



## Technology Fatigue: The Art of Balanced Learning through Project Based Learning in Christian School

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Article Info	Abstract
<b>Article History</b> Received: 2024-06-23 Revised: 2024-07-21 Published: 2024-08-07  <b>Keywords:</b> <i>Technology Fatigue; Balanced Learning; Project-Based Learning; Christian School.</i>	Technology has an important role in advancing the world of education, specifically in learning. The Covid 19 pandemic that hit the world and in the Indonesian context has changed the face of learning from traditional to blended learning and hybrid learning where technology is the main vehicle. After the Covid 19 pandemic, a learning model that was closely related to the use of technology was formed for teachers and students. Fatigue in using technology is starting to be felt by teachers and students with a survey at a Christian school in Jakarta and West Java which shows reduced student interest in using various kinds of learning applications and reduced teacher interest in using learning platforms. This technology fatigue problem requires a balanced solution in the use of technology as a tool in learning to achieve an effective and more advanced learning due to the use of appropriate and balanced technology in learning at school through Project-Based Learning.
Artikel Info	Abstrak
<b>Sejarah Artikel</b> Diterima: 2024-06-23 Direvisi: 2024-07-21 Dipublikasi: 2024-08-07  <b>Kata kunci:</b> <i>Kelelahan Teknologi; Pembelajaran Seimbang; Project-Based Learning; Sekolah Kristen.</i>	Teknologi mempunyai peranan penting dalam memajukan dunia pendidikan, khususnya dalam pembelajaran. Pandemi Covid 19 yang melanda dunia dan dalam konteks Indonesia telah mengubah wajah pembelajaran dari tradisional menjadi blended learning dan hybrid learning dimana teknologi menjadi wahana utamanya. Pasca pandemi Covid 19, dibentuklah model pembelajaran yang erat kaitannya dengan pemanfaatan teknologi untuk guru dan siswa. Kelelahan dalam menggunakan teknologi mulai dirasakan oleh guru dan siswa dengan survei di salah satu sekolah Kristen di Jakarta dan Jawa Barat yang menunjukkan berkurangnya minat siswa dalam menggunakan berbagai macam aplikasi pembelajaran dan berkurangnya minat guru dalam menggunakan platform pembelajaran. Permasalahan kelelahan teknologi ini memerlukan solusi yang seimbang dalam pemanfaatan teknologi sebagai alat dalam pembelajaran untuk mencapai pembelajaran yang efektif dan lebih maju karena penggunaan teknologi tepat guna dan seimbang dalam pembelajaran di sekolah melalui Pembelajaran Berbasis Proyek.

### I. INTRODUCTION

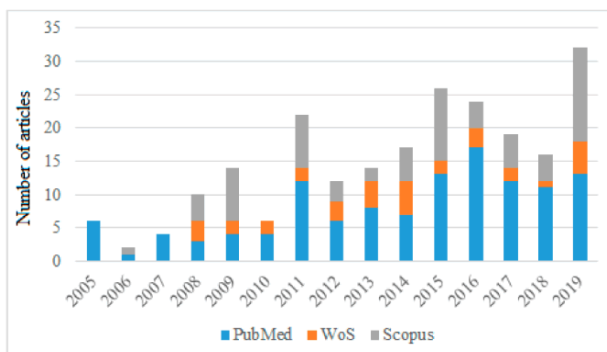
The Covid 19 pandemic has given a new color to the world of education in Indonesia. This is also felt by Christian schools in Indonesia. Changes in the face of education which originally used traditional learning began to move into blended learning or hybrid learning where technology became an effective vehicle for learning. Technology has played a big role in learning during the Covid 19 period which is happening globally around the world [1]. Entering the period of sluggish sufferers of covid 19, the government in Indonesia has begun to allow schools to start face-to-face learning activities with a total participation of 100 students [2]. Public schools and private schools in Indonesia have started implementing face-to-

face learning with a quota of 100 percent of students enthusiastically because learning that took place during the pandemic uses distance learning where students are not present face-to-face between students and teachers.

The phenomenon seen from a periodic survey every 3 months for 1 year regarding the use of one of the learning applications in 2 Christian school locations in the Jakarta and West Java areas at the 10th grade Senior High School level shows a decreasing interest in the use of technology in learning in school. Students seem happier to chat with classmates and do activities together. Teachers also indicated a lack of technology in classroom learning. This is one of the interesting things to study as a form of technology fatigue that teachers and students

may experience where the use of technology is very intense during learning during a pandemic and the introduction of the use of new technology that schools continue to teach or introduce.

Research on technology fatigue seems to have also been experienced in private universities in the United States where instructors experience technology fatigue where the use of changing technology and the technostress of the instructors para [3]. Technology fatigue is also experienced by students in Turkey who are doing online learning amid the post-pandemic era with various levels or levels of fatigue experienced. [4]. Technology fatigue is also experienced by both male and female teachers in Chile in the use of technology in learning with various forms of technology fatigue which results in technostress [5]. Batanero [6] in research on teacher stress levels in technology fatigue explained in the last 15 years in various research publications how teacher stress levels are related to technology fatigue where specifically since 2015 the experience of technology fatigue has been increasing. Based on various kinds of research on technology fatigue, in the context of education in Indonesia, it is also experiencing technology fatigue and requires solutions to overcome technology fatigue that are adapted to the context of each school.



**Figure 1.** Distribution and Progress of papers per Year in different databases. PubMed; WoS; Scopus

Previous research conducted by Al Mulhim [1] year 2023 regarding technology fatigue during the covid 19 pandemic: the case of distance project-based learning environment provides an illustration of how the fact of technology fatigue has become an important issue in the academic world and needs proper handling and in the university context, the application of Project-Based Learning at a distance far be the right choice not to put students in fatigue caused by technology, especially during a pandemic. The application of Distance Project-Based Learning is

an application that is carried out to reduce technological fatigue. Distance Project-Based Learning which is carried out in their context is remotely online and of course this is slightly different from Project-Based Learning which is carried out traditionally.

This research has the intention of providing art proposals to balance learning for teachers and students in using technology in Project-Based Learning to avoid the effects of continuous technology fatigue. This proposal can be a reference for Christian schools to rebalance the use of technology in learning so that technology is placed in the right and balanced portion and produces effective and enjoyable learning for teachers and students.

## II. METHOD

This research uses a qualitative approach by conducting a literature review on issues related to technological burnout in learning and related specifically to the context of Christian schools. Documents from two Christian schools located in the Jakarta and West Java areas are used as a source of information gathering regarding the phenomenon of technology fatigue that both teachers and students may experience during learning at school. This data is processed from the perspective of researchers to provide a balanced learning proposal through learning with Project-Based Learning.

## III. RESULT AND DISCUSSION

### A. Technology Fatigue

Technology is an effective tool in various aspects and one of them is its use in education. Technology has made education an effective education with a variety of applications offered in it. Continuous use of technology has an impact on users so that it can lead to technology fatigue. Technological fatigue can be described as an experience of new technology being introduced so that it takes time or a process to learn it which results in the individual concerned having a feeling of being unable to keep up with it. [1]. Technology, which was introduced to teachers, students, and parents in the early days of the Covid-19 pandemic, has become an effective tool, but it also has the impact of technological exhaustion which can reduce learning levels. Research related to technology fatigue in the context of learning provides a significant picture of the effects of technology fatigue can reduce student achievement or learning outcomes and one of the causes is in

the excessive use of social media. [7]. The impact of technology fatigue is not only in cognitive and psychological areas such as difficulty sleeping and others, but also in physical forms such as headaches, muscle tension, eye fatigue, stiff shoulders, back pain and so on [8].

The phenomenon of technology fatigue during the Covid 19 pandemic in Indonesia is described by the fatigue experienced by school principals, teachers and continues to students. Research from Soegijapranata University provides an illustration of how school principals experience physical and mental fatigue due to learning during the pandemic with more and more assignments and high demands and ongoing efforts to prevent transmission of covid during the learning period [9]. Technology fatigue experienced by school leaders, namely school principals, is also felt by teachers and students in schools with various forms of fatigue that occur both physically and mentally.

Research on technology fatigue in the context of students was also carried out by Soekanto and Rianti [10] which specifically describes the forms of fatigue experienced by students while studying online during the Covid 19 pandemic. The forms of fatigue are described as forms of physical fatigue such as eye fatigue, drowsiness, body feeling weak and psychological forms such as lack of concentration. As a result of this fatigue, learning is less effective. Research conducted by Al Muhlim [1] provides an overview of the factors that influence technology fatigue during the covid 19 pandemic and is described and classified in the following table.

**Table 1.** Frequencies of Factors Contributing to Technology Fatigue

Theme	N
Lack of time and overload	54
Social distancing	52
Self-learning	41
Supervisors	32
Technical problems	28
Extensive use of technology	22
Teamwork	20
Health problems	6
Lack of financial support to buy good-quality software	3

## B. Balanced Learning with the Use of Technology Through Project Based Learning

The position of technology as a tool has a big role in the world of education, especially in the learning process, but technology is not

everything in education because learning can still be done without using technology. Forms of learning without using technology such as discussion, sharing, debating remain an effective and fun form of learning. Technology really supports learning and is placed in the right capacity and in balance with learning without technology. The combination of the two will provide a space for balance in learning that is carried out both by the teacher who is teaching and students who are learning.

Project Based Learning provides strong encouragement for students to be sensitive to the surrounding context, including global issues in the world. PBL has a series of learning processes that interest students to try to be close to the context, understand the problems that occur in issues or contexts and try to solve problems [11]. Project-Based Learning is student-focused learning. This PBL has distinctive characteristics [12] in learning which are described as follows:

1. Start with a question that defines a problem
2. Students explore starting questions and learn to solve problems and to apply important ideas in learning
3. Students, teachers and the community solve problems together by discussing trigger questions and they get an idea of the complexity of the problem and its solution
4. During the inquiry process, learning that uses technology will really help students to participate in their activities and have abilities beyond what students have.
5. Students can produce a real product that is presented in class and outside the class

The principle of balance in learning using technology can be applied by implementing a balanced learning plan such as the use of Project-Based Learning in learning. Project-Based Learning is learning that involves students to be active and can be done in collaboration with classmates and has real application according to their respective contexts. Project-Based Learning is also a holistic learning model with a broad scale both in learning inside and outside the classroom both in terms of skills and knowledge [13]. Learning in Project-Based Learning is a learning proposal that can balance the use of technology in learning

specifically in the context of Christian schools that experience technology fatigue.

### C. Technology and Student Interest

Technology attracts the attention of various people, both children and adults. Technology has its own charm for humans and is applied in various aspects of life, including in education. The use of technology is currently an integral part of human life, including in the learning process that takes place in the world of education. Technology is an attraction that is of interest to students in learning. Appropriate use of technology can challenge students to use technology in project-based learning. Blumenfeld [14] giving an explanation that technology can offer various kinds of challenges for students, various types of assignments, various kinds of sources and provide various kinds of knowledge according to students' abilities.

Project-Based Learning implementation can use technology as a modern tool that can support the implementation of Project Based Learning (10). Project-Based Learning itself can be implemented starting from kindergarten, elementary school, junior high and high school and even to tertiary institutions. Teachers need to be equipped with special training regarding Project-Based Learning so that they are able to apply it according to their level [15]. Kokotsatki [15] in a special literature review Project-Based Learning provides an overview of the advantages of Project-Based Learning in terms of the balanced use of technology, namely obtaining significant results by using technology to the fullest in finding sources of materials or learning materials by browsing the internet and developing students' critical thinking skills. The implementation of Project-Based Learning can be done in communities outside the school so that students can work together with other class teachers, parents, members in a community so that students have real interaction and real collaboration with the people around them.

### C. Christian School

Christian schools are private schools that are unique when compared to public or government-owned schools. Christian schools are usually born from the vision and mission of the local synod or church. Christian schools have a vision and mission that are aligned with the local church and have a passion for

holistic learning. The phenomena that emerge from this research are based on phenomena seen from Christian schools which are unique in a holistic curriculum. This holistic curriculum means that the curriculum used covers various aspects of the integrity of human life. Learning in schools develops various aspects of the physical, skills, knowledge, and spirituality of students. Learning that uses technology is also interpreted as a tool that helps the student learning process holistically and achieves goals in learning and is aligned with the vision and mission of Christian schools.

## IV. CONCLUSION AND SUGGESTION

### A. Conclusion

Technology fatigue is a reality that occurs in the use of technology, including in the world of education. A balanced learning model that should be created by schools and in this case the teacher will really help to avoid or escape technological fatigue. This art of balance can be done by trying to implement project-based learning and is proposed with Project Based Learning. Educators can explore Project-Based Learning topics and receive special training from experts on Project-Based Learning so that they can apply it to learning in their classes. Technology support in Project-Based Learning is a very effective support in the implementation of Project-Based Learning where the sources of knowledge or literature sought can be taken from the internet. The balanced use of technology in the learning process should foster effective, enjoyable learning and get results in accordance with the learning objectives.

### B. Suggestion

The discussion related to this research is still very limited and requires a lot of input, suggestions for future authors are to study it more deeply and comprehensively about Technology Fatigue: The Art of Balanced Learning through Project Based Learning in Christian School.

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