Tiktok as an Alternative Learning Media for The Z Generation: Phenomenology Research

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ABSTRACT

The phenomenological method is being used in this qualitative research. Students at Universitas Negeri Manado used the TikTok program frequently while learning chemistry, according to data analysis employing paradigm interpretation. From the first to the third year, fifteen UNIMA Chemistry students participated in the study and served as informants to collect data. The research's primary and secondary data were gathered through in-person interviews and direct observation. The believability, transferability, dependability, and confirmability of the data were examined for quality. Data reduction, data display, and the process of drawing conclusions/verifying those conclusions were all steps in the processing of the data that Miles and Hubernan pioneered. Researchers came to the following conclusions based on their research: 1) Since the outbreak, TikTok has quickly surpassed YouTube, WhatsApp, and Zoom Meeting in terms of usage, becoming the most popular app; 2) TikTok content, which was previously only for entertainment, has migrated to learning media, including chemistry learning; 3) chemistry content in the form of videos based on experiments or practicums is able to hold students' attention; and 5) the TikTok application can be used as a media alternative in learning that is suitable for Gen Z students.

Keywords: *Chemistry Learning, Learning Technologies, Post Pandemic*

INTRODUCTION

During the time when the COVID-19 pandemic hit the world, including Indonesia, it disrupted daily activities and required people to carry out activities at home to reduce social contact. A lockdown strategy was established by the Indonesian government, which led to a significant number of cases being moved to the online system. The two primary options are the work-from-home system and online education, and as a result, Internet usage in Indonesia has drastically increased. The work-from-home system and online learning are the main choices, which have resulted in the use of the Internet network in Indonesia increasing dramatically. According to the Chairman of the Association Organizer Indonesian Internet Services (APJII), Jamalul Izza said that internet users in Indonesia until Q2 of 2021 rose to 73.7 percent of the population or the equivalent of

196.7 million users ("An Ethnoscience Study in Chemistry Learning to Develop Scientific Literacy," 2019).

Referring to the data above, it is undeniable that during the pandemic, people's dependence on the Internet has increased. Social media is one of the fastest-growing sources of internet access for the community (Arifin, 2022). Communities use social media as a tool to communicate and obtain information because of the nature of social media, which can be used as a media alternative to socializing without boundaries. Since the implementation of the international lockdown, during the COVID-19 pandemic, the need for gadgets and internet quota has entered the primary level. This also applies to the world of education, where the learning system that is usually carried out face-to-face has changed to an online learning system. Of course, this provides many opportunities for students to access the internet more intensively, one of which is the social media site TikTok.

The TikTok application is a new wave of social media, and the presence of TikTok has brought a new revolution to social media (Nababan dkk., 2019). For now, the short video platform has become one of the most popular social media platforms for netizens because it attracts so many young people. The TikTok app is a Chinese social network and short video platform launched in September 2016 (Agrawal, 2022). With this TikTok application, users can express themselves and develop creativity by making music videos with the duration provided.

Indonesia is listed as a country with TikTok users that were the second largest in the world in January 2023 (Ardiyanti dkk., 2021). There are 109.90 million social media users in Indonesia. That number beats the popularity of other apps, such as YouTube, WhatsApp, Facebook, and Instagram (Renaud dkk., 1975). The TikTok application even beat the Zoom video conferencing application, which was widely used during the COVID-19 pandemic, and this condition lasted until the pandemic period was declared to be over.

This phenomenon occurs because of the many unique and interesting features contained in the TikTok application. Feature This facilitates users' creation of unique content and the sharing of interesting video posts. Various video accompaniments soundtrack TikTok songs so that they can make users feel happy and eliminate boredom. This is what makes the TikTok application different from other social media applications. The TikTok application creates an effect that can make its users feel addicted because of its addictive nature, so the TikTok application is increasingly popular and has become an excellent application that everyone must download, especially Z Generation (Loring & Wang, 2022; Naim, 2021).

Most of the TikTok application users in Indonesia are millennials, school-age children, or what is commonly known as the "Z Generation. Gen-Z, or Generation Z, is the entire generation born from 1996 to 2012 (Raslie, 2021; Saxena & Mishra, 2021). That is, Gen-Z is the generation after millennials. So, in 2022, children aged 9–26 will be included in Gen Z. However, a number of institutions, such as the Canadian statistical agency, the Sparks and Honey Agency, and the McCrindle Research Center, say that Gen-Z is the generation born starting in 1995 (Boesdorfer, 2019).

Gen-Z is also called Generation Z. The title was inspired by the names of the world's leading technology companies, namely Apple (Sari dkk., 2022). So, iGeneration means that Generation Z is the internet generation that utilizes the internet and technology to live their lives. Therefore, they are synonymous with the need for gadgets and internet networks.

Generation Z has the advantage of being able to multitask, i.e., carry out various activities at one time, for example, using a computer, playing social media, and listening to music at the same time. That's because Gen Z has encountered technology since birth, so they can apply it to the fullest. This condition makes Gen Z have one of the main characteristics, namely being accustomed to things that smell of technology, also called tech-savvy (Hidayat dkk., 2022; Muthoni Ngila & Ndiku Makewa, 2014). So, they are able to operate technological equipment easily, even at an early age. character tech-savvy, which automatically has a major impact on students' study habits and interests, including the subject of chemistry.

Initially, TikTok was known as an entertainment medium, where uploading video content was just for fun or entertainment. Not only that, but currently, users of the social media site TikTok, including Generation Z students, are making a lot of use of it. TikTok is a medium for learning communication.

Initially, TikTok was known as an entertainment medium, where uploading video content was just for fun or entertainment. Not only that, but currently, users of the social media site TikTok, including Generation Z students, are making a lot of use of it. TikTok is a medium for learning communication (Hayes dkk., 2020). The position of communication in the learning process is seen from its educative function; basically, learning communication is tasked with managing the communication process, which is specifically created to provide added value to students and effect behavior change. Naturally, this happens as a result of the act of learning communication (Karpudewan, 2020).

In the learning process on social media TikTok, creators or owners of Chemistry education/learning accounts act as instructors who inform targets in the form of learning information (messages) and motivation on their own educational properties (Brouwer & McDonnell, 2009; Kaabachi dkk., 2022). Users of TikTok act as the target of the teacher (creator) and accept and understand the content of the learning messages given. Since 2022 until now, TikTok has become a media for chemistry learning that is effective in conveying messages. There is a lot of various video content that is able to provide interesting, fun, and interactive learning information to users and viewers for learning (González-Padilla & Tortolero-Blanco, 2020; Hendra Prijanto, 2022). Where the chemical content is given or presented, it is either general in nature or a presentation of specific knowledge.

A chemistry lesson is a lesson that must be studied as a whole in the context of the three levels of chemistry (Macroscopic, Sub Microscopic, and symbolic) ("Students' Satisfaction Index on Chemistry Learning Process," 2019). Characteristics of chemistry learning are theoretical and practical studies regarding the interactions, structures, and

properties of various materials. Investigation and understanding at the microscopic atomic level provide an understanding of various macroscopic real-world phenomena (Ardiana & Ananda, 2022).

An understanding of chemical structures and processes is used to adapt and innovate to meet the changing economic, environmental, and social needs of the world. This includes addressing the global challenges of climate change and energy constraints by designing processes to maximize the efficient use of the earth's limited resources. Chemistry is practical learning (Floriano dkk., 2009; "The Role of the Laboratory in Chemistry Teaching and Learning," 2021) In the learning process, students are trained to become learners who continue to upgrade themselves according to the characteristics of Gen Z, where they are always open to development and have a high desire to continue developing (Putry & Muassomah, 2021).

Chemistry learning is packaged in a simple way, both individually and collaboratively, regarding various real-world phenomena. Students learn to find problems, make hypotheses, design simple experiments, conduct experiments, analyze data, draw conclusions, and communicate experimental results both in writing and orally (Yavuz, 2022). Like the TikTok accounts @kimiapedia, @chemistry.noboring, @kimiadclass, @coolchemistryguy, @chemistryguy, and many more, they can make chemistry content interesting. This has a positive influence on students' attitude towards chemistry.

The attitude of students towards chemistry is defined as a student's overall attitude towards chemistry. The overall attitude in question is described by Cheung into 4 indicators [27], 1) students' interest in theories in chemistry; 2) students' interest in chemistry practicum activities in the laboratory; 3) students' interest in learning chemistry; 4) students' interest in pursuing a career in chemistry; as described in Table I.

TABLE I Attitude toward Chemistry Lessons Scale

No	Subscale	Item
1	Liking for chemistry theory lessons	I prefer chemistry to all other academic subjects. Lessons in chemistry are fascinating. One of my favorite subjects is chemistry.
2	Liking for chemistry laboratory work	I enjoy conducting chemistry experiments. I feel as though I am accomplishing something significant when I am working in the chemistry lab. Chemistry experiments are enjoyable to perform in class.
3	Evaluative beliefs about school chemistry	Chemistry is helpful for finding solutions to common issues. Because it has an impact on their life, people must grasp chemistry. One of the most crucial subjects for people to

		study is chemistry.
4	Behavioral tendencies to learn chemistry	I'm willing to read chemical books for longer periods of time. I enjoy attempting to find new chemistry solutions. If given the chance, I would work on a chemistry project.

Using TikTok is one of the solutions that can be reached by the younger generation to stay connected with their friends and update Chemistry information. This is also in line with the characteristics of Generation Z, where Generation Z is more likely to use smartphones to communicate via social media. The current sophistication of information technology makes it easier and more enjoyable for users to access and obtain information about chemistry.

Based on the phenomena that have been described, this research intended to explore the use cases of Tiktok as a learning medium alternative among Z-generation students. The research subjects chosen were Chemistry students at Universitas Negeri Manado. The location of this study was chosen with regard to researchers working in the same location, data will be more natural and deeper.

RESEARCH METHODOLOGY

A. *The Material*

Researchers employed both primary and secondary data in this investigation. Primary data is information that has been sourced directly, without the use of any middlemen. The major informants for this study, who are chemistry students at Universitas Negeri Manado who frequently use the TikTok app, were observed and interviewed for this study's methodology. The main informants were determined by purposive sampling technique and added a number of informants as supporting informants. Purposive sampling was used to select the following criteria for the study's major informants:

1. Students who live and settle in Tondano
2. Active TikTok user'
3. Following learning content

In this study, it was determined that fifteen informants, five Chemistry students at Universitas Negeri Manado (UNIMA) were in the 1st year, five students in the 2nd year, and five students in the 3rd year.

Secondary data in this study are data obtained from the interaction between students and learning content on TikTok. Secondary data can also be in the form of comments, private messages, or video stitches. Researchers use this secondary data to strengthen the findings and complete the information that the author has collected through interviews.

B. Method

This study uses an interpretive paradigm, a qualitative method that focuses on the nature of the subject, which seeks to understand the way of thinking of the subject being studied. The approach method used is phenomenology, where researchers understand and explain the meaning and experience of learning in alternative learning phenomena by UNIMA Chemistry students on TikTok.

Data collection was carried out through participant observation methods and direct interviews, where the researcher acted as an observer. In the interview process, the interviewer relatively has no control or response from the informant. In which research informants are free to provide answers that are complete, in-depth, and if necessary, not hidden. By using the in-depth interview method, the researcher will find out information or things that cannot be found through observation. The data collected meets the criteria for validity of the data, namely: *Credibility, Transferability, Dependability,* and *Confirmability*.

Technique data analysis in this research is qualitative which refers to the concept originated by Miles and Hubernan. The steps taken in data analysis are data *reduction, data presentation, and the process of drawing conclusions/verification*, as shown on Figure 1.
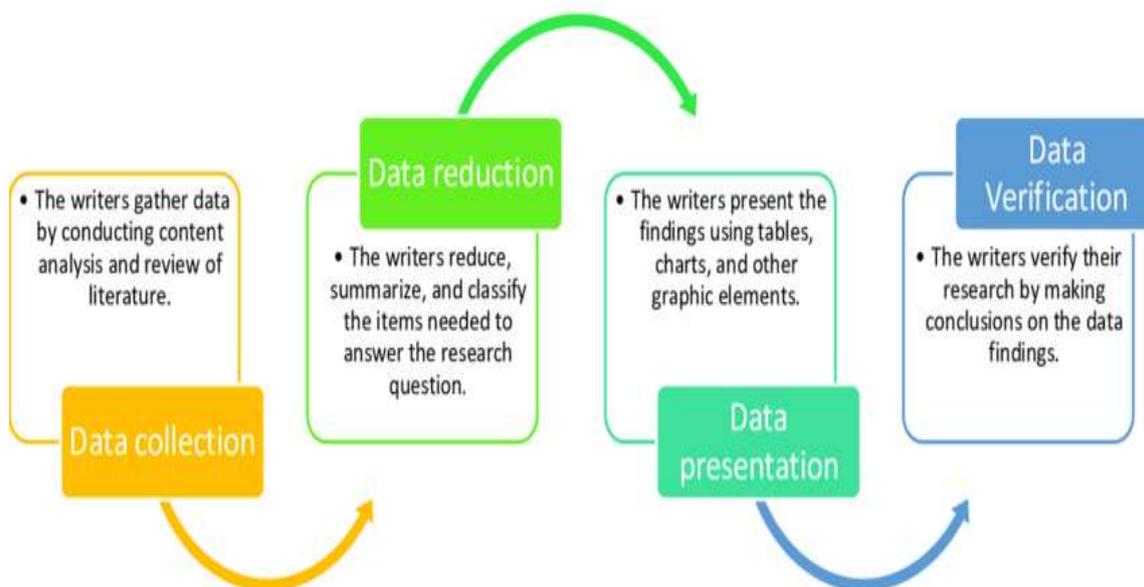

Figure 1. Qualitative Data Analysis Model (Miles & Huberman, 1994)

1. *Data collection*: Primary data was collected through a process of direct observation and interviews, while secondary data was collected by tracing the direct interactions between informants and chemical content on TikTok.
2. *Data reduction*: carried out in the first step by examining the information from all field records summarizing, categorizing, separating out the key elements,

concentrating on what matters, and searching for themes and patterns in the study. A clearer image is obtained by minimizing the data, which makes it simpler for researchers to process additional studies.

3. *Data presentation*: In the second process, namely the presentation of data, the researcher will describe the data that is relevant to the narrative text so that the information obtained is easy to understand.

Data verification: Researchers verify the data that has been analysed by drawing conclusions, so as to obtain conclusions in the form of new findings that have been tested.

RESULT AND DISCUSSION

A. Result

1) Data Collection: Aplikasi TikTok

TikTok, or as it used to be called Douyin (the Chinese version of TikTok), is a social network and a music video application originating in China that was launched by Zhang Yiming in September 2016 [30]. TikTok is developed by Taoutio, and ByteDance is an internet technology company based on artificial intelligence in Beijing that was created in 2012 by Zhaoyang Yiming. The TikTok application has IOS, Android, and PC operating systems uploaded on Google Play and the App Store.

TikTok is a video-sharing application for fifteen informants, where users can make videos that are one minute to three minutes long and can be made into long videos depending on the selection of the video duration that has been provided. This TikTok application displays a "page for you" homepage, commonly known as the "FYP" (For You Page), with the emergence of various popular video content from creators on FYP users, which can be watched by millions of other users. And the video content that appears in the FYP category is subject to careful scrutiny for each user based on their interaction on the TikTok app. Users can use hashtags, tag people, quote videos, which are usually known as "stitch, and even broadcast live on YouTube application TikTok as a way for users to interact with each other.

In today's times, the TikTok app is becoming popular not only in Indonesia but almost globally. This can be seen from the existing data. According to the Databook's portal, the TikTok application has been downloaded more than two billion times per month in the first year of 2020 globally. In 2020, the company has managed to penetrate the highest number of downloads in recent years, reaching 315 downloads for both the App Store and Google Play. Platform Google Play has contributed to TikTok's biggest downloads to date, garnering over 1.5 billion, or 75.5% of the total. Meanwhile, the AppStore has generated 495.2 million downloads or 24.5%. 70 TikToks entered Indonesia in 2017, while developments TikTok Indonesia in July 2018 was blocked by the Ministry of Communication and Informatics (Kominfo) because there is negative content, especially for children, and the use of the application does not fit the context of entertainment ethics in Indonesia. Radiantara, as the Ministry of Information and Communication said, said that the blocking of the TikTok application is only temporary, and in 2020 the TikTok application will be successful again and have become the most

popular social media in Indonesia [31]. Regardless of pros and cons, the TikTok application keeps innovating to provide special features that are unique and interesting so that it gives space for users to express their creativity so that they can make good and interesting short videos. The following are the features contained in the TikTok application, which are divided into several categories, namely:

a. Filter

The filter feature is a feature that functions to change the color tone to match the video concept, and this feature provides various types of filters. Users can add available filters to beautify video views.

b. Beauty

The beauty feature is a feature that functions to disguise and smooth facial skin. This feature is often used by TikTok users to beautify the appearance of their faces so that they are more confident in each video. Users can set their eye color and face shape.

c. Effect

Video effects and sticker features are features that make videos more creative and attractive. The effect feature presents various kinds of cute user-friendly effects, among them stickers, visuals, transitions, timers, and split effects.

d. Live broadcast

The live or live broadcast feature is a feature that is used live on TikTok and interacts directly with followers.

e. Share

The share" feature is a feature that users use to share videos with WhatsApp contacts and other social media.

f. Trending

Feature Trending is a feature that is almost the same as YouTube and Twitter. Users can use this feature to find out what's trending and going viral on TikTok. Futures trading also features currently trending music, effects, and hashtags on TikTok. Access this feature by typing a trending word in the search field.

g. Data Reduction: TikTok as a Chemistry Learning Media

The popularity of TikTok since the pandemic has brought new changes to social media because TikTok has created a new subculture for UNIMA Chemistry students. Currently, TikTok is used by users for more than just entertainment purposes, one of which is learning chemistry. TikTok is the new solution for helping the success of learning since the time of the pandemic until now; in other words, the TikTok application now creates a fun place that can be used as an alternative learning medium. Where are the users specifically? Students can use TikTok to study and share references, provided they are hashtagged #SamaSamaBelajar. Users, especially students, can search for appropriate learning content and study it.

Chemistry content becomes more interesting with content presented by creators on TikTok, thus increasing the attitude towards chemistry among UNIMA Chemistry students. Some examples of chemistry content presented on TikTok are shown in Figure 2.

Figure 2. Chemical Content by accountTikTok @Coolchemisttryguy

1. Data Presentation

Based on the data reduction that has been done, this study presents data that is closely related to TikTok as a chemistry learning medium that can improve attitude towards chemistry. The data are presented in Table II.

TABLE II

SUBJECT INTERACTION ANALYSIS WITH CHEMISTRY CONTENT

No	Indicator	Fact
1	Duration of use of TikTok	a) Subjects are able to spend 2–6 hours each day scrolling TikTok
		b) Subjects spent an average of 1-3 hours watching chemistry-related content.
2	Interest in Chemical Content on TikTok	c) Content creators that are frequently visited are: @coolchemistryguy, @kimiapedia, and @chemistry.noboring. @chemistry.method
		d) Chemistry topics with a duration of 20 seconds to 2 minutes are much more effective because they are not boring.
3	Interactions carried out with chemistry content	e) Students re-upload content and share it with their friends.

		f)	Students create hashtags to create content collections.
250		g)	Many students work with content creators.

2. Data Verification

The outcomes of the data analysis show that the following modifications to the learning environment since the epidemic period have occurred:

a. increased student use of the TikTok app.
b. Students' needs for gadgets and internet quotas are in the "primary" category;
c. Chemistry content presented in short videos of between 20 seconds and 2 minutes is easier for students to understand.
d. The TikTok application is one of the media alternatives that are relevant to use in learning chemistry.

B. Discussion

The results of research on the phenomenon of using TikTok as an alternative medium for learning chemistry by UNIMA Chemistry Students show several theories which are described as follows:

A. *Gen-Z students tend to have broad knowledge because of easy access to information through the TikTok application.*

Students are able to obtain a lot of information easily and broadly [32]. Many platforms provide informational content for free.

B. *Familiar with technology;*

According to several analysts, Gen Z differs significantly from other generations in terms of both qualities and characteristics. the current generation referred to as a generation with little limits (generations without boundaries). For instance, Ryan Jenkins (2017) claims that Gen Z has distinct expectations, tastes, and work views and is regarded as hard for the organization in his essay titled "Four Reasons Generation Z will be the Most Different Generation" [33]. Characters from the Generation Z are more varied, have a global perspective, and have an impact on most people's attitudes and culture. One characteristic of Gen Z that sticks out is their ability to benefit from technological advancements in different areas of their lives. Their technology is as organic as their breathing. [34], [35].

TABLE II

CHEMISTRY CONTENT ANALYSIS OF STUDENTS' CHEMISTRY LEARNING BEHAVIOUR

No	Behavioural Aspect	Facts/Phenomena
1	The need for gadgets and internet networks	a) Generation Z is able to make gadgets and internet quota as primary needs
		b) Students have a very big dependence

			on technology.
2	The habit of learning to use the TikTok Application	c)	Students much prefer learning chemistry through the TikTok application.
		d)	Chemical Content presented in the Application TikTok much easier and faster for students to understand
		e)	Chemistry topics of 20 seconds to 2 minutes are much easier to accept
		f)	The use of printed textbooks was minimal
		g)	Students borrow less and less borrowing books from the library.
3	Interest in chemistry	h)	Chemical content packaged in video form is much easier to understand because it uses pleasant background music.
		i)	Students are much more interested in theoretical chemistry lessons served through TikTok.
		j)	Lab/practicum-based chemistry content is becoming more and more interesting.
		k)	Awareness about the usefulness of chemistry in everyday life is getting higher.
		l)	The desire to continue a career in chemistry is getting higher

C. *Not quick to be satisfied, so will look for more references relatively easy to do through the TikTok app*;

In line with the easy dissemination of information, Gen-Z students will easily find out about scientific developments that are taking place. This causes them to tend to feel better for being their feelings "want to look better".

D. *Tends to get bored quickly if chemical content is presented for a duration of more than 2 minutes;*

Students listening ability is low because they are used to being presented with short content on TikTok. They will tend to skip content that lasts more than 2 minutes.

E. *Chemistry content in the form of chemistry demonstration videos is much easier to understand than textual content.*

F. *Extremely dependent on technology, so it is difficult when given media-based learning book text.*

The phenomenon of using TikTok as a media alternative in chemistry learning was able to increase students' attitude toward chemistry. The researcher compiled a table of analysis of students' chemistry learning behavior related to the use of TikTok, which is presented in Table III.

CONCLUSION

The use of TikTok Application has increased rapidly since the time pandemic, and became the most used application, beating Youtube, WhatsApp, and Zoom Meeting. TikTok content, which was originally just entertainment, has penetrated into learning media including chemistry learning.

Chemistry learning, which is packaged according to student characteristics and combined with TikTok as a learning medium, tends to be much preferred by students. Through the packaging of chemical content in the form of videos based on experiments or practicums, it is able to attract students' interest. So, it can be concluded that the TikTok application can be used as a media alternative for learning. The adoption of technology in the chemistry learning environment is much more effective for Gen-Z students. Teachers can simply construct interactive learning with the TikTok app so that it can be modified to the setting, circumstances, and circumstances of the students.

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