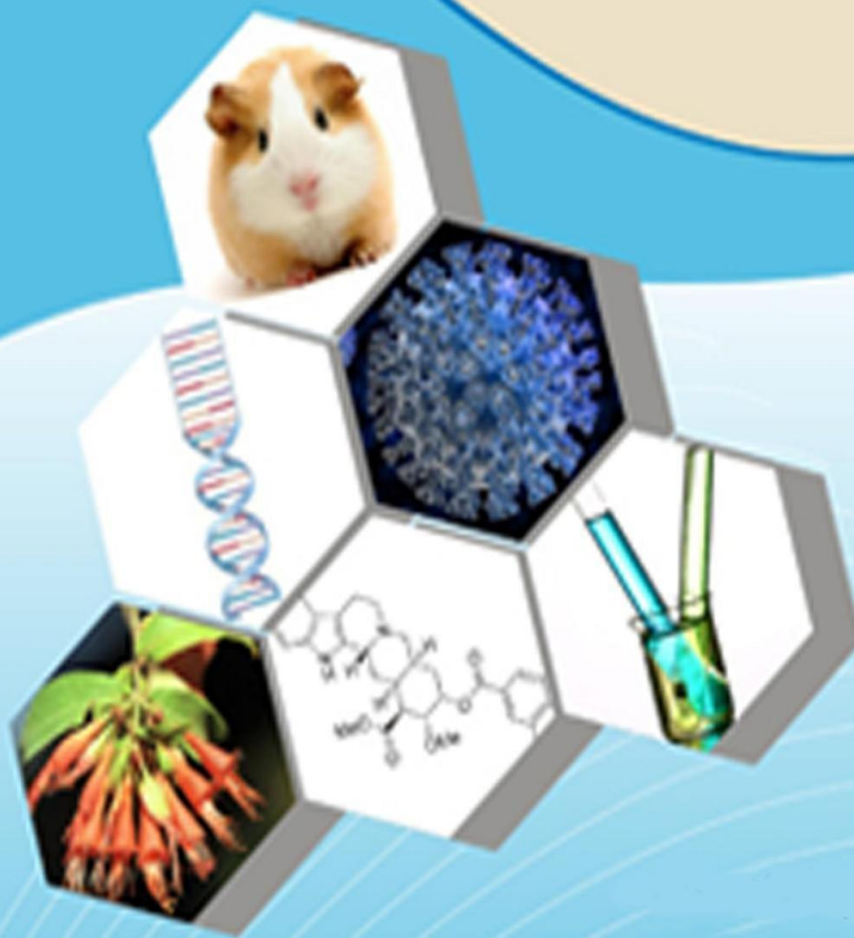




ISSN : 2347-2251

**Indo-American Journal of
Pharma and Bio Sciences**



www.iajpb.com

iajpb.editor@gmail.com

editor@iajpb.com



Pharm Tok: Evaluating the Efficacy of Student-Created TikTok videos in Enhancing Pharmacological Education

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Abstract

The popular social media app TikTok is an unproven educational tool for making and sharing short movies. This research delves at the ways that TikTok has affected drug-related learning in pharmacy schools. To find out if there are any changes, the research examined two groups. One group used standard learning tactics including textbooks and internet resources. The other group used the TikTok platform. Each group's performance was assessed using a multiple-choice exam. There is a statistically significant difference in academic achievement between the groups who used conventional methods of instruction and those that used TikTok as a learning tool, suggesting that the latter may be more effective. These findings give hope for the future of education by demonstrating the positive effects of integrating cutting-edge social media-based learning tools into more conventional classroom settings. This shows how important it is to look at many inspiring ways to teach students, especially in pharmacy school, how to learn better.

Keywords: TikTok, Pharmacy education, Distance learning, Social media, Educational innovation

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INTRODUCTION

E-learning is a contemporary method that integrates online training and education, enabling individuals to study and get assistance at their own pace and from any place. It incorporates a variety of instructional methods, including as class discussions, homework, and group and individual projects [1].

Websites that enable users to establish private accounts are known as social networking sites. Through these accounts, users may divulge details about themselves, including their hobbies, interests, and passions. One of the most important features of social media platforms is the ability to build a network of other users, called "friends" or "connections," who one may communicate with on the site. With these links, users may establish and sustain virtual relationships with loved ones, coworkers, and acquaintances. Users of social networking websites are able to communicate with one another and exchange and debate various types of media, including text, photos, and videos. People are more likely to engage in group conversations, share ideas, and communicate on these platforms [2].

The use of social media has increased to the point that it is one of the most prevalent things people do online. In the year 2021, 4.26 billion people around the world regularly

used social media. Estimates put the global user base as close to six billion by 2027 [3]. When looking at the regions of the globe where people use their smartphones for social media the most, East Asia is clearly at the top. Following that, the Americas and Northern Europe, which are digital behemoths, are on the roster. The typical user spends 144 minutes per day on messaging and social



media applications, proving the importance of these platforms in people's everyday web browsing. This is a major increase, surpassing the 30-minute mark in 2015 [4].

The rising popularity of social media and its mobile apps provide a great opportunity for educators to use these tools for teaching. By using these platforms, educators may engage students in dynamic and creative learning environments. Students find social media to be a fun and engaging learning environment that goes above and beyond the typical classroom setting in terms of fostering collaboration, knowledge sharing, and debates. Educators may encourage student engagement and foster a feeling of belonging in the classroom by using include social media in the curriculum. Collective learning is fostered by these frameworks by facilitating peer-to-peer contacts, resource sharing, and assistance requests. Teachers may also use the many multimedia features of social media to their advantage by posting videos, photos, and interactive data in an effort to enhance student learning [5, 6]. Educators may use the power of social media to harness the effects of individualized learning. All students' needs and learning styles may be met via these platforms' resources, which enable personalized content delivery, adaptive tests, and feedback. Additionally, the ease of sharing information on social media platforms facilitates knowledge exchange and the development of a strong community of educators among students, parents, and instructors. One potential benefit of social media is the ability to connect students from all over the world, which may increase their cross-cultural knowledge and global consciousness. Students are able to engage across cultural



boundaries and get a more global perspective via the use of social media [7]. By creating and sharing digital information, social media users may add to an enormous and priceless repository. By establishing connections with both teachers and other students on social media, students are able to foster an environment conducive to teamwork and the sharing of

information. By fostering an atmosphere where students may openly share their thoughts, ideas, and experiences, these platforms make collaborative learning possible. On top of that, students may find topic-specific knowledge via social media. Social media also facilitates group work, ideation, and discussion, which in turn fosters a sense of community and cooperation among students [8].

Because they are more convenient for social media, platforms that let users exchange engaging material are booming in popularity among young people. Just like applications, these websites allow users to make, edit, share, and view short films on their smartphones. These films might be anything from a few seconds to many minutes long. Because users can easily and cheaply create creative content in a flash, these platforms are ideal for spontaneous communication. They are able to be shared easily and quickly, which contributes to their popularity and widespread reach on social media. As a result, young people's use of platforms to create short movies has skyrocketed as a form of social networking [9].

Among these platforms, you may find TikTok. Users are able to make and share short videos on a wide range of subjects using this popular software for posting films. Although the platform is primarily designed for users on smartphones and tablets, the videos may also be seen using the web app. Filters, stickers, voiceovers, sound effects, and background music are just a few of the creative tools that TikTok provides its users. The original video length restriction was 15 seconds, but the site has now raised it to 10 minutes. A billion people use TikTok every month, and it will shortly overtake

Without a doubt, Instagram is a leading social media platform. There have been no other photo or video applications in the App Store with more downloads than this one since its release. Video creation and sharing have been revolutionized by TikTok, which allows users to capture and share every moment of their life. The structure of short videos makes them easier to make and watch. When users use the app for the first time, they are instantly immersed in a never-ending flow of captivating,

interesting, and exciting short videos. People are more likely to pay attention if the videos play in the correct sequence all the time, which the autoplay option ensures. Due to its addictive nature, users often spend hours viewing random videos on the network [9, 10].

After its 2016 debut, TikTok soared to the top of the social app and video platform charts globally. Worldwide, TikTok has over 656 million users in 2021. With over 834 million app downloads, TikTok reached its pinnacle in terms of worldwide installations in 2023 [4].

Having strong drug information (DI) skills is essential for pharmacists working in any clinical environment [11]. These skills are crucial, so much so that the Accreditation Council for Pharmacy Education [12] mandates that all pharmacy degree programs teach their students how to properly identify, evaluate, and interpret literature in order to provide accurate and current DI to patients and healthcare providers. As a result of this rule, we know that pharmacists can handle patient needs and contribute to healthcare teams in meaningful ways. To ensure that their DI courses meet the requirements set by ACPE, pharmacy schools use a variety of methods and chances for active learning. The goal of these courses is to help students become better researchers and better able to use what they learn about drugs in their daily lives [12].

Meanwhile, everyone agrees that pharmacy school is tough since it demands a lot of students to do well in school and take care of themselves at the same time. The rigorous curriculum, along with the need to prioritize one's health alongside academic achievement, may put a tremendous strain on students majoring in this area of study [13]. Those majoring in pharmacy report greater levels of stress than those majoring in other fields [14].

Literature Review

The impact and usefulness of TikTok in classroom instruction have been largely disregarded in the existing scholarly literature. Despite several studies on the topic of technology in education, the precise effect of TikTok on both learning outcomes and pedagogical approaches has largely gone unnoticed. Due to this information vacuum, thorough research on TikTok's pedagogical possibilities is urgently needed. By delving into these features of TikTok, researchers might uncover additional information about its unique selling points, such its visually appealing video format, easygoing learning atmosphere, and opportunities for collaboration. While studies examining the educational advantages of TikTok are few, there are a number of



publications have highlighted the possible significance of this. Research has shown that TikTok may be a powerful tool for student engagement, vocabulary building, and group projects. According to these articles, TikTok has the potential to be used as an extra tool in the classroom, opening up new avenues for increasing students' involvement and comprehension. A research conducted by Escamilla et al. (2021) found that incorporating TikTok into physical expression seminars for bachelor's degree students in sports science had several benefits. Research has shown that incorporating TikTok into the classroom may have a positive impact on student motivation, engagement, and the development of important life skills like creativity and curiosity. Integration of TikTok into creative expression courses is recommended because of its fit with the course's inventive and unique character and its ability to have a beneficial educational impact [15]. Until further notice, the video-sharing software TikTok may serve as a teaching tool. This makes it possible to create and implement new forms of education with brief training sessions lasting just a few seconds. Utilizing TikTok content that may bolster instructional techniques grounded on nano-learning principles enables the development of top-notch e-learning resources [16].

If school leaders and teachers are interested in developing new ways to teach and learn, they might use the results of research on TikTok's effectiveness as a starting point [17–20]. Teachers who want their pupils to improve as writers and public speakers could consider using the TikTok app in English classrooms, according to the research. A student's speaking and grammar abilities may be greatly enhanced by using TikTok [21–23]. The research conducted by Rahmawati and Anwar (2022) offers a different way for teachers to teach children new words using the TikTok app, one that takes into account the positive attitudes that students have shown. According to this research, using TikTok to learn new words might be beneficial [24]. Reskianissa et al. (2022) set out to determine whether or not TikTok may be a valuable resource for online educators looking to improve their students' computational thinking abilities. Students in the ninth grade were intended to participate in the quantitative research method. The findings showed a significant improvement in student performance, with an average post-test score of 89.3%, up 32.2% from the pre-test score of 57.1%. According to these findings, uploading short movies on TikTok may be an effective and novel way to learn [25]. Roza et al. (2023) used a qualitative descriptive analysis to describe in detail the knowledge and skills that students gained from using the TikTok app. Thirty students made up the total population, and the participants were chosen using a purposive sample technique. With 73.3% of students reporting an increase in outcomes, 23.3% reporting no effect, and 3.3% reporting a decrease, it's clear that the TikTok app influences students' study habits [26]. The results showed that most students were in favor of

utilizing TikTok apps to study English vocabulary, according to the research by Hastomo et al. (2022). It is supported by the high number of persons who filled out the questionnaire. In addition, every single student thought that TikTok helped them expand their English vocabulary, and they all complimented how easy it was to use TikTok whenever and wherever they wanted. Students also like that they may tailor the vocabulary lessons they watch on TikTok to focus on specific areas where they feel they need improvement. The majority of students think that TikTok makes it much easier for them to recall new words and phrases in English [27]. Researchers Evans et al. (2022) found that films produced by healthcare providers (HCPs) had higher levels of validity and reliability compared to movies produced by non-HCPs. In addition, the films created by HCPs seemed to be more relevant and had distinct goals. But it's worth noting that the majority of the films that were considered were actually made by people who weren't healthcare providers. Based on these findings, healthcare providers should look into the possibility of providing patients with educational, trustworthy TikTok films in order to improve their understanding of these videos via this social media platform [28]. The other side is that there are certain detrimental effects of watching TikTok videos, and some of those effects may increase the risk of addiction among students. Several studies have shown that the more time people spend on TikTok, the worse their grades get in school. Consequently, students need to limit their time on TikTok [18].

Importance and Purpose of the Study

Examining the impact of TikTok on pharmacy education is the primary goal of this research, which centers on the acquisition of medication knowledge. Finding new and better ways to help students remember and understand medication information is crucial in light of the ever-growing complexity of pharmacological knowledge. Through research investigating the use of TikTok as a teaching tool in this context, we want to determine if it is possible to successfully engage student pharmacists, improve student understanding of material relevant to medications, and increase overall pharmaceutical knowledge. The results of this research will be useful in pushing for the creation of innovative and effective pharmacy education practices by providing pertinent details on the possible advantages and disadvantages of incorporating TikTok into pharmacy education by means of empirical study and evaluation.

Hypothesis

The study hypothesized that student pharmacists who actively use TikTok videos as an additional learning tool will perform better on drug information tests than students who do not use TikTok for this purpose.

Research Question

Compared with different traditional teaching methods,



how does utilizing TikTok impact pharmacy students' comprehension of drug information?

MATERIALS AND METHODS

Using a quantitative approach, the research was able to achieve its aims. The research relied heavily on structured internet questionnaires to get the data.

There are 10 drug-related TikTok movies that were made and uploaded to the site. The drugs included amphetamine, donepezil, nitroglycerine, alprazolam, amiodarone, warfarin, carbamazepine, doxazosin, fenofibrate, and ropinirole. The movies ranged in duration from thirty to forty-five seconds. There were fifteen multiple-choice questions on the given material that made up the student survey.

The research included a survey that was filled out by 30 students at Chicago State University (CSU), with an average age of 26.9 ± 2.8 years; 13 males and 17 females participated in the survey. The subjects were randomly assigned to either the conventional learning group ($n=15$, mean age = 27.1 ± 2.9) or the TikTok platform group ($n=15$, mean age = 26.7 ± 2.7). To make sure that everyone was on the same page about the study's aims and could make an educated choice about participating, written permission was given to each participant before the research began. Everyone included understood that taking part in the study was entirely optional when they decided to fill out the informed consent form. At any time throughout the trial, they might choose to stop participating. Researchers refrained from collecting participants' names, email addresses, and phone numbers in order to preserve their privacy. Hence, the participants' identities remained anonymous. The study data was kept secret and saved on computers using password security; only members of the research team had access to it. From February 6th, 2023, until March 6th, 2023, data was gathered. Researchers sent students with an invitation to take part in the study. Students were not recognized or awarded in any way for their involvement. The poll gathered demographic information from respondents, including their age and gender. All respondents were able to accurately complete the survey since they were given detailed instructions. ensured that their identities would remain hidden from view.

The group that learned about drugs via the TikTok platform used the site's videos, whereas the group that learned through more conventional means relied on internet resources and textbooks. In order to make data collecting easier, this research employed multiple-choice questions as a measuring method. Google Forms, which was used to construct and administer this application, allowed for a practical and quick way to collect responses from the participants. We were able to successfully compare and contrast the responses given by the respondents since the data was ordered and consistent thanks to the multiple-choice format. Using SPSS software,

we conducted descriptive analysis and t-tests to assess the study's hypothesis.

RESULTS AND DISCUSSION

We used an unpaired t-test to compare the two groups' differences in learning methods: one that relied on the TikTok platform and another that relied on more conventional methods. Using the unpaired t-test, we could compare the two groups' means and see whether the two learning strategies produced significantly different outcomes. With a t-value of 6.4518, degrees of freedom (df) of 28, and a two-tailed p-value of 0.0001, the TikTok platform group significantly outperformed the conventional learning group in the unpaired t-test. A very statistically significant difference has been observed. In comparison to the conventional learning group, whose average academic achievement was 77.6%, the TikTok learners achieved a mean of 98.8% (Table 1). The findings were solid, and the 95% confidence interval for this difference was 14.5% to 28.0%, which further validated the conclusions.

Table 1. Measurement of the results

Measurement	Tiktok platform group	Traditional learning group
Mean	98.8%	77.6%
Standard Deviation (SD)	3.2%	12.3%
Standard Error of the Mean (SEM)	0.8%	3.2%

In the TikTok platform group, the average percentage of correct responses was consistently high and ranged from 90.9% to 100% for every question (**Figure 1**). The mean percentage varied from 63.6% to 100% in the traditional learning group, meaning it was lower. In comparison to the traditional learning group, the TikTok learners' standard error of the mean was 0.8%, whereas it was 3.2% for the traditional group (**Figure 1**). This research indicates that increased student involvement in TikTok-based learning may be related to improved academic performance.

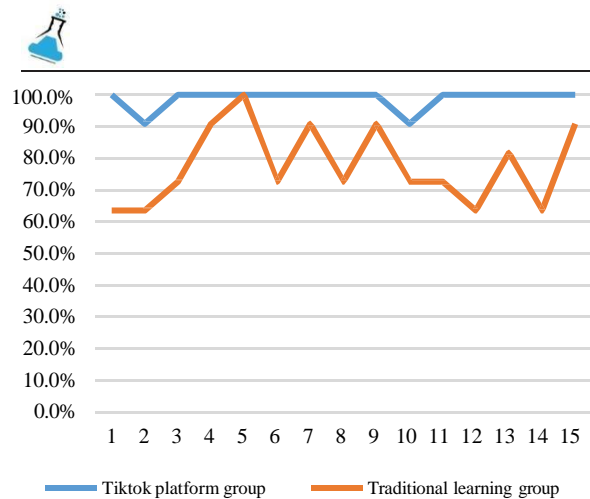


Figure 1. Test Results

This research aims to evaluate the influence of TikTok on medication learning in pharmacy education. Our primary objective is to discover fresh and efficient ways to help students grasp complex pharmaceutical concepts. In order to do this, 10 educational TikTok movies were created and posted on the site. These videos included critical facts regarding ten different medications. Afterwards, participants were asked to reflect on the information presented in the films via a survey. The group that learned about drugs using the TikTok platform group watched drug education videos on the site, while the group that learned through more conventional means studied textbooks and accessed the internet. Google Forms made it easy to gather data using multiple-choice questions, which were an efficient way. There was a statistically significant performance gap between the TikTok learners and the conventional learning groups, suggesting that learning via TikTok might be an effective strategy for improving academic outcomes. The findings have positive implications for the integration of cutting-edge social media-based learning tactics into conventional classrooms and add significantly to the body of knowledge on effective teaching approaches. Several reasons may account for the statistically substantial performance discrepancy between TikTok users and more traditional learning groups.

First of all, pupils are more engaged and enjoy studying with TikTok videos because of their short length and appealing graphics. Because of this contact, the content to be learnt may be easier to recall and understand. Second, since each TikTok video is just a few minutes long, children are presented with knowledge in bite-sized chunks that are easier to digest and retain. In contrast to conventional training materials, which tend to be lengthy and tedious or even intimidating, this approach is more concise and to the point. Also, many various learning modes may be accommodated by TikTok's multimedia design, which incorporates both visuals and music. Compared to more traditional textual forms of instruction, this style may help certain students better understand and

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remember what they've learned. Conversely, there's TikTok, a user-friendly app for cellphones. pupils to quickly finish instructional tasks on their phones and other devices. Because of this ease of access, education may take place regularly. The social features of TikTok allow students to connect with one another and share and debate academic content, creating an environment that fosters a sense of community and collaborative learning. Lessons learned and new perspectives on the topic may both be enriched by group conversations between peers. Because of the repetitious nature of TikTok videos, many students find that watching them several times helps them retain more of the material and even refreshes their memories on previously covered ground.

Learning on TikTok may or may not be beneficial depending on the subject, the level of complexity of the information, and personal preferences. For in-depth understanding, a short video could not provide adequate history and context. Since most TikTok videos are just a few minutes long, viewers may only get a cursory grasp of complex subjects. Deep learning and critical thinking might be hindered by this. Because of TikTok's appealing features, students may get addicted and spend too much time on the app, neglecting their academic and other obligations. Critically, unlike conventional classrooms or online learning platforms, this portal does not allow for the utilization of personalized feedback or interactive conversations with instructors, severely limiting the level of engagement between students and instructors. Overuse of social media, including TikTok, may produce problems including stress, worry, and feelings of inadequacy. Additional factors that could affect students include peer pressure to develop and share content and the temptation to compare themselves to others. Not all students may have constant access to the internet, which is necessary for all these social media sites. Online movie streaming also has the potential to use a lot of data, which can be an issue for students on restricted plans. Because of these limitations, TikTok should supplement, rather than replace, comprehensive instructional resources. The potential drawbacks may be mitigated by promoting balanced media consumption habits and fostering critical thinking on media content.

Educators, legislators, and healthcare professionals should anticipate and be vigilant about the use of TikTok in pharmacy and other forms of continuing education. Making and sharing authentic and trustworthy instructional content on TikTok is crucial. Teachers have to ensure the content is thoroughly checked and verified before distributing it to pupils. Making sure all material meets educational standards and enables students to get practical learning experiences is a crucial responsibility of legislators. Students and educators should consistently give credit where credit is due while using instructional TikTok content.



CONCLUSION

The current curriculum for educating pharmacists must intentionally include TikTok. It may be used as an additional resource to illustrate real-world instances or to elucidate rules. Educators and teachers should keep tabs on kids' TikTok use to make sure it's appropriate and that they're learning from it. It would be great if students could pitch in and make TikTok videos on pharmaceuticals. Acquiring information and improving communication are both aided by the technique.

Suggestions for Future Research

In today's technologically savvy society, this study shows how studying on TikTok might be beneficial and opens the door to other studies on how new digital platforms could improve academic results. If educators, business leaders, and academics are serious about improving education to meet the needs of today's digitally native children, they must pay close attention to the findings of these studies. If we want to know how TikTok affects students' performance in the long run, we need further studies and study on the app's educational potential.

Limitations

Keep in mind that this research only looked at a few specific places and had a tiny sample size. Additional study is required to confirm and build upon these findings by using bigger, more diverse samples that are reflective of other areas of education.

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