

## THE MEDIATING EFFECT OF THE PERCEIVED USEFULNESS AND EASE OF USE OF TIKTOK ON KNOWLEDGE ACQUISITION AND SELF-EFFICACY OF STUDENTS WITH SPECIAL NEEDS

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### Abstract

This research explores the mediating effect of the perceived usefulness and ease of use of TikTok on the relationship between knowledge acquisition and self-efficacy among Special Education (SPED) students. The study aims to investigate the potential of TikTok as a culturally relevant teaching tool in SPED classrooms and its impact on students' self-efficacy. Using a quantitative research design, the study involved 260 SPED students at Northwestern Mindanao State College of Science and Technology. A questionnaire was administered via Google Forms to ensure the safety of the participants during the pandemic. A parallel mediation model was used to determine the indirect effects of two mediators on knowledge acquisition and self-efficacy.

The results indicated that both mediators had a significant effect on the relationship between knowledge acquisition and self-efficacy with, perceived ease of use having a greater impact than perceived usefulness. Specifically, knowledge acquisition positively influenced self-efficacy through the students' perception of the usefulness of TikTok and its ease of use.

The findings suggest that the self-efficacy of SPED students can be improved by using TikTok, especially due to its usefulness and ease of use. These results highlight the potential benefit of TikTok not only as a culturally relevant teaching tool, but an inclusive teaching strategy for SPED classrooms. Implications for educators and practitioners in promoting effective and inclusive learning experiences are discussed.

**Keywords:** Perceived Ease of Use, Perceived Usefulness, Technology Acceptance Model (TAM), TikTok, Special Education, Special Needs.

### 1.0 Introduction

The emergence of social media platforms has made a huge implication in the field of education. Schools, institutions, and universities across the globe use different media platforms as sources of information and entertainment. Nasta (2019) asserted that social media platforms provide schools and students with numerous opportunities to enhance learning techniques. Specifically, students can take advantage of online tutorials and lessons on YouTube, as well as online courses provided by overseas universities via Skype, and a wide range of resources available through social media.

One of the most popular social media platforms today is TikTok. According to Swathi and Devakumar (2020), TikTok is an Android and IOS social music video app that was launched

in 2017 by Byte Dance, a Chinese company. The app allows users to create and share short music, humor, lip sync, and videos showcasing their talents. The app, which was launched outside of China in 2017, has become the most popular app in 2019. While individuals across different age brackets have used the app, the majority of TikTok users are teenage students. Studies have shown that TikTok has both negative and positive effects on students. In English language communication education, TikTok provides a good source of short videos of English language learning materials shared by English teachers and English native speakers to youngsters to learn in an innovative mode. In particular, teachers, as well as TikTok users, can share comments to help students improve their communication competence (Xiuwen, et al, 2021). In addition, young users can also acquire several skills in videography and video editing. Often these skills are those that young users can learn even outside of the classroom. In video editing, for example, TikTok helps users learn the fundamental concepts of cutting, audio precision, and transitions, among others.

Similarly, Solomon (2021) reported that TikTok became a tool for culturally relevant teaching. As a computer-savvy generation, Generation Z is accustomed to instant connectivity and gratification. In this study, the author asserted that TikTok naturally reinforces the 21st-century skills identified as essential for success today. Critical thinking, communication, collaboration, and creativity are examples of these abilities. He delineated that to complete the TikTok process using 21st-century skills, students must collaborate, and use performance techniques, and memorization techniques.

While some studies report several favorable student outcomes because of exposure to TikTok, other studies, on the other hand, have also criticized the platform for its negative effects on students. Several studies have indicated that Tiktok can disrupt the focus and learning process of a student. For instance, in the study conducted by Mekler (2021), he found that TikTok had detrimental effects on college students' learning. Using a survey containing 85 questions about adulthood and related topics such as depression, social networking sites, relationships, and pressure, he recruited a total of 11 college students from Bridgewater State University and UMass Amherst to participate in the study. His findings indicated that the more time participants spent on TikTok each day, the more distracted they became while listening to class discussions and doing learning tasks. Similarly, the study showed that the longer the students spend their time watching TikTok videos and clips, the more they get engrossed and lose track of time. These results of the study suggest that TikTok can have an impact on college students' ability to focus in class and complete their tasks and homework, rendering these students to perform worse in their studies.

Herath (2020) conducted a study to assess how much time students spend on TikTok and to investigate the effect of TikTok on students' academic performance. The primary data were gathered from the learners at Sri Lanka's UvaWellassa University via a structured questionnaire, and the secondary data were taken from journals and online sources. A total of 240 students was the sample size. The convenience sampling method was employed to select the respondents the following three hypotheses were developed. H1: Spending less time on TikTok has a positive impact on student performance. H2: Uploading TikTok clips has a negative influence on academic performance. H3: Viewing TikTok clips hurts academic success. The findings revealed that, while TikTok has a positive impact on students' mental

wellbeing and creative thinking, viewing and uploading TikTok Clips takes time and thus has an adverse effect on their academic performance.

Despite the negative reviews about the use of social media platforms, Tiktok remains relevant as an alternative, supplemental material for instruction. Shahin (2022), for instance, noted that Tiktok can play a significant role in education during this period because of the educational digital content possibilities it provides (Shahin, 2022). TikTok depends heavily on the technology of short videos that do not surpass several seconds and merge audio, picture, and motion. The incorporation of these media, it contributes to stimulating all the mentally handicapped child's sensory systems and attracting his focus. Hence, TikTok has been viewed as having a positive impact on students with special disabilities.

In the study conducted by Shahin (2022) the author investigated the impact of a treatment program based on the use of short video segments on the linguistic skills of people with special disabilities. The author used an experimental design to address the research problem and sampled 15 boys and girls with mild intellectual disabilities, ranging in age from 4-6 years old. The intervention involved therapeutic sessions using short educational Tik Tok videos that respondents watched along with their guardians and the assistance of a professional therapist. A total of 43 sessions were conducted over a period of 15 weeks, which lasted for approximately three months. To achieve the research goals, the researcher used the pictorial language skills scale for the mentally disabled who are able to learn on the dataset, before and after, upon confirming its validity and consistency. The findings of the study demonstrated the efficacy of a therapeutic program based on the use of short videos in Tiktok. Specifically, the study found that watching TikTok improved the linguistic skills of children with intellectual disabilities. The findings reported significant differences in the language skills (i.e., both receptive and expressive) of the students between pre and post-assessments.

Similarly, Nu'man et al., (2022) look into how Tiktok can improve the linguistic intelligence in early childhood of special students through the use of Tik Tok. The purpose of this study is to assess the increase in early childhood verbal-linguistic intelligence through TikTok media at RA Al Husna Krejenengan Probolinggo. A qualitative case study research method was used. The researchers conducted interviews with school directors and teachers at RA Al Husna Krejenengan Probolinggo to gain a better grasp of how Tiktok can improve early childhood verbal-linguistic competence. The findings reported that, when combined with correct methods and techniques, the Tik Tok application could be used as an engaging instructional tool for increasing early child verbal-linguistic intelligence. The TikTok application, with its unique options and convenience of use, can be used in conversation learning between students and educators.

Moreover, TikTok is used as a pedagogical tool in an educational innovation presented by Escamilla-Fajardo et al., (2021). In their study, they examined special students from a Spanish university. A mixed research method was administered to investigate the impact of TikTok use on the respondents. The findings show that using TikTok increases students' interest, generates an interactive learning environment, and promotes the development of skills like artistry and inquisitiveness. TikTok is thus recommended as a teaching-learning tool for students with special needs because of its beneficial educational value and because TikTok complements the imaginative and expressive content of the lesson through music and movement.

However, many of the existing studies that examined the impact of social media on student's mental health and academic performance have not addressed the influence of perceived ease and usefulness of technology on students' technological self-efficacy. Thus, in the current study, we will examine how those two constructs affect the relationship between knowledge acquisition and technological self-efficacy of students with disabilities.

The need to study the mediating effect of the perceived ease and usefulness of technology and social media especially in the Philippines arises from the fact that academic institutions and universities across the country have already integrated the use of both technology and media as part of the pedagogy in teaching. Not only is TikTok the most popular social media platform in the country, but it has also paved the way for the refashioning of teaching pedagogy and the way children learn in the classroom.

In the case of special education, TikTok has been utilized as teaching pedagogy for students with special needs to facilitate their learning while enjoying the short videos and skits in TikTok. In essence, TikTok has become a mechanism by which educators can foster knowledge acquisition and student self-efficacy in the use of technology to learn. More importantly, the current study will provide a unique contribution to the application of Davis's Technology Acceptance Model (TAM) as it focuses on students with special needs and disabilities.

#### Impact of Knowledge Acquisition on the Perceived Usefulness and Ease of Use

With the growing popularity of social media, educators have been adopting social media platforms, such as TikTok, for learning purposes (Jacobs, Aimee & Pan, Yu-Chun & Ho, Yen-Chen, 2022). Previous studies on TikTok have focused on different crucial factors that affect the acceptance of this application both in educational (Al-Marooof, Alfaisal, & Salloum, 2020) and non-educational settings. Within the educational setting, researchers have focused on TikTok as a learning tool (Al-Marooof, Arpacı, Al-Emran, Salloum, 2021; Habes, Salloum, Alghizzawi, & Mhamdi, 2019). The purpose of these studies is to investigate the effect of different factors, including motives and benefits, on the acceptance of TikTok by users, especially students and educators. In the study of Qiyang, & Jung (2019) they elicited that TikTok's short videos, which can last from a few seconds to a few minutes, have become a common way for people to learn and share artistic skills such as cooking, drawing, and crafting. TikTok and other SNSs are reforming the learning artistic skills experience with visually appealing resources and communication characteristics, and it also enables people to socialize with others who have common interests.

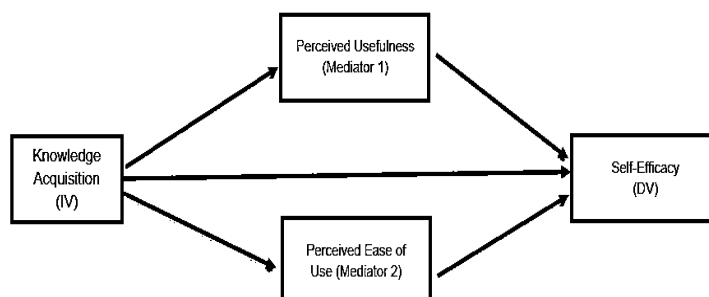
TikTok thus, is a useful and easy pedagogical tool that facilitates the learning and acquisition of the students. This can be supported by Zulkifli, Letchumanan, Kamarudin, Abd Halim, & Hashim, S. (2022) review entitled The Effectiveness of Using TikTok in Teaching and Learning. Zulkifli et al., (2022) reported that TikTok short videos about complex subjects like chemistry could attract the public to enjoy learning chemistry at home and improve undergraduate students learning. Other than that, learning skills like dance and sports through TikTok also positively impacts students. Language subjects like English as a Second Language utilize TikTok to enhance students' listening, writing, and comprehension skills. Hence, Zulkifli et al., (2022) delineated that future educators in primary, secondary, and higher education may think about integrating TikTok into their teaching and learning strategies to stimulate the creation of original videos that adhere to instructional design principles.

Impact of Perceived Usefulness and Ease of Use on Self-efficacy Education, learning, and teaching methods have all been influenced by technological advancements. As a result, education has rapidly grown, supporting the use of social media as a potent learning tool (Al-Fraihat, Joy, & Sinclair, 2017). With the growing popularity of social media, educators have been adopting social media platforms, such as TikTok, for learning purposes (Jacob et al., 2022). By bringing social media into the classroom, it can provide an effective way to support students academically and their social emotional wellbeing. Prior academic research has demonstrated that social media could facilitate teaching and learning across institutions. Chawinga (2017) found that two social media platforms are catalysts for the much-hyped learner-centered approach to teaching (Chawinga, 2017). With the incorporation of Twitter and blogging into the college classroom curriculum, Chawinga's students consistently shared and discussed course materials, posted their course reflections and interacted amongst themselves and with their lecturer (Chawinga, 2017). Meanwhile, in a case study using Snapchat to motivate high school students, a teacher named Joanna Lee Johannes (2020) in La Jolla, California utilized a social media platform to create higher academic engagement with her students. In this case study, 90% of the students reported an increase in their motivation because of the pictures, images, and humor associated with the Snapchat interventions (Johannes, 2020).

Consequently, Solomon's study revealed that social media and classroom curriculum can work in tandem as a tool to increase engagement and support social-emotional wellbeing and academic success. Solomon (2021) focuses on the use of TikTok embedded within classroom pedagogy and how it can be used as a tool to support academic and social-emotional wellbeing. In her research, she questioned ways in which students see this tool as supporting their wellbeing, in what ways parents see this tool as supporting their child's wellbeing, and why TikTok is unique in successfully building a community. Solomon (2021) noted that The TikTok application requires demonstrating 21st-century skills, enhances social relationships, and builds a connected classroom community. These studies elicit that social media such as TikTok is deemed essential, convenient, and useful as a pedagogical tool for teachers and a learning tool among students. The students perceived usefulness and use of TikTok has a significant impact on their self-efficacy. Jung & Yoon (2021) highlighted that perceived usefulness is often defined as a student's belief that self-efficacy will assist them in achieving educational goals.

## **2.0 Conceptual Framework**

This study is primarily anchored to the Technology Acceptance Model (TAM) by Davis in 1989. The Technology Acceptance Model (TAM) has been used by researchers in studies that intend to examine the acceptance and adoption of technology by users in different fields. TAM posits that two factors determine whether a computer system will be accepted by its potential users: (1) perceived usefulness, and (2) perceived ease of use. The key feature of this model is its emphasis on the perceptions of the potential user. That is, while the creator of a given technological product may believe the product is useful and user-friendly, it will not be accepted by its potential users unless the users share those beliefs.



**Fig 1. Schematic Diagram of the study**

The study was conducted to examine how knowledge acquisition of the Special Education (SPED) students while using TikTok affects their self-efficacy. More specifically, this study seeks to investigate the mediating effect of the perceived ease and usefulness of TikTok on the relationship between knowledge acquisition and self-efficacy of SPED students in using the technology.

### **Research Questions**

1. What is the student's level of knowledge acquisition while using TikTok as a learning tool?
  - a) Content Richness
  - b) Timeliness, and
  - c) Relevance.
2. What is the student's perception of the usefulness and ease of use of TikTok as a learning tool?
3. What is the students' perceived self-efficacy in using TikTok as a learning tool?
4. Does perceived usefulness and ease of using TikTok mediate the relationship between the students' knowledge acquisition and self-efficacy?

### **3.0 Method**

#### *Participant*

A total of 260 students with special needs were selected for this study. The participants were sampled from the population of undergraduate students at a large university in the Northern region of the Philippines. To ensure the inclusion of only students with special needs from various programs, a purposive sample technique was employed, utilizing the following selection criteria: (1) the student was an active TikTok user or viewer, (2) the student was at least 18 years old, and (3) the student had special needs.

#### *Design and Procedure*

Consistent with the study's goal, a quantitative research design was utilized. Specifically, a mediation analysis was conducted to assess the mediating effect of perceived usefulness and perceived ease of use of TikTok on the relationship between students' knowledge acquisition and their self-efficacy.

A quantitative research design was appropriate for this study as multiple instruments were employed to measure the relevant variables and describe their associations. Before data

collection, approval was sought from the institution's college president through the Director of Student Affairs and the Institution's Ethical Board. Participants were informed about the study's purpose and that the survey aimed to gather information regarding their perception of the role of TikTok in knowledge acquisition, as well as its perceived usefulness and ease of use. The survey, conducted via Google Forms, took approximately 10-15 minutes to complete.

### ***Instrument***

To address the presented problems, the researcher utilized various instruments to measure the relevant constructs. The survey questionnaire consisted of four sections.

The first section captured the demographic profile of the target participants, including age, program of affiliation, current course, type of disability, or special needs, among others.

The second section measured students' knowledge acquisition through three subconstructs: content richness, timeliness, and relevance. This instrument was developed by Al-Marooof et al. (2021, p. xx) and De Wulf et al. (2006). Participants rated the items on a 5-point Likert Scale, with 1 representing "Strongly Disagree" and 5 representing "Strongly Agree."

The third section assessed students' perceived usefulness and perceived ease of use with 28 items, also rated on a 5-point Likert Scale, using the scale created by Davis (1989) and Rai & Selnes (2019); Venkatesh, Morris, Davis, & Davis (2003).

The last section measured students' technological self-efficacy based on the work of Venkatesh et al. (2003) and Gu, Zhu, & Guo (2013).

### ***Statistical Analysis***

Consistent with the study's goal, a mediation analysis was conducted using Hayes' Process Macro to estimate the direct and indirect effects of knowledge acquisition (IV) and perceived usefulness and ease of use of TikTok (Mediators) on the self-efficacy of special needs students in using TikTok.

Specifically, the direct effect of knowledge acquisition on self-efficacy and the indirect effects of both perceived usefulness and ease of use on self-efficacy were estimated by fitting a parallel mediation model using Hayes' Process Macro.

## **4.0 Results and Discussion**

### ***Students' Evaluation of TikTok as a Learning Tool***

<b><i>Variable</i></b>	<b><i>Mean</i></b>
<i>Independent Variable</i>	
KA	
Content Richness	3.18
Timeliness	3.28
Relevance	3.19
<i>Mediator 1</i>	
PU	2.37
<i>Mediator 2</i>	
Perceived Ease of Use	2.71

*Dependent Variable*

SE 2.81

*KA=Knowledge Acquisition, PU=Perceived Usefulness, PEU= Perceived Ease of Use, SE= Self-Efficacy*

***Mediating effect of the perceived ease and usefulness of TikTok on the relationship between knowledge acquisition and self-efficacy***

**Outcome Variable: PU (perceived usefulness)**

Model	Summary	R	R-sq	MSE	F	df1	df2	p
		0.3466	0.1201	140.0960	35.2181	1.0000	258.0000	0.0000

**Effect of KA on PU**

Model	coeff	se	t	p	LLCI	ULCI	Stdcof
Cst	17.3967	2.7679	6.2852	0.0000	11.9462	22.8473	0.3466
KA	0.3080	0.0519	5.9345	0.0000	0.2058	0.4102	

*Cst=Constant, Stdcof= Standard Coefficient*

To investigate the perceived usefulness and ease of using TikTok to mediate the relationship between the students' knowledge acquisition and self-efficacy, a simple mediation analysis was performed using Hayes' Process Macro. The outcome variable for analysis was Self Efficacy. The predictor variable for the analysis was perceived usefulness. The indirect effect of Perceived Usefulness (PU) was found to be statistically significant with a coefficient of 0.3080 (SE = 0.0519,  $t = 5.9345$ ,  $p < 0.001$ ) (KA = 0.3080, 95% CI [0.2058, 0.4102]).

The results suggested that as Knowledge Acquisition increases, students perceive TikTok as more useful for learning purposes. This finding is consistent with previous research that highlights the positive relationship between knowledge acquisition and the perceived usefulness of educational technologies. In a study by Lee and Kwon (2020), the researchers examined the impact of knowledge acquisition on the perceived usefulness of mobile learning apps. Their results supported the notion that as knowledge acquisition increases, learners perceive the apps as more useful for enhancing their learning experiences. Similarly, a study by Wang and Chen (2019) investigated the role of knowledge acquisition in shaping the perceived usefulness of virtual reality in education. They found that higher levels of knowledge acquisition were associated with greater perceived usefulness of virtual reality for educational purposes. The significant effect of Knowledge Acquisition on Perceived Usefulness aligns with the theoretical foundations of the Technology Acceptance Model (TAM) (Davis, 1989). According to TAM, users' perceptions of usefulness play a crucial role in determining their acceptance and adoption of a technology. In the context of TikTok as a learning tool, the positive influence of KA on PU suggests that students recognize the value of acquiring knowledge through this platform.



Thus, the significance of the effect of KA on PU implies that enhancing students' knowledge acquisition can potentially improve their perception of TikTok as a valuable learning tool. Educators and instructional designers can leverage this knowledge by incorporating content-rich and timely information within TikTok-based educational content, thus maximizing its usefulness for students.

#### Outcome Variable: PEU (perceived ease of use)

Model	R	R-sq	MSE	F	df1	df2	p
Summary	0.4465	0.1994	41.9269	64.2497	1.0000	258.0000	0.0000

#### Effect of KA on PEU

Model	coeff	se	t	p	LLCI	ULCI	Standard coeff
Cst	13.0127	1.5142	8.5938	0.0000	10.0310	15.9945	<b>0.4465</b>
KA	0.2276	0.0284	8.0156	0.0000	0.1717	0.2835	

*Cst=Constant, Stdcof= Standard Coefficient*

On the other hand, the effect of knowledge Acquisition (KA) on perceived ease of use (PEU) was found to be significant at 0.2276 (SE = 0.0284,  $t = 8.0156$ ,  $p < 0.001$ , 95% CI [0.1717, 0.2835]), indicating that as students' knowledge acquisition increases, their perceived ease of use of TikTok also increases. This finding aligns with previous research that has highlighted the relationship between knowledge acquisition and users' perceptions of ease of use in technology-mediated learning environments. For example, a study by Wang, Li, Wang, and Li (2019) found that knowledge acquisition positively influenced users' perceptions of ease of use in the context of mobile learning apps. Similarly, another study by Wu, Tennyson, and Hsia (2010) revealed that knowledge acquisition positively influenced perceived ease of use and user satisfaction with e-learning systems.

Thus, the positive association between KA and PEU suggests that as students acquire more knowledge, they become more proficient in utilizing TikTok for their learning needs. This implies that a deeper understanding of the subject matter and the features of TikTok allows students to navigate the platform more easily and efficiently. As a result, they perceive TikTok as a user-friendly tool for learning.

#### Outcome Variable: SE (self-efficacy)

Model	R	R-sq	MSE	F	df1	df2	p
Summary	0.7643	0.5841	20.7751	119.8672	3.0000	256.0000	0.0000

### Effect of KA on PEU

Mdl	coeff	se	t	p	LLCI	ULCI	Standard coeff
Cst	1.5955	1.2096	1.3191	0.1883	-0.7864	3.9775	0.2529
KA	0.1254	0.0224	5.6089	0.0000	0.0814	0.1694	0.1626
PU	0.0907	0.0326	2.7805	0.0058	0.0265	0.1549	0.4895
PEU	0.4762	0.0596		0.0000	0.3588	0.5937	

Mdl= Model, Cst=Constant, Stdcof= Standard Coefficient All the IV and Mediators are significant predictors of self-efficacy

The table shows the positive effects of perceived usefulness (coefficient = 0.0907,  $p = 0.0058$ ) and perceived ease of use (coefficient = 0.4762,  $p < 0.001$ ) on self-efficacy suggest that higher levels of perceived usefulness and ease of use of TikTok are associated with increased self-efficacy in utilizing TikTok for learning purposes. This finding aligns with Bandura's social cognitive theory, which emphasizes the role of self-efficacy in determining individuals' engagement and performance (Bandura, 1997).

The study provided evidence for the mediating role of perceived usefulness and ease of use in the relationship between knowledge acquisition and self-efficacy. These findings have implications for educators and instructional designers who aim to leverage technology, such as TikTok, for educational purposes. By enhancing students' knowledge acquisition and promoting their perception of usefulness and ease of use, educators can potentially increase students' self-efficacy and engagement in utilizing TikTok as a learning tool.

### 5.0 Conclusion and Recommendation

The findings of this study provide valuable insights into the relationship between knowledge acquisition, perceived ease of use, perceived usefulness, and self-efficacy among Special Education (SPED) students using TikTok as a teaching tool. The results demonstrated significant associations between these variables, highlighting the potential of TikTok in enhancing self-efficacy and promoting inclusive learning experiences in SPED classrooms.

The mediating effect of the perceived ease and usefulness of TikTok suggests that when SPED students acquire knowledge through the platform, they perceive it as easier to use and more useful for their learning. This positive perception, in turn, enhances their self-efficacy in utilizing technology. These findings emphasize the importance of integrating TikTok into SPED pedagogy as a means to engage students, promote their confidence, and improve their learning outcomes.

Based on this study's findings, educators, practitioners, and policymakers are advised to consider several recommendations. First, integrating TikTok into the SPED curriculum can provide culturally relevant and engaging content, leading to improved knowledge acquisition, perceived usefulness, and self-efficacy among SPED students. Second, providing teacher training and professional development programs focused on enhancing technological skills and

understanding TikTok's educational potential will enable educators to effectively integrate it into teaching strategies and support SPED students' learning experiences. Third, further research is needed to explore the long-term effects and sustainability of using TikTok in SPED classrooms, and ongoing evaluation and assessment are essential for guiding instructional practices and ensuring optimal technology use. Lastly, fostering collaboration and knowledge sharing among educators, researchers, and policymakers will create a supportive community that promotes inclusive education and enhances outcomes for SPED students. Implementing these recommendations can harness the potential of TikTok, empowering SPED students and creating inclusive learning environments that cater to their diverse needs.

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