21st Century Learning Design

Oris Krianto Sulaiman
Islamic University of North Sumatra
Oris.ks@ft.uisu.ac.id

A . Introduction

Changes in the teaching and learning process are needed so that students become better than before. Design learning a bad 21 is a design study of the 21st century that aims to help educators identify and understand the learning opportunities for students to develop 21st century skills. There are six design learning a bad 21, each of which represents the student's skills for developing [1] - [3].

- Collaboration ,
- Knowledge construction ,
- Self-regulation ,
- Real-world problem-solving and innovation ,
- The use of ICT for learning ,
- Skilled communication .

B. Breakfast . Collaboration

Collaboration is a student learning process that is required to cooperate with other students and work hand in hand to learn to solve the problems at hand [1], [4] . In traditional learning in many countries students are only taught how to achieve the highest scores only for individuals. Individual models as previously mentioned will not prepare students for real work, where in real jobs students are required to work in teams and complete tasks together. Example collaboration between informatics experts with sports experts to create muscle sensors. Students have responsibility for the work given because in collaboration the work will be related to one another. In collaboration, it is very important to listen to other people's ideas and make an agreement on one unit in problem solving.

Some things students can do in collaborative activities or group work:

- Discuss a problem,
- Solve a problem,
- Create a product.

Students who undertake collaborative activities are not only limited to the collaboration between students, but can also be collaboration on people outside the classroom as public or experts. Collaboration can be used directly or indirectly, students can take advantage of technology to collaborate online either using groups in chat applications or in virtual meetings using applications.

C . Knowledge Construction

It is very important for students to understand the material presented by the teacher. However, not a few schools apply memorization methods to students. Memorizing alone is not enough for students, especially if there are those who memorize but do not understand what is being memorized. Students need to think critically and have high improvisation skills. Students must be able to process whatever information they get both offline and online and then students can use this information productively in their work. Knowledge construction is an activity for students who demands new ideas and understanding for students. Students can do interpretation, analysis, synthesis or evaluation. At a higher level students are able to process information from various knowledge, for example combining information between technology and agriculture so as to produce a deeper understanding of a topic.

Knowledge construction occurs during the process of discovering something from what students have learned. Knowledge construction is also considered by critical thinking [2], [5] . In this case, students are required to interpret, analyze, synthesize or evaluate information or ideas.

Interpretation: students are able to draw conclusions outside the written meaning of an information. For example, students can read the health protocol COVID-19 and students are able concludes why people should abide by the proto ko l health.

Analysis: students are able to identify each piece of information related to each other. For example, students analyze environmental factors and determine which environment affects the presence of cats.

Synthesis: students are able to identify the relationship between two or more ideas. For example, students were asked to compare COVID-19 from an Education perspective and COVID-19 from a religious perspective.

Evaluation: Students are able to assess the quality, credibility, or importance of data, ideas and events. For example, students read an incident in a city and then there is some information from various contradictory sources, then students are able to determine which one they think is the most credible based on the sources given.

D . Self-regulation

The development of today's world demands that we be able to take responsibility for life, work and continuous learning . This requires students who can monitor their own activities and be able to provide feedback for the development of these students. In most traditional schools, the teacher assigns assignments to students and then instructs them on what to do. To create opportunities for students to be able to develop, the teacher can work with students, not only giving instructions but also guiding these students to be able to be responsible for the answers they give so that this will have a good impact so that students can control themselves in a better direction . .

The ability of students to control themselves can be trained as at the beginning of the semester, maybe these students still need to be guided, but over time the teacher can give more responsibility so that students can learn independently.

Self-regulation can be seen from 3 areas, namely cognitive, motivation and metacognitive. To develop self-regulation, it can be done in the following ways [6] :

- Create a comfortable learning atmosphere, keep away from things that can cause students to play or other activities that are not relevant ,
- Guide students how to read an instruction and do what is in the instruction,
- Guide students to understand the method of solving a problem on a given question,
- Guide students to manage time efficiently,
- Ensure that these students are able to pursue the assigned assignment so as to grow students' confidence,
- Guide students in controlling emotions and ensure students are calm in completing assignments. Tasks will be difficult to complete if students panic easily.
- Shows the progress that has been achieved by students, and
- Guiding students to find existing references to solve problems or problems.

E . Real-world problem-solving and innovation

The world of work today has a lot of tasks given to solve a problem. It is possible that the solution to these problems can be taken through new ways or product redesign and so on. To solve a problem, you must have tested creative ideas so that the solutions offered are effective enough to solve the problem at hand. From an early age students should have been taught how to complete assignments for which they don't know the answer at all or the solution to solving the problem, requiring students to work in solving real problems, representing innovation by implementing ideas, designs and solutions from students for existing people. outside the classroom [1], [7] .

Real-world problems are authentic situations and needs that exist outside the academic context. Real world problems have the following characteristics [1], [2] :

- Real problems experienced by real people. For example, students are asked to analyze why people in City A do not comply with the COVID-19 health protocol. These students will work in accordance with the situation of real people in city A and from the results of the analysis the students provide a design or description of how to solve these problems.
- Have a specific and explicit context. For example, planning plant development for village environment A. Then students will learn what plants can be planted in that environment.
- Use of scientific references to support the solutions offered. The solutions offered by students must be based on credible data so that the solutions are scientifically appropriate to the references collected.

Innovations or ideas from students are not mere designs or words, but must be with real application in real life as well.

F . The use of ICT for learning

During the current COVID-19 pandemic, it is inevitable that teaching and learning activities must use ICT for sustainable learning . Currently the world lives with the need for internet services and internet services are a source of learning using ICT. Students can connect where and anytime with the teachers, experts and others to support the education needs of students. The use of technology changes the way of learning from traditional to full of technology. In a job, it is required to have skills in the field of ICT, so by being accustomed to using ICT media both for learning and student assignments / work, students will be able to implement ICT in the world of work. With the advancement of ICT today students can collaborate in ways that were never before done in traditional learning .

The use of ICT for teachers is when the teacher presents material, assignments and evaluations using ICT media. The use of ICT for students is when students are using ICT to complete the task and do learning. Teachers can use simulated learning on computers so that students can easily understand the lesson in a visual form.

ICT supports knowledge construction when [1], [3] :

- Students use ICT directly in learning activities . For example, students use an application to create a visualization of a flower garden design in village A,
- Students use ICT indirectly in learning activities . For example, students can collect good scientific references from the internet .

ICT enables students to communicate more widely both in domestic and abroad, students can innovate using ICT tools supporting them.

G . Skilled communication

In human interaction, communication becomes a very important factor, the interlocutor may misunderstand the meaning conveyed if someone does not have good communication skills. Good communication if the message conveyed is conveyed and understood by others. Forms of communication can be oral, written, visual and so on. It is important for students in academic studies to communicate clearly and persuasively with a wide variety of audiences.

There are many forms of communication in the 21st century, for example, students who are able to discuss with colleagues using the zoom application, microsoft team, and so on .

Some things that should not be done when communicating [8] - [10] :

- Teachers must not compare students' abilities, who is smarter, more competent and so on. But try to provide balanced communication for each individual,
- Not paying attention to what the other person is saying so there is no effective communication. This will make it difficult to understand what topic is being discussed ,
- Do not understand what the other person is saying so that he is not ready to reply to the discussion discussed,
- Not filtering what is communicated, we need to know the student's condition whether the thing to be discussed is appropriate or not,
- Not doing certain assessments for students, let alone announced to other friends. This can make the student's self-esteem fall and students may not be confident,
- A teacher is also a human who is not free from mistakes. Do not feel always right in communication, be generous in accepting what the student says if it is true then say it is true and agree with the student,
- A teacher certainly wants to look intellectual, including in communicating so that sometimes there are many strange terms that students may not know. Use language that is easy to understand and easy to understand
- Focus on the topic of conversation, don't give a very broad and wide-ranging topic so that the important topic of conversation is not discussed at all.

Conclusion (s)

The application of 21st century learning is very good for students' self-development so that they are ready to face challenges in the future. Students will be independent and be able to think critically for any problems faced.

Collaboration , allows students to work in teams and provide ideas and innovations to solve problems in the team. Develop leadership skills and respect differences of opinion. In collaboration, students are able to respect team decisions from the results of joint discussions.

Knowledge Construction , an attitude of critical thinking , students not only memorize the material presented but also understand and apply it to its real form. Students are able to draw conclusions from something being taught. Students are able to analyze and identify and evaluate the information obtained so as to produce good conclusions.

Self-regulation , students are able to control themselves in any situation. Students are not easy to panic and emotion in problems and MAMP u adapt to the surrounding environment. With the ability to control themselves or self-control, students will be calmer and can think well to produce solutions to the problems at hand.

Real-world problem-solving and innovation , is a way of solving problems faced by students. Students can innovate and apply ideas from these innovations to provide solutions to the problems at hand.

The use of ICT for learning , cannot be denied that the use of technology nowadays has become a daily necessity. With the use of ICT students can receive more innovative learning . Students can solve problems using ICT.

Skilled communication , is the student's ability to communicate. A way of communicating that can make the other person understand what is being said.

Acknowledgments

Thanks to Prof. Abdul Rahmat and the IDE Community who were the correspondents for the publication of this book chapter.

References

1. Innovative Teaching and learning, "21CLD Learning Activity Rubrics," *21st Century Learning Design* , no. December, pp. 1–44, 2012.
2. L. Core Education, “New Resources for 21st Century Learning Design -,” 2020. http://www.coreeducationllc.com/blog2/new-resources-for-21st-century-learning-design/ (accessed Aug . 20, 2020).
3. MC Sahin, “Instructional design principles for 21st century learning skills,” *Procedia - Social and Behavioral Sciences* , vol. 1, no. 1, pp. 1464–1468, 2009, doi: https://doi.org/10.1016/j.sbspro.2009.01.258.
4. Education CORE, “Collaboration,” 2017. https://core-ed.org/research-and-innovation/ten-trends/2017/collaboration/ (accessed Aug. 20, 2020).
5. IGI Global, “What is Knowledge Construction,” 2020. https://www.igi-global.com/dictionary/knowledge-construction/16299 (accessed Aug. 21, 2020).
6. DP Sari, "Developing Abilities," *Delta-Pi: Journal of Mathematics and Mathematics Education* vol. 3, pp. 16–39, 2014.
7. T. Dunstan, “Real-world Problem-solving and Innovation | Woodford House, ”2020. https://www.woodford.school.nz/real-world-problem-solving-and-innovation/ (accessed Aug. 21, 2020).
8. Rick, “12 BLOCKS TO LISTENING - Listening Pays,” 2016. https://www.listeningpays.com/12-blocks-listening/ (accessed Aug. 21, 2020).
9. D. Andrade, “The Importance of Communication in Education | Tech & Learning, ”2015. https://www.techlearning.com/tl-advisor-blog/8716 (accessed Aug. 21, 2020).
10. Ben, "15 Application of Effective Communication in Education - PakarKomunikasi.com," https://pakarkomunikasi.com/penerapan-komunikasi-efektif-dalam- 2017. learning (accessed Aug. 21, 2020).