

# Blended learning during the pandemic: a bibliometric analysis of students' perceptions

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## Abstract

This study aims to analyze trends and developments in research on students' perceptions of blended learning during the COVID-19 pandemic using a bibliometric approach. The bibliometric method is used to quantitatively evaluate and interpret academic publications, providing insights into the growth, impact, and thematic evolution within this research domain. Data was collected from major academic databases such as Sinta and Google Scholar, focusing on publications from the last decade to capture recent developments in blended learning research during the pandemic. The results show a significant increase in the number of publications on blended learning starting in 2019, peaking in 2021, before slightly declining in 2022. The analysis also reveals that student perception is the most frequently researched topic, with data collection methods dominated by tests and questionnaires. However, there is a lack of R&D studies and qualitative research that could provide further insights into the development and refinement of blended learning approaches. This study concludes that while academic interest in blended learning has increased, particularly during the pandemic, more R&D studies and qualitative research are needed to develop and refine these learning methods and to enhance understanding of their effectiveness in various educational contexts.

**Keywords:** blended learning, students' perception, bibliometric analysis

## INTRODUCTION

The COVID-19 pandemic has drastically transformed educational practices worldwide, accelerating the adoption of blended learning models that combine traditional face-to-face instruction with online components. This shift was necessitated by the closure of physical classrooms and the urgent need to maintain educational continuity amidst global health crises.

Blended learning, as a pedagogical approach, integrates digital tools and resources with conventional teaching methods to create a flexible and adaptive learning environment. The pandemic has not only highlighted the potential of blended learning but has also prompted extensive research into its effectiveness, particularly from the perspective of students.

Students' perceptions of blended learning during the pandemic are crucial for understanding the impact and effectiveness of this instructional model. As learners navigated a new landscape of remote and in-person learning, their experiences and feedback became vital for assessing the strengths and weaknesses of blended learning implementations. This period of rapid transition provides a unique context for evaluating how students adapted to and evaluated this hybrid model, offering insights into its potential advantages and challenges.

A bibliometric analysis of students' perceptions of blended learning during the pandemic can offer a structured overview of the research landscape in this area. By systematically reviewing and quantifying academic publications, this analysis aims to map the progression of research on this topic, identify key trends, and evaluate the impact of significant studies. This approach helps in understanding the evolution of student perceptions over time, the methodologies employed in the research, and the thematic areas that have been explored.

Previous studies on blended learning have often focused on various aspects such as instructional design, technology integration, and pedagogical effectiveness. However, the pandemic context introduces new dimensions to this research, including the urgency of adapting to online platforms and the challenges associated with remote learning environments. Understanding students' perceptions in this specific context is essential for refining blended learning strategies and improving educational outcomes.

The scope of this bibliometric analysis includes an examination of publications related to students' experiences with blended learning during the pandemic. This involves analyzing the frequency of relevant studies, identifying prominent authors and journals, and assessing the methodological approaches used. By focusing on students' perceptions, this study aims to provide a comprehensive view of how blended learning was received and adapted by learners during a period of unprecedented educational disruption.

In summary, this bibliometric study seeks to illuminate the research trends and developments surrounding students' perceptions of blended learning during the pandemic. By offering a detailed analysis of academic publications, the study aims to contribute to a deeper

understanding of how blended learning models were perceived and experienced by students, ultimately informing future educational practices and research in the field.

## **METHODS**

This study employs a bibliometric approach to analyze trends and developments in research on students' perceptions of blended learning during the pandemic. Bibliometric analysis allows for the quantitative evaluation and interpretation of academic publications, providing insights into the growth, impact, and thematic evolution within a specific research domain. Data was collected from major academic databases such as Scopus and Google Scholar, selected for their comprehensive coverage and relevant citation metrics. The search focused on publications from the past decade to capture recent developments in blended learning research during the pandemic.

The analysis process began with identifying and collecting relevant publications based on keywords such as "Blended Learning," "Students' Perceptions," and "Pandemic Education." These articles were then categorized according to bibliometric indicators such as publication year, authorship, journal impact factor, and citation counts. Quantitative analysis was performed to assess research productivity and the impact of existing publications. Visualization tools like VOSviewer and Bibliometric were utilized to create graphical representations of research trends, citation networks, and thematic clusters, facilitating an understanding of the field's development.

Subsequently, the study examined thematic shifts and methodological trends in research on students' perceptions of blended learning during the pandemic. This analysis focused on changes in research priorities, such as instructional design, technology integration, and student experiences. The methodologies used in the studies were also reviewed to identify the most common approaches, including both qualitative and quantitative methods, and data collection instruments such as surveys and interviews.

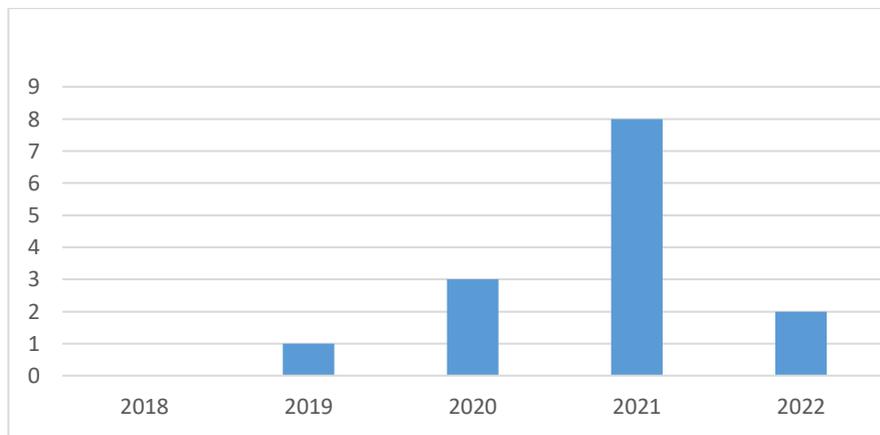
The findings from this bibliometric analysis are expected to provide a comprehensive overview of students' perceptions of blended learning during the pandemic, highlighting key contributions and emerging research trends. This information will be valuable for informing future educational practices and assisting researchers and policymakers in designing more effective and responsive learning strategies to meet students' needs.

## RESULTS AND DISCUSSION

### Results

#### *Number of Publication*

The number of article publications shows how often research is conducted in a given period. Alluding to the graph shown in Figure 1, the articles reviewed by Blended Learning can be found since 2019. There is an increase in the number of publications from year to year. Nonetheless, referring to Figure 1, Total of publications since 2021 increased higher than in previous years, and low again in 2022. The trend of increasing the number of publications on Blended Learning suggests that there is a significant increase in the number of earnest researchers to investigate Blended Learning .



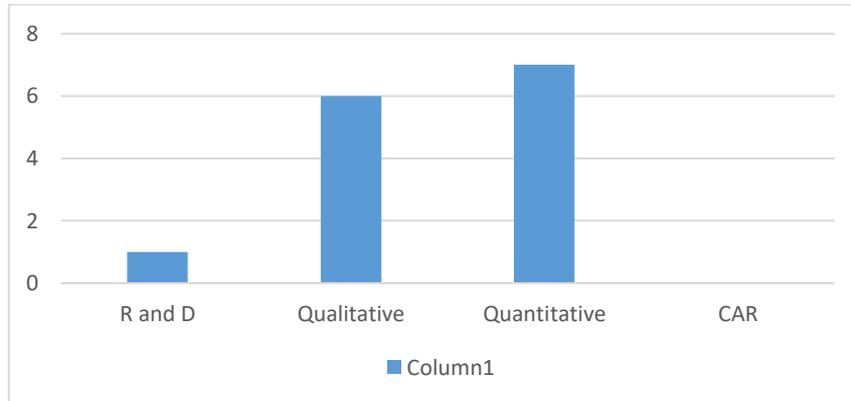
The Improvement Trend of Number of Educational Researches with Blended Learning in During Pandemic as the Main Concern in Indonesia in 5 Years

The purpose of the study is to evaluate how teachers and students perceive the application of blended learning in ELT during pandemic. Most research is the result of the researchers' observation of everyday problems that frequently arise in their environment. Face-to-face instruction during the COVID 19 epidemic is one of the most typical issues that people run into nowadays. Therefore, it is thought that doing research is the most efficient technique to solve the issue. Researchers can determine the most efficient learning strategies or media through study, which may be able to best encourage the use of blended learning.

#### *Types of Research*

The purpose of a research is determined by the types and designs of research. Based on the Diagram, quantitative research is the most dominant design used by researchers investigating the application of Blended Learning Learning. The number of quantitative studies is higher than the qualitative type of research even if it is only a difference of one, in line with

some previous studies that reported that researchers prefer quantitative research designs to conduct research in education, rather than qualitative ones. And R and D research is still not done much in this case.



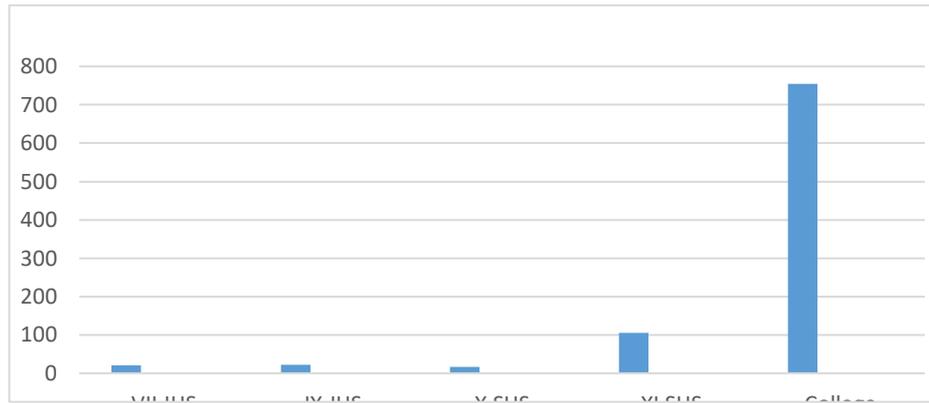
The Distribution of Researches with Blended Learning as Main Concern based on Types Research

However, Fauzi & Pradipta's study contradicts the findings that show there is a dearth of R and D research on critical thinking abilities. They say that the most popular category of study published in 2017 was R and D research (Fauzi & Pradipta, 2018). One of the most recent developments in Indonesian educational research is R and D.

#### *Research Subject*

The subject of research on blended learning is an effort to carry out learning in the midst of a pandemic in its era. We get information about blended learning from various research results of journal journals regarding blended learning. In making this article requires more than 30 types of journals. Based on information on the types of research, quasi-experimental design is the most commonly used design preferred by researchers. This suggests that, in general, research tries to compare some of the best instructional designs in empowering students' critical thinking skills. In conducting research, the researcher needs the research subject to research his hypothesis.

The most selected research subjects are successive college students followed by high school and junior high school students. There were 754 college students who were the subject of research from 15 articles identified, then there were 105 high school class students and 17 high school class X students and class IX junior high school students there were 22 students and about 20 junior high school class VII students



### The Distribution of Research Subjects in some Educational Researchers with Blended Learning as the Main Concern in Indonesia

#### Topic

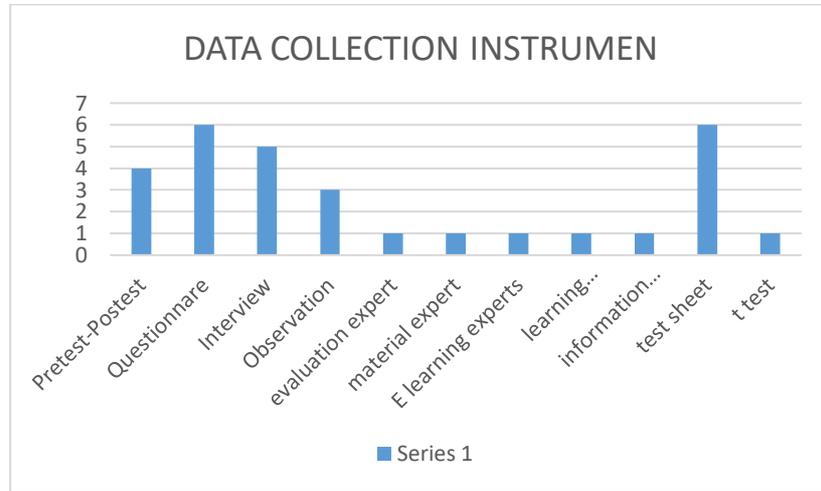
Blended learning there are many themes and topics. There are some topics that are considered easy and some that are still difficult for students (Fauzi & Fariantika, 2018; Fauzi & Mitalistiani, 2018). Derived from the analysis, there are some articles that use only one particular topic; while others highlight with several different topics. Based on the table below, several topics were selected by the researcher in his research at the level of lecturers, teachers, postgraduates, random people, students, high school and junior high school. In particular, Student's perception is the most used topic to conduct research. A total of 3 publication articles that review students' perceptions using blended learning.

Topics	Number of articles
Student Independence	1
Student's and teacher's voice	1
Student's Perception	3
Learning Outcomes	2
Student science	2
Student problem solving skills	1
Critical Thinking	1
Learning Process	1
Reading strategy	1
Conceptual Exectory	1
Analysis of student	1
Online learning	1

#### Data Collection Instruments

Instruments are necessary for researchers to use while collecting data for their studies. Various techniques created by earlier academics can be used to assess the effectiveness of social media as a learning aid. According to the graph below, the test is the most often used technique

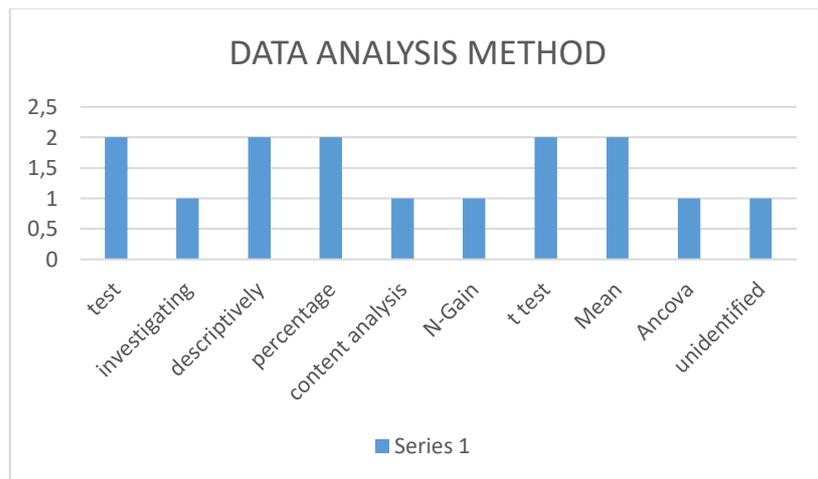
to gather information regarding social media as a learning tool. In some studies whose instruments were observed. There were 6 article that using test sheet and questionnaire as a instrument.



**Data analysis method**

When doing a study, any qualitative research technique must also include descriptive analysis, and even mixed approaches must be explained using language narratives.

The research methods employed also have an impact on the data analysis; in the table above, statistical and qualitative methods are most frequently utilized since they are the most diverse. The degree of validity of a study will depend on how well the data analysis procedures are chosen. These results demonstrate that questionnaires and interview tools are often used by researchers to compare the performance of two groups or classes.



**Discussion**

The bibliometric analysis reveals a notable increase in the number of publications on blended learning starting from 2019, with a peak in 2021 before a slight decline in 2022. This

trend suggests a growing academic interest in understanding blended learning during the pandemic. The spike in publications in 2021 can be attributed to the heightened focus on educational adaptations due to the COVID-19 pandemic. Researchers were keen to explore how blended learning models could address the challenges posed by lockdowns and social distancing measures, leading to a surge in studies.

The improvement in educational research on blended learning in Indonesia over the past five years indicates a responsive and evolving academic landscape. The research predominantly addresses the perceptions of teachers and students regarding blended learning, reflecting a practical approach to solving real-world educational challenges during the pandemic. The prevalence of quantitative research designs, as observed in the data, aligns with the preference for empirical and statistical analysis in education research. This approach allows for a broader assessment of blended learning's impact and effectiveness.

Contrary to some earlier findings, the current analysis shows a relatively low occurrence of R&D research in the context of blended learning. This discrepancy highlights a potential area for further investigation, as R&D studies could provide valuable insights into the development and refinement of blended learning tools and methodologies. The emphasis on quantitative research over R&D suggests that while there is a strong focus on assessing blended learning's effectiveness, there may be less emphasis on developing new educational tools and approaches.

The distribution of research subjects shows a clear preference for higher education students as the primary focus of blended learning studies, followed by secondary education students. This trend reflects the urgent need to address the challenges faced by college students during the pandemic, who had to adapt rapidly to new learning environments. However, the relatively lower focus on high school and junior high school students may indicate a gap in understanding the impact of blended learning on younger learners.

In terms of research topics, student perception emerges as the most frequently investigated area. This focus underscores the importance of understanding students' experiences and attitudes towards blended learning. Topics such as learning outcomes and critical thinking skills are also addressed but to a lesser extent. This suggests that while the immediate perceptions of students are well-researched, there is a need for more in-depth studies on how blended learning affects various educational outcomes and skill development.

Data collection methods primarily involve tests and questionnaires, with a significant emphasis on quantitative analysis. This approach facilitates a broad evaluation of blended learning's effectiveness but may overlook the nuanced experiences of students and teachers. Incorporating qualitative methods such as interviews could provide a more comprehensive understanding of blended learning's impact and inform the development of more effective educational strategies.

## CONCLUSIONS

The bibliometric analysis of blended learning research during the pandemic reveals a significant increase in academic interest, particularly from 2019 to 2021. The focus has predominantly been on quantitative research, with an emphasis on understanding students' perceptions and evaluating learning outcomes. Despite the growth in publications, there remains a need for more R&D studies and qualitative research to develop and refine blended learning approaches. Addressing these gaps will enhance our understanding of blended learning's effectiveness and its impact on various educational contexts, ultimately contributing to more effective and responsive.

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