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Education Psychology in Increasing the Potential of Students at the Era of Industrial Revolution 4.0

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Abstract: Education can be interpreted as all efforts done by humans to be more advanced and developed, whether done individually or independently and in groups that are held in various locations both at home, school, community, place of worship, environment, or a combination of various locations. The purpose of education is to make other individuals (students) better. The process of educational activities can be done inside the room/school or outside the school, where interaction occurs between one person and another person or group to change student behavior by providing learning material and knowledge from useful learning resources. So, in learning and teaching activities cannot be separated from mental and social activities that need each other, thereby raising the need for contributions and psychological science that can become a provision for educators to be able to carry out their duties as humanist and competent educators. Information and technology in the era of globalization at this time significantly affect activities in schools. Information and knowledge are straightforward to spread to anyone who wants and needs it. The aim of the application of educational psychology is on how to form a productive learning atmosphere. That two main ingredients can be a measure of the effectiveness of the teaching process; professional skills and knowledge as well as commitment, motivation, and care from teachers. For teachers, this is an extraordinary challenge to increase students' potential in facing the growing 4.0 revolution by exploring the potential of students to be able to be skilled and motivated.

Keywords: *Educational Psychology, Student Potential, Industrial Revolution 4.0*



1. Introduction

Psychological comes from Greek, psyche, which means "soul," and logos, which means science. Although interpreted psychology or the study of psychology. However, this is considered inappropriate. Because the psychology studied is a manifestation of the soul in the form of individual behavior when dealing with their environment. Based on this explanation, psychology is defined as the study of individual behavior in interacting with their environment. Psychology is defined as the study of science that studies the psychology and behavior of humans (Slater, 2005). Educational psychology is intended to exert influence in educational learning activities and also the more effective teaching and learning process by paying attention to the psychological responses of students' behavior. The state of the learning system, teaching methods, and students in each region is not the same. The habits of students when in the family and educational environment are sometimes also different. Educational psychology appears to provide improvements to the world of education in implementing curriculum, teaching and learning processes, counseling, and evaluation services to get a better quality of students. (Santrock, 2010) Explains psychology as a scientific study of behavioral and mental processes.

Meanwhile, according to (Nurihsan, 2013) psychology is a science that studies human behavior concerning the environment. Both of these understandings link psychology to behavior. The world of education in the era of the industrial revolution 4.0 is in the age of knowledge (knowledge age) with an accelerated increase in knowledge that is extraordinary. To realize 21st-century knowledge skills, the Ministry of Education and Culture applies the 2013 curriculum after four years later applying the 2017 Revision. The curriculum changes with the 2017 Revision are adjusted to the needs and developments of the 21st Century.

2. Literature Review

Education Psychology

In the opinion of Santrock (2010), educational psychology as follows; *“Educational psychology is the branch of psychology that specializes in understanding teaching and learning in educational settings. Educational psychology is a vast landscape that will take us an entire book to describe”*. Educational psychology is a branch of psychology that examines the understanding of teaching explicitly and learning in the educational environment and has a vast scope. The statement (Nurihsan, 2013) that the role of educational psychology is very strategic in developing qualified teaching staff. Educational psychology is applied psychology that is used to solve problems related to education. In educational psychology developed theories and research that are important for the improvement of the psychology of teaching and learning. Teaching is the process of interaction between the teacher and students in the process of knowledge transfer. Transferred knowledge is expected to be useful for



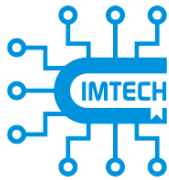
students. As explained earlier that besides the transfer of knowledge, this interaction process also contains positive encouragement from teachers to students so that what is learned can change behavior for the better.

This critical role should be responded to with positive teacher performance so that it can be an example for students. Santrock explained that teaching is a combination of art and science, and experience in combining the two will be the key to the success of a teacher (Santrock, 2010). From the art side, educational psychology requires teachers to be spontaneous and regularly improvise. Rigidity in teaching will cause students not to be interested. While in terms of science, educational psychology provides direction on how to carry out an effective teaching process. The combination of art and science here means the application of instructors to the knowledge of effective learning processes adjusted to the conditions of the classes they manage and adapt to the background knowledge and experience of the instructors and each student.

Herein lies the wisdom of a teacher in managing an atmosphere that is conducive to motivating students. In the end, the goal of applying educational psychology is on how to form a productive learning atmosphere. (Santrock, 2010) It also explains that active forms of teaching are very diverse; no one way can be said to be the most appropriate due to the variation of teachers and students (culture, ability, social economy, motivation). Therefore a teacher needs to master a variety of strategies when applying the psychology of education. Santrock then divides the two main ingredients that can be a measure of the effectiveness of the teaching process; professional skills and knowledge as well as commitment, motivation, and care from teachers. An effective teacher masters the material he teaches and also masters teaching techniques and skills. The teacher effectively knows how to choose teaching strategies and their application in managing the classroom. Besides that, they can also motivate students and be able to communicate effectively and establish mutually beneficial cooperative relationships with students who have various backgrounds.

Effective teachers know that the principles of educational psychology will help them when guiding student learning. The history of educational psychology begins with John Dewey, who holds that children are active learners; children will learn very well by practicing them. Dewey argued that children should not only be educated in academic subjects but should learn how to think and adapt to the world outside of school (Santrock, 2012). Currently, educational psychology is more focused on the socio-emotional aspects of students' lives. The socio-emotional context of children's lives affects their ability to learn (Santrock, 2012).

About the socioemotional context, the importance of teaching practices that are following development is emphasized. At Erikson's stage development, described eight life span of a human, each stage consists of developmental tasks that bring individuals together with a crisis. The more successful individuals resolve each crisis, the healthier the individual psychologically, (Santrock 2012). Meanwhile, according to Piaget, child development is seen based on the processes that occur in children when they build knowledge, namely; scheme, assimilation, accommodation, organization, equilibration,



with stages, sensorimotor, preoperational, concrete operational and formal operational. Piaget emphasized that students form knowledge. Students themselves construct knowledge. Without actual activity building knowledge, students will not know anything. The task of the teacher is more as a facilitator, and students must be actively assisted because knowledge is formed or developed with the adaptation between the human mind and its environment.

In contrast to Piaget, Vigotsky (Santrock, 2012) states that mental functions have external or social relations. Children develop more systematic, logical, and rational concepts that are the result of dialogue with outsiders / skilled mentors. Regarding the importance of social influence, there is the concept of ZPD (Zone of Proximal Development), which consists of the lower limit and upper limit. The lower limit is the level of skills that can be achieved by children who are carried out independently. The upper limit is the level of additional responsibility that can be accepted by children, with the help of someone more skilled.

Relating to the environment, according to Bronfenbrenner (Santrock, 2012) states that developing children are influenced by people who are important in their lives (family, school, peers, neighbors, etc.). Students who are given more opportunities to communicate and make decisions, both when in class or at home, show more initiative, and get better grades. Therefore, teachers must not only consider what happens in the classroom but must also consider what happens in the family, peer group students, and the surrounding environment.

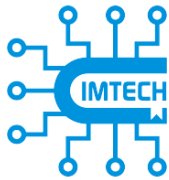
3. Method

This research aims to do a literature review. Literature study conducted by searching various written sources, whether in the form of books, archives, magazines, articles, and journals, or documents that are relevant to the problem under study. So the information obtained from this literature study is used as a reference to strengthen the existing arguments.

4. Result

Student Potential

Potential is an ability, power, ability to develop for the better. All students have potential in themselves, but all students do not have the same potential as other students. So every student has the ability, power, and also able to develop. That is, we must not sentence to sure students that the student is incapable, helpless, and also unable to develop. Because basically, every student has potential, both physical, intellectual, personality, interests, talents, morals, and religion. Each student is a unique individual who has the potential and also different abilities from one another. The potential possessed by students can be seen as having powerful memories, having durable logic



and analytical skills, characterized by being able to conclude an analysis, and much more. According to opinion (Bandura, 1995), the more able students determine their abilities, the more challenging the goals they set for themselves. Long-term goals are necessary for life. To increase the potential of students in this globalization era, we can do several strategies. There are several strategies according to (Margolis and McCabe, 2006), including:

1. Peer model Students can learn by seeing their peers who successfully carry out the task.
2. Teach specific learning strategies. Give students real plans to be ready to do assignments, from which they make them relaxed and can be implemented for overall learning skills, such as prepare exams to work on specific assignments or projects.
3. Utilize students interests grouping teaching materials or concepts according to students' desires and interests like sports or technology.
4. Allow students to make their own choices Prepare several program areas that allow students to make their own decisions, such as with flexible assessments, choice of Submission of assignments or due dates that are self-determined.
5. Encourage students to try to give students consistently, specific beliefs and encouragement, such as: "You can do this. We have prepared a framework for how to write laboratory reports and schedules about what to do every week, now follow the plan, and you will succeed.
6. Give periodic feedback. Give praise and encouragement is very important. However, all must be trusted. Use praise when it occurs and avoid excessive praise/hyperbole. Give feedback on student performances, compare with previous performances, do not compare students with other students.
7. Give encouragement with proper attribution Help students to understand that they did not fail because they were stupid, but they failed because they did not follow instructions, they did not spend enough time to work on assignments, or they do not follow up on learning strategies.

Industrial Revolution 4.0

As the times continue to progress, so many changes occur, both changes in human behavior and changes in the development of the education system in Indonesia. The education system is a strategy or method used in the teaching and learning process to achieve goals so that students can actively develop the potential that exists in themselves. The development of education at the moment is inseparable from the development of the revolution that is happening in the world because indirectly changes in the economic order have changed the order of education in each country — starting from the Industrial Revolution 1.0 which occurred in the 18th Century through the invention of a steam engine, which could increase the production of goods. The Industrial Revolution 2.0 that occurred in the 19-20th Century, the use of electricity that made production costs cheap, the Industrial Revolution 3.0 that occurred in the 1970s



the use of computerization, then the 4.0 Revolution which occurred around the 200s through intelligence engineering and also the internet of things as the backbone of the movement and connectivity of humans and machines (Prasetyo & Trisyanti, 2018).

In modern times, information and technology significantly affect school activities. Information and also new knowledge very quickly spread easily to anyone in need. Education is changing; the role of the teacher who was once the only provider of knowledge has been gradually displaced. In the future, the role and presence of the teacher in the classroom will be more challenging and will also require very high creativity. Industry Revolution 4.0 is the name of the trend of industrial automation systems, where there is an exchange of the latest data in factory technology. The term Industrial Revolution 4.0 includes physical, cyber systems, the internet for all activities, cognitive computing, and other network-based activities. The 4.0 Industrial Revolution is often also called the fourth generation industrial revolution marked by the emergence of supercomputers, smart robots, crewless vehicles, genetic editing and the development of neurotechnology that enables humans to optimize brain function. The Industrial Revolution Era 4.0 was a formidable challenge for Indonesian teachers. Quoting Jack Ma's opinion at the 2018 World Economic Forum annual meeting, education is a big challenge this Century. If we do not change the way we educate and teach, in the next 30 years, we will experience considerable difficulties. Education and learning that are conditional on the content of knowledge overriding the content of attitudes and skills are currently being implemented will result in students who are unable to be competent with the machine. The dominance of knowledge in education and learning must be changed so that later young people in Indonesia can surpass machine intelligence and are also able to be wise in using machines for the benefit of the public.

The education system needs a reform movement to respond to the Industrial Revolution 4.0 era. One of the movements planned by the government is the new literacy movement as a reinforcement, even shifting the old literacy movement. The movement of new literacy is meant to focus on three main literacies, namely 1) digital literacy, 2) technological literacy, 3) human literacy (Aoun, 2018).

These three skills are predicted to be skills that are urgently needed in the future or the industrial era 4.0. Digital literacy is directed at the aim of increasing the ability to read, analyze, and use information in the digital world (Big Data), technology literacy aims to provide an understanding of the workings of machines and technology applications, and human literacy is directed at improving communication skills and mastery of design science (Aoun, 2017). The new literacy provided is expected to create competitive graduates by perfecting the old literacy movement, which only focuses on improving reading, writing, and mathematics skills. Adaptation of the new literacy movement can be integrated by making adjustments to the curriculum and learning system in response to the industrial era 4.0 (Yahya, 2018).



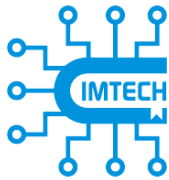
In facing the Industrial Revolution Era 4.0 in the field of education, motivation alone is not enough in realizing the ideals of making Indonesia 4.0, and there must be a concrete form and hard work for the Indonesian government and all of us in welcoming the era of digitalization. Challenges will undoubtedly be faced in every transition of innovation and technology.

5. Conclusion

Educational psychology is applied psychology that is used to solve problems related to education. In educational psychology developed theories and research that are important for the improvement of the psychology of teaching and learning. Teaching is the process of interaction between the teacher and students in the process of knowledge transfer. Transferred knowledge is expected to be useful for students. As explained earlier that besides the transfer of knowledge, this interaction process also contains positive encouragement from teachers to students so that what is learned can change behavior for the better. Each student is a unique individual who has the potential and also different abilities from one another. The potential possessed by students can be seen as having powerful memories, having durable logic and analytical skills, characterized by being able to conclude an analysis, and much more. The world of education in the era of the industrial revolution 4.0 is in the age of knowledge (knowledge age) with an accelerated increase in knowledge that is extraordinary. To realize 21st-century knowledge skills, the Ministry of Education and Culture applies the 2013 curriculum after four years later applying the 2017 Revision. The curriculum changes with the 2017 Revision are adjusted to the needs and developments of the 21st Century.

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