Review Article

A critical analysis of the effects of Twitter on student engagement and grades

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ARTICLE INFO	ABSTRACT
	Social media, such as Twitter, have skyrocketed in popularity over the past few years. In fact, social media have been widely used by students and instructors as teaching and learning tools. In response to the increasing use of Twitter in the educational field, we have collected ten studies between 2011 to 2020 in order to assess the relationship between social media, specifically Twitter, and students' engagement and grades. We have conducted a meta-analysis to provide empirical evidence concerning the impact of Twitter on student engagement and achievement. Furthermore, we have utilized the manual approach of content analysis in order to code these articles. Overall, metadata suggests that Twitter has a stronger impact on student engagement than on grades. Nevertheless, its impact is not necessarily positive, especially on grades.

INTRODUCTION

It is a fact that technology is widely accepted as a tool to support the teaching and learning process. With the advancement of technology and the rise of Web 2.0, microblogging via Twitter has become an increasingly popular phenomenon since the launch of Twitter in 2006 to enable users to share information and increase their digital footprints (Cleveland et al., 2016; Gao et al., 2012). Twitter is a popular free social networking and microblogging website that allows users to broadcast short posts, which are called tweets. Furthermore, users can post their tweets, retweet, like tweets, and follow other users' tweets using devices like computers or smartphones. Besides broadcasting tweets, users can also post photos, short videos, and hyperlinks, and the most recent development is the use of hashtags. Currently, users can post tweets that are limited to 280 characters.

A survey conducted by Moran et al. (2011) reveals that social media tools have been quickly adapted for use in the classroom, with more than 80% of the instructors surveyed admitting that they used some form of social media in their classrooms. In response to this increasing use, the researchers have analyzed ten studies assessing the relationship between social media and student engagement as well as grades. A critical analysis is conducted to provide empirical evidence concerning the impact of social media use on students' learning achievement and engagement. For the purpose of this study, the term 'social media' refers specifically to Twitter.

Student Engagement

Student engagement has long been explored and linked to success in academic achievement. Students who are actively engaged in activities are likely to achieve high grades. Astin (1984) stresses that student engagement is indicated by how much physical and psychological energy students dedicate to learning. Following up on Astin's (1984) idea, Kuh (2009) defined the term 'student engagement' as the time and effort invested by students to meet the college's desired outcomes and what schools are doing to motivate students to take part in these programs. In education, student engagement can be defined as the amount of attention, interest, passion, and optimism students invest in academic learning and school-based tasks such as studying, peer and instructor interaction, involvement in school events, or meeting their academic expectations (Kuh, 2009; Kuh et al., 2008).

Similarly, Axelson and Flick (2010) refer to student engagement as "how involved or interested students appear to be in their learning and how connected they are to their classes, their institutions and each other" (p. 38). Based on the definitions above, students need to put forth the effort to develop their knowledge and skills. At the same time, schools need to provide appropriate environments to facilitate students' learning. Student engagement is seen as a means of achieving academic outcomes. This is because genuine engagement in learning will lead to better academic outcomes (Zyngier, 2008), since students have the opportunity to collaborate with colleagues and learn how to transfer information and solve problems creatively.

Motivation is a requirement and a vital component of student engagement in learning (Saeed & Zyngier, 2012). Students who are highly motivated in learning tend to persist for longer and demonstrate more robust engagement in what they do. However, when the motivation is low, students feel bored and tend to disengage. Students engage in Twitter when they interact, share quick and constant feedback related to what they are learning, and keep up to date with each other (Bista, 2015). In this research context, the researchers focus on student engagement when using Twitter as a learning tool.

Twitter In Education

Globalization has resulted in enhanced technology, with social media being the second most important reference for students in their learning environment behind books. Furthermore, social media use in the education field is a relatively new concept for educators (Ansari & Khan, 2020). Twitter is one of the most widely used forms of social media; it is used to facilitate the learning process and as a communication medium between students and instructors, enabling them to discuss issues outside class time. Additionally, Twitter usage can be linked to videos, pictures, and links to more expansive blogs and other websites to enhance students' understanding (Java et al., 2007).

According to Huberman et al. (2009), the most intimate connections within this environment consist of all their following and followers; the latest evidence shows that users can have several networks on Twitter. Besides, Twitter could be used by teachers and students to post questions, express feedback, exchange thoughts and share information (Ebner et al., 2010). Students can engage and interact with other practitioners in online communities through Twitter and gain professional exposure to friends and lecturers (Dunlap & Lowenthal, 2009).

Microblogging tools such as Twitter are examples of Web 2.0 technologies. Web 2.0 is a large variety of web-enabled programs that allow users to contribute, exchange, and ingest content (Balakrishnan, 2014). According to Hannay and Fretwell (2011), many universities are using Web 2.0 programs and these innovations have benefits for the university work environment, whereby learners will require Web 2.0 programs to be used for communication among faculty members through live messaging such as Twitter (Hannay & Fretwell, 2011). Furthermore, many businesses will be expecting to recruit fresh graduates who are skilled in social media technologies. Hence, it is predicted that educators will use Twitter in their teaching and learning to enable learners to interact with each other and to encourage learners' engagement (Wankel, 2009).

Education nowadays engages more thoughtfully and promotes learning inside and outside the classroom. Many educators in higher education have started to utilize Twitter, hoping that students will seize the opportunity to interact more frequently (Grosseck & Holotescu, 2015; Junco et al., 2011; Perez, 2009;
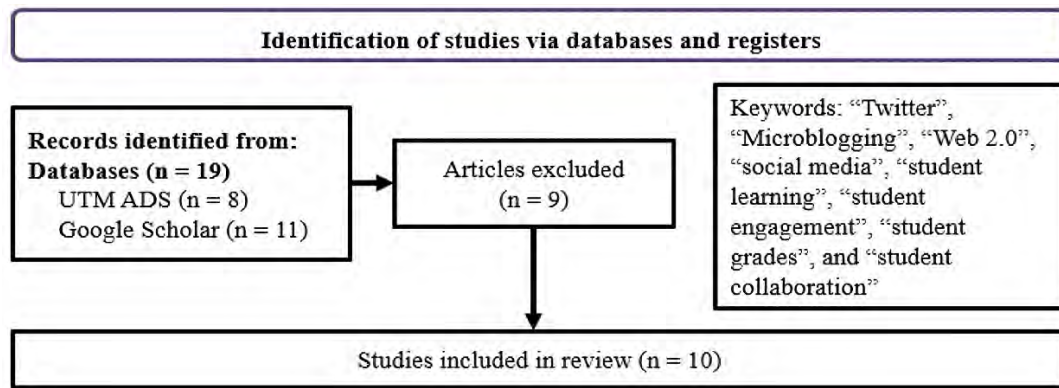
Figure 1. Searching and filtering method (Source: Authors)

Schroeder et al., 2010). Twitter, as a free Web 2.0 application, can be a powerful collaboration tool for higher education (Corbeil & Corbeil, 2011; Rheingold, 2010). Rheingold (2010) found that it was more likely that Twitter would become a powerful tool for interaction in education.

Research Questions

With this recent growth of social media usage in the field of education, there is a strong need to investigate the relationship between the use of Twitter and students' engagement and grades in the literature. Hence, this study critically analyzed ten prior studies to answer the following research questions:

1. Does Twitter encourage student engagement?
2. Does Twitter help in promoting good grades?

METHODOLOGY

A review on the literature was carried out to determine the influence of Twitter on student engagement and grades in their academic performance. This review was focused on Twitter rather than other social media platforms. Wherefore, the studies were collected by searching scholarly databases in educational technology and computer sciences. The University of Technology Malaysia academic database system (UTM ADS) and Google Scholar search engine were used to find research articles. Even though we identified the majority of the relevant literature, our review is mainly centered on published articles as opposed to unpublished articles, conference proceedings papers, and not reporting directly on Twitter. Additional citations were gathered from the reference lists of each published article. Moreover, for each author of the published articles, ResearchGate and Google Scholar were used to find additional papers related to the topic that the author might have published. Finally, keywords or search terms such as "Twitter", "Microblogging", "Web 2.0", "social media", "student learning", "student engagement", "student grades", and "student collaboration" were inserted into UTM ADS and Google Scholar to find supplementary resources. From the keywords, 19 articles/papers had been found. The articles had been filtered using specific inclusion criteria. **Figure 1** shows the process of searching and filtering the articles.

The inclusion criteria were that the studies should be published in English from 2011 to 2020. The researchers used the manual approach of content analysis in order to code these articles (such as using sticky notes, paper, and highlight pens). **Table 1** provides details of the studies that met these criteria.

RESULTS

This paper aims to analyze the usage of Twitter and its effects on student engagement and grades from 2011 to 2020. **Table 2** illustrates the statistics data from the articles that were analyzed such as the research design of the study, sample size, and year of publication. The participants in the 10 research articles set out above mainly comprised students from either college or university in various fields of study. These participants may be categorized as undergraduates and postgraduate students between the ages of 17 and 41 years. However, two studies focused on secondary school students.

Table 1. A list of studies associated with students' achievement and engagement

No	Author	Title	Journal
1.	Eusebio & Eusebio (2020)	Grade 12 students' perceptions on using Twitter for vocabulary improvement	International Journal of Research Studies in Education
2.	Denker et al. (2018)	Twitter in classroom: Modeling online communication attitudes and student motivations to connect	Computers in Human Behavior
3.	Slocomb (2017)	To tweet or not to tweet: An analysis of the effect of Twitter on secondary student performance, engagement, and attitudes	North Dakota State University of Agriculture and Applied Science
4.	Hennessy et al. (2016)	Social media and anatomy education: using Twitter to enhance the student learning experience in anatomy	Anatomical Sciences Education
5.	Bista (2015)	Is Twitter an effective pedagogical tool in higher education? Perspectives of education graduate students	Journal of the Scholarship of Teaching and Learning
6.	West et al. (2015)	Beyond tweet: Using Twitter to enhance engagement, learning, & success among first-year students	Journal of Marketing Education
7.	Junco et al. (2013)	Putting twitter to the test: Assessing outcomes for student collaboration, engagement and success	British Journal of Educational Technology
8.	Welch & Bonnan-White (2012)	Twittering to increase student engagement in the university classroom	Knowledge Management & E-Learning
9.	Junco et al.(2011)	The effect of Twitter on college student engagement and grades	Journal of Computer Assisted Learning
10.	Rinaldo et al. (2011)	Learning by tweeting: Using twitter as a pedagogical tool	Journal of Marketing Education

Table 2. Statistics from critical analysis regarding research design, sample size, & year of publication

Methodology	Number of studies
Research design	
Qualitative	1
Quantitative	3
Mixed method	2
Quasi-experimental	2
Experimental	2
Sample size	
Fewer than 100 participants	3
100-200 participants	3
201-300 participants	2
301-400 participants	0
401-500 participants	2
Year of publication	
2011	2
2012	1
2013	1
2015	2
2016	1
2017	1
2018	1
2020	1

In general, the results from the analysis of these studies pertaining to the usage of Twitter and its effects on student engagement and student grades indicated that Twitter can be a useful educational tool in helping students to learn (refer to **Table 3**).

According to the empirical findings summarized in **Table 3**, five common themes were identified from the previous studies. The overall conclusions are, as follows:

1. Twitter encourages students' engagement in learning with peers and the professional community and increases students' participation and classroom interactions.

2. Twitter improves students' motivation and attitudes toward learning.

3. Twitter improves students' performance.

4. Twitter fosters active collaboration and participation.

5. Twitter use can provide moral support to some undergraduate students.

Table 3. A critical analysis of studies examining students' achievement & engagement

Author	Objective	EG	EE	Methodology	Discussion	Theme
Bista (2015)	To find out perspectives & perceptions of alumni students in education fields on using Twitter as a research platform in a semester-long course; to investigate alumni students in education fields' perceptions about Twitter as a tool of classroom engagement in higher education; to examine likelihood that these alumni students in education fields would utilize Twitter efficiently in following two years after accomplishment of course; & to find out whether alumni students in education fields recommend use of Twitter in future graduate classes	N/R	Yes	Participants: 42 students who are Twitter users with an average age of 34 years; 31 females & 7 males; they were registered in a compulsory course in their master of education programs with a variety of specializations, such as elementary education, English as a second language, & special education; Instruments: Mixed method; researcher developed a course Twitter page; 2,414 tweets were gathered from Twitter platform over a 15-week period; participants wrote reflection papers at end of semester; online questionnaire; Research design: Qualitative case study research	Findings suggest that Twitter is a useful tool to foster students' active collaboration & participation. It helps by providing space & opportunities for students to engage in academic activities such as receiving immediate & frequent information, communicating with mentors, updating course assignments, & sharing useful information from textbooks with other students & mentors.	Twitter fosters active collaboration, participation and engagement in learning.
Denker et al. (2018)	To examine relationship between students' attitudes towards online communication & their motivation to communicate, specifically related to student engagement through Twitter	N/R	Yes	Participants: 483 students (64% freshman, 26% sophomores, 6% juniors, & 4% seniors); Age: 18-22 years old (98%) & between 23-34 years (2%); Gender: 135 male & 348 female; Instruments: Online survey; & Research design: Quantitative	There is a relationship between online communication attitudes & student motivation to communicate with course teacher through Twitter, justifying Twitter integration in large lecture classroom.	Twitter improves students' attitudes & motivation
Eusebio & Eusebio (2020)	To find grade 12 students' perceptions of Twitter use as a tool for improving vocabulary	Yes	N/R	Participants: Purposive sampling grade 12 students were randomly chosen 70 participants (male=33, female=37); Instruments: Questionnaire; & Research design: Quantitative research	Twitter enhanced student's vocabulary skills. Tweeted videos can benefit speaking skills & listening comprehension, while tweets, replies, retweets, hashtags, trending topics, threads, & links to articles can be useful for reading & writing.	Twitter improves students' performance in learning
Hennessy et al. (2016)	To find out whether medical students engage with an academic Twitter hashtag to boost their learning of neuroanatomy; to examine which elements of their learning utilize hashtag feature in neuroanatomy course; & to investigate whether students' frequency of use of hashtag feature influences their final examination scores	No	Yes	Participants: 197 bachelor of medicine undergraduate students at the University of Southampton who registered on nervous & locomotor 2 anatomy course; Instruments: Validated written questionnaire; & Research design: Survey research & quantitative	91% of medical students were using Twitter hashtags during their anatomy class, with 33% of these students viewing hashtags & making contributions while 58% observed. Besides educational purposes, students reported that Twitter usage provides a platform for them to increase morale and share worries & learning anxieties. Twitter helps them to engage in learning, communicate with their teachers, & create support networks amongst students. However, it was reported that there was no association between student final examination scores & their frequency of viewing of hashtag.	Twitter improves students' engagement & provides moral support to students.

Table 3 (Continued). A critical analysis of studies examining students' achievement & engagement

Author	Objective	EG	EE	Methodology	Discussion	Theme
Junco et al. (2011)	To find out effect of Twitter usage for educational purposes on student engagement & to investigate effect of Twitter usage for educational purposes on semester grades	Yes	Yes	Participants: 125 out of 132 students from 7 sections took part in pre-test survey; Instruments: National survey of student engagement; & Research design: Experimental design	There was a greater increase in engagement scores for EG than CG. It can be concluded that using Twitter as an educational tool had a positive effect on student engagement & analysis reveals that encouraging use of Twitter for educational purposes has a positive effect on grades.	Twitter encourages students' engagement
Junco et al. (2013)	To investigate impact of explicit encouragement of Twitter usage (through course design) on relationship between students' engagement & grades; to find out discrepancies in collaboration between a class that needs Twitter usage & one that does not; & to determine effective elements of integrating Twitter into college courses	Yes	Yes	Participants: 118 out of 132 students on a first-year seminar course for a pre-health professional major took part in study; 65 students were in EG, while 53 were in CG; 92% were Caucasian, 5% Latino, & 3% Native American; 62% were female; Age of participants ranged between 17 & 20 years; Instruments: National survey of student engagement; Twitter & Ning; students' academic records; & Research design: Experimental design	Twitter group's engagement score increased significantly more than CG over course of semester. However, difference cannot be explained by differences in pre-existing engagement. Similarly, Twitter group showed higher overall semester GPAs than CG. Again, difference cannot be explained by pre-existing academic ability. Results stressed importance of how instructors use Twitter to encourage students' engagement & achievement, as seen in study 1. Results also highlighted 3 effective elements of integrating Twitter into college courses: 1. Twitter is a requirement when designing a course to ensure that students experience benefits to their engagement & academic achievements. 2. A theoretical framework should be used as a guide to integrate Twitter into course. 3. Faculty engagement on platform is essential in promoting student engagement & academic success.	Twitter encourages group engagement
Rinaldo et al. (2011)	To investigate whether professors use Twitter to engage students in conversations about a marketing course	N/R	Yes	Participants: 113 students (64 male & 49 female) in study no. 1; 87 students (49 male & 38 female) in study no. 2; 22 students (15 male & 7 female) in study no. 3; total number of participants was 222; Instruments: Survey; open-ended questions; Research design: Both quantitative & qualitative data	Qualitative & quantitative data show that Twitter can be a powerful & useful pedagogical tool in any classroom when students believe it is relevant to them & are properly motivated to use it. Twitter provides many advantages for marketing instructors who choose to include students in experiential learning. Twitter is a fast, easy method for making announcements, solving student issues, & performing course-related administrative duties. Students are more prepared for future careers as they interact on Twitter with their lecturer.	Twitter improves students' motivation.
Slocomb (2017)		No	Yes	Participants: Involved all students enrolled in advanced sociology courses in two suburban midwestern secondary schools within same district & taught by same instructor; in 2014, there were 57 students; in 2015, there were 41 students; Instruments: Paper/pencil instrument (questionnaire & open-ended questions); & Research design: Quasi-experimental design	Results revealed that is a significant increase in student engagement & grades when using Twitter instead of online discussion boards. It could be noted that Twitter is a viable alternative to enhance learning. More posts can be seen when students use Twitter (as in 2015) as a learning tool compared to online discussion boards (as in 2014). This is because of the easy access to Twitter with press of one button & availability of smartphones.	Twitter improves students' engagement & performance

Table 3 (Continued). A critical analysis of studies examining students' achievement & engagement

Author	Objective	EG	EE	Methodology	Discussion	Theme
Welch & Bonnan-White (2012)	To investigate whether using Twitter in large-lecture format university courses produces a difference in levels of self-reported student engagement	N/R	No	Participants: 205 students on a first-year sociology course took part in study; Instruments: Paper/pencil instrument (questionnaire & open-ended questions); & Research design: A quasi-experimental design	Results revealed no significant effect of Twitter in student engagement in both CG & EG. However, there was a significant effect of Twitter enjoyment on student engagement, with those saying they enjoyed Twitter being significantly more engaged than those who did not.	Twitter encourages students' engagement
West et al. (2015)	To examine first-year students' previous experience with using Twitter; to find out how obligatory integration of Twitter for classroom teaching purposes affects students' assessments of their learning; to find out extent of students' fundamental skills while using Twitter on their interaction level; to investigate whether students' engagement level when using Twitter influences course outcome; & to investigate students' perceptions on tweeting during lectures as a learning tool.	Yes	Yes	Participants: 411 undergraduate students from Urban Canadian University participated in study; 231 students were from a first-year marketing class & 180 were from a first-year fashion class; participants' age ranged from 17 to 41 years; Instruments: Online questionnaire; students' reflective papers; & Research design: Survey research & mixed method research	Findings suggest that students' baseline skill levels do not influence level of Twitter engagement. Likewise, levels of baseline Twitter skills do not significantly influence students' performance on their Twitter assessment or final grades. ANOVA findings show that basic Twitter literacy amongst female students affects them positively in communicating with peers, improves their overall professional community & increases their overall classroom experiences. Apart from that, students reported having positive perceptions of the impact of Twitter usage. This signals that both students and faculty can find Twitter to be a useful social presence catalyst.	Twitter encourages students' engagement with peers & with professional community & enhances interactions

Note. N/R: Not related; EG: Experimental group; CG: Control group; EG: Effects on grade; & EE: Effects on engagement

DISCUSSION

Teachers employ Twitter to motivate students' interest in learning and to facilitate student group work, while students gain many benefits when using Twitter in learning, such as support for collaboration and feedback on their thoughts (Denker et al., 2018; Eusebio & Eusebio, 2020). According to the findings summarized in **Table 3**, Twitter encourages students' engagement in learning with peers and the professional community and enhances their interactions (West et al., 2015). It helps them to engage in learning, communicate with their teachers, and create support networks amongst themselves (Hennessy et al., 2016). Junco et al. (2011, 2013), and Welch and Bonnan-White (2012) concluded that Twitter encourages students' and groups' engagement when used as an educational tool. Slocomb (2017) found that Twitter can enhance students' learning and improve their engagement and performance, while Bista's (2015) study showed that Twitter fosters active collaboration, participation and engagement in learning.

Denker et al. (2018) found a relationship between online communication attitudes and students' motivation to communicate with the course instructor via Twitter, justifying Twitter's integration in the context of large lecture classrooms. Rinaldo et al. (2011) also noted that Twitter improves students' motivation. Eusebio and Eusebio (2020) found that Twitter improves performance in learning English among grade 12 students. Moreover, the finding of Slocomb's (2017) study showed that Twitter improved students' academic performance in a high school advanced sociology course as measured by the end-of-semester score. In contrast, baseline Twitter skill levels did not significantly affect students' performance on a Twitter evaluation (West et al., 2015). The researchers argued that increased student engagement is positively associated with student achievement of grades, although this effect varies in magnitude across different student populations. The findings from this meta-analysis showed that eight studies demonstrated that Twitter helps students to engage in the learning process (Bista, 2015; Denker et al., 2018; Hennessy et al., 2016; Junco et al., 2011, 2013; Rinaldo et al., 2011; Slocomb, 2017; West et al., 2015). Meanwhile, two studies mentioned that Twitter does

encourage learners to engage in learning actively, but it does not appear to improve students' achievement (Hennessy et al., 2016; Slocomb, 2017). In contrast, one study revealed no significant effect of Twitter use on student engagement in either the control or the experimental group (Welch & Bonnan-White, 2012). Meanwhile, one study did not discuss whether Twitter affects students' engagement or not but focused instead on the achievement of students' grades through Twitter (Eusebio & Eusebio, 2020).

The findings suggest that students generally have a positive experience in using Twitter in the teaching and learning process (Bista, 2015). Additionally, one study mentioned that Twitter provides a platform for students to increase their moral support and share their worries to reduce anxiety while engaging in learning (Hennessy et al., 2016), and it also promotes social interaction with peers (West et al., 2015). Participants could feel a greater sense of connection not only amongst themselves but also with members of faculty and the professional community (West et al., 2015). Based on the meta-analysis in **Table 3**, the findings from four previous studies indicated that Twitter has a positive impact on student's grades (Eusebio & Eusebio, 2020; Junco et al., 2011, 2013; West et al., 2015). Twitter enhanced grade 12 students' English vocabulary skills (Eusebio & Eusebio, 2020). Junco et al. (2013) reported that the Twitter group in their study showed higher overall semester GPAs than the non-Twitter Group in a first-year seminar course for pre-health professional majors. Moreover, an earlier study, also conducted by Junco et al. (2011), showed that the use of Twitter for educational purposes has a positive effect on grades. West et al. (2015) argued that the number of tweets was positively and significantly linked to male participants' final marks, but while a positive relationship also appeared for their female counterparts, it was not significant.

In contrast, two studies concluded that Twitter did not affect students' grades (Hennessy et al., 2016; Slocomb, 2017). In Slocomb's (2017) study, the mean grades stayed the same in an upper-level high school Sociology course, with no significant differences in mean student grades being found between the control and experimental groups. Hennessy et al. (2016) found no association between students' exam results and their frequency of viewing hashtag (#nlm2soton) that was created by the teaching fellows. Four studies did not discuss whether social media affect students' grades but focused instead on students' engagement through Twitter (Bista, 2015; Denker et al., 2018; Rinaldo et al., 2011; Welch & Bonnan-White, 2012). Thus, in the investigations reviewed above, the researchers found that Twitter has more influence on student engagement than on grades. That might be because Twitter has too many distractions when students spend time on it. Moreover, some students might feel uncomfortable when facing Twitter's character limit, and they not being able to express full thoughts due to the character count restrictions (Bista, 2015; Slocomb, 2017). Having said that, a proper use of Twitter in teaching and learning will make it as one of valuable tools for students. Twitter might have positive influence on grades due to the opportunities for students to interact with others such as peers and experts, collaborate on projects, and stay informed about relevant news and events in their field of study.

CONCLUSIONS

Students can use Twitter as a learning tool to share their ideas and resources and to communicate with peers. For example, Twitter can facilitate collaboration among students working on group projects, allowing them to share information and coordinate their efforts more effectively. Additionally, students can use Twitter to connect with experts and practitioners in their field of study, giving them access to a wider range of perspectives and resources. However, a review of the metadata reveals that Twitter has a greater effect on students' engagement than on their grades. While Twitter can be a valuable tool for promoting student engagement, its impact on academic performance is less clear. In fact, some studies suggest that social media use, including Twitter, can have a negative impact on students' grades, as it can be a source of distraction and reduce the amount of time students spend on their studies. One challenge in assessing the impact of Twitter on student learning is the wide range of contexts, sample sizes, and time periods across studies. This variability makes it difficult to compare and synthesize results, and to draw definitive conclusions about the relationship between Twitter use and student learning outcomes. Therefore, future study is required to validate the existing research findings and to explore the potential benefits and drawbacks of using Twitter as a learning tool in different educational contexts. The study could help educators and students make more informed decisions about how to use Twitter effectively to enhance learning and promote student success.

Limitations and Suggested Future Research

This study is only focused on a critical analysis of 10 articles on the use of Twitter in education. Therefore, the findings cannot be generalized to other research contexts. However, these research findings are valuable for educators and researchers who would like to explore further the use of Twitter in teaching and learning. Based on the findings, more research should be conducted on the use of Twitter as a learning tool that can influence grades, with a focus on incorporating instructional design elements. Although Twitter appears to have a greater effect on student engagement than on grades, there is a need for further research on how Twitter can enhance student engagement. Moreover, one area that requires further in-depth research is the extent to which Twitter promotes students' expression of their thoughts and ideas. In the near future, a proper learning framework should be formulated to guide the effective use of Twitter as a learning tool. Finally, the researchers suggest that future studies evaluate the impact of other social media platforms, such as Facebook, Instagram, and YouTube, on student engagement and grades.

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