Meaningful Learning Reconstruction for Millennial: Facing competition in the information technology era

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Abstract: The rapidly expanding information age raises a variety of increasingly complex global problems and challenges. Tight competition and a boundless climate of competition will increasingly color the development of the world. To deal with this, the younger generation is required to be able to have a sufficient set of life skills. Meanwhile, education today is still considered too focused on the problem of knowledge. In order for the millennial generation to have sufficient understanding, education must be oriented towards giving meaning to students, as well as providing knowledge. This article will explore the reconstruction efforts of meaningful learning for millennial generations in the face of competition in the information age. Meaningful learning is directed at providing students with critical, innovative and creative thinking skills so that they are able to respond to various problems that will emerge in the future. Learning means constructivist style, where it emphasizes the ability of students to develop a comprehensive meaning from what they learn. Meaningful learning can be pursued by various methods or approaches, provided that they are student-oriented. Some methods that can be used include active learning, collaborative learning, cooperative learning, or problem-based learning. With some of these methods, of course traditional learning hegemony that has been emphasizing more on aspects of cognition will be replaced by constructivistic features that emphasize the skills of students in the learning process. That is, the greater the involvement of students in the learning process, the more skilled they will be in interpreting what they learn. Thus, they will be ready to compete competitively in this information era.

Keywords: meaningful learning, millennial generation, information age.

1. Introduction

The ability to think critically must be owned by everyone, especially in terms of developing knowledge. The ability to think is very needed by students considering each situation requires a rational thought pattern. Meanwhile, progress in an increasingly modern era allows students to be able to obtain information quickly and easily from various sources of information. Participants receive difficulties in processing the information they need to solve problems and make decisions, if they are not equipped with critical thinking skills. Therefore, the basis of critical thinking skills should have been developed early on, even to the tertiary level must also be honed.

Theoretically, education does have a broad meaning. But practically, education that is held thanks to the learning process is only interpreted in a narrow way. The definition revolves around the definition of education which is seen as a process that only involves students and educators, where students become objects of learning and educators are the subject of learning. Whereas in fact the learning process cannot be viewed only as a process of interaction between students and educators only, but learning is, “a system, consisting of various components that are interconnected with each other.” [1] As for the components of learning in the form of goals, materials, methods and
evaluations. These four components can be organized by educators so that the learning process becomes meaningful. The world of education continues to carry out various kinds of innovation, change and development towards better direction over time. According to Banathy and his friends, as quoted by M. Thobroni, changes occur in four interrelated systems, namely: (1) changes in learning experience, (2) changes in the learning system, (3) changes in the management of the system in the region which supports the implementation of the learning system, and (4) changes to the legislative system that regulates and guarantees the overall national education system [2]. The change in paradigm in education has an impact on learning components that also change.

Of the many problems that arise, there is one very important problem in learning in formal education (school) today. These problems are the weakness of the learning process, resulting in low absorption of students. They are generally less motivated in developing a dynamic, innovative and creative mindset. The learning process in the classroom is more directed to the ability to memorize information, without being directed to understanding the information in his memory as well as to connect it with the reality of everyday life. In the delivery of the subject matter is still often found an educator only directs students to record, memorize, and master the subject matter, but not directed at the process of thinking analysis, critical and systematic, with the hope that students can develop their abilities and potential. In more formal language, let's say teacher oriented dan subject matter oriented.

These various educational problems, underlie the emergence of a new paradigm by offering a variety of varied learning strategies, namely: active, and meaningful, focused on students (student centered). In general, the strategy has an understanding as an outline of direction in acting to achieve the goals that have been determined. Strategy comes from the Greek language Strategos means an attempt to achieve victory in a war that was originally used in a military environment. Furthermore, the term strategy is used in various fields that have the same relative essence meant to be adopted in the context of learning known as the learning strategy [3]. Learning strategy according to Arthur L. Costa in Trianto "is a pattern of sequential learning activities that are applied from time to time and directed to achieve the desired learning outcomes of students." [4] The implementation of education certainly requires an appropriate strategy to achieve the desired goals.

The main hope of the implementation of meaningful learning is the formation of critical thinking skills from students. The assumption that underlies this expectation is that by creating meaningful learning that gives students freedom and trust, they will be able to find and present their own answers in every problem that exists, both in the classroom learning process, as well as solving problems in their surroundings. This critical thinking ability is considered very important for students in today's global competition in a borderless world. In the face of highly competitive competition in the information age like today, millennial generations are demanded to be creative and innovative. To be able to do both of them requires special skills that will only be obtained from meaningful learning.

General description of meaningful learning for example students are facilitated to be able to access various information (knowledge, skills and attitudes) and in order to solve problems. Framework in carrying out activities related to experience, analysis of experiences, and concepts [5]. This means that students are directly involved to demonstrate the learning material being studied. Thus, their learning experience becomes richer and not only the cognition side is honed, but also the other side.

The explanation is in line with the results of research from Michael Prince, that there is a very large role in meaningful learning. The effectiveness of active learning, collaborative learning, cooperative learning, and problem-based learning that leads to meaningful learning shows positive results for students' learning [6]. More specifically, for example when it comes to the learning method used, there will be a lot of evidence of the success of meaningful learning. An example is the research of Kevin Patton and his team, that meaningful learning also has an important role in developing the professional side [7]. Of course all of that requires support from various parties concerned.
2. Method

This article was prepared using qualitative methods with the type of library research. The priority orientation of this article is to obtain a synthesis of meaningful learning concepts that support critical thinking patterns for millennial generations, so that they are able to become strong and competent individuals in the face of competition in today's fast-paced information era. Next will be explored a lot about the concept of meaningful learning, design, to its vital role for students who will surely face contemporary problems that are increasingly developing.

3. Results

If we look at it, poly-constructivist developments in the educational realm have shown a lot of acceptance. The style of constructivism in education is admired by many people because it represents a change of paradigm in knowledge [8]. In the concept of meaningful learning, constructivism that has more integration is the concept of constructivism from Novak. According to him, human constructivism is an effort to combine human learning psychology and knowledge production epistemology [9]. On the other hand, Mintzes and Wandersee assume that human constructivism is a vision of building meaning that encompasses a learning theory and scientific construction epistemology [10]. The theory they alluded to is related to meaningful learning theory and the epistemology behind it is constructive-humanist.

3.1 Constructivist Patterns in Meaningful Learning

As a good theory, humanist constructivism is also based on general principles. Humans have the capacity to interpret something that can be optimized. Think, feel, and act. All three contribute together to change the meaning of human experience. There is a general concept in individual meaning so that dialogue, sharing, exchange and enrichment of meaning are very possible. Education must encourage construction of meaning. The meaning can be facilitated by active intervention from educators who prepare themselves well. Scientific and artistic production at its highest level is a new meaning construction that has a high level of creativity and originality [11]. From this explanation it can be understood that ideal education should lead to constructive humanist learning and full of meaning. Therefore, the learning experienced by students must be meaningful. If not, then the learning orientation will only stop at the level of cognition. Meanwhile, the results of education are expected to develop in critical analysis and good behavior. So this is very relevant to what is needed in the information age, namely comprehensive education and learning coverage.

Gowin proposed a concept of meaning that connects the conceptual and methodological realms. This means that the balance between the process of thinking and doing is a necessity in order to achieve a comprehensive meaning. That is, meaningful learning that will actually be achieved only when the theoretical and practical aspects are able to be carried out simultaneously without any dominance from one of the two. This understanding must be developed in the world of education today, given the complexity of the problem of increasingly diverse information and the limitations of the world of education in empowering the potential of millennial generations who are thirsty for meaningful direction. As a visualization, the Gowin-style "the knowledge Vee". Gowin argued that students must be aware of what cement compiled their learning. Students must also be actively involved in the learning process and independent research, while also having a pleasant interaction in the process. Meanwhile, good educators must be able to present scientific facts and evidence as well as the concepts and theories of knowledge taught. And no less important is the dialogue and debate of thoughts in class, or an active climate of discussion, which will be very helpful in the process of building meaning from what they are learning [14]. One thing that needs to be emphasized from this constructivist pattern is that it has implications for the process of interpreting everything, including when applied in the education world. Therefore, it is very important for educators to understand how valuable this meaningful learning is if it is applied well throughout all levels of education in Indonesia. It is not impossible that the next millennial generation of Indonesia will participate in the future of the nation's superior civilization in the wheel of development.
3.2 Basic Concepts of Meaningful Learning

David Paul Ausubel is a cognitive psychologist who developed cognitive psychology theory. The theory is a branch of general psychology and includes scientific studies of mental life symptoms as far as the way humans think in gaining knowledge, processing the impressions that enter through the senses, solving problems, exploring the memories of knowledge and work procedures needed in everyday life. Ausubel in his theory related to the way humans obtain knowledge, contrasts meaningful learning with rote learning. Ausubel’s meaningful learning theory in which new information is assimilated in the sense that students have, is a theory that is very close to the core essence of constructivism, which assumes that knowledge is the result of human construction. Constructivism in the learning process was first used by Piaget, a cognitive psychologist who contributed a lot to the study of the development of cognitive psychology. Therefore Piaget influenced Ausubel’s thoughts in cognitive psychology and constructivism in the learning process.

Novak explained that Ausubel classifies learning into two dimensions, namely the first dimension of how to present information or material to students through acceptance and discovery. While the second dimension is about the way students relate the material given to existing cognitive structures, namely in the form of facts, concepts, and generalizations that students have learned and remembered. This second dimension is the main process in learning where new material is related to relevant ideas in existing cognitive structures [15].

According to Dahar, if students can connect or relate the information or material to the knowledge they already have, it is said that there is meaningful learning. But if students memorize new information or material without linking it to the knowledge they already have, then it is said to occur rote learning. This causes the material to not last long in students' memories.

In learning to memorize, students memorize the material they have obtained, but in meaningful learning the material that has been obtained is developed with other conditions so that learning is more understandable. Based on the difference between learning to memorize and meaningful learning, it is clear that meaningful learning has more advantages than learning to memorize. Therefore, it is important for students to do meaningful learning in each learning process.

Ausubel stated "... if the learner intention is to memorize it verbatim, i.e., as a series of arbitrarily related words, both the learning process and the learning outcome must be rote and meaningless". If a student wishes to remember something without linking it to another thing, both the process and the learning outcomes can be expressed as memorization and will not be meaningful at all for him [16]. Based on this opinion, learning can vary from memorizing to very meaningful from learning acceptance, where information is given directly to students, to learning findings, where students identify and select information that must be learned [17]. And based on the table, along the Horizontal (horizontal) line from left to right decreases learning acceptance and increases learning discovery. While along the continuum (vertical) from the bottom up there is less rote learning and increased meaningful learning. Ausubel stated that many education experts equate learning acceptance with rote learning, because they argue that meaningful learning only occurs if students find their own knowledge. Based on the table above, meaningful acceptance learning can be done by explaining the relationship between concepts, while meaningful discovery learning only occurs in scientific research. Characteristic of meaningful learning is that students can use the knowledge they learn to solve problems and to understand new concepts by transferring their knowledge to new situations and problems. The concept of learning is meaningful consistent with constructivist views where students are said to understand material if they can build meaning from their experience by making cognitive connections between new experiences and understanding of old material.

In Ausubel's view, to learn meaningfully, students must link new knowledge with what they already know. Meaningful learning is a process of relating new information to relevant concepts contained in one's cognitive structure [18]. Learning should be a meaningful assimilation for students. Regarding the requirements of meaningful learning according to Ausubel as quoted by Dahar, namely:
1. The material to be studied must be potentially meaningful. Material meaning depends on the following two factors:
   a. The material must have logical meaning.
   b. Relevant ideas must be in the cognitive structure of students.
2. Children who will study or learners must aim to carry out meaningful learning, so they have readiness and intention to learn meaningfully. The aim of students is the main factor in meaningful learning.

Ausubel points out the need for cognitive learning theory as a basis for developing teaching theory by focusing on meaningful learning. According to Ausubel meaningful learning is a process of acquiring new meaning, assuming a meaningful set of learning and potentially meaningful learning tasks [19]. According to Lesh&Doerr, the problem requires students to understand the situation so that they can solve the problem in a way that is meaningful to them [20]. Meaningful learning is closely related to contextual learning, namely learning that is supported by situations or problems in real life. The contextual philosophical foundation itself is constructivism, which is a learning philosophy that emphasizes that learning is not just rote learning, but is reconstructing or building new knowledge and skills through the facts they experience in their lives. Based on this explanation, it can be concluded that one way that can be used to make meaningful learning happen is to link learning with problems that are close to the lives of everyday students (contextual). Contextual learning has five concepts that must be applied to learning, namely:
   1. Relating, which is a form of learning in the context of real life or real experience.
   2. Experiencing, which is learning in the context of exploration, discovery, and creation.
   3. Applying, namely learning in the form of application of learning outcomes into practical use and needs.
   4. Cooperating, which is learning in the form of sharing information and experience, responding to each other, and communicating with each other
   5. Transferring, namely learning activities in the form of utilizing knowledge and experience based on new contexts to gain new knowledge and learning experiences [21].

The learning process can be partially interpreted as a process of learning and teaching that is passed by educators and students within a certain period. However, interpreting learning should not be considered partially, because it will result in the learning process itself. In general, learning can be viewed through three approaches, first by behavioristic that is learning is interpreted as a process of changing the behavior of students through environmental optimization as a source of student stimulus. Second, cognitiveism is the effort of educators to provide stimulus, guidance, direction and guidance to students so that learning occurs. And third, the interactional approach is that learning is interpreted as a process of interaction between students and educators and learning resources in a learning environment [22]. Based on the three approaches mentioned above, it is worthy of learning to have an activity, creativity and innovation and ultimately create meaningful learning outcomes.

3.3 Meaningful Learning Design for Millennial

Meaningful learning is basically a learning process that can add to the experience of learners through the problems contained in their surroundings, through systematic and systematic efforts based on relevant concepts. In simple terms meaningful learning is learning that makes students understand or understand not just remembering or memorizing material. Understand happens when humans connect new concepts with old concepts. Then there is a change in students' cognitive structure, modified concepts and new concepts are created. Learning is very useful because it allows students to learn in real terms and produce greater understanding and facilitate the learning process for other real situations [23].

The learning process often ignores the concepts and processes of interpreting learning, in practice the learning process only focuses on the success of learning evaluation alone. As a result of emphasizing cognitive evaluation standards that are ignored by understanding a concept, students are often trapped in the process of memorizing science without understanding the concept of knowledge.
According to Gowin's, as quoted by Marco Antonio, learning is marked by various meanings between educators and students about the knowledge of a material through the curriculum.

The relationship between educators, students and learning material is described by Gowin's through the following Triadic model. In the triadic model illustrates that the process will be meaningful when walking with the interaction between students, educators and learning material. Interaction in the context of the triadic model is certainly not merely an interaction of exploring knowledge limited to memorizing material. However, students and educators must be able to present an understanding of knowledge (Sharing Of Meanings) whose purpose is to make the learning process run well. Of course meaningful learning is then not enough in the interaction of students, educators and material alone, but must be packed with innovative concepts without eliminating scientific values [24]. From the description, it can be concluded that meaningful learning goes far beyond the realm of cognition. This is due to the contextualization of each subject matter that is supported by efforts to share meaning, so that meaningful learning can truly give students a complete understanding. On the other hand, educators must be aware of their role as learning partners and also navigators in directing this learning process. So the concept of learning that is oriented to educators (teacher oriented) should no longer be valid considering the purpose of education is projected to provide understanding to students.

The information age that moves so quickly forces the next generation to equip themselves with a special set of skills to be able to compete competitively. Creative and innovative thinking is a necessity for global competition that is in sight. A systematic and critical mindset certainly does not come by itself. This is where the important role of education is meaningful, where the orientation is to make students able to understand the comprehensive meaning of what they are learning. Edward Glase defines critical thinking as:

1) an attitude of wanting to think deeply about problems and things that are within one's experience;
2) knowledge of audit methods and logical reasoning;
3) a kind of skill to apply these methods. Critical thinking requires a great effort to examine every assumptions or knowledge based on supporting evidence and the subsequent conclusions that result [25].

Meanwhile John Dewey argued that critical thinking is essentially a process that is 'active' - a process in which someone thinks things more deeply for themselves, asks questions for themselves, finds information that is relevant to themselves, etc. rather than accepting various things from others are mostly passive. Likewise, Ennis argued that critical thinking is reasonable and reflective thinking that focuses on deciding what to believe or do [26]. A definition that is not much different was conveyed by Susanto, who stated that critical thinking is an activity through the way of thinking about ideas or ideas related to the concept given or the problems presented. With other languages, Desmita argues that critical thinking is the ability to think logically, reflectively and productively that is applied in assessing things to make good judgment and decisions [27].

These critical thinking indicators can be achieved if meaningful learning is carried out with great care. This meaningful learning design has various definition specifications. According to Suyatno, meaningful learning design is learning that prioritizes the meaningfulness of learning and effectiveness by creating a conceptual cognitive-constructivist activity framework based on the contextual problems and experiences of students, and by utilizing the environment as a learning resource that can be optimized to achieve learning processes and outcomes quality for students [29]. In line with this opinion, according to Ausubel that learning must be meaningful, the material being studied is assimilated and related to the knowledge previously possessed [30]. This means that meaningful learning is a process that is associated with new information on relevant concepts contained in the cognitive structure of students. Where the learning process is not just memorizing concepts or facts, but is an activity that connects concepts to produce a complete understanding of the environment around students so that the concepts learned can be understood well and are not easily forgotten.
Actually there are many meaningful learning models that can be utilized, for example through active learning approaches. In general, active learning is defined as all forms of learning methods that involve students in the learning process. In short, active learning requires the readiness of students to participate in meaningful learning and think about what they do [31]. With this definition, traditional learning such as giving homework to students. However, what is meant by active learning here is that these learning activities should be done more in class. The essence of active learning is the activities of students and their involvement in the learning process.

4. Discussion

Besides active learning, there is also a collaborative learning approach or collaborative learning. Understanding that can be understood is that all types of learning that involve collaboration between students in several small groups to reach a common goal, will be able to build a deeper understanding [32]. Besides that collaborative learning can also be seen as all forms of group-based learning methods, which also include cooperative learning [33]. On the contrary, some researchers distinguish between collaborative learning and cooperative learning because both have different development histories and philosophical roots. However, from the explanation of both, it can be said that the core of collaborative learning is more emphasis on the interaction of students than holding independent learning activities. In comparison, the concept of cooperative learning can be defined as a structured form of group work where students pursue the same goals even though they are still assessed individually [34]. The most common models of cooperative learning include five specific rules namely individual accountability, mutual interdependence, supportive direct interaction, appropriate interpersonal practice skills, and regular self-assessment of team performance [35]. Besides of course there are other different models [36], the main element of cooperative learning is to focus more on the drive to work together in the learning process, rather than overly developing a competition climate to support learning. However, excessive competition climate can direct students to learning disorientation.

Problem-based learning is a method where relevant problems are presented at the beginning of the learning cycle and are used to provide context and motivation for learning to be carried out. The process of this always runs actively and is usually synonymous with collaborative and cooperative learning. Problem-based learning usually involves a type of independent learning for some students. From the explanation, it can be understood that learning will be more meaningful if students experience firsthand what is learned that can provide direct experience in solving real or contextual problems. Solving the problem will provide students with experience or cognitive abilities so that later it can be useful and applied in dealing with problems that are obtained in daily life. Meaningful learning design is an instructional learning method that prioritizes the meaningfulness of learning and creativity by creating a conceptual cognitive-constructivist activity framework. As a concrete illustration, the steps to carrying out the learning design are meaningful as follows:

1) Lead in. Conduct learning activities related to the experience of students, analysis of experience of students, and the concept of ideas or ideas of students.
2) Reconstruction. Rebuilding the concepts that students have by linking them with the concept of the subject matter learned.
3) Production. The preparation of the results of the process of excavation and construction of concepts carried out by students with the guidance of educators [38].

From this explanation it can be concluded that the advantages of this meaningful learning design is that it can overcome the learning process that tends to be passive, because students are well organized in learning activities that are centered on students. In addition, meaningful learning can also improve group collaboration between one student and another. What's more, the process of reading, observing, and working together can stimulate the ability to think and the ability of students to receive the material so that the material learned is more easily understood by students.
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5. Conclusion

Knowledge-oriented traditional education has shown its dominance in the past few decades. However, various contemporary problems that now occur along with the development of the information age, require special skills to overcome them. Moreover, in the future it takes critical, innovative and creative thinking from millennial generations so that they can compete in the midst of increasingly unstoppable global competition. It requires a strategic role of education that emphasizes the ability of students to understand the situation around them. That cannot be achieved simply by relying on obsolete learning. Then meaningful learning is the right solution in preparing the millennial generation to meet the information age competition.
Meaningful learning can be built with various methods or approaches. Active learning, collaborative learning, cooperative learning, or also problem-based learning will stimulate students’ ability to understand the learning process they are doing. With active participation and involvement, they will be able to build a complete scientific construction. So that if faced with problems around it, our millenial generation will be able to respond appropriately without having to think about it for a long time. So it should be that traditional learning styles such as teacher centered and learning through memorization alone are replaced by meaningful learning that focuses more on the active participation of students.

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