A LITERATURE REVIEW ON THE USE OF DISCORD APPLICATION IN EDUCATION: CONTRIBUTIONS AND THE DEVELOPMENTS

Evi Isfiatul Jannah[1]; *Sri Wahyuni[2]; Nurul Aini[3]; Amjad Ali Jokhio[4]
[1]Post Graduate Program of English Education Department, IAIN Kediri, Indonesia
[2,3]English Education Department, IAIN Kediri, Indonesia
[4]Department of Education and Learning Sciences, Iqra University Karachi, Pakistan
evi.isfiatul.jannah@gmail.com; swy090984@gmail.com;
florida_iani@iainkediri.ac.id; amjadjokhio12@gmail.com
(*) Corresponding Author

Abstract: This research intends to conduct a systematic literature review on the use of Discord application in education. The use of technology, such as learning applications in education today is increasing day by day. One such application used by educators is Discord. While some literature reviews have touched on the topic, there is still much to be explored regarding its use in education. Therefore, this study synthesized the findings on two key aspects, namely contributions and developments on Discord by searching empirical research in databases such as Mendeley.com, Connected Papers, and Google Scholar. To deeply explore the research article, the researchers utilized the

SLR procedure by Petticrew and Roberts (2006), and to guide the reviews, the researchers used PRISMA 2020 by Page et al. (2021). The research findings revealed that many studies explored students' perceptions of Discord's contributions to the class. While most reported positive perceptions, some revealed negative perceptions due to the application's poor network connection. Furthermore, most of the developments were applied in flipped-based classrooms to test out the created learning system. In conclusion, the researchers found that Discord has made numerous educational contributions and created a new virtual environment.

Keywords: *Discord application, Discord learning application, contributions of Discord, developments of Discord*

INTRODUCTION

In recent years, the use of technology in education has grown in popularity, with numerous applications being developed to aid learning. Besides, COVID-19 pandemic has changed the learning environment from offline to online (Jannah & Hentasmaka, 2021). Agung et al. (2020) also explained that Indonesia's government implemented policies to move offline classrooms to online classrooms because of the COVID-19's impact. As schools and universities closed their doors to avoid the transmission of the virus, educators turned to technology to deliver lessons remotely.

Discord, includes an application mostly used for games, social communication, or business group and is now turning to use in the educational contexts as an alternative virtual learning media (Jannah & Hentasmaka, 2021, p. 185). By using Discord, the teacher is not only allowed to create virtual classrooms but also share materials, communicate with their students, and conduct online discussions. It also offers features such as screen sharing, video calls, live voice, and others features that make it more popular to use as a tool for distance learning.

Recently, some systematic literature reviews (SLR) about Discord have been conducted by some researchers (Andriansyah & Erlangga, 2023; Craig & Kay, 2022; Kruglyk, Bukreiev, Chornyi, Kupchak, & Sender, 2020). Andriansyah and Erlangga (2023) conducted the SLR focused on the factors influencing Discord as a gamer application for learning English in

higher education. Craig and Kay (2022) also conducted the SLR focused on examining Discord in higher education, and Kruglyk et al. (2020) focused on Discord's utilization as a virtual learning environment for emergencies. Although some relevant studies are exploring the Discord application, there is limited discussion about its use in education. From the relevant research mentioned, no systematic literature reviews explore the use of Discord platform in education widely. Subsequently, the article has purposed to synthesize the findings focused on two critical aspects linked to the use of Discord as learning application in education: contributions and developments. The review also chooses empirical research that explicitly mentions the contributions and developments of Discord as a learning tool used in educational settings.

Understanding this aspect is very important because as educators, we will know the contributions and developments of using the Discord application as a learning application in future research and practice. The research provided the synthesis that educators can use to increase student engagement by using Discord application and also maximize its positive impact in class. Besides, it is also hoped that this article reduced the redundancy of many existing studies and help identify the links in the different areas. In addition, this article first outlines the conceptualization of using the Discord application and describing the students' perceptions. Then, it continued by discussing the limitations of the previous reviews. Subsequently, the methods used are described and finally the results are reported.

Paragraphs above highlight the need to conduct a SLR on the widespread usage of the Discord application in the field of education. The aim of this review is to enhance our knowledge of students' perceptions regarding to the contributions of Discord, the investigation on the factors that affect students' perceptions, and the exploration of the recent developments in the usage of Discord applications in education. Specifically, the following research questions were addressed in this review:

RQ1: What are the characteristics of studies using the Discord application in education?

RQ2: How do students' perception on the contributions of the use of Discord application in education?

RQ3: What factors affect students' perception on the contributions in using Discord application to education?

RQ4: How do development on the use of Discord application in education?

METHOD

The aim of this research is explored the use of Discord application in education and analyze the selected empirical research using a systematic review approach. The systematic review approach is a scientific method that aims to reduce systematic bias by identifying, evaluating, and synthesizing related studies to answer specific research questions (Petticrew & Roberts, 2006). To ensure that the method was implemented correctly, the researchers used the guidelines of PRISMA 2020 by Page et al. (2021) and the SLR procedures by Petticrew and Roberts (2006). The SLR procedures consist of several stages: formulating the research questions, developing search strategies, carrying out the article searches, stating the inclusion criteria, screening the research articles, presenting the finding, summarizing and analyzing, the research result.

The Search Strategy

To search the articles, the researchers used three key terms: Discord application, Discord as a learning application, and Discord application as "online learning media" for the literature search. Furthermore, to maximize the coverage of the literature, the researchers also included the articles about students' perceptions related the Discord's use, even if it is not the main topic of the research. On the other hand, this present research was conducted from October 2023 to November 2023 by using three databases, namely Mendeley.com, Connected Papers, and Google Scholar, to search for titles and abstracts. The researchers used these three databases because they can cover a wide range of research articles.

When accessing those databases, the researchers searched the articles by giving the available filters. The searches were limited to peer-reviewed journals and the research articles should be written in English in the year of 2019-2023. Then, the duplicates are removed to identify whether the research has many duplicates on the same database or even on a different database. Additionally, the four inclusion criteria were used,

such as (1) the article discussed the use of Discord application in education; (2) it was published in 2019-2023; (3) it presented empirical research; (4) it was published in the peer review journal; and (5) it was presented in English.

The Data Extraction

After the researchers searched the articles in databases of Mendeley.com, Connected Papers, and Google Scholar, 162 research articles were successfully collected. The total of those articles was screened by using the inclusion criteria to prepare them for further analysis. Here, the researchers used some selection processes to determine which articles would be reviewed. Firstly, the researchers identified the title and abstract based on the inclusion criteria, and 78 articles were removed before the screening. When the title of the article did not represent the topic, the article was eliminated. After removing the articles, the researchers reviewed the included 84 articles to check the conformance with the inclusion criteria. In the screening process, 59 articles were excluded because they did not meet the inclusion criteria. Their exclusion was because of the duplication, place of publication, and writing format. The excluded articles were screened to determine whether they were duplicate articles, not published in a peer-reviewed journal, and not written in English. The articles had to be excluded whenever they met all three of these criteria.

From this screening, 25 articles were selected for the next stage. Next, the researchers read the entire contents of 25 articles. After reading each article, the researchers conducted another screening to determine whether the article would be included or excluded. The article was included when categorized as empirical research. When the article was theoretical research, it was eliminated.

Finally, the result showed that three articles did not meet the inclusion criteria due to their completeness and relevance to education. Thus, the three articles that did not meet the criteria were excluded from the list. Therefore, the final result of the review included 22 articles that met the inclusion criteria. Detailed information regarding the articles' selection process can be seen in Figure 1.
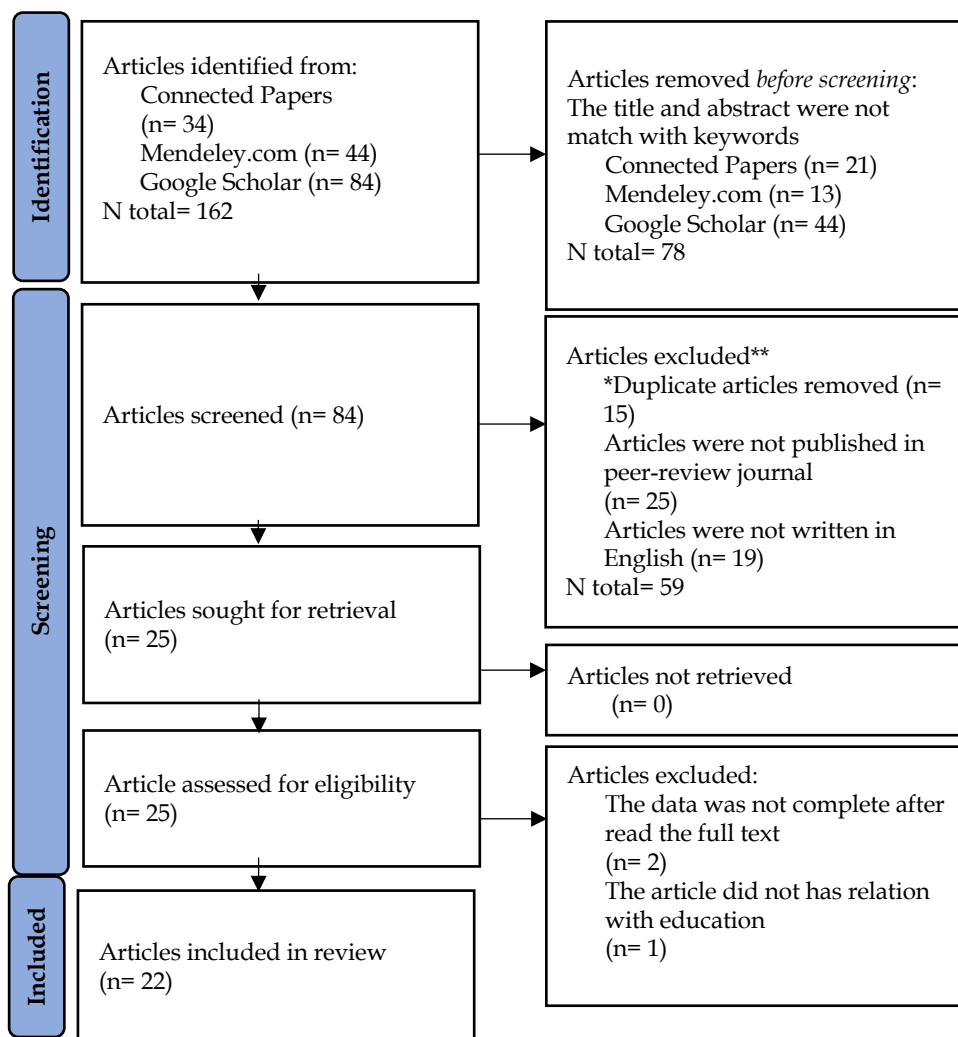
Figure 1. Diagram Process of the Articles Selection

FINDINGS

The following section presents the findings based on four research questions. Firstly, the included studies' characteristics (RQ1) are described. Secondly, the perceptions of students regarding the contributions of using Discord (RQ2) and the factors that affect their perception (RQ3) are reported. Finally, the developments of Discord application in education (RQ4) are presented.

RQ1: What are the characteristics of studies using the Discord application in education?

Table 1.
The Overview of Articles Included

No.	Author(s)	Year	Context			Research Design	Sample Size	Data Collection Method
			Country	Education Sector	Subject			
1.	Ananda, Mawardi, & Suryani	2023	Indonesia	Secondary education	Education	R&D	12	Questionnaire and Interview
2.	Ardiyansah, Batubara, & Auliya	2021	Indonesia	Tertiary Education	Education	Qualitative	The students of English Education Department at University of Muhammadiyah Gresik	Questionnaire and Interview
3.	Arifianto & Izzudin	2021	Indonesia	Tertiary Education	Education	Qualitative	44	Questionnaire and Interview
4.	Ayob, Hadi, Pahroraji, Ismail, & Saaid	2022	Malaysia	Tertiary Education	Education	Quantitative	81	Questionnaire and Survey
5.	Beruin	2022	Philippines	Secondary Education	Education	Qualitative	15	Interview
6.	Bordel, Alcarria, & Robles	2023	Spanish	Tertiary Education	Education	Quantitative	The Students of Computer Engineering, Information Technologies engineering, and Software Engineering (Groups in years 2018-2021) at Universidad Politecnica de Madrid -UPM, hereinafter-	Survey

							and Universidad Alfonso X el Sabio -UAX herein after-	
7.	Chuang & Ratan	2022	USA	Tertiary Education	Education	Quantitative	175	Survey
8.	Delfianza, Mawardi, & Suryani	2023	Indonesia	Secondary Education	Education	R&D	14	Questionnaire, and Interview
9.	Handri, Mawardi, Aini, & Nizar	2023	Indonesia	Tertiary Education	Education	R&D	12	Questionnaire and Interview
10.	Jannah & Hentasmaka	2021	Indonesia	Tertiary Education	Education	Qualitative	105	Questionnaire and Interview
11.	Joyce, Sahawneh, & Dixon	2022	USA	Tertiary Education	Education	Qualitative	The Students at Undergraduate Cyber Security and Network Management (CNM) program, Murray State University (MSU)	Interview
12.	Mirnawati, Lisnawati, & Khair	2022	Indonesia	Tertiary Education	Education	Quantitative	56	Observation and Questionnaire
13.	Mashud, Warni, Arifin, Ferry, Pebriyandi, & Kristiyandaru	2021	Indonesia	Secondary education	Physical learning	Quantitative	The Students of SMAN I Kota Banjarbaru Class X with Totaling 8 Classes	One group Pre-test Post-test
14.	Mazura, Arisya, Zetty, Lai, & Nafisah	2023	Malaysia	Tertiary Education	Quantity Surveying course	Quantitative	87	Survey
15.	Odinokaya, Krylova, Rubtsova, & Almazova	2021	Russia	Tertiary Education	English Vocabulary Acquisition	Quantitative	80	Pre-test and Post-test

16.	Ramadhan & Albaekani	2021	Indonesia	Secondary education	English Speaking Learning	Qualitative	6	Observations, Interviews, and Documentation
17.	Salehudin, Zurqoni, Robingatin, Syobah, Janah, Rorimpandey, & Subakti	2023	Indonesia	Tertiary Education	Technology and Learning Media	Quantitative	67	Questionnaire
18.	Sartika, Sudana, & Gustine	2022	Indonesia	Tertiary Education	English Speaking Learning	Qualitative	2	Interview and Observation
19.	Setyanto, Efrizal, & Nugroho	2023	Indonesia	Tertiary Education	Japanese Language learning	Qualitative	132	Questionnaire and Interviews
20.	Tuti, Mawardi, & Suryani	2023	Indonesia	Secondary education	Education	R&D	14	Observation, Interview and Questionnaire
21.	Wahyuningsih & Baidi	2021	Indonesia	Primary Education	Islamic Religious and Moral Education	Qualitative	34	Interview, Observation, and Documentation
22.	Zannah, Zakiyyah, & Fatnah	2022	Indonesia	Middle Education	Science Learning	Quantitative	64	Pre-test, Post-test, Questionnaire, Interview and Documentation

Table 1 provides the points of the basic information from 22 research articles that were included in this review. The table above summarizes the authors, publication year, context and design of the research, size of the sample, and the methods when collected the data for each study. The research studies included were published between 2021 until 2023. They were conducted across six different countries, with Indonesia having the most studies (n=15), followed by the USA (n=2), Malaysia (n=2), Philippines (n=1), Russia (n=1), and Spain (n=1). Most of them (N=14) conducted in tertiary education, while 6 articles were in secondary education, 1 in middle education, and 1 in primary education. All of the research is covered a broad range of subjects and the education subject is the subject that most studied (N=13), followed by language subjects (N=4), and other rare subjects such as physical learning, quantity surveying course, technology and learning media, Islamic religious and moral, and science learning. The included studies employed various research designs, including quantitative, qualitative, and R&D. Qualitative (N=9) and quantitative (N=9) research designs were the most frequently used, followed by R&D (N=4). The most commonly used data collection methods were interviews (N=14), questionnaires (N=12), observations (N=5), surveys (N=4), documentation (N=3), and pre- and post-tests (N=3).

Most researchers applied multiple data collection methods, so the categorizations were larger than the total research studies (Ananda, Mawardi, & Suryani, 2023; Ardiyansah, Batubara, & Auliya, 2021; Arifianto & Izzudin, 2021; Ayob et al. 2022; Delfianza et al. 2023; Handri et al. 2023; Jannah & Hentasmaka, 2021; Mirnawati et al. 2022; Mashud et al. 2021; Odinokaya et al. 2021; Ramadhan & Albaekani, 2021; Sartika et al. 2022; Setyanto et al. 2023; Tuti et al. 2023; Wahyuningsih & Baidi, 2021; Zannah et al. 2022). Besides, the interview was the method that was used mainly by the researchers in selected research (Ananda et al., 2023; Ardiyansah et al., 2021; Arifianto & Izzudin, 2021; Beruin, 2022; Delfianza et al., 2023; Handri et al., 2023; Jannah & Hentasmaka, 2021; Joyce et al. 2022; Ramadhan & Albaekani, 2021; Sartika et al., 2022; Setyanto et al., 2023; Tuti et al., 2023; Wahyuningsih & Baidi, 2021; Zannah et al., 2022). While the

documentation (Ramadhan & Albaekani, 2021; Wahyuningsih & Baidi, 2021; Zannah et al., 2022) and the pre and post-test (Mashud et al., 2021; Odinokaya et al., 2021; Zannah et al., 2022) was the method that often used by the researchers.

RQ2: How do students perceive on the contributions of the use of Discord application in education?

After reading the full-text research, the researchers indicated that all students showed a positive perception of implementing Discord in class. The 17 articles that provided findings related to students' perceptions of Discord's contribution to the classroom (e.g. 2, 3, 4, 5, 6, 7, 10, 12, 13, 14, 15, 16, 17, 18, 19, 21, and 22), provided findings where students had positive perceptions. A consistent finding of the students' report showed that Discord's features efficiently helped students in their activities (2, 3, 4, 6, 7, 10, 12, 13, 15, 19, and 21). Besides, it was pretty straightforward, easy to use (2, 3, 4, 6, 7, 10, 16, and 17), and capable in supporting their learning objectives (3, 10, and 13). It makes the students experience good interaction, good communication (2 and 5), and giving them the chance to get feedback or ask questions (2, 7, and 10) in their discussion and presentation. Furthermore, they also experienced livelier situations when using Discord application (2, 4, 13, and 18).

Here, Discord helped the students' virtual activities with the other students (2, 5, 10, and 15) or with the teacher (4, 6, 17, and 21) smoothly and made it possible to share files of the materials (2, 4, 5, 10, and 16). Subsequently, all of them experienced the learning process interactively (2 and 21), motivated them to learn (2, 5, 10, 15, and 22), made them more focused (19), and made improvements in education learning outcomes (13, 15, 18, and 22). Besides, Discord is cheaper than other video conference applications (3 and 10) and an entirely free platform (16).

On other sides, some of them reported their negative perception when using Discord. Some felt difficulties in their first trial (3 and 21). Besides, most of them said that the network was unstable (2, 10, 14, and

21). Discord also required a considerable synchronous and permanent activity (6). Subsequently, sometimes the students only have inadequate device, which makes them lag when they used this application (2 and 21).

RQ3: What factors affect students' perception on the contributions in using Discord application to education?

The 17 researchers have discussed the factors affect students' perception on contributions in using Discord (e. g. 2, 3, 4, 5, 6, 7, 10, 12, 13, 14, 15, 16, 17, 18, 19, 21, and 22). Among the included research, the researchers investigated the factors that influence including the features' benefits activities (2, 3, 4, 6, 7, 10, 12, 13, 15, 19, and 21), the effectiveness (4, 13, 15, 16, 17, 19, 21, and 22), the easiness (2, 3, 4, 6, 7, 10, 16, and 17), the helpfulness (2, 7, and 10), and the cheaper cost (3 and 10). The other factor is that it increases the student skills and outcomes (13, 15, 18, and 22), provides a meaningful learning experience (2, 4, 13, and 18), and creates an exciting and enjoyable communicative digital learning environment (5). Besides, it was also a user-friendly application (17).

RQ4: How do development on the use of Discord application in education?

A total 6 researchers have examined the developments on the use of Discord in education (1, 8, 9, 11, and 20). Mostly, the developments are in the form of flipped classroom based (1, 8, 9, and 20), then followed by the undergraduate cyber-security and network management (CNM) program (11). The development has aimed to develop and analyze the validity and practicality of the flipped guided inquiry learning system by using Discord application on chemical equilibrium (1). Besides, the other researchers also did the similar purpose at developing Discord, such as produce a learning system with digital literacy based guided inquiry integrated flipped classroom on thermochemistry and determining the validity and the practicality level (8), produce an integrated flipped classroom learning system

based on guided inquiry on colloid material (9), and developed the learning system by the combination of flipped classroom and guided inquiry (20). In other sides, the different purpose also appeared, such as developing Discord to create online educational community (11).

Here, the researchers found that 6 researchers have examined the developments in the use of Discord in education (1, 8, 9, 11, and 20). Mostly, the developments are in the form of flipped classroom based guided inquiry learning system (1, 8, 9, and 20), followed by the undergraduate cyber-security and network management (CNM) program (11). The developments have aimed in developing and analyzing the validity and practicality of the flipped guided inquiry learning system using Discord application on chemical equilibrium (1). Besides, the other researchers also did a similar purpose in developing Discord, such as produced the learning system using digital literacy based guided inquiry integrated flipped classroom on thermochemistry and determining the validity and the practicality level (8), produced an integrated flipped classroom learning system based on guided inquiry on colloid material (9), and developed a learning system by combining a flipped classroom with a guided inquiry model as a learning media (20). Different purposes also appeared on the other side, such as developing Discord to create an online educational community (11).

DISCUSSION

As presented in the previous section, the articles included were primarily conducted in several countries, such as Indonesia, followed by other countries, such as the USA, Malaysia, Philippines, Russia, and Spain. The data showed that Indonesia paid more attention to using the Discord application in education. Furthermore, the number of research conducted in tertiary education is much larger than in secondary education, middle education, or primary education. The research designs used were qualitative, quantitative, and R&D. The researchers utilized surveys, pre and post-tests, closed-questionnaires, interviews, opened-questionnaires, observation, and documentation as

the methods to collect the data. Here, interviews are the most commonly employed method because they can dig deeper into the data needed to get maximum results. The reason for using this method was similar with the research by Jannah and Hentasmaka (2021), who used the interviews to get a profound understanding of the data collected.

The finding of students' perception showed that the students were satisfied with the use of Discord in teaching and learning process. The benefits in using Discord are that it provides students with the helpful contents or features, a simple interface, an interesting interaction process, useful feedback in communication, and interactive learning experiences. Unfortunately, some students also experienced Discord's weakness such as the bad network and the inadequate device.

Both perceptions are in line with the relevant research about the Discord application that stated the students' perception of using Discord, such as the feature that allows users to create various channels to make specific topics or interests, ensuring organized and focused discussions, fostering vibrant communities where individuals can seek advice, share knowledge, or more engage in conversations. It also supports the integration of multimedia content, including images, videos, and GIFs, which enhances the overall user experience and makes interactions more dynamic and engaging (Andriansyah & Erlangga, 2023). Moreover, the other relevant research reported Discord's challenge, such as the internet connection, which inhibited student engagement in teaching and learning (Craig & Kay, 2022).

The finding showed that factors that influenced students' perception on contributions to the use of Discord application mainly because of the effectiveness, easiness, helpfulness, and cheaper cost. Furthermore, the others factors are that it increases students' skills and outcomes, provide a meaningful learning experience, and creates an exciting and enjoyable digital learning environment. Moreover, Discord is the user friendly's platform in which it recommended to be used as a tool to run the class tasks and activities smoothly. It was suggestible to use this application in order to develop other EFL skills

(Wijaya & Basori, 2023) and to enhance the students' proficiency (Odinokaya et al., 2021). This tool is raised in popularity with the help of students' good response and the institution also reacts more quickly to the students' requests (Marco, 2021). The finding from Wulanjani (2018) also showed that using Discord in class can change the students' attitude such as being livelier.

According to Wiles and Simmons (2022), the development of Discord in class is built as a server with some channels to direct the flow of communication. Besides, Joyce et al. (2022) created an educational community by using Discord. Here the students could discover the value in educational purposes and community. Then, findings above also revealed that some researchers developed the Discord application as a flipped classroom based guided inquiry learning system (Delfianza et al., 2023; Tuti et al., 2023; Handri et al., 2023; Ananda et al., 2023). Here, Delfianza et al. (2023) stated that the developments helped educators apply the *Merdeka* Curriculum, which focused on the student-centered learning. Moreover, the development of Discord through validity and practicality tests resulted in valid and convenient categories (Tuti et al., 2023). Furthermore, the other developments of Discord have similar results (Handri et al., 2023; Ananda et al., 2023).

Some researchers, such as Delfianza et al. (2023), Tuti et al. (2023), Handri et al. (2023), Ananda et al. (2023) often collaborate in developing Discord as a flipped classroom because some of the authors of the articles are the same person and work on similar articles related to Discord development. Finally, the researchers concluded that as educators, we can develop the Discord application in virtual learning to make the learning situation more exciting and have some variations to attract student responses. In addition, this development also aims to test the existing learning system (Delfianza et al., 2023).

CONCLUSION

This review is addressed two main aspects related on the Discord's usage in education. First, it focuses on students' perception

about the use of Discord application and Discord's contributions. Second, it was identified the developments of Discord (i.e., development of Discord in flipped based classroom). The reviews provided a nuanced understanding on utilizing the Discord application in educational settings. As Discord usage is typically driven by students, the insights gained from the research not only enhance our understanding of student perceptions but can also aid in optimizing the positive impact of Discord on learning outcomes. However, there are still certain limitations to exploring the use of Discord in education, such as examining teacher perspectives and weighing the pros and cons. These areas present promising topics for future research.

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