Effectiveness of TikTok in Enhancing Students' Communication Skills: A Meta-Analysis

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Abstract

TikTok has become a popular social media among students. However, its impact on communication skills remains unclear. This meta-analysis aimed to examine the effectiveness of TikTok in enhancing students' communication skills. The investigation analyzed 30 studies from 2021 to 2025 with 34 valid datasets and a total sample of 2367. Findings revealed that TikTok had a very large and significant effect (g = 1.337, p < .001) on students' communication skills. However, due to substantial heterogeneity and publication bias, the meta-analytic estimates were adjusted with a range of 0.814 to 1.104, still indicating a significant and large effect. Additionally, geographical region, duration, and grade level significantly moderate the effects of TikTok, while class size, blinding of assessment, and communication skills showed no moderation. Subgroup analysis suggested that TikTok was more effective in Southeast Asian settings, with longer duration (2-4 weeks, 5-7 weeks, >8 weeks), class sizes of 1-30 and 31-50, and in the following levels (middle school, high school, and university) for both oral and written communication skills. Content analysis revealed five (5) challenges in TikTok implementation: time constraints, distraction and addiction, technical skills and teacher workload, technical issues and self-management, and content quality and relevance. Overall, this study provides valuable insights for teachers and research scholars to enhance the integration of TikTok in education.

Introduction

Technological tools offer flexibility in delivering instructional content, enhancing student engagement, and catering to diverse learning styles. With the integration of digital platforms, educators can create interactive lessons, provide instant feedback, and facilitate collaborative learning experiences. Haleem et al. (2022) report that digital technologies have brought a paradigm shift to the education system, transforming it from merely delivering knowledge to serving as a co-creator of information, a teacher, and an evaluator. Advancements in educational technology have made learning more accessible and convenient for students. Instead of relying on traditional pen-and-paper methods, students now utilize various software and digital tools to create presentations and complete projects. Additionally, digital devices like iPads or mobile phones offer a lightweight and efficient alternative to carrying stacks of notebooks. In addition, technology supports remote and hybrid learning, ensuring continuous education despite geographical or situational constraints. The accessibility of e-learning materials

empowers both teachers and students to engage in self-directed learning beyond the traditional classroom setting.

On the other hand, Ansari and Khan (2020) report on how online social media platforms facilitate collaborative learning, significantly enhancing interactivity among peers, teachers, and online knowledge-sharing behavior. Furthermore, increased interactivity with teachers and peers, along with active knowledge sharing, positively influences student engagement, which, in turn, has a significant impact on academic performance. Sasikala et al. (2021) argue that social media serves as a valuable platform for accessing essential information, connecting with learning groups, and engaging with educational systems, thereby making education more convenient. Social networking tools offer students and institutions numerous opportunities to enhance their learning methods. These platforms enable the integration of social media plug-ins, facilitating the sharing and interaction of content. Additionally, social media helps students to build meaningful connections that can benefit their academic and professional careers.

One of the most popular social media platforms among students is TikTok, formerly known as Musical.ly. Originally founded by Zhang Yiming in September 2016, the app was later acquired by Beijing Bytedance Technology in November 2017 and rebranded as TikTok. Within a short period, TikTok became the most globally successful social media app of Chinese origin (Xiong and Ji, as cited in Montag et al., 2021). According to Ceci (2024), TikTok had approximately 1.9 billion users worldwide as of 2023, representing a 40% increase from 2021. TikTok gained widespread popularity in 2020, reaching a peak of roughly 313.5 million downloads in the first quarter of the year. Projections indicate that TikTok's user base will continue to grow, reaching an estimated 2.35 billion users by 2029. Liang (2023) states that the user base of TikTok, particularly among college students, is expanding rapidly. The increasing coverage rate is influencing their media consumption habits, especially in video content. Statistics indicate that 85% of TikTok users are under 24 years old, with a significant proportion being college students. As of December 31, 2022, TikTok had over 26 million college student users, accounting for approximately 80% of all college students in China. Meanwhile, Duarte (2025) reports that TikTok receives nearly one billion unique monthly visits. Additionally, one in four TikTok users is under 20 years old, and the platform has more Gen Z users than Instagram. The majority of TikTok creators are between 18 and 24 years old. Lastly, Indonesia records the highest average monthly time spent on TikTok.

According to Zulkifli et al. (2022), TikTok offers key features, including short videos that are easy to create and share conveniently. Their review suggests that TikTok is used in teaching various subjects, including Sports Science, English, Science (such as Chemistry), and dance courses. They also emphasize the integration of this platform into teaching and learning practices. Similarly, the survey of educators by Carpenter et al. (2024) reports that TikTok contains education-related content, often presented humorously. Respondents also described it as a rich source of teaching ideas and other resources. However, Carpenter and colleagues identified challenges associated with its use. Likewise, the qualitative study of Nguyen and Tran (2024) reports on the advantages and disadvantages of using TikTok, its impact on speaking skills, and its role as a self-study tool. Authors recommend that English lecturers should view TikTok as a supportive learning medium. On the other hand, Amaluisa Rendón et al. (2023) evaluate the use of TikTok in elementary education through a descriptive-inferential approach and qualitative analysis. Their findings suggest that children who utilize TikTok as a learning tool perceive themselves

as more motivated and demonstrate greater dedication to the subject matter, as reflected in their academic performance. Moreover, Conde-Caballero et al. (2023) investigate the implementation of TikTok as a microlearning approach in university education. Their inquiry finds that social networks can effectively complement teaching in higher education. Notably, no significant differences are observed in students' evaluations based on gender, while differences emerge depending on the subject in which the microlearning approach is applied. The study reveals highly positive student feedback on the use of TikTok to enhance learning through microlearning strategies. In summary, the cited studies highlight the potential of TikTok as an educational tool across various levels, from elementary to university education, and across multiple academic subjects.

Literature Review of Utilizing TikTok in Education

Putri et al. (2024) reviewed the effects of using TikTok in English language learning, analyzing data from 30 studies sourced from Google Scholar, the Directory of Open Access Journals (DOAJ), and the Education Resources Information Center (ERIC). Their findings suggest that TikTok has a positive impact on students' speaking, listening, and writing skills by providing an interactive and engaging learning environment. The study highlights the potential of the platform as a valuable tool in language education and emphasizes the need for further investigation to maximize its effectiveness. Meanwhile, the review study of Rininggayuh et al. (2024) described the impact of TikTok on improving English-speaking skills, arguing that the platform holds significant potential for language learning. However, they emphasize the importance of recognizing its limitations and integrating it thoughtfully within a broader educational framework. By addressing these challenges, the potential of TikTok can be fully optimized to create an engaging, accessible, and effective language learning experience.

The systematic review of Caldeiro-Pedreira and Your-Domínguez (2023) uses 25 studies from 133 Scopus records (2020–2023). The investigation identifies didactic applications of TikTok, recent educational uses, and guidelines for responsible integration into the learning process. Despite concerns about risks and limitations, findings highlight a positive impact of the platform on student motivation, digital skills development, and responsible usage. The study recommends enhancing teacher literacy and educational communication in higher education to optimize the role of TikTok in the learning process. On the other hand, Genelza's (2024) review examines nine studies on the current understanding of the impact of TikTok, both positive and negative, on students' educational experiences. The findings reveal two key themes: the benefits and drawbacks of integrating TikTok into the learning process. On the positive side, TikTok’s algorithm personalizes content based on user preferences, continuously exposing students to educational videos aligned with their interests and learning needs. This individualized approach can encourage students to explore subjects independently and in greater depth. Conversely, TikTok has limitations, such as being distracting, and its brief videos often limit the depth of content delivery. Additionally, since TikTok is open to everyone, concerns arise regarding the accuracy and credibility of the information shared on the platform. As a result, educators and students must critically evaluate and cross-reference content with reliable academic sources to ensure accuracy and credibility.

Furthermore, López-Carril et al. (2024) explore the integration of TikTok in sports sciences education through a narrative critical review. Data in the study were extracted from six (6) records in the WoS and Scopus databases.

Notably, the study highlights the benefits of fostering curiosity, creativity, and imagination. On the other hand, the investigation also identifies several risks associated with TikTok use, including addiction, invasion of privacy, deficiencies in students' digital literacy, infringement of intellectual property, and reinforcement of gender stereotypes. With this information, the researchers are hopeful that future implementations of TikTok will consider these limitations to enhance the platform's benefits and mitigate its negative sides. The researchers recommend the use of TikTok in sports sciences and encourage its exploration in higher education.

Meanwhile, the systematic literature review of Jah et al. (2024) on the use of TikTok in English language learning examines the effectiveness of TikTok as a pedagogical tool in enhancing language acquisition. Data were obtained from 10 studies retrieved from the Scopus and Web of Science (WoS) databases. The investigation reveals the potential of TikTok in English language learning, improving reading and speaking skills. These results are also consistent with the systematic review by Pereira and Hitotuzi (2023), which utilized eight peer-reviewed studies on TikTok. Similarly, Jah and colleagues also document some challenges, such as reluctance, low motivation, larger class sizes, and issues with confidence when content is shared publicly. The study also recommends an investigation into the long-term effects of the platform on language acquisition.

Similarly, the application review by Maretha and Anggoro (2022) examines the advantages and limitations of utilizing TikTok in English language teaching (ELT). Positively, the app can enhance motivation and confidence, as its interactive and audiovisual features encourage students to speak English more freely. Additionally, the app helps reduce procrastination by promoting time management through short-form videos and fosters 21st-century skills like communication, collaboration, creativity, and critical thinking, particularly through features such as duets and digital content creation. However, TikTok also has drawbacks, primarily related to privacy risks, as public accounts expose students to potential cyberbullying and online harassment. Another concern is the platform's short video format, which may limit the depth of lesson content and hinder comprehensive learning. Despite these challenges, TikTok can be a valuable tool for ELT when used strategically, ensuring student safety while maintaining educational relevance.

Furthermore, Otu and Pujiriyanto (2023) explore whether TikTok is recommended for learning. The review utilizes 13 articles from the Wiley, Taylor & Francis, ERIC, and IEEE databases. The investigation suggests that the platform can be used as a learning medium to improve conceptual knowledge. Likewise, researchers argue that teachers and students respond positively to the use of technology. However, similar to the limitations mentioned by several authors, TikTok has its constraints; therefore, sufficient studies are needed to describe its effectiveness on learning outcomes.

Despite extensive literature reviews on the effectiveness of TikTok across various fields, particularly in the English language, a meta-analysis of its impact on communication skills has not yet been conducted. Therefore, this present meta-analysis aims to investigate the effectiveness of TikTok in enhancing communication skills. This inquiry benefits educators and researchers by providing valuable insights into the effective implementation of TikTok in educational settings. This study examines various factors that may influence the impact and provides practical recommendations to enhance its effectiveness in developing communication skills. By understanding

moderating variables, this study enables educators to integrate TikTok into their teaching practices effectively.

Research Questions

Generally, this investigation aims to determine the effectiveness of utilizing TikTok in English language education. Specifically, this meta-analysis sought to answer the following research questions:

1. What are the characteristics and qualities of the studies included in the meta-analysis?
2. How effective is TikTok in enhancing students' communication skills?
3. Are there significant differences in the effect sizes among moderators, such as geographic region, duration, class size, blinding of assessment, grade level, and communication skills?
4. What are the challenges in implementing TikTok in the classroom?

Method

This study utilized a meta-analysis method to determine the effectiveness of TikTok in enhancing students' communication skills. Riffenburgh (2012) defined meta-analysis as the systematic approach of combining different studies to generate results with larger sample sizes. Additionally, this process yields overall statistics and confidence intervals that summarize the effects of the experimental intervention compared to the comparator intervention. Notably, Higgins and Thomas (2019) highlight several advantages of this method, including enhanced precision, the ability to address questions not covered in individual studies, the resolution of controversies arising from conflicting results, and the generation of new hypotheses. The meta-analysis procedure in this current inquiry generally follows the eight-step practical guide outlined by Hansen et al. (2021). These steps include:

1. Defining the research questions;
2. Conducting a literature search by developing a search strategy, establishing inclusion criteria, and acquiring the sample;
3. Selecting the appropriate effect size measure and converting effect sizes to a common metric;
4. Choosing an analytical method, such as univariate meta-analysis, meta-regression analysis, meta-analytic structural equation modeling, or qualitative meta-analysis;
5. Selecting the appropriate software;
6. Coding effect sizes using a coding sheet, including moderator or control variables;
7. Assessing outliers and publication bias while determining whether to use fixed-effects or random-effects models; and
8. Reporting the findings in the article.

Search Strategy

The documents included in this meta-analysis were retrieved in the last week of January 2025 from reputable databases, including Google Scholar, Lens, Dimensions, and ScienceDirect. Additionally, relevant publications were gathered from Semantic Scholar and ResearchGate. These sources provide access to scientific publications

from various international journals. Yu et al. (2024) emphasized the importance of using multiple sources to minimize literature search bias, a strategy applied in this study by utilizing diverse databases and search engines to identify relevant records. The search queries used in this investigation included: *"Effectiveness" AND "Effects" AND "TikTok" AND "Communication Skills"* and *"Effectiveness" AND "Effects" AND "TikTok" AND "Education."* All included reports were peer-reviewed and published by reputable institutions to ensure the quality of the meta-analysis.

Publication Selection

This investigation followed the guidelines from the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Page et al., 2021). Figure 1 illustrates the systematic search process for identifying records related to the use of TikTok in education. Furthermore, to guide the process of selecting the articles, the following criteria are followed:

a. The study must report on the implementation of TikTok and its effects on the communication skills of the students;
b. The study must utilize an experimental or quasi-experimental research design, where the experimental group received the intervention using TikTok;
c. The article must provide necessary and sufficient quantitative data for the calculation of the effect size;
d. Peer-reviewed or provided by reputable institutions and published in the English language.

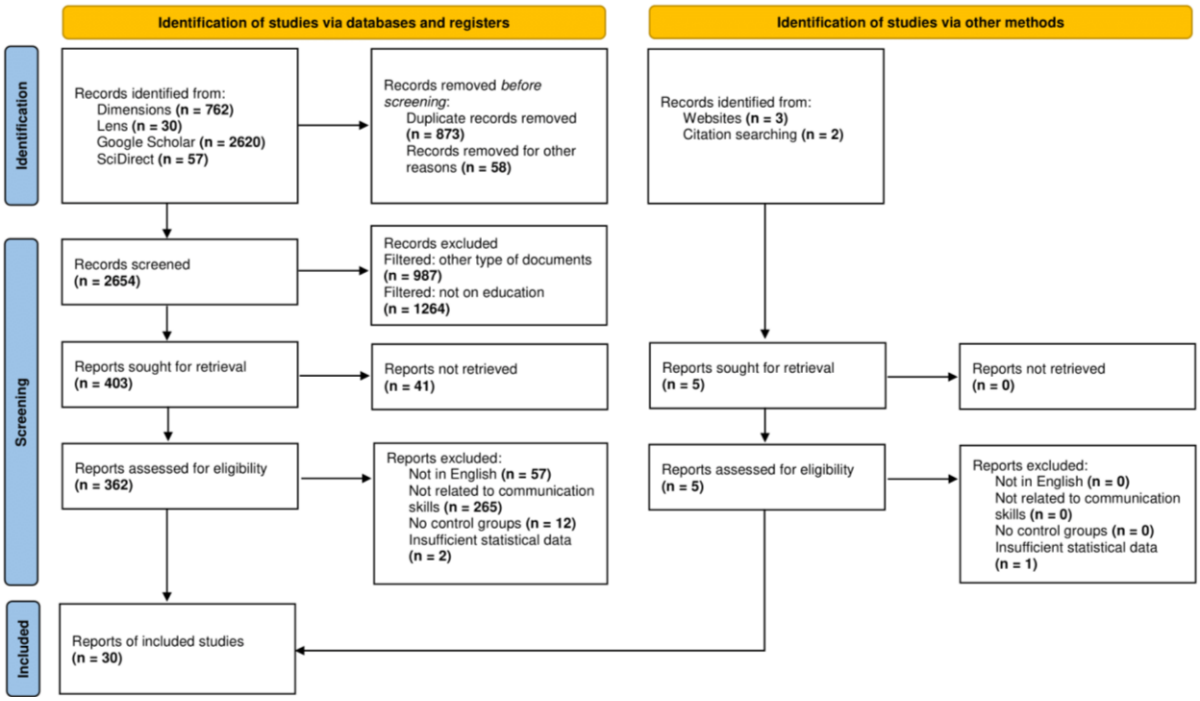

Figure 1. PRISMA Flow Diagram Search of TikTok Records from Databases, Registers, and Other Sources

The initial database search yielded a total of 3469 records, representing a broad range of studies relevant to the research query. In addition to these database results, five more documents were identified through other sources, such as reference lists, institutional repositories, and gray literature. To refine the dataset, duplicate records were

first removed. Following this, an initial screening was conducted based on the appraisal of the authors, leading to a reduction of the dataset to 2654 records. To focus on studies directly relevant to the research objectives, further filtering was applied. Only articles specifically related to education were retained, narrowing the selection to 403 records. Once retrieved, a detailed assessment for eligibility was conducted on 367 records to determine their suitability for inclusion in the meta-analysis. This evaluation involved reviewing abstracts and full texts to ensure alignment with the inclusion criteria of the investigation. Articles were excluded if they did not meet key requirements, use of TikTok as intervention, including language restrictions (non-English studies were omitted), the absence of communication skills as a primary variable, lack of control groups, and insufficient or incomplete data. Lastly, following this systematic selection process, only 30 studies met all eligibility criteria and were included in the meta-analysis.

Quality Assessment of the Studies

This investigation assesses the quality of studies included in the meta-analysis using the Newcastle-Ottawa Scale-Education (NOS-E) provided by Cook and Reed (2015). The scale includes five domains: *representativeness of the intervention group, selection*, *comparability of the comparison group*, *study retention,* and *assessment blinding*. Each domain was scored as either 0 or 1, except for comparability, which was rated on a scale of 0 to 2. To assess the quality of the study, the overall score was classified as high (5-6), medium (3-4), or low (0-2). This procedure follows the approach employed by Prasittichok and Smithsarakarn (2024). In this meta-analysis, two independent teachers evaluated each document. If their scores differ, a third evaluator intervenes to resolve the disagreement and determine the final assessment.

Data Extraction and Coding the Potential Moderators

To systematically identify and organize the data for the meta-analysis, the researcher utilized a matrix to extract key characteristics from the 30 selected studies. The extracted data included authors, document type, journal source, country, communication skill variables, and the quantitative data required for effect size computation. Additionally, potential moderators or influencing factors related to the effects of TikTok usage were also identified.

1. Geographic Region - this moderator refers to the study's location, categorized as *East Asia, Southeast Asia,* and *West Asia*.
2. Duration - this factor refers to the length of time of implementation of TikTok as an intervention and is categorized as *< 1 week, 2-4 weeks, 5-7 weeks, >8 weeks,* and *undetermined*.
3. Class Size - this moderator refers to the number of students in the class where TikTok is implemented, categorized as *1-30, 31-50, 51-100,* and *>100*.
4. Blinding of Assessment - this moderator refers to the practice of concealing certain information to reduce bias in evaluations and is categorized as *blinded* and *not blinded.*
5. Grade Level - this moderator refers to the educational stage of the participants, categorized as *middle school, high school,* and *university level*.
6. Communication Skills - refers to specific communication skill variables, categorized into *listening, oral*

communication, and *written communication*.

Data Analysis

This meta-analysis employed the mean, standard deviation, and sample size, with Hedges' *g* as the effect size measure. Hedges' *g*, a bias-corrected standardized mean difference, applies to both large and small samples, eliminating the need to switch between Hedges' *g* and Cohen's *d* in analyses involving studies with varying sample sizes (Chalmers & Altman, 1995; Turner & Bernard, 2006). To account for variations in effect sizes across studies, conversions were conducted using the online effect size calculator of Wilson (2023), following the meta-analysis guidelines of Hansen et al. (2021) and standard books by Lipsey and Wilson (2001) and Borenstein et al. (2009). Moreover, JASP 0.19.3 was utilized to analyze the effects of TikTok on students' communication skills, generating statistics, figures, and tables, including the pooled effect size in a forest plot, a funnel plot, and test results of publication bias. On the other hand, subgroup analysis was performed in SPSS 30 (172) to examine differences in effect sizes among the potential moderators and the direction of differences between subgroups (Çikrıkci, 2016). Notably, the *Q* statistical method was employed to test the significance of differences between moderator variables, with Q_b assessing the homogeneity between groups. Lastly, the effect size interpretation followed the revised rules of thumb of Sawilowsky (2009): g = 0.01 (very small), g = 0.2 (small), g = 0.5 (medium), g = 0.8 (large), g = 1.2 (very large), and g = 2.0 (huge).

Results and Discussion

This section describes the characteristics and qualities of the studies included in the meta-analysis and analyzes the effects of TikTok on students' communication skills, including variations in effect size across identified potential moderators. Additionally, the implementation challenges of TikTok in the classroom were also discussed.

Characteristics and Qualities of the Studies Included in the Meta-analysis

A total of 30 documents were included in the meta-analysis and the characteristics of the studies were presented (see Table 1). The majority of the publications were from the year 2024, accounting for 16 records, followed by 2023 with 9 studies. There were three (3) studies from 2022, while both 2021 and 2025 contributed one study each. In terms of publication type, most studies were original research articles (20), followed by thesis manuscripts (7) and conference papers (3). This study attempts to include some gray literature in the meta-analysis reducing literature bias. Geographically, Indonesia contributed the highest number of studies, with 25 publications. Meanwhile, China, Malaysia, Saudi Arabia, Taiwan, and Thailand each produced one study. Therefore, it is evident that the majority of the sampled studies were conducted in Asian regions. The studies primarily focused on middle school (12) and high school (13), while university-level produced five (5) publications. On the other hand, this research identified and coded three specific communication skills: listening, oral communication, and written communication.

To elaborate, the investigations of Alolayan (2025) and Fei and Li (2024) focused on enhancing listening skills. Meanwhile, the following studies concentrated on oral communication: Prabaningrat and Akhiriyah (2024), Wahyuni (2024), Fei and Li (2024), Nabella (2024), Damayanti et al. (2024), Yusuf et al. (2024), Setiowati et al. (2024), Mokoginta et al. (2024), Simanjuntak et al. (2024), Amdhannur (2024), Gao et al. (2023), Opas (2023), Hartini et al. (2023), Nasution and Nurlaili (2023), Rismawati et al. (2023), Aida et al. (2023), Muhammad (2022), Rajan and Ismail (2022), Nuari (2022), and Aziz and Sabella (2021). On the other hand, the following studies focused on written communication: Harahap (2024), Jabri et al. (2024), Puspita et al. (2024), Tirtayasa et al. (2024), Usman et al. (2024), Fei and Li (2024), Hasanah et al. (2024), Tambunan et al. (2023), Tampubolon et al. (2023), and Meylina and Rahmiaty (2023). Overall, the study focused on English language acquisition.

Table 1. Characteristics of Studies Included in Meta-analysis

Features	**Category**	**Frequency**
Publication Year	2021	1
	2022	3
	2023	9
	2024	16
	2025	1
Type of Documents	Original Articles	20
	Conference Paper	3
	Thesis Manuscript	7
Country	China	1
	Indonesia	25
	Malaysia	1
	Saudi Arabia	1
	Taiwan	1
	Thailand	1
Grade Level	Middle School	12
	High School	13
	University Level	5

Meta-analyses, including systematic reviews, pool data from individual studies to generate a higher level of evidence (Luchini et al., 2021). The findings of such investigations must guide stakeholders in making evidence-based decisions. Luchini and colleagues argued that the quality of evidence depends on the integrity of the studies included in the analysis. Furthermore, beyond the quality of individual studies, only a methodologically sound approach to systematic reviews and meta-analyses can ensure reliable and valid results. Consequently, the quality of meta-research projects also impacts the reliability of evidence synthesis. As a result, many investigations have implemented quality assessments or research appraisals of the studies included in their inquiries (Major et al.,

2021; Prasittichok & Smithsarakarn, 2024; Yu et al., 2024). Noteworthy, this current meta-analysis utilized the Newcastle-Ottawa Scale-Education (NOS-E) to evaluate the quality of the included studies. The individual assessments and corresponding quality ratings are presented in Table 2.

Table 2. Quality of Studies Included in the Meta-analysis

Author/s (Year)	**Domains**						**Total**
	A	**B**	**C**	**D**	**E**	**F**	
Alolayan (2025)	1	1	0	0	1	1	**4**
Harahap (2024)	1	1	0	0	1	0	**3**
Jabri et al. (2024)	1	1	0	0	1	1	**4**
Prabaningrat and Akhiriyah (2024)	1	1	0	0	1	0	**3**
Puspita et al. (2024)	1	1	0	0	1	1	**4**
Tirtayasa et al. (2024)	1	1	0	1	1	1	**5**
Usman et al. (2024)	1	1	0	0	1	1	**4**
Wahyuni (2024)	1	1	0	0	1	0	**3**
Fei and Li (2024)	1	1	0	0	1	1	**4**
Nabella (2024)	1	1	0	1	1	0	**4**
Hasanah et al. (2024)	1	1	0	0	1	1	**4**
Damayanti et al. (2024)	1	1	1	1	1	0	**5**
Yusuf et al. (2024)	1	1	0	0	1	0	**3**
Setiowati et al. (2024)	1	1	0	0	1	0	**3**
Mokoginta et al. (2024)	1	1	0	0	1	1	**4**
Simanjuntak et al. (2024)	1	1	0	0	1	0	**3**
Amdhannur (2024)	1	1	0	0	1	0	**3**
Gao et al. (2023)	1	1	1	1	1	0	**5**
Opas (2023)	1	1	1	1	1	0	**5**
Tambunan et al. (2023)	1	1	0	0	1	0	**3**
Tampubolon et al. (2023)	1	1	0	1	1	1	**5**
Hartini et al. (2023)	1	1	0	0	1	1	**4**
Nasution and Nurlaili (2023)	1	1	0	0	1	1	**4**
Meylina and Rahmiaty (2023)	1	1	0	0	1	0	**3**
Rismawati et al. (2023)	1	1	0	0	1	0	**3**
Aida et al. (2023)	1	1	0	0	1	1	**4**
Muhammad (2022)	1	1	0	0	1	0	**3**
Rajan and Ismail (2022)	1	1	0	0	1	0	**3**
Nuari (2022)	1	1	0	0	1	0	**3**
Aziz and Sabella (2021)	1	1	0	0	1	0	**3**

Domains: *(A) representativeness of the intervention group, (B) selection of the comparison group, (C, D) comparability of the comparison group, (E) study retention, and (F) blinding of assessment.*

Twenty-five studies were rated medium quality, with 14 receiving 3 and 11 rated 4. In contrast, only five (5) studies achieved a rating of 5 (high quality). Based on the appraisal of individual studies, the domains related to the representativeness of the intervention group, selection of the comparison group, and study retention were observed in all studies. However, only a few studies considered domains related to the comparability of the comparison group, including baseline scores and characteristics. According to Chaimani (2015), ignoring important variability in one or more population characteristics across studies in a meta-analysis may lead to misleading conclusions. This current meta-analysis argues that these features provide valuable insights into the analyzed studies, help researchers assess heterogeneity, and enable a more nuanced understanding of the intervention's effects.

Additionally, there was variation in ratings for domains related to the blinding of assessment. This variation can be attributed to the fact that 18 studies relied on human judgment to evaluate the effects of TikTok such as the use of rubrics in assessing students' oral communication skills, while others utilized participant-reported outcomes in a survey questionnaire. This domain is relevant to the risk of detection bias or observer bias, where the evaluator has strong preconceptions about interventions. This is similar to assessing subjective outcomes such as qualitative scoring or identifying patterns (Barcot et al., 2020). Noteworthy, this meta-analysis reported some concerns on domains related to comparability of the comparison group and blinding of assessment.

Effectiveness of Utilizing TikTok in Enhancing Students' Communication Skills

In the current meta-analysis, a total of 30 documents were analyzed, which include 34 valid datasets (*k*) with 2367 as the overall sample size (*n*). Moreover, when synthesizing data from independently conducted studies, variations in respondents and interventions make it unlikely that all investigations are identical or functionally equivalent. These differences can influence results, making it inappropriate to assume a common effect size. In this case, a random effects model is more appropriate than a fixed effects model (Borenstein et al., 2009). Therefore, this meta-analysis employed a random effects model to assess the impact of utilizing TikTok on students' communication skills. Table 3 presents the meta-analytic results with a pooled effect size (Hedges' *g*) of 1.337 derived from 34 independent datasets. This suggests a very large effect of TikTok on communication skills, as denoted by the diamond pooled estimate in the forest plot (see Figure 2). Likewise, the effect was statistically significant ($Z = 7.756$, $p < .001$), with a 95% confidence interval (CI) of 0.999 to 1.675.

Table 3. Pooled Effect Size and the Residual Heterogeneity Statistics

k	***Hedges' g***	***SE***	***Z***	***p***	***95% CI (Lower)***	***95% CI (Upper)***
34	1.337	0.172	7.756	<.001	0.999	1.675
τ	***τ^2***	***I^2***	***H^2***	***df***	***Q***	***p***
0.952	0.907	91.446%	11.690	33	338.251	<.001

Pooling Model: Random-effects

Notably, the forest plot illustrates variability among the studies. Most datasets show statistically significant positive effects, as indicated by confidence intervals (CIs) that do not cross the line of no effect (zero), while others do cross this line. Specifically, out of 34 valid datasets, 29 demonstrated that TikTok had a significant positive effect on students' communication skills. To assess the extent of variability in effect sizes across the included studies, the *Q*-statistic tests the null hypothesis that all studies share a common effect size. If this were true, the expected *Q*-value would equal the degrees of freedom (the number of studies minus one). In this analysis, the *Q*-value is 338.251 with 33 degrees of freedom and $p < .001$, leading to the rejection of the null hypothesis, indicating that true effect sizes differ across studies. Additionally, the I^2 statistic is 91.446%, suggesting that 91.446% of the variance in observed effects is due to true effect size differences rather than sampling error. The variance of true effects (τ^2) is 0.907, and the standard deviation of true effects (τ) is 0.952. The forest plot also presents the prediction interval (PI), ranging from -0.56 to 3.23, represented by the thick black line below the diamond. This indicates that in 95% of comparable populations, the true effect size will fall within this range. Thus, while TikTok may have a substantial impact in some contexts, its effect may be minimal or even absent in others.

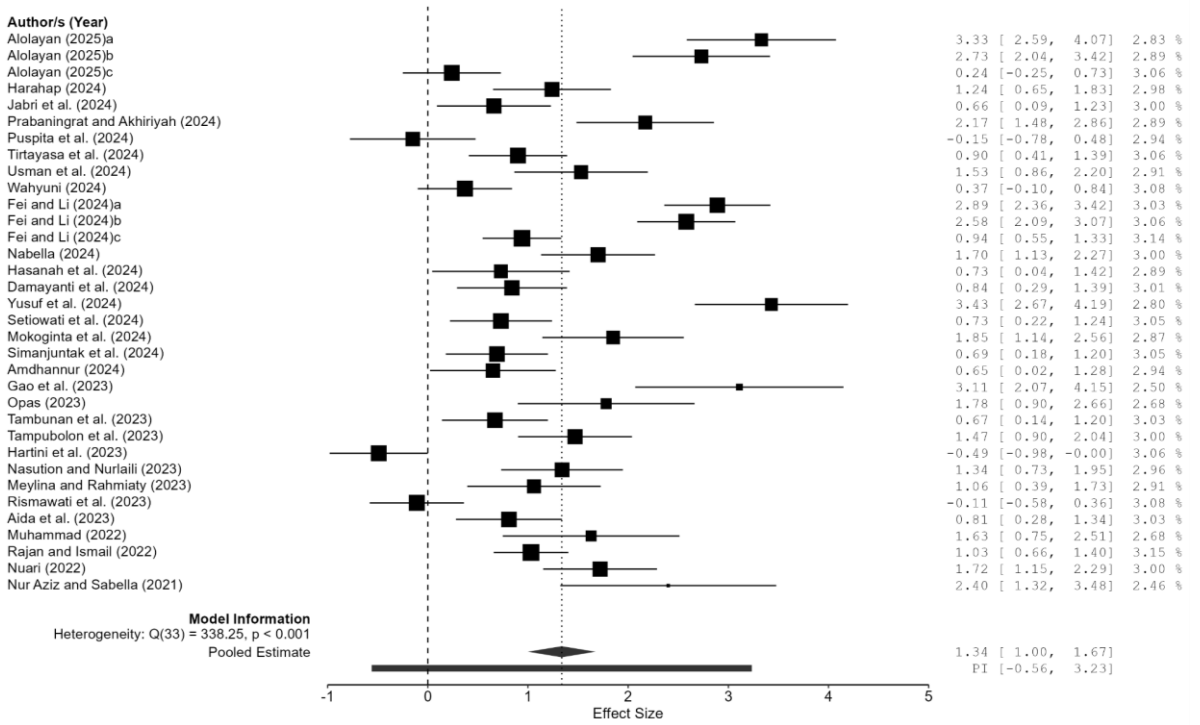

Figure 2. Forest Plot Showing the Effects of TikTok on Students' Communication Skills

Moreover, while the previous tests indicate heterogeneity, they do not specify which study or dataset contributed to it. To ensure the robustness of the meta-analytical findings, a sensitivity analysis was conducted. First, casewise diagnostics and the Baujat plot were used to identify potential outliers, studies that disproportionately contribute to heterogeneity and overall results (Baujat et al., 2002). Each dot represents an individual study, with those in the top right quadrant exerting the greatest influence on the overall results and contributing most to heterogeneity (see Figure 3). Notably, the analysis found no influential cases or datasets. Likewise, study weights (%) are presented in the last column of the forest plot, indicating each dataset has a contribution to the pooled effect size.

Specifically, studies with narrower confidence intervals (indicating less uncertainty around their effect estimates) carry more weight. This process is crucial for ensuring that the meta-analysis provides a more precise and representative estimate of the true effect by emphasizing the most reliable studies.

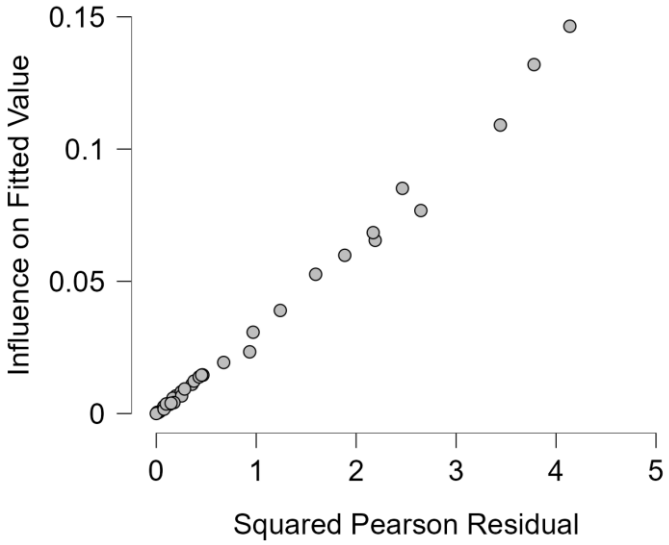

Figure 3. Baujat Plot Showing the Datasets Contributing to Heterogeneity

An additional analysis was conducted to assess the potential risk of publication bias. Rothstein et al. (2006) define publication bias as the tendency for studies with significant findings to be published more frequently than those with nonsignificant or inconclusive results, leading to an unbalanced representation of the research. One approach to detecting publication bias is examining the funnel plot, which displays the distribution of effect sizes. In Figure 4 (A), the plot appears asymmetric, suggesting possible publication bias. However, Simmonds (2015) warns that visual inspection alone can be misleading when determining the presence or absence of publication bias. Therefore, formal statistical tests are typically recommended for a more reliable assessment of asymmetry (see Table 4). In Figure 4, the funnel prediction interval was denoted by confidence levels of 0.90, 0.95, and 0.99.

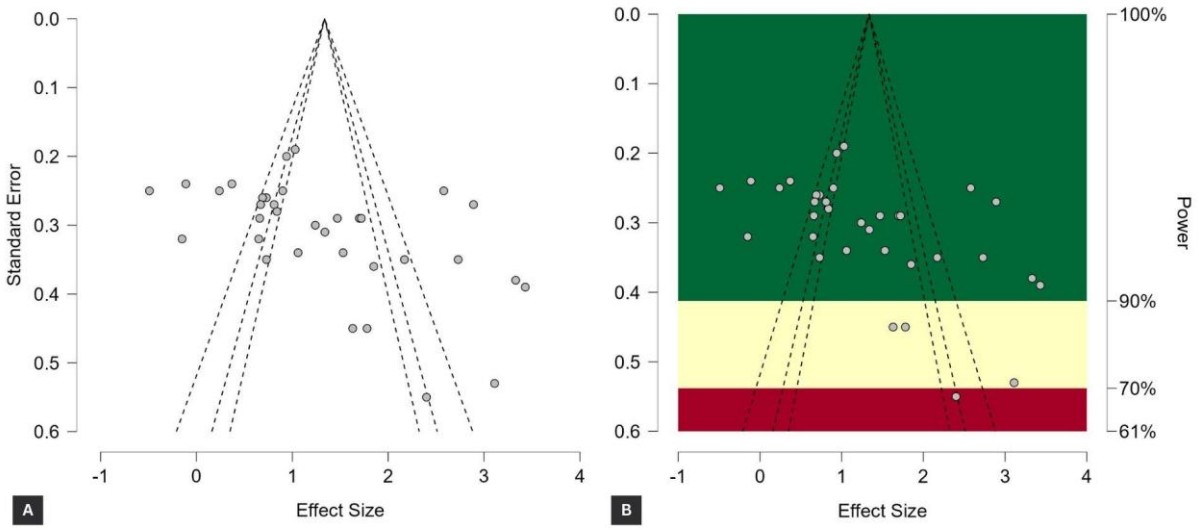

Figure 4. Conventional Funnel Plot (A) and Power-enhanced Funnel Plot (B)

Figure 4 (B) presents the power-enhanced funnel plot, a graphical display described by Kossmeier et al. (2020) to assess study-level power in meta-analysis. This plot provides a more detailed view than traditional funnel plots by incorporating color-coded power regions and a secondary power axis. Studies in the top funnel (green area) have small standard errors and high power, making their effect size estimates more precise. In contrast, studies in the bottom funnel (red area) have large standard errors and low power, typically representing smaller, less precise studies. The power-enhanced funnel plot indicates that most studies fall within a high-power region, suggesting the meta-analysis has reasonable power to detect an overall effect.

On the other hand, the classical Rosenberg Fail-Safe *N* test estimates the number of null-result studies required to negate the observed effect. Originally, this test was designed to address publication bias in hypothesis testing; however, this method is less relevant in modern meta-analysis, which focuses on estimating mean effect sizes rather than testing a specific null hypothesis. Borenstein (2019) argued against relying on Fail-Safe *N* due to these limitations. Despite this, the high Fail-Safe *N* value of 4663 suggests that the overall effect is robust against potential publication bias, meaning 4663 studies with an effect size of zero would be needed to nullify the observed effect. Additionally, the *p*-value of < .001 indicates minimal susceptibility to publication bias. Since Fail-Safe *N* has limitations, alternative analyses can provide more meaningful insights. On the other hand, Table 4 presents statistical tests used to evaluate funnel plot asymmetry and assess the potential risk of publication bias in this meta-analysis.

Table 4. Statistical Tests for Funnel Plot Asymmetry

Funnel Plot Asymmetry Test	**Statistic**	**value**	***p***	**95% CI (Lower)**	**95% CI (Upper)**
Rank Correlation Test	τ	0.404	<.001		
Meta-Regression Test	*z*	3.709	<.001	-1.978	0.352
Weighted Regression Test	*t*	3.000	0.005	-2.037	0.577

The rank correlation test (Kendall's tau) measures the correlation between effect sizes and their standard errors, yielding a significant tau value of 0.404 ($p < .001$), indicating a potential risk of publication bias. Similarly, Egger's test, a meta-regression analysis that examines the relationship between effect size estimates and their standard errors weighted by inverse variance, shows a significant *z*-value of 3.709 ($p < .001$), confirming the presence of asymmetry. Additionally, the weighted regression test also produces a significant result ($t = 3.000$, $p = 0.005$), further supporting the evidence of the risk of publication bias. Furthermore, the statistical investigation from the funnel plot asymmetry test yielded a *p*-value less than 0.05, suggesting that the effect size distribution may be asymmetrical, which indicates a possible risk of publication bias. Likewise, the Trim-and-Fill analysis, a method that imputes potentially missing studies to correct for funnel plot asymmetry was employed, in this investigation the side where the studies to be imputed was set according to the slope of the meta-regression test, and found that 10 additional studies were imputed on the left side of the funnel plot (see Figure 5).

As highlighted, the analysis of publication bias suggests that findings from the random-effects model, including

its inferences, may be overestimated when evidence from individual studies is aggregated. Lin and Chu (2018) highlight publication bias as a significant challenge in systematic reviews and meta-analyses, potentially compromising the validity and reliability of conclusions. They outline two approaches to addressing this issue: selection models and funnel-plot-based methods. However, Borenstein (2019) emphasizes that the presence of publication bias does not necessarily invalidate the results, highlighting the need for careful interpretation. Meanwhile, publication bias is just one of several domains that require consideration; other forms of bias must also be reported. This study conducted a quality assessment of individual studies to provide insights into additional risk of bias domains, ensuring a more comprehensive evaluation of potential limitations. Moreover, this current meta-analysis utilized the recommendations of Bartoš et al. (2022) in adjusting meta-analytic estimates for publication bias using JASP 0.19.3. This research employed the Trim-and-Fill method, the WAAP method, and selection models to address the potential risk of publication bias (Table 5).

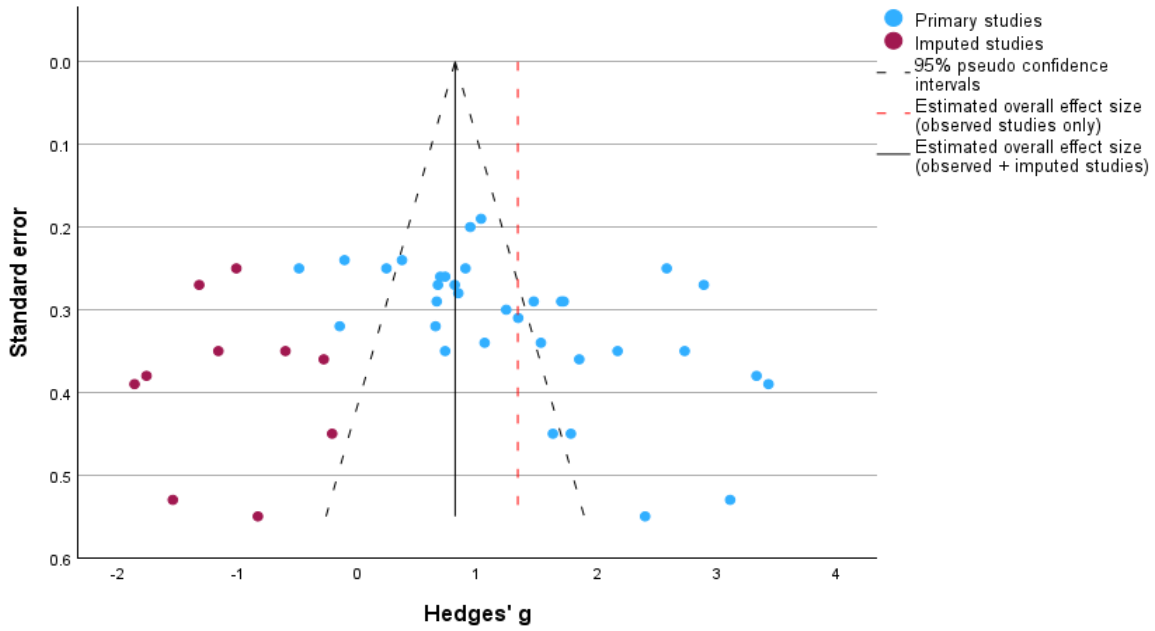

Figure 5. Funnel Plot Showing the Imputed Studies in the Trim-and-Fill Analysis

Table 5. Summary of Meta-analytic Estimates of the Effectiveness of TikTok based on Different Models

Method	Effect Size estimate and 95% CI	Test against no effect	Interpretation
Random Effects Model	1.337 (0.999, 1.675)	$z = 7.756$, $p < .001$	Very Large
Trim-and-Fill Method[a]	0.814 (0.406, 1.221)	$z = 3.911$, $p < .001$	Large
WAAP Method[b]	1.104 (0.775, 1.433)	t (29) = 6.581, $p < .001$	Large
Selection Model[c]	0.834 (0.061, 1.608)	$z = 2.114$, $p = .034$	Large

[a]*imputed studies: 10 on the left side of the funnel plot; iteration model: fixed effects*

[b]*WAAP (weighted average of adequately powered studies); power > 80%: 30 datasets*

[c]*random effects estimates (adjusted)*

Originally, the random effects model resulted in a significant and very large effect estimate of 1.337. On the other hand, the Trim-and-Fill method imputes missing studies until the funnel plot achieves symmetry. In this study, the imputed studies were added on the left side of the plot using the slope from the meta-regression test with the use of fixed effects as the iterative model (Figure 5). As shown in the table, this adjustment reduced the effect size from 1.337 in the random effects model to 0.814. This result is still considered large and remains statistically significant. Additionally, the WAAP (Weighted Average of Adequately Powered) method was applied to estimate the meta-analytic effect size using the studies with sufficient statistical power (>80%), thereby reducing the influence of small-study effects. In this method, 30 datasets met the power threshold, yielding a significantly large effect size of 1.104. Likewise, selection models adjust for publication bias by accounting for the likelihood of studies being missing due to selective reporting. Similarly, the adjusted random-effects estimate resulted in a significantly large effect size of 0.834. In brief, the findings consistently demonstrate a large and statistically significant effect of TikTok on students' communication skills regardless of the method used, whether the random-effects model, Trim-and-Fill adjustment, WAAP method, or selection models. This indicates that TikTok plays a significant role in enhancing students' communication skills. Lastly, while publication bias was assessed and accounted for, the overall robustness of the effect size across different statistical methods reinforces the reliability of the conclusions drawn from this meta-analysis.

Subgroup Analysis of the Effects of TikTok across Different Moderators

This study provided empirical evidence of the effectiveness of TikTok in improving students' communication skills. However, meta-analytic findings indicate considerable heterogeneity (I^2 = 91.446%) in the investigation. This highlights the need to explore potential moderators influencing the overall effectiveness of TikTok. Moderating variables contribute to some observed variance (Quintana, 2015). To address the observed heterogeneity, subgroup analyses were performed to evaluate whether the effectiveness of TikTok varied across different moderators, such as geographic region, duration, class size, grade level, blinding of assessment, and communication skills. According to Higgins and Thomas (2019), subgroup analysis involves partitioning pooled data into distinct subgroups to facilitate comparisons and identify potential moderating variables affecting the overall effects. This study presents a summary of the subgroup analysis results, including the effect sizes and statistical significance for each moderator variable (see Table 6). Subgroup analysis revealed a significant variation in effect sizes across different geographical regions (Q = 6.536, df = 2, p = 0.038). Specifically, both East Asia (g = 2.332, p < 0.001) and West Asia (g = 2.083, p = 0.028) exhibited significant and huge effect sizes, according to the effect size rule of thumb of Sawilowsky (2009). However, this interpretation should be approached with caution, as these groups are represented by only three or four datasets and these regions consist of a lesser sample size, potentially leading to an overestimation of effect sizes. Substantial unexplained heterogeneity is observed across regions (East Asia: I^2 = 91.9%; South East Asia: I^2 = 87.1%; West Asia: I^2 = 96.1%). Thus, the validity of TikTok's effects in each subgroup remains uncertain due to inconsistent results. In contrast, Southeast Asia, with a sufficient dataset of 27 with 1770 samples, also demonstrated a significant and large effect size (g = 1.100, p < .001). Overall, these findings suggest that TikTok contributed to improvements in communication skills among Southeast Asian students, although further research with larger and more even sample distributions is necessary to confirm these trends.

Table 6. Subgroup Analysis according to the Identified Factors from the Studies

Moderators	Effect Size Estimates for Subgroup Analysis							Subgroup Homogeneity		
	k	*n*	*g*	*Lower*	*Upper*	*z*	*p*	Q_b	*df*	*p*
Geographic Region								6.536	2	**0.038***
East Asia	4	405	2.332	1.372	3.293	4.761	**<.001**			
South East Asia	27	1770	1.100	0.787	1.413	6.889	**<.001**			
West Asia	3	192	2.083	0.229	3.937	2.202	**0.028**			
Duration								11.094	4	**0.026***
< 1 week	1	60	0.370	-0.100	0.840	1.542	0.123			
2-4 weeks	6	436	1.047	0.676	1.418	5.533	**<.001**			
5-7 weeks	5	483	1.601	0.515	2.626	2.890	**0.004**			
>8 weeks	6	460	1.301	0.434	2.169	2.940	**0.003**			
Undetermined	16	928	1.437	0.896	1.979	5.202	**<.001**			
Class Size								1.172	2	0.556
1-30	15	727	1.268	0.836	1.701	5.745	**<.001**			
31-50	15	1145	1.254	0.667	1.841	4.185	**<.001**			
51-100	4	495	1.847	0.849	2.846	2.626	**<.001**			
Grade Level								10.289	2	**0.006***
Middle School	12	802	1.311	0.789	1.833	4.921	**<.001**			
High School	13	887	0.825	0.425	1.225	4.040	**<.001**			
University Level	9	678	2.111	1.423	2.798	6.017	**<.001**			
Blinding of assessment								0.870	1	0.351
Blinded	15	1477	1.156	0.646	1.666	4.441	**<.001**			
Not Blinded	19	890	1.480	1.029	1.932	6.428	**<.001**			
Communication Skills								5.917	2	0.052
Listening	4	307	2.282	0.916	3.649	3.273	**<.001**			
Oral Communication	20	1352	1.370	0.923	1.817	6.008	**<.001**			
Written Communication	10	708	0.905	0.607	1.203	5.949	**<.001**			

*k (datasets); n (sample size); g (effect size estimate); random-effects model: *moderating effect, p<.05*

Moreover, the impact of TikTok varies across geographical regions was corroborated by the study of Puspita et al. (2024). Their investigation suggests that cultural background plays a crucial role in enhancing motivation and learning outcomes, particularly when students find TikTok content familiar and engaging. In the context of Indonesian students, when content is culturally relevant this becomes more relatable and effective, thus enhancing the learning process. Noteworthy, Puspita and colleagues highlight the importance of culturally responsive pedagogy in maximizing student engagement and academic success. Likewise, Hossain (2023) emphasized that to achieve consistent relevance of language education in the evolving global landscape, it is recommended that cultural perspectives, digital resources, and learners' diverse backgrounds should be considered. Overall, by integrating culture, technology, and student diversity into language instruction, teachers can foster more engaging and meaningful learning experiences, empowering students to become effective communicators.

On the other hand, subgroup analysis revealed a significant difference in effect sizes based on study duration (Q = 11.092, df = 4, p = 0.023). Studies lasting 5-7 weeks exhibited a very large effect size (g = 1.601, p = 0.004) and those extending beyond 8 weeks also showed a significant and very large effect (g = 1.301, p = 0.003). Similarly, studies lasting 2-4 weeks demonstrated a significant and large effect size (g = 1.047, p < 0.001). However, these findings should be interpreted with caution, as these durations are represented by only five or six datasets with relatively small sample sizes. In contrast, studies with a duration of less than one week, represented by a single dataset with a total of 60 participants, yielded a non-significant and small effect size (g = 0.370, p = 0.123). Meanwhile, 16 datasets lacked information on the duration of TikTok implementation due to the absence of reported intervention length. Despite this, the undetermined group exhibited a very large and significant effect size (g = 1.437, p < 0.001). Notably, based on the results, the 5-6 datasets with sample sizes exceeding 400 revealed large effects of TikTok across different durations (2-4 weeks, 5-7 weeks, and >8 weeks). This suggests that longer exposure may have a greater impact on communication skills. However, this interpretation remains inconclusive, as it is based on a limited number of datasets. Furthermore, substantial unexplained heterogeneity exists within each duration subgroup (2-4 weeks: I^2 = 61.6%; 5-7 weeks: I^2 = 95.6%; >8 weeks: I^2 = 91.3%), indicating that the validity of the intervention effect estimates is uncertain due to inconsistent individual results.

This study provides evidence that regardless of the length of the implementation of TikTok, the intervention has positive effects on communication skills. This finding is supported by the commentary of Khlaif and Salha (2021), who identified TikTok as a form of nanolearning. They suggested that TikTok has the potential to become a valuable educational tool, as the platform facilitates the delivery of concise learning units within a short time frame (less than 60 seconds). Similarly, Conde-Caballero et al. (2023) reported that higher education students positively evaluate TikTok as a tool that enhances the quality of education through microlearning. Yousef et al. (2023) also suggested that nano videos can effectively introduce new concepts, demonstrate procedures, or summarize complex ideas. Lastly, these videos are precise, focused on specific topics, and designed for easy comprehension.

Additionally, the non-significant Q value for subgroup homogeneity (Q = 1.172, df = 2, p = 0.556) indicates that class size, as a whole, had no moderating effect. However, individual class size categories showed significant results. Smaller classes (1-30 students) had a statistically significant and very large effect (g = 1.268, p < .001),

the same with classes with 31-50 students (g = 1.254, p < .001). Notably, classes with 51-100 students yielded the largest effect size (g = 1.847, p < .001), this finding should be interpreted cautiously due to the limited representation of datasets and smaller sample size. Further, the class size shows a wider confidence interval (0.849, 2.846), which suggests greater uncertainty in the effect size estimate, likely due to the small number of datasets (k = 4). Noteworthy, the results for 1-30 and 31-50 student classes demonstrated very large effects and were supported by 15 datasets each. While all individual class sizes showed statistically significant effects, the overall test for subgroup homogeneity suggests that class size, in general, does not act as a moderator. Additionally, regardless of class size, Cruz et al. (2024) found that students perceive TikTok as an accessible and effective tool for self-directed learning in English. By definition, according to Brookfield (2009), self-directed learners are individuals who take responsibility for conceptualizing, designing, conducting, and evaluating their learning. This approach does not necessarily mean learning in isolation; rather, students can engage in self-directed learning within group settings if they choose to do so, recognizing it as beneficial to their learning process. Lastly, Cruz and colleagues reported that TikTok is easy to access on mobile devices, enhances interaction with English language content, improves oral proficiency, and supports effective study strategies for learning English.

A significant difference was observed across grade levels (Q = 10.289, df = 2, p = 0.006), indicating that grade level serves as a moderating factor. The analysis revealed a huge and positive effect at the university level (g = 2.111, p < 0.001), a very large effect in middle school (g = 1.311, p < 0.001), and a large effect in high school (g = 0.825, p < 0.001). A sufficient number of datasets were observed across grade levels: middle school (12), high school (13), and university level (9) - with sample sizes ranging from 678 to 887. However, there is a substantial heterogeneity among the levels (middle school: I^2 = 85.9%; high school: I^2 = 88.8%; university level: I^2 = 91.2%). Thus, the validity of the effects of TikTok for each level is uncertain due to inconsistent results. Despite this, findings suggest that the effects of TikTok vary across educational stages, with the greatest potential and effect observed at the university level. Consistently, Fei and Li (2024) found that TikTok-based blended learning positively impacted college students' language abilities. Participation in this type of intervention led to significant improvements in their listening, reading, and writing skills. Thus, the integration of TikTok short videos in blended learning played an active role in enhancing their language proficiency. Gao et al. (2023) reported that the use of TikTok as a video aid in the classroom enhanced university students' motivation and improved their oral proficiency. On the other hand, this current meta-analysis reported that aside from university-level TikTok had significant and large effects on middle and high school students suggesting that the platform has improved students' communication skills. Noteworthy, three educational levels were observed: middle school, high school, and university level. However, none of the included studies involved elementary-level or lower-grade-level participants. This indicates that the individual investigations adhered to the Privacy Policy and Terms of Service of TikTok, which require users to be at least 13 years old, with certain features remaining restricted until they turn 16 or 18 (TikTok, n.d.). Nonetheless, Harahap (2024) described that TikTok could be utilized across different subjects, with its feasibility varying by grade level.

Additionally, blinding of assessment is not a significant moderator in this study (Q = 0.870, df = 1, p = 0.351), indicating no substantial difference in effectiveness between blinded and non-blinded outcome assessments. However, blinded assessments showed a significantly large effect (g = 1.156, p < .001), while non-blinded

assessments had an even larger effect size (g = 1.480, p < .001). It can be noted that non-blinded assessments have a slightly larger effect size compared to blinded assessments. This result is consistent with Pitre et al. (2023), who found that there is moderate evidence that no blinding in assessment likely leads to an overestimation of treatment effects for continuous outcomes. Further, a smaller sample size contributed to the non-blinded assessment subgroup (n = 890) compared to the blinded assessment subgroup (n = 1477), which may limit the ability to detect subgroup differences. Despite this, the blinded assessment generated a significant and large effect, suggesting that outcome assessments using objective measures, such as multiple-choice tests, demonstrated a substantial effect of TikTok on students' communication skills.

Furthermore, the differences in effect sizes across communication skills (Q = 5.917, df = 2, p = 0.052) were not statistically significant, as the p-value slightly exceeds the .05 threshold. This suggests that while TikTok enhances communication skills, there is no strong evidence that its effectiveness differs significantly across listening, oral, and written communication. Listening skills exhibited a huge and significant effect (g = 2.282, p < .001), while oral communication showed a significant and very large effect size (g = 1.370, p < .001). Additionally, written communication skills demonstrated a significant and large effect (g = 0.905, p < .001). It is important to note that the uneven distribution including the limited number of datasets and samples on listening skills (k = 4, n = 307), may affect the conclusiveness of the interpretations. Despite this, oral and written communication showed substantial improvement. Oral communication was supported by 20 datasets with a total sample of 1352, while written communication was substantiated by 10 datasets involving 708 participants. The findings corroborate the reports of Rajan and Ismail (2022), who observed a statistically significant difference in mean scores between students who utilized TikTok to enhance their speaking test performance and those who did not use the platform. Meanwhile, Aziz and Sabella (2021) found that TikTok improved students' speaking fluency, as supported by increased post-treatment scores compared to pre-treatment scores. Likewise, Prabaningrat and Akhiriyah (2024) found that TikTok enhances junior high students' speaking skills by exposing them to native pronunciations and new vocabulary. Meanwhile, Fei and Li (2024) reported the improvement in reading, listening, and writing skills through the use of TikTok short videos in blended learning for college English education. Similarly, Meylina and Rahmiaty (2023) described that TikTok short videos enhanced the academic writing skills of middle school students. In summary, this meta-analysis highlights the significant positive impact of TikTok as an instructional medium for improving students' communication skills.

Challenges in Implementing TikTok in the Classroom

This study also reported the challenges identified in individual studies regarding the implementation of TikTok in the classroom. Based on content analysis of the documents included in the meta-analysis, five key challenges were identified: (1) *time constraints*, (2) *distraction and addiction,* (3) *technical skills and teacher workload,* (4) *technical issues and self-management,* and (5) *content quality and relevance*. This study emphasizes the significance of future scholarly work in addressing these challenges for better TikTok integration or implementation. A detailed description of these challenges, along with their sources is provided (see Table 7). Notably, the findings of this current investigation on the challenges of implementing TikTok are consistent with the review of Maretha and Anggoro (2022). To elaborate, the authors highlight several drawbacks of using TikTok

for English as a Foreign Language (EFL) instruction, including privacy concerns and issues with lesson content, where students may either watch or create videos that oversimplify concepts. Additionally, tasks may require extended periods of time, and quality control remains a significant challenge. Some content may also be unsuitable for students. Learners may access unrelated content, leading to distractions from their intended tasks, and the potential for addiction to the platform raises further concerns.

Table 7. Challenges in Integrating TikTok in the Classroom

Challenges	Descriptions	Sources
Time constraints	Certain skills may take longer to develop when using TikTok, as the platform's short videos can lead to a superficial learning experience in English. Additionally, the research timeframe may be insufficient to accurately assess TikTok's impact.	Alolayan (2025) Damayanti et al. (2024)
Distraction and addiction	TikTok's entertainment-focused nature can be distracting and potentially addictive, making it difficult for students to concentrate on learning material as they may become overly engaged with its content.	Alolayan (2025 Usman et al. (2024)
Technical skills and workload for teachers	Teachers require advanced technical skills to choose and provide feedback on videos, adding to their workload compared to traditional teaching methods.	Fei and Li (2024) Hartini et al. (2023)
Technical issues and self-management	Network technology problems, application issues, and limited internet connectivity can hinder access and affect performance. Additionally, students may face challenges in self-management while using TikTok.	Fei and Li (2024) Nabella (2024)
Content quality and relevance	The inconsistent quality of TikTok content means that some videos may lack educational value.	Damayanti et al. (2024) Simanjuntak et al. (2024)

Moreover, Ramsden and Talbot (2024) reported in their review that while TikTok can help alleviate academic stress and anxiety, students often compare themselves to others, which can lead to self-destructive behaviors, especially after encountering distressing content. The authors argue that this issue arose from the algorithm of the platform. They suggested that by intentionally engaging with positive videos, users may influence the algorithm

to recommend more positive content, potentially improving its impact on their mental well-being. In the context of education, engaging with legitimate accounts that offer educational content can influence the algorithm to provide more learning-focused materials for students. Furthermore, Xavierine and Shanthi (2024) described the potential of TikTok as an effective learning tool but emphasized the need for improvements to enhance its educational value. They highlighted the introduction of new features to support educators in creating engaging content and establishing official TikTok accounts for each subject, offering students a dedicated platform for accessing educational videos. In summary, beyond the meta-analytic findings, including the subgroup analysis results, this current investigation highlights the challenges that should be addressed to enhance the effectiveness of TikTok as a language tool in future educational practices.

Conclusion

This meta-analysis assessed the effectiveness of TikTok in enhancing students' communication skills. The study analyzed 30 research documents comprising 34 valid datasets, which involved a total sample of 2367. Most studies were published in 2024, with the majority being original research articles (20), as well as seven thesis manuscripts and three conference papers. Moreover, a significant portion of the studies originated from Indonesia, and all retrieved documents were from Asian countries. TikTok was primarily implemented in middle schools, high schools, and universities. Meta-analytic findings using the random-effects model indicate that TikTok had a very large and significant effect (g = 1.337, p < .001) on students' communication skills. However, substantial heterogeneity and publication bias were observed. After applying adjustments such as the Trim and Fill method, the WAAP method, and the selection models, the obtained effect size (g) estimates ranged from 0.814 to 1.104, which confirms that TikTok has a significant and large effect on students' communication skills. To date, this is one of the few investigations into the effectiveness of TikTok in enhancing communication skills.

Additionally, the results revealed that geographical region, duration, and grade level had a moderating effect. Conversely, class size, blinding of assessment, and communication skills did not exhibit moderating effects. This suggests that the effectiveness of TikTok in enhancing communication skills is consistent, regardless of the number of students in a class, the type of blinding assessment outcomes, or the particular targeted communication skills. Notably, the implementation of TikTok was found to be more effective in Southeast Asian countries, with longer duration (2-4 weeks, 5-7 weeks, >8 weeks), class sizes of 1-30 and 31-50 students, in following grade levels (middle school, high school, and university), and for both oral and written communication skills. Therefore, considering these subgroups may lead to the effective implementation of TikTok as an instructional tool.

Additionally, the content analysis revealed five (5) challenges in implementing TikTok in the classroom: (1) time constraints, (2) distraction and addiction, (3) technical skills and increased teacher workload, (4) technical issues and self-management, and (5) content quality and relevance. Notably, these findings were consistent with existing literature on the drawbacks and challenges associated with using TikTok in educational settings. In summary, by recognizing the effectiveness of TikTok in enhancing communication skills, this study is hopeful that teachers and scholars will consider the insights from the current inquiry to improve their teaching and learning practices.

Limitations of Research and Recommendations for Future Practice and Work

This investigation provided empirical evidence of the effectiveness of TikTok in enhancing students' communication skills. To guide effective implementation in other contexts, the following recommendations are provided for future practice and further research.

1. As observed, the retrieved studies originated from East Asia, Southeast Asia, and West Asia, with all research conducted in Asian countries. Future investigations in other regions, such as America, Australia, Europe, and Africa, are recommended to strengthen further and validate the findings of this meta-analysis. However, restrictions and bans on TikTok may hinder the ability to generate such valuable information.
2. The results indicate that the duration of implementation is a significant moderator. However, further research on the durations is needed for a more comprehensive analysis of the effects of TikTok. Future studies should consider implementing TikTok over different timeframes, such as < 1 week, 2-4 weeks, 5-7 weeks, and > 8 weeks, to strengthen the findings. Moreover, researchers are encouraged to explicitly specify the duration in their methodology, including the number of meetings, hours, and weeks.
3. The results indicate that class size is not a significant moderator in the implementation of TikTok. However, smaller class sizes (1-30 and 31-50) show a significant and large effect size, supported by 15 datasets each. Future research is recommended to include larger class sizes (51-100 participants) to verify the observed effects of TikTok in the current investigation. Likewise, researchers may also account for possible collaboration among the students in creating TikTok videos as another potential moderator.
4. As noted, grade level has a moderating effect; however, further research across all grade levels, particularly at the university level (k = 9), is encouraged. Notably, this meta-analysis recommends that teachers and research scholars adhere to the Privacy Policy and Terms of Service of TikTok regarding user age requirements.
5. Large effects were observed in oral and written communication, supported by 10 and 20 datasets, respectively. However, listening skills (k = 4) require further investigation to strengthen the results. Additionally, future research may explore various learning variables, such as other communication skills not included in the current study, learning gains, retention, critical thinking, and creativity.
6. Another limitation observed in the individual study is the concern regarding the comparability of the comparison group, particularly in terms of reporting baseline scores and characteristics, including the domain related to blinding assessments. Therefore, future research should carefully consider baseline characteristics and scores when comparing groups to ensure accurate comparisons.
7. This study recommends implementing blinding in the assessment of variables, excluding evaluations that rely on human judgment or participant self-reports. In cases where it is not feasible, this research suggests reporting interrater reliability or agreement when using human judgment to ensure the accuracy of the reported outcomes and enhance the trustworthiness of the study.
8. A meta-analysis can be conducted to evaluate the effectiveness of short video platforms such as TikTok, Facebook Reels, and YouTube Shorts. Additionally, further studies are encouraged to investigate each platform utilizing control and experiment groups.
9. Research scholars are encouraged to specify whether the short videos used in the study were *student-*

made, *teacher-made*, or *pre-selected*. This moderator was not evaluated in the current meta-analysis due to the lack of reporting in most studies. The duration of TikTok videos should be considered, as it may affect user engagement, content effectiveness, and educational value.

10. Other challenges in implementing TikTok may not have been included in the current report, as the sources were limited to the documents analyzed in the meta-analysis. Further investigations are encouraged to explore challenges with implementing the platform in different subjects and grade levels.

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