Tikio (TikTok App Educational Video) Based on the Character Education of Newton’s Laws Concepts Preferred to Learning for Generation Z

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ABSTRACT

The massive tendency of Generation Z activities on social media should be thought as opportunities for interaction from the education segment. Intake of educational content based on character education is not only in conventionally implemented that can touch the Generation Z, but also in the whole process of learning including the learning media. The purpose of this paper is to offer alternative learning media in the form of educational videos that are interesting, sticky, and creative for students through the contemporary platform, such as TikTok. TikTok application comes with a popular trend that the majority of users are Generation Z. Based on its features that support to produce interesting audio and video learning, it can streamline the learning process. The interesting and entertaining learning nuance of this application is useful for essential and abstract concepts such as Newton's laws to create an interactive learning process in accordance with the characteristics of students.

INTRODUCTION

Indonesia as one of the countries with the most population citizens in the world has a role in the massive use of social media. In addition, the character of Indonesian peoples who tend to have a high social sense, narcissistic, but not too concerned with privacy strongly represents the habits of the people to interact and communicate with each other on social media. Making this condition a challenge as well as an opportunity from the impact of the presence of social media in the midst of the community that the flow of additional users cannot be dammed. This shows that the number of social media users will continue to grow from time to time which provides interesting facts about the power of the internet for life (Nasrullah, 2015). Internet access is no longer limited to only being connected to computers, but to devices that are very close to humans, namely smartphone.
The impact of social media become a serious challenge for all users, the majority of which are Generation Z. Generation Z refers to the generation born after 1994 (Combi, 2015). The original inhabitants of the industrial 4.0 digitization era, were born in the digital world with complete technology, internet sets and devices. They spend more time exploring social media, so that almost all information is more often obtained from the device than the living environment outside. For example, in the Covid-19 Pandemic era which greatly impacted the entire world, including Indonesia, it made the majority of people tend to surf longer on social media, thereby increasing its popularity and use. In the case of Covid-19, Generation Z is increasingly given the opportunity to do everything one of which is the learning process to stay at home.

In general, social media functions to send or receive messages of information in the form of sound, images (photos), and also video links that now offer options for editing more varied. This makes various social media platforms compete with each other to get more users. Demand that social media processors develop features and capabilities to compete with other platforms. This competition process has a positive impact to progress in the field of communication technology. The unification of communication and technology, makes it effective for the interaction needs of the world community who have a variety of interests. The social media have many forms, including Instagram, Facebook and the latest is TikTok.

TikTok application is an applicable social media for conducting various interactions in the form of short videos. Because of how to use it is simple and exciting so this application is in great demand. This application is one of the fastest growing applications in the world with more than 1 billion users and 800 million active monthly users. That makes TikTok among the tops five downloads in 2019, on Google Play and the App Store. Where the average user spends about 52 minutes per day from TikTok. The majority of users are in the 14-30 years age group. These results in opportunities that have the potential to make the application of Generation Z excellent for the advancement of education.

In 2018 the TikTok application was blocked by the Indonesian government through the Ministry of Communication and Information because there were many negative reports caused by the lack of urgency for character education. But now it can be reused freely with a variety of new considerations and regulations, so in August 2018 TikTok can be downloaded again. Therefore, efforts to collaborate educational content on this Generation Z exclamation container must be balanced with the character education as well so that the educational process can be fully absorbed.

Education is a segment who is very influential to improve the quality and competitiveness of Human Resources (HR) for a nation. Farhatin et al. (2016: 22) state that "education always rests on a historical insight, namely experiences, reality and urgent needs of the present, and aspirations and hopes for the future". Education in one, country determines success in other fields. The ability of innovation in the field of education today will affect the position of the quality of human resources go forward.

Characteristics of TikTok applications that tend to steal the attention of Generation Z and are not boring have the opportunity to produce creative educational videos on boring learning materials. Educational video media that are included in the media by design are media that have been designed for learning, so that the content has been adapted to the learning objectives to facilitate students in learning that can later help students understand learning (Erniasih, 2018). In this paper specifically related Newton's Laws concepts which is actually an essential material to be understood in physics. Thus affecting the mindset of teachers and students towards creative
learning models to improve the quality of education. This is in line with government Regulation Number 17 of 2010 articles 48 and 59 that great expectations for the development of information technology-based education systems, and information. With a good education system, it will be able to increase Indonesia's competitiveness through the creation of good human resources (Sulisworo, 2016).

Therefore, this paper wants to discuss educational videos through the TikTok Application. Only the implicit content that will merge into the short video is Newton's Laws concepts based on character education. This paper aims to discuss about creative learning through the TikTok Application to produce educational videos. Values that provide benefits for students and students to learn that are creative, unique, and fun, but pay attention to the value of character education.

METHODOLOGY
Research within the type of descriptive theoretical data with a qualitative approach using literature study techniques. The author presents the matter by explaining clearly and objectively touching on data taken from appropriate research.

RESULT AND DISCUSSION
TikTok Application Tendency of Generation Z
Indeed, the golden era of Gen-Y has dimmed and now is the time for generation Z to shine. Many studies that have examined the identity of Generation Z adolescents have been carried out. Based on the characteristics of generation Z shows that this generation is the first community that is actually the internet generation. If the previous generation, Y, is still undergoing a technology transition to the internet, then generation Z is born when the technology is available. That is what makes this generation have a character that is fond of technology, flexible, smarter, and tolerant of cultural differences. Nevertheless, this generation is a generation that likes instant culture and is less sensitive to private essence because it is constantly uploading its life on social media. Subandi (2011) said that this generation was seen as a future generation that were nurtured in a new cultural environment of digital media that was interactive, of solitude, communicating personally, and computer-literate.

Generation Z was born and grew together with digitization, the digital era is the era of Generation Z. Digital technology, such as video calls, voice calls, chat, and social media become friends for the growth and development of generation Z. Digital technology is packaged in various applications that have features and packaging that different. With this application, generation Z can easily interact, even reach billions of people in this world with just one click. The internet generation or i Gen is another designation for generation Z.

Surayot Aimlaor as head of marketing TikTok Thailand said that the average population of Southeast Asia spends 3.6 hours a day playing smartphones (Indonesia reaches 3.9 hours), and the percentage is dominated by users aged 15 to 24 years and 98% of the group Generation Z has its own smartphone (Jonathan,2020 ). So the Generation Z community is connected to the internet for 10 hours a day and 1/3 of them watch videos for up to one hour a day, and consume an average of 68 in a 24-hour period. These characteristics are utilized by TikTok. ByteDance calls this service the number one short-video platform in the world - especially in Asia and America. Users are welcome to make videos of 3 to 15 seconds or a maximum of one minute. This short social video application has a lot of music support so that users can do various forms of movement ideas in the form of dance, freestyle, and many more to encourage the creativity of users into content creature.
The TikTok application has a strong tendency to be used by the majority of Generation-Z due to its character. These factors also make in 2020 based on a digital report from We Are Social that TikTok stole the position of other social media applications because its user account has grown by 800 million users. Indirectly, the TikTok application has surpassed user accounts from social media applications which first stole social media market share, such as Twitter, Pinterest, and Snapchat.

As for Indonesia, TikTok applications are starting to grow, although they are stilling alternatives. The number of users continues to increase after being blocked on Tuesday, July 3, 2018. This trend will continue to grow because this application is very viral among the Millenial generation or Generation Z community.

**Figure 1.** Data Distribution of Social Media User Accounts in the World (Source: wearesocial.com)

**Figure 2.** Data Distribution of Social Media User Accounts in Indonesia (Source: wearesocial.com)

**TikTok Application as an Educational Video**

Yusufhadi Miarso in (Mahnun, 2012), states that the first thing teachers must do in use media effectively is to find, find, and choose media that meet the learning needs of children, attracts children's interests, according to their developmental maturity and experience and specific characteristics that are in the study group. These criteria are obtained by the instructor as
a human resource (HR) through the process of observation of the characteristics of the learning group. So that the media used for learning are no longer conventional but more varied and innovative.

In addition to the problem of students' interest in the media, the representation of knowledge conveyed by the teacher must also be considered. There are at least three functions that move together in the presence of the media, namely stimulus, mediation and information (Mahnun, 2012). First stimulation function that causes interest to learn and find out more about everything in the media. Second, the mediation function which is an intermediary between the teachers and students. In this case, the media bridges the communication between teacher and students. The third function is information that displays the explanation that the teacher wants to convey. With the presence of the media, students can capture the information or explanation that is needed or what the teacher wants to convey.

The use of media become very important in learning because it can facilitate the delivery of material to students. One of the packagings of learning media that is currently in trend is audio and visual packaging. Besides facilitating audiovisual learning, it also facilitates visual learning. In this way, students find it easier to understand the material presented. Visual packaging can also made abstract learning more tangible and concrete. Creating innovative instructional media must include providing new experiences to learners, turning something abstract and imaginary into something real to see through the screen, analyzing changes that occur systematically from period to period, providing a certain experiences for students, showing material discussion in the form of real life which is used as a case study for students (Prastowo, 2011).

TikTok application was first released in 2016 by China. This application is then much loved by the public, especially generation Z whose majority is the age of school children. TikTok provides short video features with a duration of 15-60 seconds motivated by attractive audio and visuals. A video making is facilitated so that it is made easy and the product target (user), broader and with diverse video editing capabilities. This means, in addition to the features that are displayed instantaneously and interestingly, TikTok also makes making videos easy, so that even beginners can make incredible videos. These features include the following:

**Table 1. Features of the TikTok application**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voice record</td>
<td>Record the user's voice through a device, then integrated it into the user's TikTok account.</td>
</tr>
<tr>
<td>Video record</td>
<td>Record a video through the device, then integrated it into the user's TikTok account.</td>
</tr>
<tr>
<td>Background sound</td>
<td>Background sounds that have been available in the TikTok application to be inputted into the video</td>
</tr>
<tr>
<td>Special Effect</td>
<td>Make video visuals more interesting with certain filters or effects that are already available on the application</td>
</tr>
<tr>
<td>Edit</td>
<td>Editing and improving draft videos that have been recorded.</td>
</tr>
<tr>
<td>Duets</td>
<td>The duet feature allows users to collaborate with other TikTok users.</td>
</tr>
</tbody>
</table>
Feature | Function
--- | ---
Share | Share completed videos with others, both in the TikTok application and other social media applications.

(Source: Aji, 2018)

In general, TikTok application can be used as an effective learning medium for contemporary learning. TikTok is an audio visual media, this makes learning material that is initially abstract or difficult to see in real terms, can be packaged into more real and interesting. It can also attract interest and motivate students to learn, because it provides cool, unique, and interesting features, so that it is expected to become continuous learning. In addition, the age of development of students belongs to generation Z, if viewed in terms of student maturity, mental condition, and background experience, then the TikTok application is in accordance with this (Aji, 2018)

Specifically in Physics, the TikTok application also has several advantages. First, the majority of learners' targets are Generation Z, which is the most users of the TikTok application. Second, it can increase students' creativity in learning. Third, it is an audio visual application that can facilitate visual and auditory yachting styles. Fourth, the importance of flooding social media content with educational content so that everyday generation Z can be accompanied by useful things. Fifth, it can make learning physics fun and interesting, thus leaving the impression that physics is one of the scourses of learning.

**Inserting Character Education in Newton's Laws Concepts**

**Newton’s Laws**

Newtonian mechanics consists of three laws contained in Philosophiae Naturalis Principia Mathematica (the Principia) published in 1686. Essentially classical, or Newtonian mechanics is the study of the consequences of the laws of motion as formulated in there. The three laws read as follows: First Law: Every object continues in its state of rest or uniform motion in a straight line unless a net external force acts it to change that state. Second Law: the rate of change of momentum of an object is directly proportional to the force applied and takes place in the direction of the force. Third Law: For every action there is always an equal and opposite reaction; that is, whenever a body exerts a certain force on a second body, the second body exerts an equal and opposite force on the first (Arya, 1990).

1. **Newton’s First Law**

Newton’s first law reads: "If an object is at rest, the object will remain stationary forever, the object’s speed will not change or the object will not accelerate. If an object is moving with speed, then the object will still be moving at that speed constantly" (Halliday, 2005).

2. **Newton’s Second Law**

Newton’s second law reads the net force acting on an object in proportion to the product of the mass of the object and its acceleration.

\[ {\vec{F}}_{net} = m\vec{a} \]\n
The net force is the sum of the vectors of all external forces that apply to objects. The more force in the direction of the object, the greater the force in the other direction, and the object will move in the direction of the greater force. In the case of opposing external forces the value is
equal and nullifies each other, this means that the acceleration of the object will be zero. No matter how much or how much force on the object, if the numbers cancel each other out, then the object will remain stationary and if the object is moving, it will still move at a constant speed. In this case, the object is said to be in equilibrium. The amount of force acting on the object is worth the balance. This does not mean that there is absolutely no force acting on objects, the style is there, but the sum of the vectors is zero (Halliday, 2005).

3. Newton’s Third Law

When an object exerts a force on another object, there will be a force arising from the other object to the initial object with the same magnitude, but in the opposite direction to the initial force. This means there is a force resistance of the same magnitude. In Newton's third law the two forces between objects that interact can be called a pair of forces. If two objects interact in a condition, a pair of forces from the third law will definitely exist (Halliday, 2005).

Character Education Contained in Newton’s Laws Concepts

Character values can be internalized in the scientific aspects of Physics concepts. This can be done by linking the values of life to the laws of Physics (Suyoso, 2013). This association of life values can be contained in learning video content.

Based on research conducted by Dewi (2019) there are 14 character values internalized in Newton's Laws concepts in Physics textbooks that have been suggested by the Ministry of national education. In the scientific aspect, there are 5 character values, namely religion, tolerance, hard work, community care, and creativity. In addition, the value of the character of discipline and care for the environment can also be internalized in the concept of Newton's Laws. The seven characters are specifically contained in the story given in the learning content.

The value of religious character can be embedded in the concept of Newton's Laws. Newton's Laws discusses how conditions of objects exist on earth, and what happens to them. Something on Earth exists because God has created it and balanced everything. God created a system that is so neat and beautiful, and studied in Newton's law.

Characteristics of tolerance are studied by interpreting Newton's third law. Based on Newton's third law, we must respect others because everyone has their differences. If we do good to others, the universe will also do good to us.

Newton's second law implies the value of Nationalist character. If F (force) is associated with impulses from within oneself, then one can struggle with serious learning for the betterment of the nation and state (Diana, dkk., 2020).

The value of hard work can be obtained by interpreting Newton's first law. Newton's first law is also called the law of inertia or the law of laziness. Objects tend to maintain their initial position, unless there is an external force acting on them. Lazy people will not move from their current living conditions, unless that person does work and does not become lazy anymore. Someone will still sleep in a dream if there is no will to wake up and pursue success.

If the style is represented on the moral aspect, then it can be said that style is a factor in life that represents the displacement of conditions that contain the character values of discipline. One must gather forces in the direction of the goal and reduce forces in the opposite direction. The greater the net force in the direction of the goal, the faster the goal will be achieved. For example, when someone wants to be a physics olympic winner, we can say that the directional force is learning, group discussion, taking part in a physics contest, etc. On the contrary, the opposite force is laziness, never taking part in a physics contest, not studying, delaying work, etc.
Third Newton's laws requires us to analyze an object that exists in nature creatively. We have to play with reason to be creative to uncover everything. Community care and the environment are taught through Newton's third law. Newton's third law teaches that what we do is what we will get. Caring for society and the environment will make people and the environment care and have a good impact on us. If we take care of the environment well by not littering, not cutting down trees, etc. Then, the environment will not be damaged and we can live healthy.

**Tikio (TikTok App Educational Video) of Newton’s Laws Concepts**

The TikTok application educational video can be used by students in learning, especially to learning Newton's Laws concepts. The presentation of this educational video is not only intended to attract interest and to make the video interesting for students, but also to include character values, so that, learning is not only based on cognitive aspects.

Educational video content is created by presenting stories that are relevant to moral values in daily life associated with Physics material, namely the concept of Newton's Laws. Among the presentations of educational content on Newton’s Laws concepts is as follows:

**Newton’s First Law**

Presentation of educational content begins with presenting the first states of Newton's law explicitly then presents a story that is relevant to daily life as an investment in the character of hard work. The relevant story is a sleep scene that reflects laziness, then a comparison is made with someone who always works hard. At the end of the video, explicit advice can be given that a person will remain in his initial state, if he does not have desire to work and pursue success. That way, the law of inertia, and the value of the character of hard work have been conveyed through this video.

**Newton’s Second Law**

The educational video begins by presenting the sound of Newton's second law explicitly, then presents a relevant story to instill the value of nationalist character. The relevant story could be by showing the Indonesian flag and the struggle against the invaders during the struggle for independence. Then, by displaying Soekarno's statement which reads "Our struggle is easier because against the invaders, your struggle is more difficult because it is against foolishness". Then at the end of the video explicit advice is displayed that we must study hard to fight foolishness for the sake of the nation and state of Indonesia.

The educational video begins by displaying the sound of Newton's second law explicitly, then presents a relevant story to instill the value of disciplinary character. The relevant story could be by showing someone who want to be a class champion, so we have to gather styles that are in our direction, such as studying diligently, reading books, join studying groups, do lots of practices, and so on. So, we must be disciplined, so that the acceleration we experience is even greater. At the end of the video explicit advice can be written that we must gather the forces in the same direction, so that the acceleration we experience is even greater.

**Newton’s Third Law**

The educational video starts by displaying the sound of Newton's third law explicitly, then presents a relevant story to instill the value of tolerance character. Relevant stories can be
presented through duets with other users, and show that if we do good to others, other people will also do good to us. At the end of the video an explicit statement can be presented as any object we are subjecting to action will surely cause a reaction of the same value.

The educational video begins by presenting the sound of Newton's third law explicitly, then presents relevant stories to instill the values of the characters caring for the community and the environment. Relevant stories such as good deeds that we do to the surrounding community will make them also be good to us. In addition, the value of community care can be instilled by presenting the story of reforestation, so that nature will provide oxygen that is beneficial to human health. At the end of the video explicit advice can be presented such as caring for the community and the environment, so the universe will care to you.

**Third of Newton’s Laws**

The inculcation of religious and creative values in educational videos, can be done by displaying Newton's three laws and then presenting relevant stories. Relevant stories as we observe objects on our earth that are arranged so beautifully and in balance, all of them exist because there is a God who created them. In addition, a style analysis with Newton's laws is presented, which shows we must look and analyze these objects creatively so that we have more faith in the Creator.

Presentation of educational content by inserting character education can be expanded by using the features available in the TikTok application. The use of this feature can make educational content more interesting. Learners can also be assigned to make their own educational videos as creatively and as well as possible. In addition to testing the elasticity, this can also be done as an evaluation of material understanding for students, and as further learning so that character planting can take place even better.

**CONCLUSION**

TikTok application can be utilized to produce interactive educational videos on Newton's laws concepts. By maximizing its diverse features, and simplicity in operation the TikTok application can be implemented in the daily life learning for the generation Z. To compensate for technological advances and educational innovations that develop, the value of character education must also be inserted so that the learning process can be fully absorbed and minimize moral crises. Meanwhile, determining the effectiveness of the TikTok Application in improving physics learning particularly Newton's Laws concepts, it could be further research.

**REFERENCES**


