

Lecturers' Competences towards 21st-Century Learning Transformation and the Challenges of Industrial Revolution 5.0

Ummul Khair

Institut Agama Islam Negeri Curup
ummulkhair1213@gmail.com

Kholik

Institut Agama Islam (IAI) Al-Qolam
kholik@alqolam.ac.id

Abstract

Teachers and lecturers are important components in preparing the younger generation for the future, which is the hope of the nation. In order to produce professional lecturers with qualified competencies to face the challenges of the industrial revolution 5.0, Society 5.0, which is a new future for humans that relies on the advanced use of technology in various aspects of life, including Industry 4.0 and cybernics, must be considered. The vision of Society 5.0 demands a transformation in learning. Therefore, this paper will explain Society 5.0 and the importance of educational transformation, 21st-century learning and its implications for lecturers, and the development of literacy competencies and efforts to strengthen the education system.

Keywords: *Lecturer Competence, 21st-century learning, Industrial Revolution 5.0*

Introduction

The 21st-century educational model is distinguished by a focus on improving students' learning skills. The targeted learning skill is an attempt to enhance students' 4C abilities, which include collaboration (ability to work with others), communication (ability to communicate effectively), critical thinking (ability to think critically), and creativity (ability to develop innovative ideas). Education in the 21st century emphasizes the need to develop a generation that is knowledgeable and skilled in the use of technology (Trilling and Fadel, 2009).

Although higher education in Indonesia is growing rapidly in terms of quantity, the quality of education needs improvement to compete with universities in developed countries. In 2021, Indonesia's tertiary education participation rate was only 31%, lagging behind neighboring countries such as Malaysia with a 38% participation rate and Singapore with a 78% participation rate.

One of the challenges faced by higher education in Indonesia during the industrial revolution 4.0 and into the 5.0 era is the mismatch between educational background and work. In Indonesia, academic education is more prevalent than vocational education, leading to disruption and resulting in many tertiary education graduates not working in fields related to their scientific background. Such incidents pose significant challenges for the world of higher education, particularly for lecturers who are expected to design learning strategies that meet the needs of the workplace while also paying close attention to the characteristics of the millennial generation of students.

The 21st century is sometimes referred to as the "century of globalization" because of the profound changes in human culture that have occurred since the turn of the century. It's common knowledge that success in the 21st century workplace involves using only the best human resources, which in turn needs using only the most professionally managed institutions that can provide the best results. To meet the demands of the times, various breakthroughs in conceptualization, thought, and necessary actions are required. As a result, a new paradigm is needed to address these new challenges (Mukhadis, 2013).

Every facet of life in the 21st century is distinct from that of the 20th, including modes of employment, social interaction, and personal development. Many normal and repetitive occupations, both in manufacturing and in computer development, have been progressively replaced by machines thanks to the fast growth of information technology and the introduction of completely automated systems that started at the beginning of the 21st century. It is undeniable that the 21st century has fundamentally altered both the patterns of life in society and the field of education. Campuses and schools, as we know them today, have also changed shape as part of developing an educational pattern that is relevant to the times, namely encouraging students to enter the world of industrialization.

Schools and campuses were originally established to aid in the formation of civil society and industrialization. Since the unification of Germany in 1989, globalization has continued to this day, taking place in North America, Europe, and the East American region. While Asian countries have not been united due to cultural and ethnic diversity, it is expected that they will one day follow globalization in the same way that Western countries have.

Society 5.0 represents a new era in human history, one in which technology is integrated into all facets of daily life. Shinzo Abe, a former prime minister of Japan, invented the phrase "Society 5.0" to describe an approach that seeks to strike a balance between technical advancement and integrated solutions to social, educational, economic, health, and other concerns. Health, finances, transportation, and infrastructure are just a few examples of how big data and the IoT have given rise to artificial intelligence, which in turn will revolutionize people's habits and ways of life. At present, humans are increasingly developing AI (Artificial Intelligence) technology, which will ultimately provide convenience in their daily lives.

Society 5.0 is closely linked to the Fourth Industrial Revolution, also known as Industry 4.0. There are several ties that connect the two. Industry 4.0 represents a shift in work that focuses on data management, industrial systems enabled by technological advancements, communication, and increased work efficiency related to human interaction. Industry 4.0 is closely linked to the demand for innovation in various sectors, including education. To achieve this, the availability of qualified human resources is essential. It is nearly impossible to create innovation and realize a country's progress without such human resources (Suwandi, 2018).

The Fourth Industrial Revolution and Society 5.0 pose significant challenges to the international community, including Indonesian society. Of course, the education world will face challenges and demands in producing competitive graduates, creating graduates who have skills in data literacy, technology literacy, and human literacy. As a result, educators, teachers, and lecturers have no other option but to participate in educational and learning transformations. Lecturers must transform into educators who are sensitive to and responsive to the needs of their students.

In this regard, having a curriculum that can respond to the demands of Industry 4.0 and Society 5.0 is critical. A curriculum pattern that uses a digital human approach and has digital-based skills is necessary. Higher education institutions are expected to correctly answer whether the education and learning patterns that have been designed and implemented are in accordance with the predetermined platform, namely an educational model capable of meeting the needs of students while also meeting the demands of the community as users.

If we consider the vision of Society 5.0, it necessitates several changes in learning in tertiary institutions, such as focusing more on skill development, offering flexible study programs, being open in determining learning outcomes, promoting the slogan of lifelong learning, allowing initiatives to emerge, and increasing innovation in learning. This includes conducting research oriented toward scientific development and finding new ways of scientific innovation (Sarwiji Kelvin, 2021).

Education plays a crucial role in the 21st century as it is necessary to equip students with skills in learning, innovation, information technology, and life skills. According to a report by the Republic of Indonesia's Ministry of Education and Culture and Higher Education, the defining characteristics of the 21st century include: (1) the ability to access information at any time and place; (2) faster computing; (3) automation that replaces routine jobs; and (4) constant, anywhere-and-anytime communication (Ministry of Education and Culture Research and Development, 2021).

Although the 21st century has only been around for a decade, there has already been a shift in the philosophy, direction, and goals of education. Scientific and technological advancements, particularly in cognitive science, biomolecular science, information technology, and nanoscience, have greatly contributed to the progress of science. The increasingly connected world of knowledge is one of the most prominent features of the 21st century, and the synergy between them is accelerating.

There are a number of shifts that Trilling and Fadel have identified as occurring in the 21st century. These shifts include (a) the world shrinking as a result of technological and transportation advancements, (b) the rapid expansion of information technology and media services, (c) global economic growth that significantly impacts changes in employment and income, (d) a focus on resource management including water, food, and energy, (e) cooperation in environmental management, and (f) efforts to increase k. (Trilling, Bernie and Fadel, Charles, 2009).

Furthermore, there has been a shift in employment trends from an industry-based society to a knowledge-based society. Trilling and Fadel (2009:4) outlined the differences between the old and new societies.

Figure 1.1 Flowchart of Changes in the Industrial Age and Figure 1 Flowchart of Changes in the Knowledge Age



Gambar 1.1 Alur Perubahan Masa Industri (*Industrial Age*)



Gambar 1 Alur Perubahan Masa Pengetahuan (*Knowledge Age*)

Changes in the transition from an industrial to a knowledge-based society (the knowledge age) will have an impact on various cultural and educational aspects. As new workers emerge in knowledge-based industries (knowledge work), the majority of new jobs require qualifications that industry workers do not have. Workers of the future will need training in the notion of analytical knowledge, a new way of thinking about their jobs, and a commitment to lifelong education. Work that was traditionally done in farm and the home has shifted to the

industrial sector, and people in these fields now need a broader range of skills and knowledge to succeed (knowledge work). Therefore, change is necessary to prepare individuals to live and work in the knowledge age, particularly in the field of education (Trilling and Hood, 1999).

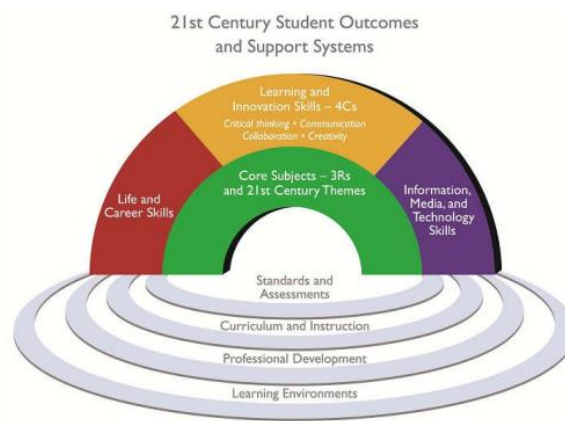
Education is an integral part of Indonesia's national development efforts to improve the standard of living and human welfare. Of course, the numerous changes brought about by the reformation era and the globalization process affect life. Therefore, a clear and directed vision for Indonesian education is required. This specific vision and plan serve as the strategic plan for Indonesia's national education. It is necessary to understand the current problems in order to develop a vision and strategic plan for national education development. The essence of national education development is an effort to produce superior human resources to prepare society and the nation for the competitive era of knowledge (knowledge age).

Literature Review

Learning Paradigm Shift in the 21st Century Era

The above-mentioned need for a shift in human perspective in the twenty-first century also necessitates a radical revamping of our outdated national education system, which teaches students to regurgitate information without imparting an appreciation for its context or significance. Reforming Indonesia's educational system is no easy feat. There are over 30 million kids enrolled in schools in the Republic of Indonesia, with another 2 hundred thousand schools and four million educators on hand to serve them.

However, to avoid being overwhelmed by global changes, we must make this change. This framework also describes the skills, knowledge, and expertise that students must master to be successful in life and work.



Partnership for 21st Century Skills: Framework for 21st Century Learning
Gambar. 2 Framework Pembelajaran Abad ke-21

Thus, the Ministry of Education and Culture proposed that the 21st-century learning paradigm places an emphasis on students' capacity to integrate information from many sources, generate novel questions, use critical thinking skills, and work together to discover solutions (Ministry of Education and Culture Research and Development, 2013).

The explanation regarding the 21st-century learning framework according to (BSNP: 2020) is as follows: (a) Critical-Thinking and Problem-Solving Skills, being able to think critically, laterally and systemically, especially in the context of problem solving; (b) Ability to communicate and collaborate (Communication and Collaboration Skills), able to communicate and collaborate effectively with various parties; (c) Critical-Thinking and

Problem-Solving Skills, being able to think critically, laterally and systemically, especially in the context of problem solving; (d) Ability to communicate and collaborate (Communication and Collaboration Skills), the ability to communicate and collaborate effectively with various parties; (e) Ability to create and innovate (Creativity and Innovation Skills), the ability to develop their creativity to produce various innovative breakthroughs; (f) Information and Communications Technology Literacy, the ability to use information and communication technology to improve performance and daily activities. (g) Contextual Learning Skills, the ability to engage in contextual independent learning activities as part of personal development, and (h) Information skills and media literacy, the ability to understand and use various communication media to convey various ideas and carry out collaborative activities as well as interactions with various parties.



Gambar 3. Pergeseran Paradigma Belajar Abad ke-21

Everyone must have critical thinking abilities, digital literacy, information literacy, media literacy, and knowledge of information and communication technologies in order to tackle learning in the twenty-first century. Many studies on the use of information technology to assist 21st-century learning have been undertaken in different nations.

Society 5.0 (Society 5.0) and Education Transformation

Society 5.0 is not characterized as a wave of innovation, but rather as a social model. Industry 4.0 and cybernetics are two of the foundations of Society 5.0. Cybernetics is an interdisciplinary discipline that seeks to advance technology, industry, and society in order to aid, support, and improve the functioning of the human body. Cybernetics encompasses a broad variety of disciplines, including medical and nursing robot development and deployment, engineering, medical sciences, information (communication) sciences, and social sciences. In the meanwhile, cybernetics is the study of regulating or managing information systems. Cybernetics is a tool used to carry out cybernetics.

Regarding Industry 4.0 as an important pillar of Society 5.0, the skills needed to be able to carry out work activities in the Industry 4.0 era are relevant to the learning needs of the Society 5.0 era. According to Yamnoon (2018), these abilities include (1) sensory perception, (2) retrieving information, (3) the ability to recognize patterns or categories, (4) generate new patterns/categories, (5) solve problems, (6) maximizing and planning, (7) creating (creativity), (8) articulating or displaying output, (9) coordinating with various parties, (10) using language

to express ideas, (11) using language to understand ideas, (12) sense social and emotional, (13) make social and emotional considerations, (14) produce emotional and social output, (15) fine motor/dexterity, (16) gross motor, (17) navigation, and (18) mobility.

21st Century Era Learning

If we look closely, we can see that the curriculum development implemented by the government through the Ministry of Education and Culture (Kemendikbud) at the primary and secondary education levels has referred to three educational concepts in the twenty-first century era, namely 21st century skills, scientific approach (scientific approach), and authentic assessment. A significant implication for lecturers and teachers is that learning must refer to the four 21st-century learning models, namely always thinking critically in problem solving, being creative and innovative, collaborating, and communicating, also known as the 4C (critical thinking and problem solving, creative and innovation, collaboration, and communication).

The following table shows the results of the analysis on learning in the knowledge age quoting Trilling and Hood:

Table 1. Differences in the Implementation of Industrial Age and Knowledge Age

No	Industrial Age	Knowledge Age
1	Educators hold full power for the learning process, all centered on the teacher	Educator as a facilitator
2	Educators as a source of knowledge and knowledge	Educators as study partners
3	Learning centered on the curriculum (direct learning)	Student-centered learning
4	Study is limited by time and scheduled	Learning is more flexible and according to needs
5	Fact-based learning	Project-based and problem-based learning
6	Theoretical, ABSTRACT, and survey	Real, process and reflection
7	<i>real & practice</i>	<i>Inquiry & design</i>
8	According to rules and procedures	Find (discovery)
9	Compete (competitive)	collaborative
10	Focus on problems in class	Focus on social issues
11	Learning in accordance with existing norms	More creative learning
12	Computer as a subject of study	Computer as a medium for learning
13	Static based presentation media	More dynamic presentation media
14	Communication between students is limited in class	Communication between students becomes unlimited
15	Assessment is done based on test results	The assessment is reviewed from various aspects

Source: Trilling and Hood (1999: 11)

The learning transition between the industrial and knowledge ages can be seen in the table above. According to the author, these changes are as follows: Firstly, educational practice is undergoing a paradigm shift. Learning in the industrial period relied heavily on facts, drills, and practices; this approach was less successful in the knowledge age. Project-based learning, problem-based learning, inquiry-based learning, design-based learning, and discovery-based

learning have replaced more traditional forms of instruction in today's knowledge-based society.

In the industrial age, learning was interpreted as an effort to improve skills through gradual and detailed habituation of students in responding to the stimulus they received, which was reinforced by proper behavior from teachers. However, this puts students at a disadvantage as they were thought to have little or no individual potential.

In today's information-based society, education is seen as a process designed by instructors to foster innovative thought processes that boost students' capacity to generate new knowledge and so facilitate their acquisition of subject matter expertise. A teacher's role in a student's development is best seen as an active one in which they actively aid the student's development via the provision of stimuli, guidance, direction, and encouragement. With this view, students' cognitive performance serves as the foundation for knowledge formation throughout the learning process.

Learning has two main characteristics: (1) the learning process fully engages students' mental processes, requiring student activity to think, and (2) learning is directed at improving and enhancing students' thinking skills, which in turn can help students acquire relevant knowledge. They construct themselves. Learning is more than just the transfer of knowledge; it is an activity in which students must actively participate in order to build their own knowledge based on their potential (Arifin, 2020).

During the knowledge age, it appeared that everything was dependent on information and computing technology, but there were several aspects of learning that could be accomplished without the use of this technology. A tool, not a predictor, information and communication technology (ICT) is a key enabler of the shift from the industrial to the knowledge eras in education. ICT as diverse set of technological tools and resources used to communicate, create, disseminate, store, and manage information. This technology is very helpful for the teacher because it does not only deliver the contents, but also to construct knowledge and meaning (Tinio; Vrasidas & McIsaac in Apriani et al., 2019).

Lecturer Competence in 21st-century learning Transformation

Teachers and lecturers must have academic credentials, competencies, educator certificates, and be physically and mentally healthy and capable of achieving national education goals, as stated in Article 2 of Government Regulation No. 74 of 2008 concerning Teachers and Lecturers as the legal basis for Competence and Certification. As mentioned in Article 2, "Competence" refers to a collection of information, abilities, and behaviors that educators must have, absorb, master, and actualize in order to fulfill their professional responsibilities.

When it comes to the structure of a university's curriculum, the lecturers play a crucial influence. Article 1 of Law No. 14 of 2005 of the Republic of Indonesia on Teachers and Lecturers states that "Lecturers are professional educators and scientists whose primary responsibility is to transform, develop, and disseminate science, technology, and art through education, research, and community service." Balkaran argues that professors are crucial to providing high-quality, learner-centered education (Balkaran, 2011). To this purpose, Henard argues that professors, as part of an educational system, have a key teaching responsibility characterized in two ways: (1) the effect on the quality of instruction and learning, and (2) institutionalized quality control (Henard, 2012).

With the advancement of technology, lecturers must always be adaptable by updating the four dimensions of competence they possess in accordance with the needs of the times. Lecturers in the 5.0 era must also be educators capable of studying student mindsets,

understanding digital literacy, and integrating classroom teaching and learning activities carried out with various online learning media platforms (Afrianto, 2018).

It is anticipated that professors would be able to use their knowledge to equip their students with 21st century abilities. Skills for the twenty-first century are broken down into four groups in Assessment and Teaching of 21st Century Skills: ways of thinking and working, tools for working, and life skills. The manner of thinking includes creative thinking, critical thinking, problem solving, innovation, and the ability to make decisions. Communication and cooperation are integral parts of this method of operation. Awareness-raising as a global and local citizen, as well as a feeling of social responsibility, are useful skills in the workplace. The capacity to study and operate digitally via social networks and an understanding of how to use information resources effectively underpin the part on skills for living in the world (Griffin, 2012).

Research Methodology

The descriptive research method was used by the authors in this study. The goal of descriptive research was to accurately describe the facts and characteristics of the object or subject being studied (Darmadi, 2021). The authors conducted literature studies to collect data and information. And the author's literature for this study included: various laws and regulations, as well as academic texts about the functional positions of lecturers, developers of 21st-century learning technology, and so on. Furthermore, the authors used a variety of sources from the most recent journals and scientific articles to support their discussion of this study. Data and information analysis was done descriptively, and it was also presented descriptively.

Discussion

Competence of Lecturers in the Industrial Revolution Era 4.0

The author defines competence before exploring the expertise of professors throughout the Industrial Revolution. Specifically, the English terms "competence" and "competency" are being referred to here. Competence is sometimes confused with other terms that denote roughly the same thing, such as skill or ability. Yet, the phrase "learning outcome" is more typically used in the field of education to describe this ability.

Grant and Young argue that the absence of a universally accepted definition for the distinction between competence and competency has led to the two terms being used interchangeably in various contexts and regions (Grant & Young, 2010). There is a clear distinction between the two terms, and it is based on how they are used in different nations. English speakers often use the phrase "competence," whereas Americans tend to think in terms of "competency." Competencies are what a person contributes to his job that leads to successful performance, while competencies are the outputs that are expected in a specified minimal level (Trotter and Ellison quoted by Sten, 2012).

Several different sets of skills and abilities for educators and professors have been presented by experts. The UNESCO one emphasizes 21st-century skills and knowledge. When it comes to training educators, UNESCO emphasizes what it calls "Information and Communication Technology" (ICT) capabilities.

Any educator who does not demonstrate proficiency in these areas cannot be deemed qualified. After demonstrating mastery of the aforementioned areas, candidates for teacher certification may apply for and get their credentials. Teaching, work, social, and interpersonal skills are all part of the discussion. Together with these foundational abilities, a lecturer also

needs talents like agility, inventiveness, creativity, anticipation, experimentation, openness, and networking (Harto, 2018).

Competition in today's Fourth Industrial Revolution period is fiercer than ever, therefore educators must adapt to survive. Therefore, several lecturer competencies must be mastered in the era of education 4.0, including (1) educational competence - basic skills in this era referring to the internet of things, (2) research competence - lecturer's competence in the field of research, and (3) competence for technological commercialization - competency in the commercialization process of research and innovation results, (4) globalization competence, and (5) counseling competence.

It would be unfair to compare professors from the twentieth century to those from the twenty first. The Internet of Things (IoT) has become ubiquitous in modern culture. Thus, experts in the area of education need to be fluent in understanding and operating a variety of devices that are based on the Internet of Things. The term "Internet of Things" (IoT) describes a scenario in which any human or item may be instantly linked to any other person or thing in the world. The IoT, or Internet of Things, is a cutting-edge technical development that enables real-world things to interact with their digital counterparts (Abbasy and Quesada, 2017).

Internet of Things is everywhere nowadays. Internet of Things applications include ridesharing services like Gojek and Grab, online shopping, booking of flights and trains, and live video streaming. Use of IoT in the medical field has also started. As an example, a doctor may use internet-connected medical equipment to monitor the patient's blood pressure and do other tests. E-learning, distant learning, digital libraries, e-commerce for campus small and medium-sized enterprises (SMEs), and other similar initiatives are all concrete instances of how the Internet of Things is being used in the realm of education. As a consequence, lecturers need to keep their skills up to date by familiarizing themselves with the many pieces of IoT-connected equipment that are utilized in the classroom.

Competence in Research

It is now taken for granted that in addition to teaching and community service, lecturers must also undertake research, and that this research is an essential component, for example, for advancement to functional roles of lecturers and as a requirement for other needs as professors. Lecturers are expected to do research projects, thus they must be well-versed in a range of research methods. According to Badke, research skills include "issue recognition," "source identification," "quality and appropriateness assessment," and "successful use of knowledge to address difficulties" (Garg, Madhulika, and Passey, 2018).

How many distinct research abilities are there? The authors draw on a wide range of sources to arrive at the following list of qualities essential to a successful researcher: (1) a broad range of skills and knowledge, including familiarity with related subfields; (2) mastery of research methodology; (3) experience with and insight into data collection techniques; (4) the ability to construct sound arguments; (5) familiarity with statistical concepts and procedures; and (6) the ability to communicate findings effectively.

During this age of the Fourth Industrial Revolution, the capacity to undertake research has also expanded to cover a larger region. Thus, it is anticipated that each professor would be able to create and cultivate a network of knowledge and research. In addition, professors need to be aware of international research trends in order to steer their students' studies and get funding for their own studies from a variety of local and international organizations.

Competence for Technological Commercialization

Although many academic schools' discoveries in science and technology have great potential, commercialization remains a challenge. Bringing academic innovations to market has far-reaching effects on the economy, academia, and business.

Unfortunately, due to the high risks and unpredictable nature of commercialization initiatives in Indonesia, the vast majority of them fall short of expectations. Technology commercialization, as defined by Jolly and mentioned by Zhang and Shi (2016), is the process through which a product is brought to market and then maintained to meet consumer demand. Block and McMillan have outlined several important phases of commercialization, such as (1) finalizing concept and product testing, (2) completing prototypes, (3) securing initial funding, (4) finalizing initial factory tests, (5) conducting initial market testing, (6) launching startups, and (7) gauging initial reactions from the competition.

Future faculty members, in particular those whose work relies on student participation or breakthrough finds with social value, will hopefully be able to commercialize technology outside campus and even internationally. Findings from innovation and research should be sold to the public for profit, rather than only employed as content for papers that collect dust in storage facilities.

There are a number of skills that need to be introduced into K-12 and higher education curriculum to improve students' capacity to adapt to a globalized world. Seven global competences have been identified by Pawlowski and Holtkamp. One's "generic" or "general" competence, as well as two "IS" or "Information and Communication Technology" (ICT) competences, four "project management" or "leadership" competences, five "knowledge management" or "collaboration" competences, six "communication" competences, and seven "intercultural" or "international" "competence.

Sten (2012) further elaborates on the underlying skills required to do each of these larger tasks. The scenario is outlined in the table below.

Table 2. Competency and Description

Categories	Description of Competency
ICT competence	1). Ability to use ICT according to business needs 2). Understanding the strengths and weaknesses of different sources of information 3). Ability to find quality information with the help of ICT 4). Ability to identify problems with ICT
Leadership and project management competencies	1. Ability to manage one's own abilities 2. Ability to use or utilize the knowledge and expertise of others 3. Ability to take responsibility 4. Ability to make decisions
Knowledge management and collaboration competencies	1. Ability to build relationships nationally and internationally and network at a professional level 2. Ability to share information and knowledge among team members (groups) 3. Ability to resolve collaborative issues 4. Ability to understand other people's perspectives, needs, and values
Communication competence	1. Ability to communicate sensitively regarding personal and cultural issues 2. Ability to listen to others and consider their suggestions and thoughts 3. Ability to communicate clearly and articulately 4. Ability to focus on key points in communication

Cultural competence	1. Foreign language skills (English, Mandarin, Arabic) 2. Understanding the influence and implications of culture in the world of work 3. Ability to adapt to different cultures 4. Ability to evaluate perspectives, practices and products from multiple cultural perspectives
---------------------	---

Counselor Competence

Several obstacles must be overcome in the field of education. It's likely that many students may develop clinical depression and anxiety as they go through their academic careers. Instead of a lack of openness to new knowledge being to blame for depression, more complicated personal issues being to blame. In addition to facilitating student learning, counselors play an essential role in the teaching profession. The best lecturers are also good counselors, able to inspire their pupils and provide sound guidance on how to deal with difficult situations.

Counselor competence, as defined by Urbani, involves 18 abilities that fall into three broad categories: investigating, comprehending, and acting (Alis, Jaafar, and Ayub, 2018). Eye contact, body language, tone of speech, question asking, paraphrasing and summarizing are all part of the exploratory set of abilities. Ability to recognize emotional content, personal revelation, genuine expression, a sense of urgency, and direct confrontation are all part of the comprehension phase. Ultimately, the doing stage is broken down into six sub-stages, including (1) the capacity to make decisions, (2) possible courses of action, (3) anticipations, (4) endorsement, (5) promises, and (6) an evaluation of all acts to ascertain outcomes.

Competence in Future Strategies

We face a wide range of uncertain obstacles right now because of the interconnectedness of the world and the lightning speed with which technology is advancing. Every person's capacity for change and foresight may help compensate for humanity's inherent lack of foresight. Educators at the university level need the ability to foresee and assess new educational opportunities.

As a follow-up to this topic, it is essential for educators to maintain an emphasis on developing international ties and networks. Academic activities such as (1) establishing research partnerships (collaborative research with abroad campuses), (2) joint lecturer programs, (3) campus staff exchanges, and others may all contribute to the growth of this network. Campuses in the United States can only grow if they engage in a wide variety of international partnerships. When it comes to educational priorities, Indonesian campuses shouldn't be developing much slower than the rest of the world.

Conclusions

In this age of the Fourth Industrial Revolution, educators face more difficulties than ever before. The education sector will be affected by the current wave of digital technology. Graduates from today's universities need a wide range of skillsets that reflect the features of the Fourth Industrial Revolution, since many traditional human occupations are being phased out in favor of new models and forms of labor. Lecturers, as one of the most visible and influential roles in higher education, have a special responsibility to improve their skills in this area.

Lecturers are required to have a broad range of skills and knowledge under Law 14 of 2005 on Teachers and Lecturers. The rapid development of digital technology and the spread of internationalization have increased the demands placed on today's educators. They must be well-versed in a variety of fields, including teaching, research, commercialization of technology, internationalization, counseling, and future strategy.

References

- Abbasy, M.B. & Quesada, E.V. 2017. Predictable Influence of IoT (Internet of Things) in Higher Education. *International Journal of Information and Education Technology*, 7(12), 914—920.
- Afrianto. (2018). Being a Professional Teacher in the Era of Industrial Revolution 4.0: Opportunities, Challenges and Strategies for Innovative Classroom Practices. *English Language Teaching and Research Journal*. Vol 2(1).
- Anderson, T., and Dron, J., Three Generations of Distance Education Pedagogy, *International Review of Research in Open and Distance Learning, IRRODL Journal*, Vol. 12.3, March, 2011.
- Apriani, E., Supardan, D., Sartika, E., Suparjo, S., & Hakim, I. N. (2019). Utilizing Ict To Develop Student'S Language Ethic At Islamic University. *POTENSIA: Jurnal Kependidikan Islam*, 5(1), 1. <https://doi.org/10.24014/potensia.v5i1.6279>
- Arfin, Zainal. 2013. *Konsep dan Model Pengembangan Kurikulum*. Bandung: Remaja Rosdakarya.
- Balkaran, N.D. (2011) Role of Student Ratings of Lecturers in Enhancing Teaching at Higher Education Institutions: A Case Study of the Durban University of Technology. *Journal of Economics and Behavioral Studies* Vol. 5, No. 5, pp. 268- 281.
- Darmadi, Hamid. 2021. *Metode Penelitian Pendidikan*. Bandung: Alfabeta.
- Garg, A., Madhulika, M., & Passey, D. 2018. *Research Skills Future in Education: Building Workforce Competence*. Laporan Penelitian Kolaborasi antara Centre for Technology Enhanced Learning dan Lancaster University.
- Grant, S. dan Young, R. 2010. Concepts and Standarization in Areas Relating to Competences. *International Journal of IT Standards and Standarization Research*, 8(2)
- Griffin, P. M. (2012). *Assessment and Teaching Of 21st Century Skills*. Dordrecht: NL, Springer.
- Harto, K. 2018. Tantangan Dosen PTKI di Era industri 4.0. *Jurnal Tatsqif: Jurnal Pemikiran dan Penelitian Pendidikan*, 16 (1).
- Henard, F., & Roseveare, D. (2012). Fostering quality teaching in higher education: Policies and practices. *An IMHE Guide for Higher Education Institutions*, 7-11
- J.M. & Holtkamp, P. (2012). Toward on Internalization of the Information Systems Curriculum. Dalam *Prosiding MKWI 2012 (Multi Conference Business Information System)*, Braunschweig: Maret 2012 Sten,
- Mukhadis, Amat. 2013. *Sosok Manusia Indonesia Unggul dan Berkarakter dalam Bidang Teknologi Sebagai Tuntutan Hidup di Era Globalisasi*. *Jurnal JPK UNY*.
- Peraturan Pemerintah No 19 Tahun 2005. *Standar Nasional Pendidikan*. Jakarta: Departemen Pendidikan Nasional.
- Trilling, Bernie and Fadel, Charles. 2009. *21st Century Skills: Learning for Life in Our Times*, John Wiley & Sons, 978-0-47-055362-6.
- Trilling, Bernie and Hood, Paul. 1999. *Learning, Technology, and Education Reform In The Knowledge Age*, (Online), (https://www.wested.org/online_pubs/learning_technology.pdf), diakses tanggal 11 Mei 2016

- Trilling, B., & Fadel, C. (2009). *21st Century Skills, Enhanced Edition: Learning for Life in Our Times*. John Wiley & Sons.
- Sarwiji Suwandi, 2020, *Implementasi Pembelajaran Abad Ke-21 Dan Tantangannya Untuk Berperan Dalam Masyarakat 5.0*, Proseding Seminar Nasional Pendidikan Program Pascasarjana Universitas PGRI Palembang, 10 Januari 2020.
- Suwandi, S. 2018. *Tantangan Mewujudkan Pembelajaran Bahasa dan Sastra Indonesia yang Efektif di Era Revolusi Industri 4.0*, Makalah dipresentasikan dalam Kongres Bahasa Indonesia XI yang diselenggarakan Badan Pengembangan dan Pembinaan Bahasa Kementerian Pendidikan dan Kebudayaan, Jakarta, 28-31 Oktober 2018.
- Salgues, B. (2018). *Society 5.0: Industry of the Future, Technologies, Methods and Tools*. London: ISTE Ltd and John Wiley & Sons, Inc
- Tomasevski, Katarina, Pendidikan Yang Terabaikan: Masalah dan Penyelesaiannya, Jakarta:
- Trilling, B., & Fadel, C. (2009). *21st century skills: Learning for life in our times*. Jossey-Bass
- Undang-Undang No. 14 tahun 2005 tentang Guru dan Dosen. Bandung:
- Yamnoon, S. (2018). *Education 4.0, Teaching and Learning in 21 th Century*. Lobbury Thailand: Thepsatri Rhajabat University
- Zhang, Y. dan Shi, P.Y. 2016. *Core Competencies for Commercialising Emerging Technologies*. <https://www.researchgate.net/publication/267718249>. Diunduh pada 12 Januari 2019.