robust and scientifically consistent.

The second stage in the planning phase is defining categories to carry out an analysis. The category for conducting analysis consists of higher education levels in developed and developing countries, education that occurs when the analysis is carried out, and efforts made regarding education in the country. The content analysis makes it possible to find research trends on a topic. In the event of a difference, it was resolved through discussion [14].

IV. Higher Education System in Developed Countries

A. Germany

Germany is one of the countries on the European continent, so especially in Germany, will discuss the education system in continental Europe first. This was done because many countries on the European continent were developed countries, so this could be used as a reference for developing countries to find out about the higher education system in Europe.

Western societies are currently experiencing an era of great transformation, mobility of goods, information, and humans, both in volume and impact [15]. This has an effect on the higher education system in Europe, where all social work practices throughout the world can be considered as arenas, where global and local interact and influence people's experience. Globalization influences higher education and the importance of the internationalization of higher education is seen throughout the world. It was stated in the Bologna Declaration of 1999 that European countries agreed to "promote the European dimension needed in higher education, especially those relating to curricular development, cooperation between institutions, mobility schemes and integrated study programs, training and research".

Previous study shows that all universities have added an international dimension to their curriculum [15]. The curriculum is one part of the higher education system. Educators in Europe believe that the internationalization of the curriculum has contributed to professionals in a more qualified future. In some countries, internationalization is a criterion for accreditation of higher education programs.

In Germany, there are differences between research universities and universities of applied sciences in Europe. In research universities, especially the faculties of social sciences are more oriented to theory, while at the university of applied sciences, the branch of vocational education is more practice oriented. It takes students who have the appropriate skills and competencies, such as mastering a foreign language, gaining knowledge and insights about other cultures, making it possible to function better in a multicultural or international environment.

The international curriculum that is of particular concern is the purpose, content, use of foreign languages, and curriculum integration in the overall education program. Students who follow the international curriculum can become more competent in the adaptation of new social and cultural contexts, the development of comparative competencies, transcultural awareness, develop critical thinking, national context, and foreign language skills [15].

Whereas in Germany, the education system, and systems in Germany continue to experience changes and improvements to overcome new challenges and needs. Based on the results of the study, it can be known as the main steps of development and provide a basis for national and international discussions about the progress and challenges of education [16]. Education policy in Germany has passed five significant periods since the period after World War II to the present. The first period was post World War II in the late 40s. The second period occurred in the '50s and '60s, where focused on education for reconstruction and economic growth. The third period occurred in the 70s and 80s, during this period experienced many social changes. The fourth period occurred in the 90s, during which this period was carried out to accelerate change, especially in the field of Vocational Education and Training (VET). The fifth period occurs in the millennium until now.

Education in Germany applies lifelong learning. Initially, Germany developed two education systems, one for the Federal Republic of Germany and another for the German Democratic Republic, which lasted more than 40 years. However, since the merger took place on October 3, 1990, the education system became a single unit.

After entering the millennium, the PISA Shock struck German education, where people and politicians were shocked by the results of the German average in the first weak of study in Programme for International Student Assessment (PISA), so the education system needed to be redesigned. In 2002 Bologna's ideas were considered to change the study programs of universities and universities of applied sciences, from diplomas to bachelor's and master's degrees. Changes are made to make the study program shorter so that it can be completed more quickly.

In the first decade after 2000, Germany has focused on e-learning, implemented technology and information in which other countries have not used it, especially in developing countries. In 2010, Germany discovered new opportunities related to blogs, wikis, and mobile learning as learning purposes. Until now, the education system in Germany has focused on challenges in the industry sector 4.0 and the accompanying digitalization aspects, because it will be a revolution in German education in the years to come.

The higher education system in Germany is divided into three, namely universities, applied science universities, and art/music universities. The university offers all levels of academic discipline. The university focuses on basic research to follow up, especially theoretical oriented and research-oriented components. The University of Applied Sciences concentrates study programs in engineering and other technical disciplines, such as business, social work, and design fields. The university of art/music offers studies for artistic careers in fine arts, performance, and music, and other fields such as directors, production; writing in theater, film, and other media, and in the fields of design, architecture, media, and communication. Diploma education is taken for 4-5 years, undergraduate for 3-4 years, master for 1-2 years, and doctorate for 3-4 years. The educational assessment scheme in Germany usually consists of five levels, namely (1) excellent, (2) good, (3) satisfying, (4) sufficient, and (5) insufficient/failed.

Germany adopted a subject-centered curriculum approach with an emphasis on learner-centered tasks in learning. In a subject-centered curriculum, courses are divided into a different course, but an interdisciplinary approach is also possible. The teacher education system in Germany allows students to specialize in two open courses to formulate these interdisciplinary courses.

The curriculum in the education system in Germany is generally formulated to give teachers the freedom to adopt appropriate content, teaching methods, and assessment instruments in their classrooms. This is referred to as pedagogical responsibility for teaching lessons about the students' interests. In determining its decision, it is conducted by the teacher conference, where the teacher discusses teaching and education to apply the lesson if it is deemed appropriate. One of the responsibilities of teacher conferences is to choose textbooks from the list approved by the ministry.

B. China

With the reform movement in 1978, the China government began to make great efforts to develop education in his country [3]. China seeks to achieve a world class education system. The quality of teaching and the level of academic excellence must be achieved. The education system in China is among the oldest in the World [3]. Traditional culture and the political education system still influence the education system in China.

Higher education in China has proliferated since 1990, with the number of colleges and universities also increasing rapidly [5]. Changes experienced by China are very significant changes and can not be separated from the efforts made by China leaders to implement reforms, especially in education [4]. Efforts to build China through the education sector can be seen from the expansion efforts carried out from 1980 to the beginning of 1990. During this period, China's education continued to progress rapidly and made many innovations [4].

The China education system has a structure that is highly centralized and overseen by the Ministry of Education. The process of developing higher education in China is persistent and fast. Higher education in China has set up a systematic knowledge system, which actively dampens community needs, and forms a teaching model to serve national strategies and economic and social development at the regional level. China universities train students at different levels, according to different market needs. China universities have well organized personnel training systems, have information technology-based teaching management platforms, adequate infrastructure, and facilities. Higher education in China starts from higher education at the same level as the academy, which is taken for 2-3 years, technical vocational education for 4 years, undergraduate for 4-5 years, masters for 2-3 years, and doctorates for three years.

China strives to meet the highest international standards, for example, by playing an essential role in China's social and economic development. China does not have a national credit system, meaning that the amount of credit needed for completion of undergraduate programs, for example, can vary between institutions, from around 180 to 240.

China internationalizes higher education, which is strategically designed and programmed by the government so that institutions formulate their strategies and plans within the national frameworks [17]. China restructured the higher education system because of the influence of globalization and the drive for modernization of the 21st century economy [18].

C. Singapore

The education system in Singapore has been developed for the last 50 years. Singapore has a vision of education to develop an independent education ecosystem that offers diversity and quality education services to the world, thus becoming the engine of economic growth, capacity building, and talent attractiveness for Singapore [19]. The Singapore education system aims to provide students with holistic and broad-based education because Singapore has multicultural and multiracial characteristics [19]. Singapore moves towards a more flexible and diverse education, which gives students a better choice to meet different interests and ways of learning.

Singapore has a public higher education system consisting of universities, polytechnics, and technical education institutes. Singapore's higher education system organizes several prestigious institutions and international partnerships. Fundamental changes in curriculum and assessment methods are needed to facilitate education so that students are equipped with creative thinking skills and innovative ideas. Polytechnic education is taken for three years, undergraduate for 3-4 years, master for 1.5-3 years, and doctorate for 2-7 years [19].

Efforts to expand schools in Singapore have resulted in standardization, one of which is by creating independent schools in an effort to hand over management authority and a larger curriculum to schools and allow 20% up to take advantage of the enriched curriculum. According to the Progress in International Reading Literacy Study (PIRLS) conducted in 2016, Singapore is ranked 4th among 45 education systems [19].

There is a Thinking Schools Learning Nation that serves to introduce critical and creative thinking, more diversity in the curriculum, greater structural diversity, greater than resources to encourage innovation, and increase education. Singapore has shifted from a rigid system to a more flexible and responsive system. Also, students in Singapore need 21st century skills, such as problem solving, skills, communication, and others. Besides, capacity is also needed to develop new knowledge through Research and Development, and provide opportunities for lifelong learning. The new mission of education is to prepare for jobs that do not yet exist, create ideas and solutions for products and problems that have not been identified using undiscovered technology. For this reason, there needs to be openness to new ideas and approaches, creating new pedagogical approaches or methods.

V. HIGHER EDUCATION SYSTEM IN DEVELOPING COUNTRIES

A. Zimbabwe

Zimbabwe is a developing country, where there are two curricula:(1) an integrated curriculum, where education or learning is industry-based, and (2) a curriculum that is purely for education. An integrated curriculum has many enthusiasts. After all, it leads to a career that is relevant and motivated because it can get a better job. Education for sustainable development generally requires a student-centered approach, relating to the environment, teachers with technical, content, pedagogical, and leadership skills [20]. Implementation of teaching can be through projects, problem solving, critical

thinking, and practical skills. With that, it will be able to produce products that are creative and have entrepreneurial skills to promote development, both locally and globally.

Zimbabwe implements the same curriculum documents, but the implementation is different in each school. Some involve integration with the environment and industry, developing competencies for the world after school by applying modern technology, while others focus on high academic achievement, as well as the acquisition of knowledge. Thus, emphasis needs to be placed on student-centered strategies, maximizing technology and integrating education with industry.

B. India

India and Germany are two important countries in the modern era as far as education is concerned [21]. The higher education system in India is complex [22]. In its size and diversity, India has the third largest higher education system after China and the United States and the most extensive higher education system in the world in terms of the number of institutions [22]. India's higher education system is the third largest in the world, after China and the United States [19]. The India higher education system is the largest in the world in terms of the number of institutions [7]. Higher education in India for undergraduates is pursued for 3-5 years, a master for two years, and a doctorate for 3-5 years.

The problem that occurs in higher education in India, that is still influenced by caste, religion, economy, place of residence, and gender [7]. In India there are still many problems in terms of education, such as a small ratio of registrants, a lack of relevant learning, a lack of teachers, overlapping policies, and an increase in private institutions with their own funding. These problems need to be addressed because that problems can affect the higher education system in India.

India's step to improve its education system is to move towards the Learning Society, education that is student-centered and uses dynamic methods. The overall scenario in higher education in India is not by global quality standards [6], [8]. An ongoing curriculum is needed in the higher education system to offset the rapid growth of science and technology. Youth in India always try to go abroad for higher education because they have far better facilities and quality of higher education systems [8], which can happen because of some universities in India with inadequate necessary infrastructure [23].

The shortcomings of the higher education system in India are divided into four broad categories, (1) the low quality of teaching and learning, (2) the gap between supply and demand, (3) uneven growth and access, and (4) constraints on research and innovation capacity [23]. The curriculum in India is outdated, rigid, and has few opportunities for interdisciplinary learning [23]. Pedagogy and assessment are focused on input and memorization, so there is little chance for students to develop a broader range of transversal skills, including critical thinking, analytical reasoning, problem solving, and working in groups. These things need to be resolved to fix the higher education system in India.

In addition to the existing problems, higher education in India serves as a powerful tool to build a knowledge-based information society in the 21st Century [23]. However, the higher education system in India when compared to developing or developed countries still needs significant improvements [23]. The reason is that China, Singapore, Taiwan, and South Korea position themselves as leaders in a knowledge-based economy in the coming era. After all, they invest in large and different higher education systems [23].

C. Indonesia

Education in Indonesia has not adequately provided hope for the community through the values and benefits of education, indicated by the low quality of graduates, and the low relevance of education in terms of the substance of the needs of the community [4]. Indonesia still needs to catch up with educational standards with other countries. The low quality of graduates is proof that education in Indonesia has not been developed optimally [4]. This shows that the higher education system in Indonesia still needs to be improved.

The curriculum is often seen as a document that is the only handbook for teachers. This makes the teacher afraid to create and innovate in teaching activities. Teachers always pursue curriculum targets, where the implementation of learning experiences will vary in various situations, both every semester and every year. So that the learning process is mostly still limited to the completion of teaching materials. Not all students can understand the contents of the material so that it impacts when conducting the test. Also, curriculum substance in terms of material density is not significant to the available time allocation. This makes the material taught in classless meaningful, and less relevant for students.

When viewed from curriculum issues, things that need to be improved are the implementation and demands given to implement and the demands given to implement the curriculum. For example, the teacher is given the freedom to run the curriculum while still in the same corridor, so the teacher is asked to complete the related teaching material. Therefore, a learning process that is centered on students is needed by providing a fun learning process. Moreover, all that must be arranged in the higher education system.

Indonesia has the fourth largest education system in the world after China, the United States, and India. However, no Indonesian university is ranked high in world universities [24]. Therefore, ICT-based national education policy is a solution to improve the quality of school education, especially in Indonesian vocational high schools (VHS) [25]. In Indonesia, there are types of academic specialties, such as academics, polytechnics, universities, institutes, and universities. The first two types of specialization are vocational, while the rest is academic. Diploma 1 to Diploma 4 courses are taken for 1-4 years, undergraduate for four years, master for two years, and doctorates for three years [24].

VI. Decision Support Systems Syllabus in Developed Countries

Based on the official website of the University of Pittsburgh, it is known that at the University of Pittsburgh in

the United States, there are Decision Support Systems for Public Managers course with a code of 90-745, and the number of credit is 3. The course is held 1x a week within 3 hours (05.30 p.m. - 08.30 p.m.) with a break time of 15 minutes (06.50 p.m. - 07.05 p.m.). The learning objective is to get acquainted with a set of computer-based tools to assist in human decision making in the context of the organization. The things learned are (1) how to use simple techniques in decision making in uncertainty, (2) composing decision problems so that they can be modeled, (3) helping organizational decision making with decision support systems, and (4) how to use analytical methods in processing systems smart information and decision support systems. The prerequisite is to take management science courses, decision analysis, data analysis (statistics), and modeling techniques. The reading sources are textbooks, Decision Support Systems and Intelligent Systems, 5th edition by Efraim Turban & Jay E. Aronson as the main book, and can use other relevant books. In addition to the main book, there are supplementary books to deepen the material, for example, Making Hard Decisions: An Introduction to Decision Analysis by Robert T. Clemen. Software needed, such as GeNIe and SMILE. Six tasks are done at home with groups of 2-3 people and formed during meetings in class—a 20 minute class presentation with exciting topics related to the course. The 3rd week is a discussion to avoid the same topic and in the 5th week of the presentation. The final task is to build a decision support system. Also, there is one comprehensive final examination consisting of multiple choices and essays. Assessment consists of 30% assignments, 10% presentations, 30% projects, and 30% final examinations. Also, there is 10% for participation in the class.

Based on the official website of RMIT University, it is known that at RMIT University in Australia, there is a Decisions Support Systems course with ISYS1018 course code, and the number of credits is 12. Face to face learning method. Necessary prerequisites, math skills, and spreadsheets. The purpose of learning is to have the ability to: choose the right modeling technique, identify and choose the right decision support system, design, and implement a decision support system. Thus, it is obtained the ability to recognize the relationship between business information needs and decision making, assess the general nature, variety, development, analysis, design, and implementation of DSS. Learning activities: active participation in scheduled lectures and workshops, reading assigned notes and reading material, completing assignments satisfactorily. Minimum participation is not mandatory, a satisfactory project completion is required. Access university learning centers, Distributed Learning Systems (DLS), find out announcements, staff contacts, teaching schedules, assessment schedules, and essential teaching and learning material. Assessment is based on completing a series of tests and class assignments.

VII. Decision Support Systems Syllabus in Developing Countries

Based on the official website of the University of Petra, it is known that at the University of Petra in Amman, Jordan, has a DSS course (602481) with three credit. The course has prerequisites code without supported by name and other details. The purpose of the lecture is to introduce students to a software system that coordinates data, modeling, algorithms, and user friendly interfaces to create an environment in automatic or interactive decision making. Lectures consist of 16 weeks, in which the first exam and second exam are not included in the working week. Discussion topics include decision support systems and business intelligence; decision making systems, modeling, and support; decision support systems concepts, methodologies, and technologies: an overview; modeling and analysis; business intelligence; system development and acquisition; collaborative computing technologies: group support systems; and knowledge management. The assessment includes 20% attendance and homework, 20% first exam, 20% second exam, and 40% final exam. The textbook reference source is the Decision Support Systems and Intelligent System 8th edition by Turban & Aronson and other sources that can be obtained online.

Based on the official website of Uppsala Universitet, it is known that at Uppsala Universitet in Sweden, there is a Decision Support Systems course with a 1HY126 course code, and the number of credits is 5. Where the scoring system is Fail (U), Pass (3), Pass with Credit (4), and Pass with Distinction (5). With requirements, BSc 180 credit exams in the fields of natural sciences, technology, and social sciences. Learning objectives, reflect and apply fundamental scientific theories about hypothesis testing, falsehood, equality, and predictive power as applied to decision making: material, fundamental theories of science and methodology, environmental assessment cycles, introduction to methodology. The learning consists of lectures, project work, and literature studies. The assessment uses written reports and project presentations (3 credits), and written examinations (2 credits).

Based on the official website of the Slovak University of Technology, it is known that at the Slovak University of Technology in Bratislava, Slovakia, there is a Decision Support Systems course with an SYPR06_6D course code dan number of credit is 10. Time allocation workshop 2 hours a week. Assessment methods, ongoing tests, and assignments. Learning objectives, gain in depth knowledge of decision theory, knowledge engineering, expert systems, and decision support systems. Able to formulate problems and design knowledge-based problem solving systems. Content, optimal and satisfying decision theory, expert systems, and decision support systems, creating knowledge bases, knowledge discovery in databases, data mining, and applications. References are of two types, primary and recommended.

Overall, the implementation of the syllabus of decision support systems and education syllabus in developing countries, is also very dependent on the equitable distribution of information access systems and their supporting devices. This is similar to the results of research conducted by Elmunsyah (2012) that the means of government support in disadvantaged areas in the form of content, information systems and supporting devices are a necessity so that students results learning in the regions can be optimal in developing countries [26].

VIII. Conclusion and Suggestions

The description of the higher education system in developed countries is prepared to face globalization. This can be done by developed countries because there are only a few problems in education at the local level so that that developed countries can pay attention to global challenges. The higher education system in developed countries is built over a long period with not a little investment, but these results can be obtained at this time. Developed countries have high enthusiasm. When knowing their country is left behind or has specific weaknesses, then the country is not discouraged, but does its best to catch up and improve existing weaknesses.

Developed countries also began to implement internationalization in their higher education system. Internationalization is carried out to prepare quality students, so they can compete at the global level, and provide access to international theory and knowledge.

Developed countries also prepare their students to master 21st century skills, such as creative, innovative, ability to think critically, ability to solve problems, excellent communication skills, being able to work in groups, and others. Based on this, it can be known that developed countries have a vision that is able to analyze problems and be able to provide solutions, always innovate, and always try to give the best.

The description of the system of higher education in developing countries has its advantages. However, there are still problems that need to be resolved, such as the unemployment rate, the low Human Development Index (HDI), and other local problems. These problems can affect the higher education system. Developing countries have also tried to improve the quality of their education system. Therefore, to be able to participate in or compete with developed countries, especially in the higher education system, existing local problems must be resolved first. Indeed, the solution will not be easy; therefore, a strategy and correction is needed for the existing higher education system.

Developing countries can see or adopt or modify the higher education system in developed countries. Thus, developing countries will have references to make corrections to the higher education system in their country. Each developing country has the potential to become a developed country, but it needs much effort to make it happen. One of them is through the higher education system because the country's future will be determined mainly by its education system.

Based on several syllabi related to the topic of decision support system courses in developed and developing countries, it is known that the higher education system in developed countries emphasizes understanding. This is seen implicitly in the syllabus of decision support systems accessed from one university in the United States and Australia. From there, it is also known that students are required to have a basic understanding so that they do not experience difficulties and can understand what will be done. The learning is also required to be innovative and creative and able to solve problems in the real world. Even though in developing countries, there is still too much content to be solved. The increasing number of content that must be resolved does not rule out the possibility that student understanding cannot be maximized because there is much content that must be learned. That way, students will only be healthy in memorization, but not comprehensive.

Based on the existing higher education system and the syllabus, it needs to be started with an excellent higher education system so that in the implementation phase, it can be more focused. Learning needs to be centered on learners, but it needs to be emphasized on understanding, creativity, innovation, critical thinking skills, ability to solve problems, excellent communication, and the ability to work in groups. Thus, based on these results, it is expected to be able to assist in shaping education reform with the assumption that countries are willing to learn from each other about success from other countries. Hopefully, this can be used as a material for discussion. This paper is far from perfect. Therefore suggestions are given to other researchers to reveal more details, focus more, be structured, or be developed with approaches or methods that are far better.

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