

# Challenge Based Learning Model: Strategies and Answers to Face Education Digitalization

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**Abstract:** *This research aims to discuss the Challenge Based Learning model as a solution to the digitalization of education. The method used is library research, collecting data by searching for sources and reconstructing them from various sources such as books, journals and existing research. The result is that the application of the Challenge Based Learning model is recommended in the learning process as an innovation alternative, especially when you want to adopt technology on a massive scale. This is in line with the urgency of implementing the CBL model as conveyed by Jhonson that CBL is a learning model that is suitable to be applied in a technology-rich environment.*

**Keywords:** Challenge Based Learning, Digitalization, Education

## 1. INTRODUCTION

The 21st century history learning paradigm brings fundamental changes along with the arrival of the era of digitalization which occurs comprehensively in all aspects of life, including education. The process of digitizing education can be seen starting from learning objectives, learning processes, the role of educators, and all student activities. Technology has become an integral part and characteristic of modern society (Fraillon, Ainley, Schulz, & Friedman, 2014). Therefore, schools as learning spaces at various types of educational levels play a major role in preparing students to face the challenges of using technology consciously and responsibly (Michael, Julia, & Frank, 2021). Technology not only opens the door for social inclusion in society, but also offers various opportunities for students, educators and related stakeholders to support the teaching and learning process.

However, the massive use of technology around us does not mean we can use it effectively (Considine, Horton, & Morman, 2009). Discussions about whether teachers and schools are taking advantage of digital technology opportunities in the classroom often lead to discussions about the technical facilities and availability of digital technology in schools. So it is not surprising that the government and related parties work together to accelerate digital transformation. According to Nizam as Director General of Higher Education, the digital transformation of education has been carried out since 20 years ago. However, progress is considered very slow because most schools still do not realize the importance of using digital technology in the curriculum. According to Nizam, the presence of the Covid-19 pandemic helped speed up the digital transformation process because the teaching and learning process was required to adopt online learning methods.

Education and technology are a collaboration that will encourage the progress of a nation. Through education, people can improve their quality of life, while through technology

they can develop innovative solutions to society's most significant problems (Castro & Zermeno, 2020). Therefore, the implementation of technology in education must also be supported by the selection of appropriate learning models. Challenge Based Learning (CBL) is an innovative pedagogy that actively involves students in real world problems that are relevant to their environment, where these problems require solutions to be solved. This learning model is rooted in experiential learning. This includes the use of technology, teamwork, independent learning, and solutions to real problems ranging from the classroom to society (Castro & Zermeno, 2020).

Several previous studies have shown that the CBL model has a big influence on the quality of students' learning, especially when accompanied by technology integration. As research conducted by Radberg has shown, the application of the CBL model encourages students to work actively with their peers and teachers to identify complex challenges, ask relevant questions, and take actions that support sustainable development. Apart from that, research conducted by Farizi, Umamah, et al also shows that the application of the CBL model can improve learning outcomes and critical thinking skills. This increase is said to occur because Challenge Based Learning emphasizes thinking skills to create new knowledge from learning experiences. Research conducted by Azis and Reni also showed results in the form of positive responses from students towards the development of teaching materials based on the Challenge Based Learning model because they were considered capable of making it easier for students in the learning process.

Based on the results of previous research, it can be concluded that the application of the Challenge Based Learning model is recommended in the learning process as an alternative innovation, especially when you want to adopt technology on a massive scale. This is in line with the urgency of implementing the CBL model as conveyed by Jhonson that CBL is a learning model that is suitable to be applied in a technology-rich environment. According to Castro and

Zermeno (2020), new strategies are needed to develop more active learning that is oriented towards problem solving. So the nature of learning tends to be more practical than theoretical. Apart from that, along with the development of technology-based education, education needs to adapt to be able to keep up with the times.

Therefore, the aim of this research is to find out the process and influence of implementing the Challenge Based Learning model in the learning process, especially at high school level in History subjects as a strategy and answer in facing the digitalization process.

## 2. METHODOLOGY

The method in this article uses library research, namely a method of collecting data by understanding and studying theories from various literature related to the research. There are four stages of library study in research, namely preparing the necessary equipment, preparing a working bibliography, organizing time and reading or recording research material (Zed, 2004). This data collection uses the method of searching for sources and constructing them from various sources, for example books, journals and research that has been carried out. Library materials obtained from various references are analyzed critically and must be in-depth in order to support the propositions and ideas.

## 3. KAJIAN PUSTAKA

Previous research is used as a reference and comparison in order to avoid similarities with this research. Based on the research results, the researcher found several relevant previous studies and then listed the results as follows:

1. Results of research entitled "A Learning Model Proposal Focused on Challenge-Based Learning" by Torres-Barreto, M. L., Castano. G. P. C., and Melgarejo, M. A. (2020)

This research is research that uses quantitative methods by directly adapting the Challenge Based Learning syntax from Apple and the VaNTH ERC Engineering Research Center which carried out a project entitled "Apple Classrooms of Tomorrow-Today" in 2011. From this project, a learning model emerged called Challenge Based Learning. This research was conducted at university level, specifically at the Universidad Industrial de Santander, Colombia, with students and homeless people participating.

Based on this research, it can be concluded that the Challenge Based Learning model influences students' ability to grasp the meaning of learning. This is because the learning process directly answers questions and seeks solutions from the surrounding environment. The students used homeless people as research objects to find out aspects of their lives, starting from economic levels experiencing extreme

poverty, armed conflict, unemployment, drug consumption, and so on. After knowing the real conditions of homeless people, students will learn to communicate ideas, develop a sense of empathy, and find solutions to solve these problems in accordance with the Challenge Based learning syntax.

The similarity between this research and the author's research is that it uses the Challenge Based Learning model to support the learning process so that the author took a lot of basic material regarding the Challenge Based Learning model from this journal. Meanwhile, the difference between the two is the aim of the research, where the aim of Torres-Barreto's research is to provide recommendations for new learning models to the general public by providing real evidence, namely conducting direct research at the relevant universities. The author of this research aims to answer the position of the Challenge Based Learning model in the educational digitalization process.

2. Results of research entitled "Challenge Based Learning: Innovative Pedagogy for Sustainability through e-Learning in Higher Education" by Castro, M. P., and Zermeno, M. G. G. (2020). This research is research that uses quantitative methods combined with case studies and uses questionnaires to collect data. This article was carried out by taking students at the University of Mexico as the subject. As a result, CBL is said to be an innovative pedagogical breakthrough that is suitable for multidisciplinary application to answer real-world challenges that can be solved collaboratively. Castro, et al highly recommend the use of the Challenge Based Learning model in the learning process because it is based on the successful results of their research.

This research focuses on the implementation of CBL with e-learning as a medium to strengthen education oriented towards sustainable development or SDGs. Where, students are expected to be able to connect the knowledge they have acquired with situations found in real, everyday life. Although Castro said that his research was only limited to a small research group so it did not represent the general population. The similarity between this research and the author's research is the use of the Challenge Based Learning model to support the learning process. Apart from that, the use of technology-based e-learning is in line with the author's research which discusses the digitalization of education. Meanwhile, the difference lies in the focus of the study, where Castro focuses his research on e-learning reviewed by CBL and the author focuses his research on the role of CBL as a learning model in responding to the challenges of digitalization of education.

3. The results of the research entitled "Digital Learning in Schools: What Does it Take Beyond Digital

Technology?" by Sailer, M., Murbock, J., Fischer, F. (2021)

This research is research that uses quantitative methods by using 410 teachers from German state secondary schools in the Bavaria region as samples. The research results show that digital skills and technology-related teaching skills for a teacher are very important compared to the quantity of technological resources. Although digital technology is needed in schools at some level, the results of Murbock's research show a shift in focus from equipping schools with a variety of technologies to teachers' skills in using technology effectively.

This research focuses on how teachers adapt to technology in schools. This research answers whether teachers are able to adapt to the massive amount of technology in schools. Although in reality, the quality of teachers in making maximum use of technology is more important than the quantity of technology available in schools. Because no matter how much technology will be useful for students if the teacher is not able to use it properly and correctly.

The similarity between this research and the author's research is that it discusses digitalization and technology, where this cannot be separated from all aspects of life, including education. This research explains in detail how digitalization plays a role in influencing teachers. Meanwhile, the difference between this research and the author's research is that the focus of this research study is on what teachers' attitudes should be in facing digitalization and the author's research focuses on how a learning model can be suited and applied optimally in facing the digitalization of education.

4. The results of the research entitled "Challenge-Based Learning in Higher Education: A Malmö University Position Paper" by Christersson, C. E., et al.

This research does not only focus on students but also on educational institution staff and other stakeholders. The implementation of the CBL model is carried out in order to carry out sustainable community development, considering that CBL is a learning model that uses real everyday life as material for questions and then solutions are sought. As a result, Christersson, et al through this research strongly recommend the CBL model for a sustainable learning process. In this research, researchers at the University of Malmö theorize, conceptualize, and provide examples of learning in the fields of Higher Education, research, and innovation, through a CBL approach. Christersson's CBL approach is fully based on the theory of lifelong inclusive learning as an essential element of Higher Education commitment.

The similarity between this research and the author's research is that CBL is used as a learning model so that it can produce maximum output from students. Meanwhile, the difference between this research and the author's research is that the subjects of this research are students from universities in Germany and the aim of this research is to prove whether there is an influence from implementing the CBL model on students' abilities in solving real problems.

#### 4. RESEARCH RESULTS AND DISCUSSION

##### 1. Challenge Based Learning Model

Challenge Based Learning is a learning model that encourages students to use technology to solve challenges (Johnson et al., 2009: 8). Epstein (Orne, 2010) says that an appropriate challenge could include the task of choosing fully

caution because students do not yet know the solution, until they carry out the process of working on challenges which often results in increased mental processes. The Challenge Based Learning model is collaborative because one part of the syntax requires students to work together with other colleagues. Through this collaboration, a collaborative process will occur to identify and solve challenges and share the solutions they have created (Apple Inc, 2010: 3; Johnson et al., 2011: 4). Through challenge-based learning, students can be invited to think about things related to everyday life in various subjects, including history. As a subject that studies the past, it would be very interesting if an educator was able to direct learning using the Challenge Based Learning model to link everything that happened in the past with the present. That way, the learning process will be more meaningful.

The Challenge Based Learning model encourages active and student-centered learning and provides students with access to utilize technology in learning activities. Apart from that, the Challenge Based Learning model is also a learning model that is suitable for use as a learning by doing learning process. Basically, this model can be classified as a special form of problem-based learning because in the initial syntax, this model emphasizes big ideas and essential questions. So students need to look for big ideas that can cover the entire learning process that will be carried out. Big ideas can come from phenomena that actually occur in everyday life as well as from students' personal experiences. From the big ideas presented, essential questions and challenges will emerge that students must solve.

Through learning with the Challenge Based Learning model, students have ample space to learn alongside technology, collaborate with colleagues, and understand the material more meaningfully.

##### 2. Characteristics of the Challenge Based Learning Model

1. Challenge-Based Learning (CBL) is an educational approach that emphasizes solving real-world problems and creating sustainable solutions. Characteristics of the CBL model include:
2. Challenge-Based Problem Solving: Students are faced with real-world challenges or problems that are complex and require creative solutions.
3. Collaboration: CBL encourages collaboration between students, teachers, and possibly external parties such as non-profit organizations or businesses. It promotes the ability to work in a team and appreciates diverse views.
4. Project Based Experience: Students engage in real projects that allow them to apply knowledge and skills in a practical context.
5. Integrating Disciplines: CBL combines various disciplines such as science, mathematics, languages, arts, and technology. This helps students see the connections between various subjects.
6. Student Orientation: CBL places students at the center of their learning process. They have more control over problem solving and decision making.
7. Use of Technology: Technology is frequently used in CBL to help students gain access to resources, collaborate online, and create technology-based solutions.
8. Reflection and Feedback: Students are encouraged to reflect on their experiences, both individually and as part of a group, and receive feedback from teachers and fellow students to refine and improve their solutions.
9. Importance of Social Context: CBL emphasizes the importance of understanding the social, cultural, and environmental impacts of solutions proposed by students.
10. Iterative Learning Cycle: Students go through a continuous learning cycle, where they plan, act, reflect, and adapt their solutions based on feedback and new knowledge.
11. Creation of Sustainable Solutions: CBL encourages students to create solutions that are not only effective in addressing problems, but are also economically, socially, and environmentally sustainable.

### 3. Syntax of the Challenge Based Learning Model

The Challenge Based Learning learning model has five stages, namely: (1) Big idea; (2) Essential question (important question); (3)

Challenge (challenge); (4) Solution (solution); (5) Assessment (assessment) (Apple Inc, 2010: 4).

In the first stage, namely Big Idea, educators help students to determine one big idea that will be used.

In the second stage, namely important questions, education will provide essential questions related to the big ideas that students have chosen.

In the third stage, namely challenges, educators will provide challenges to students in the form of advanced knowledge that students must understand, discuss with the group, and look for relevant and trusted sources.

In the fourth stage, namely solutions, educators will ask students to create solutions that have been created based on the previous stage.

In the fifth stage, namely assessment, educators will ask students to carry out evaluations as a form of assessment and measurement of students' level of understanding.

### 4. Advantages and Disadvantages of the Challenge Based Learning Model

#### Advantages:

1. Problem-Based Learning Experience: Students are involved in solving problems based on the surrounding environment, thus opening up space for them to experience authentic and relevant learning.
2. High Engagement: The CBL model motivates students because they feel involved in solving problems that matter to them and society.
3. Critical Skills Development: Students learn to think critically, analyze information, and develop creative solutions to complex challenges.
4. Collaboration and Social Skills: CBL encourages teamwork, effective communication, and the ability to work in groups, skills that are important for future success.
5. Disciplinary Integration: This model allows students to see the interconnections between various subjects and apply knowledge from various fields in a practical context.
6. Use of Technology: Technology is frequently used in CBL to facilitate research, collaboration, and solution development, allowing students to utilize digital tools and resources.

#### Disadvantages:

1. Time Required: CBL implementation often takes longer than conventional teaching methods due to the preparation required to prepare for the challenges and support students in solving them.

2. Resource Limitations: Relevant real-world challenges often require access to additional resources and collaboration with external parties, which may be difficult to access in some settings or schools.
3. Complex Assessment: Evaluation of solutions in CBL can be complicated because there are no “right” or “wrong” answers. Clear assessment rubrics and ongoing formative assessment are required.
4. Difficulty in Measuring Effectiveness: Because of its focus on deep and continuous learning, assessing how effective CBL is in improving student academic achievement can be challenging.
5. Skilled Classroom Leaders Required: CBL implementation requires teachers who are skilled at designing and facilitating project-based learning as well as providing the necessary support to students.
6. Difficulty in Finding Relevant Challenges: Identifying real-world challenges appropriate to students' skill levels and interests can be difficult, and not all topics can be easily adapted into suitable learning challenges.

## 5. SIMPULAN

Through this journal, we discuss the importance of developing a learning model that is responsive to the era of digitalization, where technology is an integral part of the learning process. The Challenge-Based Learning (CBL) model offers the right approach to facing the challenges of educational digitalization. By emphasizing problem solving, collaboration, and the use of technology, CBL prepares students to become skilled actors in digital environments. In addition, CBL is effective in increasing student engagement and developing critical, creative thinking skills and collaborative skills that are important in the digital era.

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