

## **Transformation Education System and Challenges and Opportunities in the 21<sup>st</sup> Century**

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### **Abstract**

The 21st century has brought big changes in various aspects of life, including in the education system. Transformation of the education system has become an inevitability to respond to global challenges, technological progress, and the need for 21st-century competencies. This article discusses in a deep way the challenges and opportunities in the process of transforming education, highlighting the need for curriculum adjustment, learning methods, the role of teachers, and supporting digital infrastructure. Challenges include covering the gap in access to education, lack of digital literacy among educators and participants, and resistance to change the established system. On the other hand, opportunities include the integration of technology in learning, improved global collaboration, and the birth of a more flexible, personal, and competence-based learning approach. With an interdisciplinary and participatory approach, transformation education must be directed at the formation of individuals who are not only cognitively capable but also possess 21st-century skills such as critical thinking, collaboration, communication, and creativity. The role of government, education institutions, society, and the business world becomes very important in supporting this transformation to create an inclusive, adaptive, and sustainable education system. This article ends with strategic recommendations to strengthen proactive and responsive education policies to the challenges of the times, as well as the importance of sustainable innovation in developing the superior Indonesian people.

**Keywords:** transformation education, challenges education, digital opportunities, innovation learning, skills 21st century

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### **INTRODUCTION**

Transformation of the education system in the 21st century is an important step to ensure that the future generation can face increasingly complex challenges in a world that continues to change. In an era marked by rapid development in information and communication technology (ICT), globalization, and fast-changing social systems, education cannot remain static or follow patterns that have become obsolete. The education system of the 21st century must be capable of preparing students to adapt to a dynamic and rapidly developing world that faces increasingly complex life and work challenges. Therefore, transformation has become very important to create relevant education for future needs. Michael Fullan (2013) stated that transformation education in the 21st century is not only a change in structure,

but also changes deep culture. The process of transformation This must involving collaboration between all stakeholders interests, including government, educators, parents, and students. According to him, the changes in education must oriented in development skills students, as well as facilitate they in develop ability think critical and creative.

Technology be one of factor booster main in transformation education. With progress such a technology rapid, education model traditional which is only focuses on indoor teaching class start felt not enough effective. On the other hand, technology open opportunity for introduce method learning newer one interactive, flexible and skills - based practical that can accessed by whom just, when anywhere, and anywhere. Learning based on technology give chance for student for Study with a more personal way, allowing they for explore Topic more in in accordance with interests and abilities of each. John Hattie (2012) in his book Visible Learning argues that one of key success education the 21st century is adopt approach based on proof in measure effectiveness teaching. Hattie emphasized importance bait clear feedback, involvement students, and use technology as tool help teaching that can increase results learning.

However, even though technology give Lots opportunity for repair quality education, challenges big faced is gap access to technology. In many countries, especially in the regions remote and lacking developing, infrastructure technology still very limited. Limitations This create inequality in quality education, which in turn to worsen gap social and economic. In the context of this, transformation education need balanced with effort for ensure equalization access technology for all student can feel benefit from change This. Linda Darling-Hammond (2017) revealed that system education in the 21st century must capable provide more personal and inclusive education. This is Can achieved through Updates more curriculum adaptive to need individual students, as well as training sustainable for teachers. Darling-Hammond emphasized importance more assessment focus on development student in a way holistic.

In addition, the challenges other is resistance to frequent changes appear from various parties, including teachers, parents, and even student That themselves. Many teachers are still bound with method teaching traditional and feel difficulty for integrate technology in the learning process. Some parents also feel worry with use excessive technology and how matter the can influence development social and emotional children them. In addition, students who are accustomed to with pattern learning conventional also sometimes feel difficulty for adapt with method newer one demand involvement active. Andreas Schleicher (2018) argues that for can face challenge 21st century, policy education must capable merge technology in a way effective in the learning process teaching. Technology, according to Schleicher, is not only tool help, but must become an integral part of experience Study students. Therefore that, teachers need to trained for utilise technology in support more learning interactive and engaging.

In facing the challenge this is very important for involving all stakeholders interest in the process of transformation education, starting from government, educators, parents, to student That itself. Government own role important in to design policy supportive education use technology optimally and provide the infrastructure needed. While that, the teacher must given training and development skills in a way continuously for Can integrate technology in

teaching and learning with effective. P21 (2019) identified four skills the main thing to do owned by students 21st century, namely think critical thinking, creativity, communication, and collaboration skills. This expected can help student for more Ready face the challenges of the world of work are increasingly complex and dynamic. Therefore that, system education need integrate learning based on skills This in every level of education.

Apart from technology, one of the component important in education the 21st century is development relevant skills with the needs of the world of work that continue to grow developing. In the era of globalization this, the power market Work the more prioritize skills that are not only nature technical, but also skills social, creative, and critical. Skills this, which is often called with 4C skills (Critical Thinking, Creativity, Collaboration, Communication), become the more important. Therefore that, system education must capable teach skills This through method innovative and project - based learning real. Artur Saavedra and Daniel Opfer (2012) revealed that although technology own potential big for increase education, its implementation in the classroom need more from just device hardware and devices soft. They emphasize importance teacher training in use technology in a way effective for reach objective more learning Good.

Important for understood that transformation education No only just replace method teaching or enter technology to in class, but also involving change in paradigm education That itself. System education the 21st century must emphasize on learning throughout life, where students No only learn relevant information moment that, but also prepared for Keep going learn and adapt with future developments. Learning throughout life This require individual for develop ability for Study independent, overcome challenges, and continue develop skills they. UNESCO (2015) in report they about education 21st century states that education must capable to form character student for become good, knowledgeable citizen wide, and capable adapt with rapid change. Inclusive and sustainable education. must become priority for reduce gap social and economic in society.

On the other hand, changes in education It also focuses on creating more education inclusive and equitable. Education must give equal opportunity for all child, without look at background behind social, economic, or culture. Inclusive education No only ensure that all student own equal access to learning, but also respect diversity and provide room for every student for develop in accordance with potential them. Therefore that, system education must capable accommodate needs and uniqueness every individual. OECD (2018) in report they emphasize importance digital skills and learning lifelong life. Education must emphasize on development skills that enable individual for Keep going learn and grow throughout life, especially in the middle such a change fast in the world of work.

David Perkins (2010) argues that education the 21st century must more emphasize on development skills think level high. Learning should push student for more often involved in breakdown relevant issues with the real world, as well as develop ability for think in a way systematic and critical. Problems in Transformation Education System, Education Access Gap : One of the challenge main in transformation education is gap access between area urban and rural. Although technology can give solution for gap this, the infrastructure is not adequate in

the area remote still become obstacle bigIn overall, transformation system education in the 21st century presents opportunity big for create system more education good and relevant with the needs of the future world. However, this process is also not without challenge. Required Work the same close between government, educators, and society for create environment supportive education development skills required students in the 21st century. With Thus, education No only functioning for transfer knowledge, but also to prepare students to be able to contribute in a way positive in an increasingly global society complex and dynamic.

## **METHOD**

Study about Transformation Education System : Challenges and Opportunities in the 21st Century aims for analyze changes that occur in system education 21st century, and challenges and opportunities faced by educators, students, and stakeholders interest others. The research methods used is approach qualitative with type study descriptive analytical focused on understanding the phenomenon that occurs in a way in depth. Here is details method research used :

Study This use approach qualitative Because aiming for understand and explore information about transformation system education, challenges, and opportunities that exist. Approach qualitative allow researcher for dig views, experiences, and perceptions from the stakeholders interest related transformation education. The type of research used is descriptive analytical. Research descriptive aiming for describe the phenomenon that occurs in system education 21st century, while analytical used for analyze the data obtained in order to be able to understand factors that influence transformation education as well as existing challenges and opportunities.

Data sources in study This includes : Interview deep with various stakeholders interests, such as teachers, principals schools, students, parents, and creators Education policies in the city Sidoarjo. Discussion group Focus Group Discussion (FGD) with groups involved direct in implementation policy education, such as service education, practitioner education, and academics.

## **RESULTS AND DISCUSSION**

### **Research result**

Based on the data obtained through interview in depth, discussion group focused group discussions (FGD) in the city Sidoarjo study This identify various challenges and opportunities faced in the process of transformation system education in the 21st century. Research results This shared become a number of theme the main thing that reflects dynamics change in system education as well as the impact towards stakeholders interest.

1. The Role of Technology in Educational Transformation

One of findings main from study This is role increasingly advanced technology dominant in the learning process. Many teachers say that technology can enrich experience Study student with provide various source Power education that can accessed When anywhere and anytime. Use of online learning platforms, applications education, as well as tool digital collaboration such as Google Classroom and Zoom is increasingly expanding. However, the obstacles the biggest one faced is limited infrastructure technology in the area certain. In many area remote, access to stable internet and devices adequate technology Still become obstacle big. Even though technology own potential big for increase quality education, gap access technology between area urban and rural Still become problem the main thing that needs to be done quick overcome.

## 2. Resistance to Change

Interview results with teachers and principals school disclose existence resistance to changes that occur in system education. Many educators still used to with method teaching traditional and feel difficulty for integrate technology in learning they. One of them reason main resistance This is lack of adequate training about use technology in education. Some teachers also expressed uncertainty about effectiveness use technology in increase results Study students. And need there are more training programs intensive and sustainable for teachers so that they can more believe self and skilled in adopt technology in the teaching process.

## 3. 21st Century Skills (4C)

Study This find that There is increasing awareness increase about importance development skills 21st century like think critical, creativity, collaboration, and communication (4C). Many heads the school stated that curriculum they start leading to development skills This. However, effective implementation from learning based on skills This Still hampered by limitations time and sources power. Some school Still focused on achievement academic traditional and less give attention to development skills social and technical students. Although development skills the 21st century begins acknowledged as important, curriculum and methods teaching need customized for facilitate more learning focused on development skills practical This.

## 4. Education Access Gap

research results also show existence significant gap in access education in the region urban and rural areas. In the areas urban, schools Already more easy access various source Power education, including device technology, teacher training, and support government. On the other hand, in the regions rural, many schools that are still lack infrastructure basic, such as computers, stable internet access, and adequate teacher training. This contribute to inequality in quality education received by students in more remote areas developed and underdeveloped areas develop. To ensure equitable education, government need increase investment in infrastructure education in the region isolated and provide more training effective for educators in the area.

#### 5. Supportive Education Policy Innovation

According to a number of maker interviewed policy, policy education at the level national and local start shift for support innovation and development more curriculum relevant with need 21st century. However, still there is challenge in implementation policies that are often hampered by bureaucracy, lack of funding, and resistance from interested party. A number of designed policy for push adoption technology in the classroom often not reflected in practice everyday, especially Because lack of support for educators. Policy education must more notice challenge implementation in the field and provide more support concrete to teachers and schools in apply Updates the.

#### 6. Learning Lifelong

Research result show that draft learning throughout life start accepted by many party as part important from education 21st century. Many heads the school stated importance develop attitude independent learning in students, so that they can Keep going develop although has graduated from school. However, the implementation learning throughout life This constrained by the lack of facilities and training programs for teachers, as well as lack of support from system existing education. Learning throughout life must become an integral part of curriculum, with a more approach emphasize on learning independence and development skills for Keep going Study.

#### 7. Parental Involvement in Education

In research this, parental involvement in education students also become theme important things that were raised. Many parents expressed desire they for more involved in the educational process children they, especially in use technology for learning. However, they feel not enough get sufficient information and adequate access for support learning children at home. Therefore there it is need for strengthen partnership between school and parents in support the learning process child. And Required effort more in build a more solid partnership between schools and parents so they can support development student in a way maximum, especially in context use technology in learning.

#### 8. Development Teacher Competence

One of findings main other is importance development teacher competence in face change system education 21st century. Many teachers feel No Ready face demands learning based on technology and skills 21st century. Teacher training programs are available in many area Still limited, and some teachers feel difficulty for integrate technology in a way effective in teaching they. Development teacher competency must be become priority in transformation education, with provide relevant and ongoing training that focuses on the use of technology and teaching skills 21st century.

#### 9. Evaluation and Measurement Effective Learning

Study this also found that method evaluation used in many school Still focus on assessment based on exams and tests that are not reflect ability student in skills 21st century.

Many heads schools that recognize the need develop system more assessment holistic which includes skills think critical, collaboration, and creativity. However, the implementation system evaluation kind of That Still limited by existing policies and uncertainty about standard appropriate assessment. With existence System evaluation must developed for more reflect development skills needed in the 21st century, with integrate more assessment based on projects and capabilities practical.

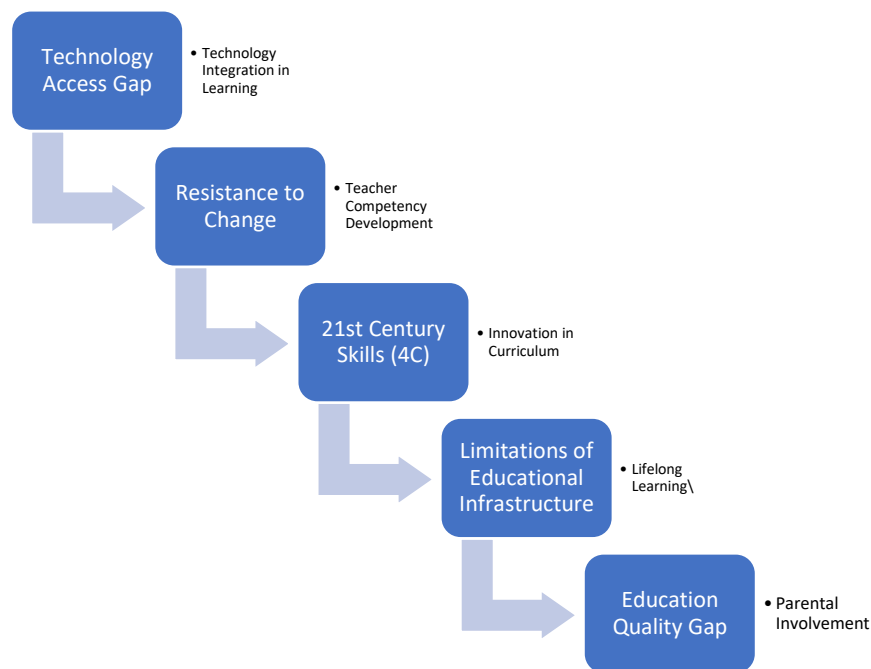
**Table 1.** Challenge and Opportunity

<b>Challenge</b>	<b>Opportunity</b>	<b>Explanation</b>
Technology Access Gap	Technology Integration in Learning	Limited access to technology in the area remote can overcome with utilise technology online- based and digital education platforms.
Resistance to Change	Development Teacher Competence	Teachers who are hesitant or Not yet skilled in adopt technology can given training for increase ability they in integrate technology.
Development 21st Century Skills (4C)	Innovation in Curriculum	Supportive curriculum development skills think critical, creativity, collaboration, and communication can help prepare student for the future.
Limitations Education Infrastructure	Learning Lifelong	Lack of facility education can balanced with more learning flexible and independent, allowing student for Keep going Study in a way independent.
The Gap Quality of Education	Parental Involvement	Education in more developed areas develop can equated with increase collaboration between school and parents in support development student.

Transformation system education in the 21st century brings challenge big, especially in matter gap access technology, resistance to changes, and development skills 21st century. However, the opportunities generated are also very large, especially related with use technology in education, development skills practical, and learning throughout life. for realize transformation this, is required cooperation between government, educators, parents, and society for create system inclusive, sustainable and relevant education with future needs.

## **Discussion**

In the 21st century, the system education faced with challenges big in need attention seriously. Along with progress technology, change social, and needs will skills new, transformation in education become A necessity. Based on results research, there is a number of challenge main problem faced by the system education moment this, which in turn open opportunity for significant changes and improvements.



**Picture 1.** Development Chart 21st Century Education System

### 1. Technology Access Gap

One of challenge the biggest in transformation education is gap access technology, especially between area urban and rural areas. Many schools in the area remote that is not own infrastructure adequate technology, such as stable internet access and devices enough computer. This is result in inequality in quality education received by students in the area the compared to with students in the area more urban proceed in matter access technology. However, the challenges this also opens opportunity big for integration technology in learning. Government and institutions education need overcome gap This with increase infrastructure technology in underdeveloped areas developing. In addition, the use of online learning platforms and applications education can become solution for spread material learning to various area in a way evenly, without limited by space and time.

### 2. Resistance to Change

Transformation system education need change in method teaching and how to learn. However, many educators who are still feel difficulty for adapt with method learning based on technology and approaches new in curriculum. Some teachers feel that method teaching traditional more effective and comfortable, so that they reluctant for innovate. To overcome resistance this, is required development teacher competency through intensive and ongoing training programs. Training This must covers understanding about technology education and skills appropriate teaching with demands 21st century. With proper training, teachers will more believe self in adopt technology and change approach they to learning.

### 3. Development 21st Century Skills (4C)



21st century education demands student for control skills that are not only focus on knowledge academic, but also on skills practical, such as think critical, creativity, collaboration, and communication (4C). However, many schools that are still more focus on achievement academic traditional, such as exams and tests, which are not fully reflect skills needed in the world of work moment This. Innovation in curriculum is one of the opportunities that can taken for overcome challenge This is a curriculum based on development 4C skills can help student become more Ready face challenges in the professional world. Learning based on project, discussion groups, and use technology for collaboration is example methods that can applied for develop skills This.

#### 4. Limitations Education Infrastructure

Limitations infrastructure education, especially in the regions rural, become inhibitor main in transformation system education. Many schools do n't own adequate facilities, such as room comfortable class, laboratory, or internet access. This is impact on quality the learning provided to students, because they No own access to various source Power education that can support understanding they. Learning throughout life be one of solution for overcome problem this. With utilise technology, learning No must limited in class or facility physical. Students can access material learning from various source online, allowing they for Keep going Study although No own access direct to complete facilities. Learning throughout life this can also increase ability student for Study in a way independent and continuous develop along time.

#### 5. The Gap Quality of Education

The Gap quality education between area urban and rural is other problems faced in transformation system education. Students in the area urban usually own access more big to various facility education, teacher training, and technology compared to with students in the area rural. This is create inequality in quality education received by students. Parental involvement in education student can become opportunity for reduce gap This. Building strong partnership between school and parents will create supportive environment development student good inside or outside class. In addition, parents can play a role in motivate and give support to children they for access various source Power education that is outside school, good via the internet or activity learning addition.

#### 6. Opportunity for Innovation in Curriculum

Transformation education the 21st century requires more curriculum flexible and relevant with need students and the world of work. Curriculum traditional which emphasizes memorization and tests No Again in accordance with demands of the times. Therefore that, innovation in curriculum that prioritizes development skills practical and mastery technology become very important thing. The existence of a curriculum based on skills the 21st century must designed for push student develop ability think critical, creativity, collaboration, and communication. In addition, the curriculum must facilitate more learning based on projects and collaborative, where students Study through experience direct and work The same in team.

With Thus, students No only Ready in a way academic, but also ready face the challenges of the world of work are increasingly dynamic.

Transformation 148endid 148education in the 21st century faces quite a challenge big, like gap access technology, resistance to changes, and nonconformities curriculum with needs of the world of work. However, the challenges this also opens opportunity big for do improvement and innovation. Integrating technology in learning, developing skills 21st century, and repair infrastructure 148education and parental involvement can become 148endidi-steps strategic for create 148endid 148more education good and relevant with future demands. Government, educators, and 148education need Work The same for create environment 148inclusive, innovative and sustainable education for generation upcoming.

**Table 2.** Challenge and Opportunity

No	Challenge	Opportunity	Explanation
1	Technology Access Gap	Technology Integration in Learning	The Gap access technology between area urban and rural can overcome with utilization technology online -based, such as online learning platforms and applications education.
2	Resistance to Change	Development Teacher Competence	Many educators feel difficulty adapt with change. Development competence through training will help they integrate technology and methods new in learning.
3	Development 21st Century Skills (4C)	Innovation in Curriculum	Curriculum need customized for develop skills like think critical thinking, creativity, collaboration, and communication. Learning based on projects and collaborative Can applied.
4	Limitations Education Infrastructure	Learning Lifelong	Limited infrastructure in the area certain can balanced with learning that is of a nature flexible and independent, allowing student for Study although No There is facility complete physical.
5	The Gap Quality of Education	Parental Involvement	Quality education in the region rural can fixed through involvement active parents, who support the educational process student good at home or at school.

## CONCLUSION

Transformation system education in the 21st century faces various challenges that need to be overcome overcome with the right strategy. Some challenge main identified in study This including gap access technology, resistance to change, development skills 21st century, limitations infrastructure education, and inequality quality education between area urban and rural areas. However, each challenges also open opportunity for significant improvement in system education.

Opportunity the biggest that can be utilized for overcome challenge the such as integration technology in learning, development teacher competence, innovation curriculum based on skills 21st century (4C), learning throughout life, and parental involvement in support education students. Therefore that, transformation education in the 21st century requires cooperation between government, institution education, educators, and society for create environment inclusive, innovative and sustainable education. With Thus, education can fulfil the increasing demands of the world advanced and complex.

Through integration technology, development relevant curriculum, as well improvement quality source Power human in the field education, system education We can more Ready face global challenges and equipping generation upcoming with skills required for success in the dynamic world of work.

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