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The Potential of Flipped-Case-Based-Learning for Creative Thinking in Higher Education: Bibliometric and Content Analysis (2020-2023)

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Abstract
The research aims to identify the potential of combined flipped-case-based learning in higher education that leads to creative thinking skill through bibliographic analysis and publication content from 2020-2023. The research is guided by questions surrounding research trends, content, and themes relevant to flipped learning and case-based learning. This research reviewed 100 relevant articles from SCOPUS and ERIC databases using a 4-stages systematic mapping method, then continued content analysis through quantitative encoding. The analysis results indicated a big concern in research trends on the combination, as evidenced by the increasing number of publications, citations, and interest from academics in various disciplines. The success of the paradigm in enhancing student performance and advancing towards higher-order thinking skills or 21st-century skill abilities is a recurring topic in studies on flipped and case-based learning. Even though, very little research looks into teachers as a success factor and directly addresses creative thinking. These findings indicate that further research is required to ascertain the potential of flipped and case-based learning methodologies to enhance or lead to creative thinking. The combination demonstrates significant potential for examining the variables associated with creative thinking. This study highlights a gap and an urgency in the research domain for further investigation.

Keywords
Flipped learning, case-based learning, creative thinking, bibliometric, content analysis

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Introduction

Flipped learning, which combines technology with blended learning, has become a fundamental aspect of educational practice in several sectors, including language education (Turan & Akdag-Cimen, 2020), mathematics (Ölmefors & Scheffel, 2023), medical or health education (Sullivan, 2022), science education (Tunggyshbay et al., 2023) and more. Flipped classroom or flipped learning is an educational idea where self-assigned component of a course is positioned before normal face-to-face classroom instruction. Students engage in individual research, then engage in discussions with their peers or apply their acquired knowledge to new topics in the flipped face-to-face classroom (Robertson, 2022). This paradigm reverses the habit of knowledge acquisition from the classroom and application in the classroom.

Some of the above-mentioned literature studies demonstrate the impact of flipped learning, which improves both practical and theoretical student performance in college, but not many combine it with other models or attribution moderation. Further research should identify potential combinations that align with the needs of student learning performance. The case-based method, or case-based learning, is one of the potential models. Case-based learning is considered relevant because it also emphasises case-based self-study as the main activity that can be facilitated in the flipped learning phases. Additionally, the combination of flipped learning and case-based methods potentially enhances coverage and success targets, not only in cognitive learning outcomes but also in high-order thinking skills (Divjak et al., 2022).

Flipped learning offers students a more comprehensive approach, resulting in improved educational outcomes and enhanced learning and working environments in the 21st century. Although there is a significant amount of existing research, there has been a lack of studies on the combination of adequate flipped learning and case-based methods in the past four years, specifically in the context of bibliometric study. In the context of blended learning, the four years between 2020 and 2023 are unique and significant because, starting in that year, COVID-19 significantly pushed a lot of learning to be done online, and following the pandemic, there is an adjustment (post-pandemic) to increase or remain stable. The time difference is thought to reflect shifts in educational research trends. The researchers argue that bibliometric studies are crucial for delineating bibliographic data pertaining to a specific subject within a particular field (Julia et al., 2020; Birgili et al., 2021). Therefore, this paper attempts to find a gap in other crucial

elements of the combined flipped learning and case-based methods practices in higher education, especially leading to the enhancement of creative thinking skills. The study diverged from previous research by conducting a bibliometric and content analysis of the combined flipped learning educational model and case-based learning. This analysis encompassed six aspects of trend (publication number, most influential journals, citation patterns, authors' keywords, authors' collaboration, and geographic statistics) and two aspects of content (research design and subject area) related to the theme of flipped learning and case-based methods topics in higher education.

In summary, this work conducts bibliometric and content analysis approaches to examine the trends and content of flipped and case-based learning research in higher education from 2020 to 2023. This study is different from others because it uses methods that look at several content dimensions and statistically show trends through bibliographic analysis. This study is distinctive as it seeks to comprehensively examine the correlation between trends and content that contribute to the topic gap. It utilizes more specific and rigorous criteria to properly illustrate the robustness of the research suggestions in the field. This study has the benefit of assessing numerous articles while thoroughly analysing the content gap.

This study is conducted based on the following research questions:

1. What are the research trends in flipped and case-based learning from 2020 to 2023 that lead to creative thinking in terms of publication count, journals that have published the most articles, citation patterns, keyword trends, authors' collaboration, and geographic statistics?
2. What are the research contents in flipped and case-based learning between 2020 and 2023 in higher education in terms of research design and subject area?
3. What are the research themes in flipped and case-based learning in higher education that lead to creative thinking outcomes between 2020 and 2023?

1. Literature Review

Flipped learning is a pedagogical approach that effectively incorporates modern methods to deliver education that is customized to the requirements of 21st-century pupils (Al-Zoubi & Suleiman, 2021). It replaces direct instruction with pre-class video material, allowing students to concentrate on essential learning experiences facilitated by their teachers and then explore knowledge through discussion, presentation, and collaboration,

as well as reinforcement feedback through face-to-face or virtual meetings. This paradigm promotes independent utilization of technology by students for learning outside of the classroom environment (Sanchez-Muñoz et al., 2022). It fosters analytical thinking, self-development, cognitive abilities, and collaborative work among students (Li et al., 2023). Flipped learning allows the integration of both online and offline teaching methods (An & Qu, 2021). During online sessions, teachers typically create video or virtual learning materials to access outside classroom. Subsequently, in-person or virtual meetings take place in the classroom through collaborative discussion, problem-solving exercises, and presentations (Jovanovic et al., 2019). The basis of the flipped learning model involves two specific components: technology-based instruction engaging in an outside learning setting, and a profound social learning experience for in-class learning (İşçi & Yazıcı, 2023; Shi et al., 2020).

Many empirical benefits of flipped learning have been determined by researchers. The pre-class phase allows learners to personally regulate and arrange the learning process at their own pace (Nugraheni et al., 2022). Enhanced flexibility empowers students to actively participate in the learning process, unlike traditional classes (Nerantzi, 2020; Gong et al., 2020). Adopting the flipped learning paradigm will allocate more resources to interactive learning activities like group discussions, problem-solving exercises, project-based work, experiential learning, and other forms of social engagement (Farokhi et al., 2023). Despite its benefits, flipped learning possesses numerous drawbacks, including teachers requiring additional time to plan for pre-class activities (Howell, 2021). The preference of certain students for traditional and passive learning methods, which include the direct transfer of knowledge, poses a notable obstacle (Durak, 2023). The resistance tendency of adult learners towards the flipped learning implementation is another barrier (Chua & Islam, 2021; Wilson, 2023). In addition, if a student arrives at the class unprepared and fails to watch the video, the teacher is unable to proceed with the scheduled instruction and the student is unable to comprehend the assignments given in the class (Sointu et al., 2023). The quality of teaching materials is a significant challenge, as teachers must create pre-class materials with clearly defined objectives for students' understanding and progress (Purwanti et al., 2022). While flipped learning is successful in improving student learning outcomes, low viewing rates may be due to inadequate video content quality, and student disinterest can negatively impact their academic success (Fidan & Fidan, 2023).

Active and situational learning, such as case-based learning, can effectively address the limitations of flipped learning. Case-based learning (CBL) is an educational model that involves students actively participating in the decision-making process of a real past issue or situation. Under the CBL, students are presented with a practical problem scenario, known as a case, which they can analyze by either testing its answer or actively trying to solve it (McWhirter & Shealy, 2020). CBL is a constructivist learning approach that encourages students to actively engage in real or hypothetical problem situations, reflecting their natural experience in the subject being studied (Puri, 2022). A case is a situation that encapsulates concealed implications and is resolved via the designed and structured efforts of both people and groups. Consequently, a case method refers to an instructional approach that employs a selected case as a learning resource during a class. Subsequently, the case is collectively reviewed to determine a resolution or a plan of action (Kumar et al., 2022). The case closely aligns with the problem, thereby enhancing students' problem-solving abilities. A case, on the other hand, contains many things and can associate several concepts at once, allowing students to train their connectivity skills. With these features, a case can be utilized as a substitute for pre-class content, and the examination of resolution becomes pertinent to in-class phase in the flipped learning.

The CBL model can be notified by the case, focusing on a controversial, new, and relevant event that creates empathy, has pedagogical utility, and requires compelling decisions. In CBL, students examine their case responses individually or in small groups and then discuss each other's case responses with the whole class. The discussions aim to convey ideas, to promote critical analysis and feedback under the teacher supervision (Pinto, 2023). Students play an active role in the search for ideas and guide alternative problem-solving. The learning process emphasizes the analytical and critical thinking skills development. The last characteristic is advanced action activities, which can be carried out individually or in groups to further explore similar cases (Lestari et al., 2023). The CBL involves students determining their learning goals, selecting appropriate cases, controlling the learning pace, self-filtering information, and analyzing the case in detail. After data collection and discussion, students make a comprehensive analysis that leads to a creative problem solution. Following the discussion, the class receives the results and formulates alternative ideas for problem-solving. Students then create a final report with a case framework, data, and argumentation. Teachers provide feedback on the results,

evaluating students' attitudes, presentation of opinions, and problem-solving skills (Qian et al., 2021; Topperzer et al., 2022).

Case-based learning is one pedagogical approach proposed to enhance creative thinking in higher education context (Lavi & Marti, 2023). According to Akpur (2020), creative thinking ability is the ability to find many possible answers to a problem, where the emphasis is on quantity, appropriateness, and diversity of answers. Creative thinking is a skill that can be developed (Kim, 2011); it is a habit of mind that is trained by showing intuition, turning on the imagination, revealing new possibilities, opening up amazing perspectives and generating unexpected ideas (Lavi & Marti, 2023).

Creative thinking is part of a *divergent* thinking process that combines judgemental processes (analytical, rational and logical) with liberating processes (imaginative and intuitive). Guilford (1950) mentioned that the focus of creative thinking which is identical to the divergent thinking process is not always the same as product-oriented creativity because the creative thinking process is characterised by *aptitude* which is the main characteristic of the cognitive process while creativity is determined by *non-aptitude* or affection characteristics (Weiss et al., 2021).

Some experts put forward indicators of creative thinking based on different definitions. There are four indicators of creative thinking according to Torrance (in Hung & Yeh, 2023) as follows: (1) fluency, (2) flexibility, (3) originality, and (4) elaboration. Guilford (1950), as cited by Kaufman & Beghetto (2009), added one indicator of creative thinking from Torrance with (5) redifination while Wilson et al. (1954) added four other indicators namely (5) complexity, (6) imagination, (7) risk-taking and (8) curiosity.

Higher education is closely related to creative thinking because the learning process in higher education requires an independent knowledge discovery process and is also oriented towards real and specific outputs according to fields and interests (Al-Zahrani, 2015). Creative thinking will make product-oriented and problem-oriented knowledge discovery more meaningful (Ariani et al., 2022).

2. Methods

2.1 Design

This study utilizes a bibliographic approach that incorporates systematic and explicit mapping methodologies (Julia et al., 2020) and is followed by content analysis to explore the outcomes (Birgili et al., 2021). Meanwhile, the research followed a four-stage

approach for bibliographic studies, including (1) searching processes, (2) bibliographic filters, (3) bibliographies data completion, and (4) bibliometric analysis, and then descriptive content analysis. The final relevant information was coded by researchers into categories for each of the pre-identified groups and double-checked.

2.2 Data Collection

The research employs the Publish or Perish (PoP) software to search bibliographic databases. Due to specific theme constraints, the study limited database sources to SCOPUS and extended to ERIC, which are the biggest repositories of peer-reviewed material. SCOPUS restrictions on specific keywords of "Flipped Learning", "Case-Based Method", "Higher Education" and "Creative Thinking" produced only 57 corresponding pieces of literature, so the researcher expanded them with the ERIC dataset as a reputable resource (Li et al., 2010). The analysis includes a bibliography with several criteria, including three aspects: (1) the bibliography type is journal; (2) the abstract and title must contain "Flipped Learning", "Higher Education" and "Case-Based Learning"; and (3) the year of searching is limited to the period 2020-2023. The overall limited search produced 257 journal articles in the same period from databases, then using the filters of duplication and relevance to higher education and content analysis that lead to creative thinking, only 100 articles were chosen for inclusion by the authors. As the database expands, adequate number of articles meet the criteria, prompting a restriction to the last 100 published in October 2023. The researchers save the bibliographic search results into a CSV file and open it in an Excel application for content analysis. We check the saved files and supply them with metadata.

The collections are chosen based on several criteria, specifically: (1) including content related to Flipped learning, higher education and case-based learning; (2) utilizing the English language; and (3) being produced by a well-established or renowned bibliographic database publisher. Before being included or excluded from the bibliometric study, all bibliography undergoes a thorough examination by scanning into the SCOPUS or ERIC from 2020 to 2023 databases obtained from the PoP program. The exclusion criteria do not include any articles as the keyword search is highly specialized and constrained, hence completely fulfilling the criteria.

2.3 Data Analysis

The bibliometric analysis was conducted using seven specific aspects: (a) number of publications, (b) journals with the most articles published during the period, (c) citation pattern, (d) keyword trends, (e) author collaboration, and (f) geographic statistics. The VOSviewer tool was utilized to do bibliometric analysis and present the findings in a visual format. VOSviewer is a software for managing large data sets, providing visualizations, analysis, and insights, and generating publications, authors, or journals through co-citation networks or keyword maps (Bukar et al., 2023).

To address the second and third questions and verify flipped learning research content, the content analysis was done by two researchers who systematically assigned codes to each article and subsequently created links among them. While assessing a coding frame's intercoder reliability, the two researchers had an agreement-disagreement discussion. The terms found in the research outcome were categorized into similar material in a codebook table, objectively compared with two coders, and then thematized (Miles & Huberman, 1994). As for the data analysis, to determine the content in flipped learning research, the articles were coded and categorized based on their research design, subject area, educational stage, and theme from the results. If the relevant information was not found in the article, it was classified as non-categorized or others.

3. Results

3.1 Research Trend in Flipped with Case-Based Learning

Figure 1 depicts the trajectory of scholarly articles published about flipped and case-based learning in higher education from 2020 to 2023. This period illustrates the dynamics of educational research influenced by the COVID-19 pandemic, so reflecting the circumstances during and subsequent to the epidemic. Publication trends exhibit two distinct patterns, specifically an upward trajectory observed throughout 2020–2022. The reduction observed in 2023 can be attributed to the restricted number of articles included in the analysis, which only accounted for data up until October 2023, so it does not provide a comprehensive representation of the total articles number published in a complete year. Overall, the study on flipped learning has shown a consistent upward trend over the past four years. Researchers are increasingly focusing on the production of scholarly articles on anticipated flipped and case-based learning trends.

Figure 1: *Number of publications per year*

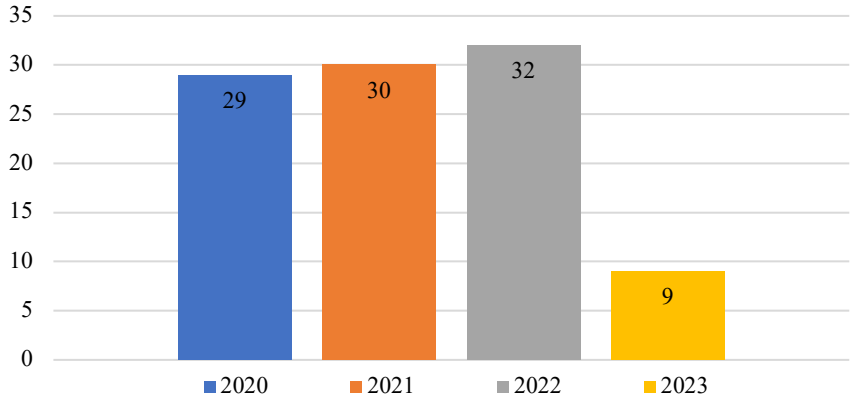


Table 1 displays 10 of the 14 leading journals that have published more than 1 article on flipped and case-based learning in higher education topics. Sustainability and Education Sciences became the lead with each 6 articles published, making them the top-ranked journals. International Journal of Educational Technology in Higher Education, the International Journal of Instruction, and the Journal of Professional Nursing each had 4 publications, placing them in the second rank. The International Journal of Emerging Technologies in Learning (iJET) and Educational Technology Research and Development each had 3 articles. Research and Practice in Technology Enhanced Learning, the European Journal of Educational Research (EUJER), and British Journal of Educational Technology have 2 articles. This data is interesting to classify and measure the trends of publication through the quality and scope of the journal where the articles were published. All of these top 10 journals are included in the SCOPUS database until at least 2023, indicating that the topic is acceptable for publication in reputable journals. The scope of educational technology dominated among general education, medical and multidisciplinary scopes of journals in the top 10.

Table 1: *Journals with the most articles on flipped with case-based learning*

No	Journal Name	Publisher	Number of Articles
1	Education Sciences	Multidisciplinary Digital Publishing Institute (MDPI)	6
2	Sustainability	Multidisciplinary Digital Publishing Institute (MDPI)	6
3	International Journal of Educational Technology in Higher Education	Springer	4
4	International Journal of Instruction	Gate Association for Teaching and Education	4
5	Journal of Professional Nursing	Elsevier	4

6	International Journal of Emerging Technologies in Learning (iJET)	International Association of Online Engineering (IAOE)	3
7	Educational Technology Research and Development	Springer	3
8	Research and Practice in Technology Enhanced Learning	Asia-Pacific Society for Computers in Education	2
9	European Journal of Educational Research (EUJER)	Eurasian Society of Educational Research	2
10	British Journal of Educational Technology	John Wiley & Sons	2

Figure 2 illustrates the quantity of article citations on flipped and case-based learning in higher education. The citation pattern exhibits a downward trend. As a result, from 2020 to 2023, there will be a consecutive series of 2390, 2015, 1768, and 229 citations per document year. In 2020, there were a total of 2390 citations from 29 publications, making it the year with the most occurrences. On the contrary, in 2023, there were only 229 citations from 9 articles, making it the year with the lowest occurrence. The decreasing trend reveals a typical annual pattern in which the articles that are published first are cited more frequently than the articles that are published later. This tendency also indicates a link between prior research and recent studies. Restrictions on the top 100 documents with the highest citation counts and limitations on the incomplete year of publication, where data was collected in October 2023, are the only reasons for the decline in the number of documents in 2023.

Figure 2: *Number of citations per year*

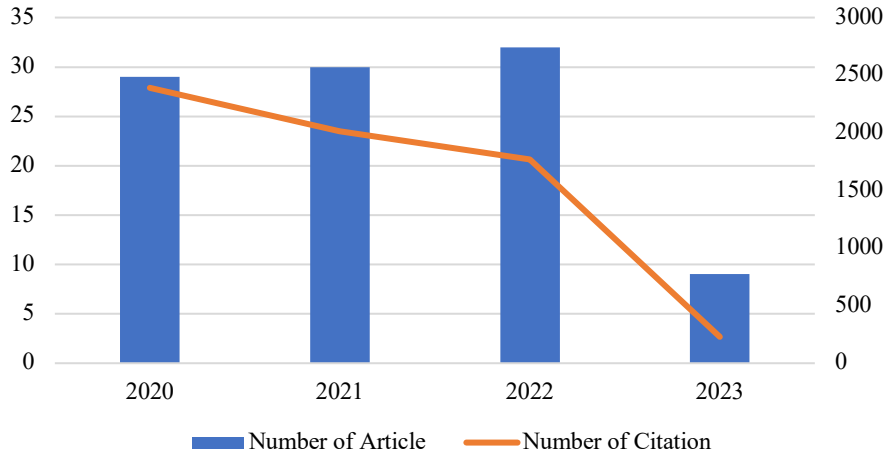


Table 2 displays the most frequently cited papers on flipped and case-based learning within the top 10 rankings. Al-Samarraie et al. (2020) had the most quotations with 370, followed by Divjak et al. (2022) with 250. Latorre-Cosculluela et al. (2021) and

Campillo-Ferrer & Miralles-Martínez (2021) got 205 and 203 citations in the third and fourth sequences. The influence of publications on this issue is significant and of considerable interest to other academics, as seen by the fact that the top four titles received more than 200 citations apiece, while the titles ranked 5 through 10 received more than 140 citations each in only 4 years.

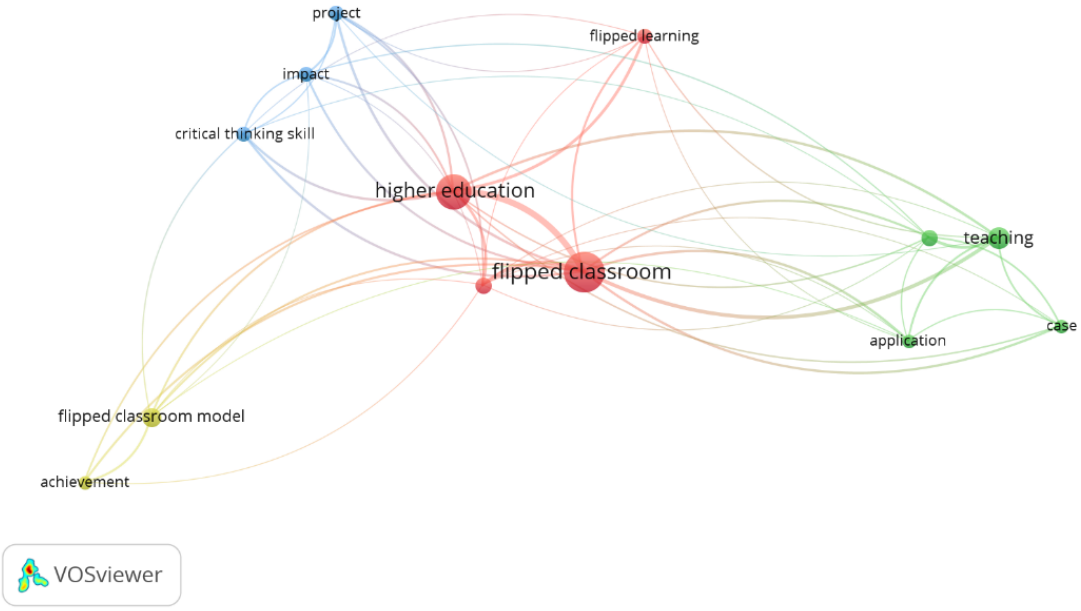
Table 2: *The most cited article on flipped with case-based learning*

No	Authors	Title	Year	Citation	Journal
1	Al-Samarraie et al.	A flipped classroom model in higher education: a review of the evidence across disciplines	2020	370	Educational Technology Research and Development
2	Divjak et al.	Flipped classrooms in higher education during the COVID-19 pandemic: Findings and future research recommendations	2022	250	International Journal of Educational Technology in Higher Education
3	Latorre-Cosculluela et al.	Flipped Classroom model before and during COVID-19: Using technology to develop 21st century skills	2021	205	Interactive Technology and Smart Education
4	Campillo-Ferrer & Miralles-Martínez	Effectiveness of the flipped classroom model on students' self-reported motivation and learning during the COVID-19 pandemic	2021	203	Humanities and Social Sciences Communications
5	Huang et al.	Applying a business simulation game in a flipped classroom to enhance engagement, learning achievement, and higher-order thinking skills.	2022	192	Computers & Education
6	Shi et al.	College students' cognitive learning outcomes in flipped classroom instruction: a meta-analysis of the empirical literature	2020	187	Journal of Computers in Education
7	Cevikbas & Kaiser	Flipped classroom as a reform-oriented approach to teaching mathematics.	2020	175	ZDM Mathematics Education
8	Chen et al.	Effect of project-based learning on development of students' creative thinking	2022	174	International Journal of Electrical Engineering & Education
9	Bredow et al.	To flip or not to flip? A meta-analysis of the efficacy of flipped learning in higher education	2021	161	Review of Educational Research
10	Kang & Kim	Impact of blended learning on learning outcomes in the public healthcare education course: A review of flipped classroom with team-based learning.	2021	144	BMC Medical Education

Table 2 shows that among the 10 papers with the most significant impact, there are three papers from 2020, four papers from 2021, and three papers from 2022. The period's balanced number of representatives demonstrates consistency year after year in generating high-quality publications that have an impact about case-based learning and flipped learning that lead to creative thinking. It also correlates to the citation result where the 2023 publication gained the lowest number of citations. With 78 citations, Sointu et al. (2023) was the article with the most citations in 2023.

Figure 3 illustrates the analysis of 599 author keywords, with a minimum occurrence of 8. Out of these, 22 author keywords were found to have strong connections. A relevance score will be determined for each term, and the most pertinent term will be chosen for visualization. The 13 most relevant author keywords from the result were categorized into 5 clusters, represented by a distinct color. Cluster 1 (red) contains 4 items (flipped classroom, flipped learning, higher education, implementation), cluster 2 (green) contains 4 items (application, case, flipped classroom approach, teaching), cluster 3 (blue) contains 3 items (critical thinking skill, impact, project), and cluster 4 (yellow) contains 2 items (achievement, flipped classroom model).

Figure 3: *Network visualization of author keyword with 8 occurrences*



The study reveals that the keyword “flipped classroom” generated the most significant results. In the 100 documents analyzed, the two most frequent terms were “flipped classroom” (74 occurrences) and “higher education” (58 occurrences), indicating that the documents analyzed do contain research on the topic. However, both terms are

only calculated as medium category score of 0.78 and 0.81 from the perspective of relevance. The term "achievement" (2.20) and "flipped classroom model" (1.92) had the highest relevance scores. Terms with a high relevance score tend to represent specific topics covered by the text data. Therefore, it is determined that in this area, the achievements and flipped classroom model components are more illustrative of the relationship trends between the flipped and case-based learning research topic.

It is highlighted that in the above analysis, the term "creative thinking" does not appear at all in contrast to "achievement" (2.20 relevance score) and "case" (0.84 relevance score) or "critical thinking skills" (0.52 relevance score). A further visualisation analysis was conducted to find the position of creative thinking. The term "creative thinking" appears in the analysis list with a minimum of 6 occurrences.

Figure 4: *Network visualization of the author keyword with 6 occurrences*

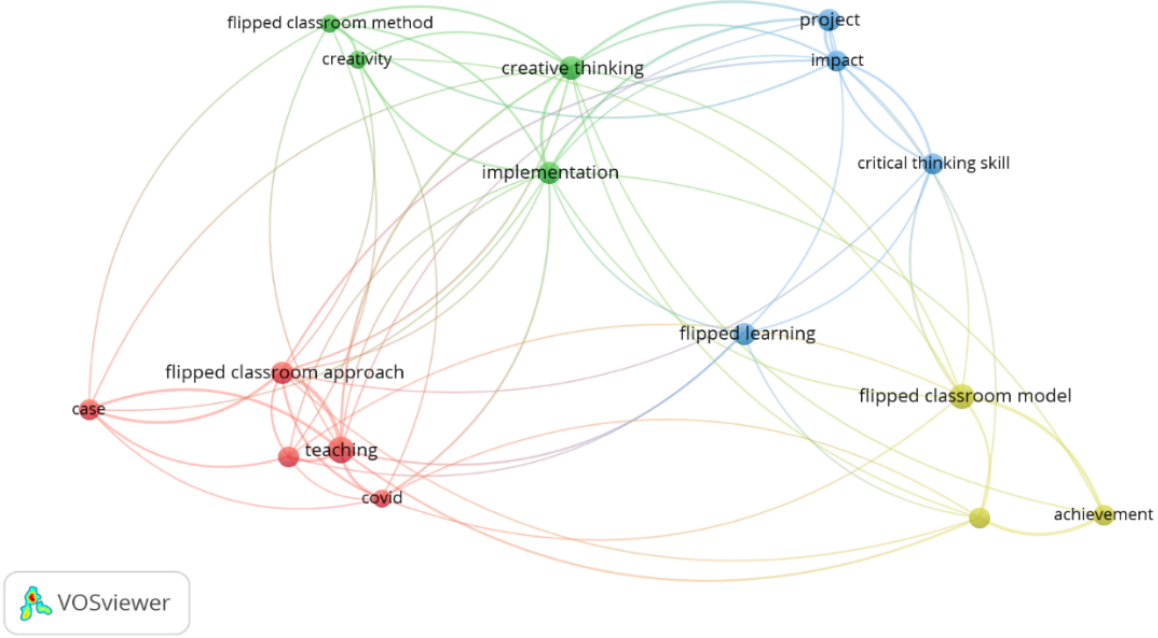


Figure 4 illustrates the analysis of the same number of author keywords, with a minimum occurrence of 6. Out of these, 27 author keywords meet the threshold, and the top 60% of the keywords are visualized. The 16 author keywords were categorized into 4 clusters. Cluster 1 (red) contains 5 items, cluster 2 (green) contains 4 items, cluster 3 (blue) contains 4 items, and cluster 4 (yellow) contains 3 items. Generally, compared to the previous analysis, there are more terms that appear with several new terms, such as "creativity", "covid" and "creative thinking". In addition, in this analysis, there are no more terms with dominant occurrences such as "flipped classroom" and "higher

education" in to analyses with a minimum of 8 occurrences. There are also differences where some terms switch clusters according to the strength of the relationship between keywords.

The data shows that the keyword distribution becomes wider and more representative following the relevance level with a relatively balanced occurrence number. In this list of 16 terms, "achievement" still has the highest level of relevance (2.69), followed by "flipped classroom model" (1.78) and "higher order thinking skills" (1.70), completing the top 3 keywords. Meanwhile, "creative thinking" has a low relevance score of 0.28 with 14 occurrences.

This finding indicates that there is quite a lot of research on the topic of flipped and case-based learning related to higher-order thinking skills but not much that is comprehensive and specific targeting creative thinking. Future researchers should take advantage of this gap as well as its potential because, when examined in more detail, "creative thinking" has direct and strong links to the "case" and the "flipped classroom model".

The trend is also analyzed through the map of the authors' connection. The results of 249 authors' co-authorship analysis with at least two document occurrences number, resulting 10 authors who were selected. Co-authorship analysis is useful to see the mapping of research topics through relationships or collaborations between authors. The author is illustrated in Figure 5 and found that only four authors had interacted links and two documents.

Figure 5: *Network visualization of author collaboration*

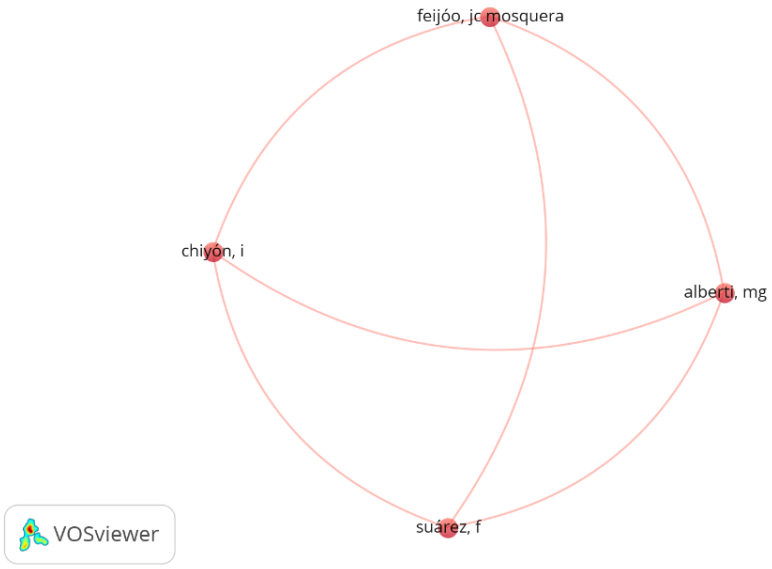
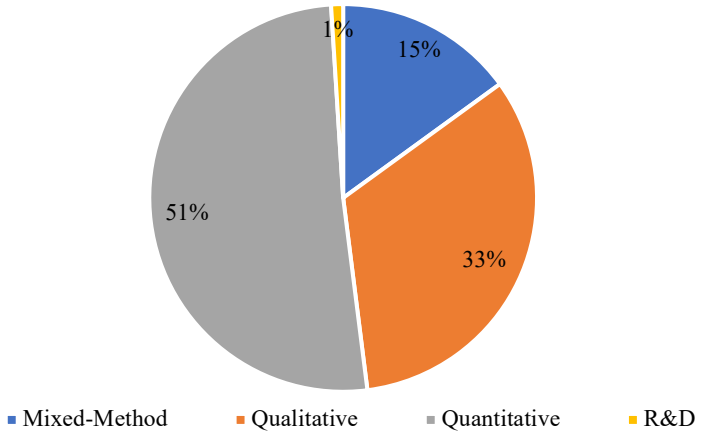


Figure 5 displays that the 4 authors produce 6 strong relationship lines. The co-occurrence is also indicated by intercorrelated lines among those four authors. Each of these four authors collaborate on the same topic with more than 2 published documents. The same overlay visualization also found that the documents were published in the same year (2021). It indicates less collaboration in flipped and case-based learning studies in higher education, since the total numbers analyzed are 249 authors with only four writers with strong connections. This data is important for discovering trends based on researchers' expertise and interests. The lack of strong relationships between researchers suggests that this topic has not been explored in further detail by experts. This finding could be a gap for future researchers to investigate.

3.2 Content of Flipped with Case-based Learning Research

The chosen papers mostly employ a quantitative research design (51%) and some studies utilize a qualitative research design (33%). The mixed-method design also has a small portion (15%). The least frequently used was a Research and Development (R&D) research design (1%) (see Figure 6).

Figure 6: *Article distribution based on research design*

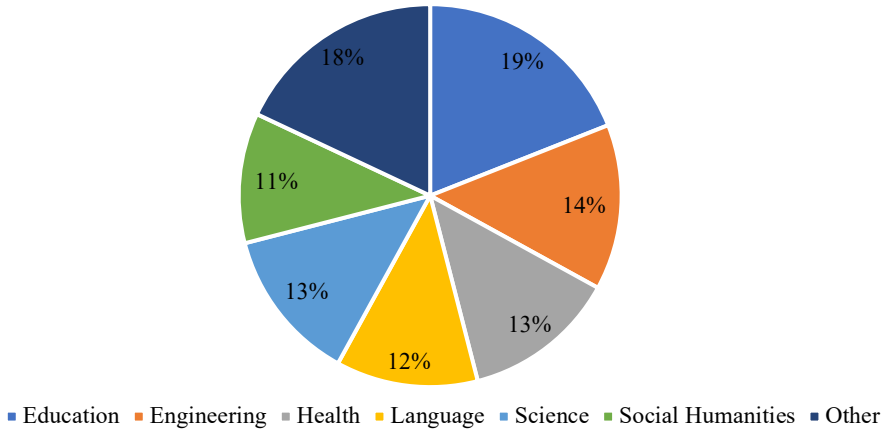


This type of research data can be used to discern the trend that on this topic, researchers are dominated by experimental forms to gauge the success of the combined model in teaching. Additionally, there is a wide range of research that proposes qualitative and mixed methods to examine this topic from different perspectives.

The subject areas of the 100 reviewed research on flipped learning were also analyzed. The data shows a diverse range of the subject area and is classified into: (1)

education, (2) engineering, (3) health, (4) language, (5) science, (6) social & humanities, (7) and (9) others.

Figure 7: *Article distribution based on subject area*



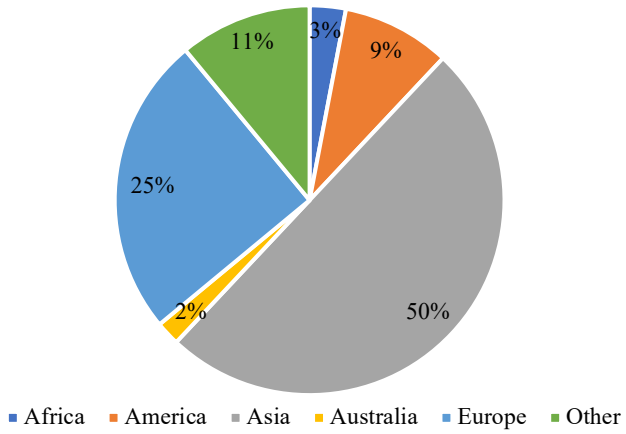
Most of the reviewed research was conducted in the fields of education (i.e. early and primary education, teacher education, physics education, education management, instructional & training development, physical education, and educational technology) with 19%. Engineering also reached a high percentage with subjects of construction management, civil engineering, informatics management, engineering science, vocational, informatics engineering, and urban planning with 14%.

The scope of health & medicine (dentistry, nursing, emergency medical service, pharmacology, and medical resident) and science (including human biology, mathematics, biology, science, geometry, chemistry, physics, and energy material) gained the same percentage of 13%. In addition, some reviewed studies on flipped and case-based learning research studies have also been conducted in the fields of language (i.e. English, second language, foreign language, and literacy) with 12% and social humanities (i.e. music, social studies, civics, religion, culture, fashion, business, and management) consecutively with 11%. Among the number, 18% of reviewed papers are categorized as other since they did not mention the explicit subjects.

Related to the setting of the studies, the reviewed studies were methodically analyzed based on the continents and countries where each study was conducted (see Figure 8). The findings indicate the studies were conducted largely in Asia (50%), some others in Europe (25%), and widely spread to America (9%), Africa (3%) and Australia (2%). Among those continents, Spain represented Europe and became the highest

contributor (f=17). Indonesia and China have the same number (f=14) and become the most publications in Asia. Taiwan and the United States of America followed with each 5 publications as well as Uncategorized (f = 11) as the research papers did not specify the geographic region.

Figure 8: *Article distribution based on geographic area*



The documents reviewed span all continents, indicating worldwide acceptance of the topic. The large number of studies in Asia indicates that this topic is of great interest to researchers in the region. In Europe, this topic also received considerable attention from some researchers. A note of caution is that a few studies did not mention the specific research setting, as the majority were literature studies. This means that there are also many literature studies that explore this topic, but not on some specific aspects as previously discovered.

3.3 Themes of Flipped with Case-based Learning Research Outcomes

Fifty-seven articles indicate that flipped and case-based learning have a positive impact on student performance. Some sample categories showing positive influences are as follows: “effectiveness in learning” (e.g., Campillo-Ferrer & Miralles-Martínez, 2021; Hue, 2021), “improving performance” (e.g., Busebaia & John, 2020; Naciri et al., 2022; Oliván-Blázquez, 2023; Yen, 2020), “efficient approach” (e.g., Durrani et al., 2022; Wang, 2020). For example, Naciri (2022) conducted an experimental study in classes that used the Flipped-based PBL and MAKER approaches. The outcome demonstrated significantly higher levels of interest and satisfaction compared to the existing Flipped Learning programs. It showed that selecting a class application with more flipped learning

combinations that fit the subject and combining multiple teaching approaches improved existing teaching methods and maximized their strengths.

Thirty-five articles demonstrate the beneficial impact of the flipped and case-based learning strategy on students' higher-order thinking abilities. Some examples of terms in this group include “system thinking ability” “higher order thinking skill” (e.g., Fung et al., 2022), “decision making” (e,g., McWhirter & Shealy, 2020), “computational thinking” (e.g., Gong et al., 2020), “problem-solving” (e.g., Cai et al., 2022; Gao & Hew, 2022; Sánchez et al., 2020), “critical thinking” (e.g., Chen & Hwang, 2020; Listiqowati et al., 2022) and “creative thinking” (e.g., Agustini et al., 2022; Chen et al., 2021; Nasongkhla & Sujiva, 2022). For instance, Fung et al. (2022) conducted a study on the effectiveness of using a pre-class film lasting seven to 12 minutes, followed by in-class sessions lasting 40 minutes. The findings indicated that flipped learning potentially enhances students' comprehension, learning engagement, innovation, and 21st-century skills development. Considering its advantages, flipped learning through teaching can be regarded as a highly effective method for STEM education.

There are just ten articles that indicate the beneficial impact of the flipped and case-based learning strategy on the performance of teachers or teacher candidates. Alternatively, certain studies emphasize the role of teachers in implementing flipped learning. Here are some exemplary categories that demonstrate good influences: “teacher perspective” (e.g., Aspridanel et al., 2022; Cevikbas & Kaiser, 2020), “experience of teacher” (e.g., Creely & Lyons, 2022; Väisänen & Hirsto, 2020), “teacher readiness” (e.g., Nantha et al., 2022; Youhasan et al., 2022), and “teaching practice” (e.g., Yan et al., 2022; Zain et al., 2022). Creely & Lyons (2022) directly experienced a shift in teaching and learning by the adoption of flipped learning pedagogies in the COVID-19 pandemic. They prioritize student collaboration, autonomy, and agency, making it ideal for addressing long-term educational changes. The conceptual process model suggests that educators adopt a design orientation, intentionally shaping learning environments to meet student needs through technology affordances. This collaborative autoethnographic study provides insights into the experiences and thinking of two teacher educators in implementing flipped learning in online and hybrid environments.

4. Discussion

Over the past four years, there has been a dynamic in flipped learning research focusing on case-based methods or case-based learning (CBL). Despite a decline in 2023 due to restrictions, the number of relevant themes consistently averages over 20 articles per year. The trend pattern of publications indicates a high level of research production, attributed to factors such as scholarly reputation, references, and the importance of the subjects covered. The large number of articles is correlated to the contributions of several journals that regularly map the field of study on flipped learning and CBL. The sixteen journals in the database that have published multiple pertinent topic articles in the past ten years are indicated in Table 1. All of the top ten journals with the highest number of publications were all included in the SCOPUS database, indicating that the research and publications on this subject are of a high caliber and might have a significant influence (Limaymanta et al., 2021).

The number of quotes cited among published studies can indicate which have the greatest impact on the field. The pattern of high quotations in the more recent emerging years indicates the interconnectedness of various themes' research. According to Petersen (2022), the quantity of quotes scientists receive is a remarkable indicator of their quality.

All articles with the highest citation counts received over 140 citations, including one item cited more than 300 times within four years and three articles exceeding 200 citations, as Table 2 demonstrates, demonstrating how popular this theme is for this kind of study. The research on flipped learning and case-based learning frequently focus on keywords like “flipped classroom”, “learning”, and "flipped learning". This research identifies a relationship between flipped learning and critical thinking as well as project-based learning, indicating that there are research connections between the two variables, but not much research has been done.

The study of cluster connectivity revealed that cluster 1, encompassing flipped and higher education, exhibited the most robust links overall, while the case term in cluster 2 demonstrated a significant association with the preceding two terms. Nonetheless, in the examination of a minimum of 8 occurrences, the subject of creative thought was absent. This signifies insufficient research in this domain. Further analysis indicated that flipped and case-based learning in higher education can be grouped into a single cluster if the minimum occurrence is lowered to six, but themes related to creative thinking are found

in separate clusters. This theme emphasizes that creative thinking remains inadequately associated with flipped case-based learning and higher education in prior research.

The study reveals a gap in research on flipped and case-based learning, with only 4.01% of 249 authors having more than one writing. Among these, only four authors possess connections between their works. The tenuous connection among authors indicates that this subject requires further exploration through collaboration and the integration of under-researched issues. This indicates a lack of international collaboration and research on these methods. The dataset presents an opportunity for scholars to collaborate on developing educational methods using flipped and case-based learning, which can enhance the careers of researchers and improve their overall knowledge (Julia et al., 2020).

Most of the flipped and case-based learning research uses a quantitative research design, contrary to Birgili et al. (2021) who found most of the mixed methods. Furthermore, as Barranquero-Herbosaa (2022), this finding indicates that quantitative research methods significantly enhance the general applicability of data. The findings highlight the growing research on flipped learning and case-based learning across various fields, including Science, Health, Education, Engineering, Language, and Social Science, as shown in Figure 7.

Research in higher education within this sector is often fragmented and encompasses a diverse array of fields, reflecting the varying applicability of flipped and case-based methods across different disciplines (Baig & Yadegaridehkordi, 2023). The use of flipped and case-based learning in the field of science and health is more common than in other disciplines (Jung & Hong, 2020; Divjak et al., 2022). The effectiveness of flipped and case-based learning in applied experimental settings in healthcare, particularly in nursing, has been demonstrated (Chi et al., 2022; Choi et al., 2021; Yang et al., 2021). However, the subject of education, in general, holds significant and prevailing attention within this model. This finding suggests that despite certain obstacles in higher education, this subject remains critical for investigation (Wilson, 2023).

Flipped and case-based learning research is primarily from Asia, followed by Europe and the Americas. The success of students in Asian countries on international exams suggests that experimenting with different teaching methods could be effective. Countries like Indonesia, China, Turkey, Spain, and the USA have the highest acceptance of flipped learning. The nation of origin of the author indicates that there is a broad global following for flipped learning and case-based learning research. This research

recommends expanding flipped learning to Africa and Europe. Additionally, increasing the number of studies involving teachers could be beneficial since limited findings employ teachers' points of view in flipped and case-based learning.

4.1 The potential of Flipped-Case-Based Learning to enhance Creative Thinking

Prior research analysis on flipped and case-based learning has identified themes that support improved student performance as well as higher-order thinking skills. However, trend data indicate that creative thinking is not a prominent or extensively studied subject within the integration of flipped and case-based learning in higher education. As a result, this is seen as a need gap that can serve as a suggestion for further research. The potential for flipped classroom and case-based method models had been previously studied by Yang et al. (2021) who investigated the potential of flipped classroom and CBL models in medical students. Kolahdouzan et al. (2020) also conducted research combining CBL and flipped learning, examining its effectiveness against student satisfaction. Research shows that a combination of flipped classroom, case-based, and problem-based models can enhance decision-making skills, as demonstrated by McWhirter & Shely (2020). Some research demonstrates that flipped learning and case-based learning are extensively utilized to teach product-oriented practical skills. However, a lot of the relevant educational contexts deal with both science and health. Very few are applying a combination of both in the practice of educational skills such as designing learning or learning media. Therefore, by applying Flipped-Case-Based-Learning (FCBL) to the environment of education, specifically developing design skills, it has the potential to uncover novel data.

Studies have shown that combining flipped learning and other models can enhance flexibility of thinking. In distance learning, blended learning models and the flipped classroom approach can be combined with team-based learning to strengthen individual processes. Combining flipped learning with case studies has been shown to enhance students' creativity in learning insights into science, technology, and the environment (Antonis et al., 2023). Some studies have attempted to integrate flipped learning with project-based learning (Ekayana, 2022; Listiqowati et al., 2022). Additionally, combining flipped learning with problem-based learning can improve students' creative thinking skills and shape their Creative Problem Solving (CPS) pattern (Rahayu et al., 2022). Research by Suhartini & Marianti (2023) proved that students' creative thinking skills can be enhanced with a combination of flipped learning guided approach with problem-based

learning. Those studies demonstrate that flipped learning is frequently used in conjunction with other relevant models, like project or team-based and problem-based learning, to improve students' capacity for creative thinking. A very small number of sources particularly address creative thinking through the combination of flipped and case-based learning. As a result, this potential study suggests analyzing the compatibility of FCBL model combinations, thereby identifying innovative methods to enhance creative thinking skills.

Flipped learning is frequently combined with case-based learning, although some compare both models equally. Kumar et al. (2022) compared their effectiveness in developing medical students' clinical and applied physiology skills. Various media can be used to research the flipped classroom paradigm. Wang et al. (2021) utilized MOOCs, Rehman & Fatima (2021) employed virtual learning environment (VLE), while Sezer & Esenay (2022) utilize email to distribute information in pre-class sessions. Nonetheless, it is standard procedure to employ a methodical and easily navigable medium, such as the Learning Management System (LMS), when combining models. The LMS medium is typically used in conjunction with the approach of integrating flipped learning and case-based learning since it makes applying syntax learning easier (Huda et al., 2023). In some research, the two models are utilized simultaneously with time variable separators alone, thus, the correlation and theoretical order of their combined stages are not documented. The separation of learners and educators in a flipped class is unclear, potentially allowing the CBL approach to dominate learning syntax. Further research requires a balanced syntactic structure and theoretical compatibility between the two models. To optimize syntax interaction, it is crucial to observe the interaction between the two models in various synchronous and asynchronous learning environments. These models are frequently combined to facilitate learning based on practical competence and product orientation; however, none of these combinations have included moderation or other elements that contribute to the success of these combination models, like creative thinking. Therefore, it is important to consider alternatives to moderation variables that might interact with the effectiveness of the learning model.

5. Conclusion

In conclusion, three issues are being investigated in this review. To sum up, research on flipped and case-based learning indicates that this approach is highly promising. Research

on flipped and case-based learning has continued to be extensive, with a growing number of publications, citations, and attention from researchers across other fields. This indicates that the trend of studying flipped and case-based learning remains a compelling issue. Publications during the past four years have shown that the adoption of flipped and case-based learning is mostly focused on the domains of education, science and health. The increasing popularity of flipped and case-based learning was widely embraced in numerous countries, particularly Indonesia. The themes that emerge in flipped learning studies mostly revolve around the effectiveness of the paradigm in improving student performance and shifting towards more advanced cognitive skills, such as decision-making and creative thinking. Furthermore, almost little investigation has been conducted on instructors as a point of success for flipped and case-based learning. These findings indicate the need for additional investigation into the possible integration of flipped and case-based learning methods to improve creative thinking.

5.1. Suggestions

Further investigation on this subject can be extended by utilizing programs, exploring constraints, and accessing diverse bibliographic databases to enhance the study's mapping. Utilizing bibliometric and content analysis may function as an alternative method for identifying research gaps and determining an urgent need for further investigation among academics. Future research on the collaboration between flipped learning and case-based learning may focus on the creative thinking component of the topic.

5.2 Limitations

Even though there are still additional uses, this research is limited using only one bibliometric analysis software. Bibliographic databases utilizing databases from SCOPUS and ERIC are likewise subject to restrictions. Additionally, the content analysis was limited to a few key areas.

References

Agustini, K., Santyasa, I., Tegeh, I., Santyadiputra, G. & Mertayasa, I. (2022). Quantum flipped learning and students' cognitive engagement in achieving their critical and creative thinking in learning. *International Journal of Emerging Technologies in Learning (iJET), 17*(18), 4–25. https://doi.org/10.3991/ijet.v17i18.32101

Akpur, U. (2020). Critical, reflective, creative thinking and their reflections on academic achievement. *Thinking Skills and Creativity, 37*, 100683. https://doi.org/10.1016/j.tsc.2020.100683

Al-Samarraie, H., Shamsuddin, A. & Alzahrani, A.I. (2020). A flipped classroom model in higher education: A review of the evidence across disciplines. *Educational Technology Research and Development, 68,* 1017–1051 https://doi.org/10.1007/s11423-019-09718-8

Al-Zahrani, A. M. (2015). From passive to active: The impact of the flipped classroom through social learning platforms on higher education students' creative thinking. *British Journal of Educational Technology, 46*(6), 1133–1148. https://doi.org/10.1111/bjet.12694

Al-Zoubi, A. M., & Suleiman, L. M. (2021). Flipped classroom strategy based on critical thinking skills: Helping fresh female students acquiring derivative concept. *International Journal of Instruction, 14*(2), 791–810. https://doi.org/10.29333/iji.2021.14244a

Antonis, K., Lampsas, P., Katsenos, I., Papadakis, S., & Stamouli, S. M. (2023). Flipped classroom with teams-based learning in emergency higher education: methodology and results. *Education and Information Technologies, 28,* 5279–5295. https://doi.org/10.1007/s10639-022-11339-3

An, X., & Qu, C. (2021). A hierarchical learning model based on deep learning and its application in a SPOC and flipped classroom. *International Journal of Emerging Technologies in Learning (iJET), 16*(9), 76–93. https://doi.org/10.3991/ijet.v16i09.23009

Ariani, D. N., Sumantri, M. S., & Wibowo, F. C. (2022). The impact of android module-based inquiry flipped classroom learning on mathematics problem solving and creative thinking ability. *International Journal of Interactive Mobile Technologies (iJIM), 16*(24), 32–46. https://doi.org/10.3991/ijim.v16i24.35749

Aspridanel, A., Abdurrahman, A., Lengkana, D., & Tri Jalmo. (2022). STEM-Integrated flipped classroom in the teacher's perspective: Could its implementation in e-module improve system thinking ability? *Indonesian Journal of Science and Mathematics Education, 5*(1), 43–52. https://doi.org/10.24042/ijsme.v5i1

Baig, M. I., & Yadegaridehkordi, E. (2023). Flipped classroom in higher education: A systematic literature review and research challenges. *International Journal of Educational Technology in Higher Education, 20,* 61. https://doi.org/10.1186/s41239-023-00430-5

Barranquero-Herbosaa, M., Abajas-Bustilloa, R., & Ortego-Maté, C. (2022). Effectiveness of flipped classroom in nursing education: A systematic review of systematic and integrative reviews *International Journal of Nursing Studies, 135*, 104327. https://doi.org/10.1016/j.ijnurstu.2022.104327

Birgili, B., Seggie, F. N., & Oğuz, E. (2021). The trends and outcomes of flipped learning research between 2012 and 2018: A descriptive content analysis. *Journal of Computer Education, 8*(3), 365–394. https://doi.org/10.1007/s40692-021-00183-y

Bredow, C. A., Roehling, P. V., Knorp, A. J., & Sweet, A. M. (2021). To flip or not to flip? A meta-analysis of the efficacy of flipped learning in higher education. *Review*

of Educational Research, 91(6), 878–918. https://doi.org/10.3102/00346543211019122

Bukar, U. A., Sayeed, M. S., Razak, S. F. A., Yogarayan, S., Amodu, O. A., & Mahmood, R. A. R. (2023). A method for analyzing text using VOSviewer. *MethodsX, 11*, 102339. https://doi.org/10.1016/j.mex.2023.102339

Busebaia, T. J. A., & John, B. (2020). Can flipped classroom enhance class engagement and academic performance among undergraduate pediatric nursing students? A mixed-methods study. *Research and Practice in Technology Enhanced Learning, 15*, 4. https://doi.org/10.1186/s41039-020-0124-1

Cai, L., Li, Y.-L., Hu, X.-Y., & Li, R. (2022). Implementation of flipped classroom combined with case-based learning: A promising and effective teaching modality in undergraduate pathology education. *Medicine, 101*(5), e28782. http://dx.doi.org/10.1097/MD.0000000000028782

Campillo-Ferrer, J. M., & Miralles-Martínez, P. (2021). Effectiveness of the flipped classroom model on students' self-reported motivation and learning during the COVID-19 pandemic. *Humanities and Social Sciences Communications, 8,* 176 https://doi.org/10.1057/s41599-021-00860-4

Cevikbas, M., & Kaiser, G. (2020). Flipped classroom as a reform-oriented approach to teaching mathematics. *ZDM Mathematics Education, 52,* 1291–1305 https://doi.org/10.1007/s11858-020-01191-5

Chen, M. R. A., & Hwang, G. J. (2020). Effects of a concept mapping-based flipped learning approach on EFL students' English speaking performance, critical thinking awareness and speaking anxiety. *British Journal of Educational Technology, 51*(3), 817–834. https://doi.org/10.1111/bjet.12887

Chen, S-Y, Lai, C-F, Lai, Y-H, & Su, Y-S. (2022). Effect of project-based learning on development of students' creative thinking. *International Journal of Electrical Engineering & Education, 59*(3), 232–250. https://doi.org/10.1177/0020720919846808

Chen, Y-C., Fan, K-K., & Fang, K-T. (2021). Effect of flipped teaching on cognitive load level with mobile devices: The case of a graphic design course. *Sustainability, 13*(13), 7092. https://doi.org/10.3390/su13137092

Chi, M., Wang, N., Wu, Q., Cheng, M., Zhu, C., Wang, X., & Hou, Y. (2022). Implementation of the flipped classroom combined with problem-based learning in a medical nursing course: A quasi-experimental design. *Healthcare, 10*(12), 2572. https://doi.org/10.3390/healthcare10122572

Choi, J., Lee, S. E., Bae, J., Kang, S., Choi, S., Tate, J. A., & Yang, Y. L. (2021). Undergraduate nursing students' experience of learning respiratory system assessment using flipped classroom: A mixed methods study. *Nurse Education Today, 98,* 104664. https://doi.org/10.1016/j.nedt.2020.104664

Chua, K., & Islam, M. (2021). The hybrid project-based learning–flipped classroom: A design project module redesigned to foster learning and engagement. *International Journal of Mechanical Engineering Education, 49*(4), 289–315. https://doi.org/10.1177/0306419019838335

Creely, E., & Lyons, D. (2022). Designing flipped learning in initial teacher education: The experiences of two teacher educators. *Australasian Journal of Educational Technology, 38*(4), 40–54. https://doi.org/10.14742/ajet.7957

Divjak, B., Rienties, B., Iniesto, F., Vondra, P., & Žižak, M. (2022). Flipped classrooms in higher education during the COVID-19 pandemic: Findings and future research recommendations. *International Journal of Educational Technology in Higher Education, 19*, 9. https://doi.org/10.1186/s41239-021-00316-4

Durak, H. Y. (2023). Role of personality traits in collaborative group works at flipped classrooms. *Current Psychology, 42*, 13093–13113. https://doi.org/10.1007/s12144-022-02702-1

Durrani, U. K., Al-Naymat, G., Ayoubi, R. M., Kamal, M. M., & Hussain, H. (2022). Gamified flipped classroom versus traditional classroom learning: Which approach is more efficient in business education? *The International Journal of Management Education, 20*(1), 100595. https://doi.org/10.1016/j.ijme.2021.100595

Ekayana, A. A. G. (2022). Flipped learning berbasis project terhadap berpikir kreatif dan prestasi belajar di pendidikan tinggi. *Kwangsan: Jurnal Teknologi Pendidikan, 10*(2), 164–182. https://doi.org/10.31800/jtp.kw.v10n2.p164--182

Farokhi, M. R., English, D. K., Boone, S. L. & Amaechi, T. A. (2023). Health professions learners' evaluation of e-learning scenario-based case study design: Reinvigorating flipped classroom modalities. *Journal of Dental Education, 87*(12), 1754–1765. https://doi.org/10.1002/jdd.13379

Fidan, M., & Fidan, M. (2023). The effects of video-driven discussions integrated into the flipped classroom model on learning achievement, practical performance, and higher-order thinking skills in dental education. *Journal of Computer Assisted Learning, 40*(1), 158–175. https://doi.org/10.1111/jcal.12869

Fung, C.-H., Poon, K.-K., & Ng, S.-P. (2022). Fostering student teachers' 21st century skills by using flipped learning by teaching in STEM education. *Eurasia Journal of Mathematics, Science and Technology Education, 18*(12), em2204. https://doi.org/10.29333/ejmste/12728

Gao, X., & Hew, K. F. (2022). Toward a 5E-based flipped classroom model for teaching computational thinking in elementary school: Effects on student computational thinking and problem-solving performance. *Journal of Educational Computing Research, 60*(2), 512–543. https://doi.org/10.1177/07356331211037757

Gong, D., Yang, H. H., & Cai, J. (2020). Exploring the key influencing factors on college students' computational thinking skills through flipped-classroom instruction. *International Journal Educational Technology in Higher Education, 17,* 19. https://doi.org/10.1186/s41239-020-00196-0

Howell, R. A. (2021). Engaging students in education for sustainable development: The benefits of active learning, reflective practices and flipped classroom pedagogies. *Journal of Cleaner Production, 325*, 129318. https://doi.org/10.1016/j.jclepro.2021.129318

Huang, Y-M., Silitonga, L. M., & Wu, T. T. (2022). Applying a business simulation game in a flipped classroom to enhance engagement, learning achievement, and higher-order

thinking skills. *Computers & Education, 183*(10), 104494. https://doi.org/10.1016/j.compedu.2022.104494

Huda, I., Desriana, P., Safrida, S., Nurmaliah, C., & Muhibbuddin, M. (2023). Analyzing of using case method based on flipped classroom on student learning outcomes. *Jurnal Penelitian Pendidikan IPA, 9*(6), 4103–4108. https://doi.org/10.29303/jppipa.v9i6.3844

Hue, J. P. (2021). A study of the effectiveness of PBL and MAKER classes based on flipped learning. *Journal of Problem Based Learning, 8*(2), 53–61. https://doi.org/10.24313/jpbl.2021.00038

Hung, H-T., & Yeh, H-C. (2023). Augmented-reality-enhanced game-based learning in flipped English classrooms: Effects on students' creative thinking and vocabulary acquisition. *Journal Computer Assisted Learning, 39*(6), 1786–1800. https://doi.org/10.1111/jcal.12839

İşçi, T. G., & Yazıcı, K. (2023). The effect of the use of the flipped learning model in the social studies course on the students' academic success and higher-order thinking skills. *International e-Journal of Educational Studies, 7(*13), 46–64. https://doi.org/10.31458/iejes.1216865

Jovanovic, J., Mirriahi, N., Gašević, D., Dawson, S., & Pardo, A. (2019). Predictive power of regularity of pre-class activities in a flipped classroom. *Computers & Education, 134,* 156–168. https://doi.org/10.1016/j.compedu.2019.02.011

Julia, J., Afrianti, N., Soomro, K. A., Supriyadi, T., Dolifah, D., Isrokatun, I., Erhamwilda, E. & Ningrum, D. (2020). Flipped classroom educational model (2010-2019): A bibliometric study. *European Journal of Educational Research, 9(*4), 1377–1392. https://doi.org/10.12973/eu-jer.9.4.1377

Jung, Y. K., & Hong, H. (2020). A theoretical need for applying flipped learning to STEAM education. *Journal of Problem Based Learning, 7*(1), 42–49. https://doi.org/10.24313/jpbl.2020.00213

Kang, H. Y., & Kim, H. R. (2021). Impact of blended learning on learning outcomes in the public healthcare education course: A review of flipped classroom with team-based learning. *BMC Medical Education, 21,* 78. https://doi.org/10.1186/s12909-021-02508-y

Kaufman, J. C., & Beghetto, R. A. (2009). Beyond big and little: The four C model of creativity. *Review of General Psychology, 13*(1), 1–12. https://doi.org/10.1037/a0013688

Kim, K. H. (2011). The creativity crisis: The decrease in creative thinking scores on the Torrance tests of creative thinking. *Creativity Research Journal, 23*(4), 285–295. https://doi.org/10.1080/10400419.2011.627805

Kolahdouzan, M., Mahmoudieh, M., Rasti, M., Omid, A., Rostami, A., Yamani, N. (2020). The effect of case-based teaching and flipped classroom methods in comparison with lecture method on learning and satisfaction of internship students in surgery. *Journal of Education and Health Promotion, 9*, 256. https://doi.org/10.4103%2Fjehp.jehp_237_19

Kumar, T, Sakshi, P., & Kumar C. (2022). Comparative study between "case-based learning" and "flipped Classroom" for teaching clinical and applied aspects of physiology in "competency-based UG curriculum". *Journal Family Medicine and Primary Care, 11*(10), 6334–6338. https://doi.org/10.4103/jfmpc.jfmpc_172_22

Latorre-Cosculluela, C., Suarez, C., Quiroga, S., Sobradiel-Sierra, N., Lozano-Blasco, R., & Rodríguez-Martínez, A. (2021). Flipped Classroom model before and during COVID-19: Using technology to develop 21st century skills. *Interactive Technology and Smart Education, 18*(2), 189–204. http://dx.doi.org/10.1108/ITSE-08-2020-0137

Lavi, R., & Marti, D. (2023). A proposed case-based learning framework for fostering undergraduate engineering students' creative and critical thinking. *Journal of Science Education and Technology, 32,* 898–911. https://doi.org/10.1007/s10956-022-10017-w

Lestari, E., Rahmawatie, D. A., & Wulandari, C. L. (2023). Does online interprofessional case-based learning facilitate collaborative knowledge construction? *Journal of Multidisciplinary Healthcare, 16*, 85–99. https://doi.org/10.2147/JMDH.S391997

Limaymanta, C. H., Apaza-Tapia, L., Vidal, E., & Gregorio-Chaviano, O. (2021). Flipped classroom in higher education: A bibliometric analysis and proposal of a framework for its implementation. *International Journal of Emerging Technologies in Learning (iJET), 16*(9), 133–149. https://doi.org/10.3991/ijet.v16i09.21267

Listiqowati, I., Budijanto., Sumarmi., & Ruja, I. N. (2022). The impact of project-based flipped classroom (PjBFC) on critical thinking skills. *International Journal of Instruction, 15*(3), 853–868. https://doi.org/10.29333/iji.2022.15346a

Liu, D., & Zhang, H. (2022). Improving students' higher order thinking skills and achievement using WeChat based flipped classroom in higher education. *Education and Information Technologies, 27*, 7281–7302. https://doi.org/10.1007/s10639-022-10922-y

Li, J., Burnham, J. F., Lemley, T., & Britton, R. M. (2010). Citation Analysis: Comparison of Web of Science®, ScopusTM, SciFinder®, and Google Scholar. *Journal of Electronic Resources in Medical Libraries, 7*(3), 196–217. https://doi.org/10.1080/15424065.2010.505518

Li, R., Lund, A., & Nordsteien, A. (2023). The link between flipped and active learning: a scoping review. *Teaching in Higher Education, 28*(8), 1993–2027. https://doi.org/10.1080/13562517.2021.19436555

McWhirter, N., & Shealy, T. (2020). Case-based flipped classroom approach to teach sustainable infrastructure and decision-making. *International Journal of Construction Education and Research, 16*(1), 3–23. https://doi.org/10.1080/15578771.2018.1487892

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook (2nd ed.).* Thousand Oaks: Sage Publications.

Naciri, A., El Hajji, M., Radid, M., Kharbach, A., & Chemsi, G. (2022). Exploring student motivation and performance in the flipped classroom: A case study of nursing students. *Electronic Journal of General Medicine, 19(*3), em364. https://doi.org/10.29333/ejgm/11796

Nantha, C., Pimdee, P., & Sitthiworachart, J. (2022). A quasi-experimental evaluation of classes using traditional methods, problem-based learning, and flipped learning to enhance Thai student-teacher problem-solving skills and academic achievement. *International Journal of Emerging Technologies in Learning (iJET), 17*(14), 20–38. https://doi.org/10.3991/ijet.v17i14.30903

Nasongkhla, J., & Sujiva, S. (2022). A HyFlex-flipped class in action learning: A connectivist MOOC for creative problem-solving. *Contemporary Educational Technology, 14*(4), ep392. https://doi.org/10.30935/cedtech/12554

Nerantzi, C. (2020). The use of peer instruction and flipped learning to support flexible blended learning during and after the COVID-19 pandemic. *International Journal of Management and Applied Research*, *7*(2), 184–195. https://doi.org/10.18646/2056.72.20-013

Nugraheni, B. I., Surjono, H. D., & Aji, G. P. (2022). How can flipped classroom develop critical thinking skills? A literature review. *International Journal of Information and Education Technology, 12*(1), 82–90. https://doi.org/10.18178/ijiet.2022.12.1.1590

Oliván-Blázquez, B., Aguilar-Latorre, A., Gascón-Santos, S., Gómez-Poyato, M. J., Valero-Errazu, D., Magallón-Botaya, R., Heah, R., & Porroche-Escudero, A. (2023). Comparing the use of flipped classroom in combination with problem-based learning or with case-based learning for improving academic performance and satisfaction. *Active Learning in Higher Education, 24*(3), 373–388. https://doi.org/10.1177/14697874221081550

Ölmefors, O., & Scheffel, J. (2023). High school student perspectives on flipped classroom learning. *Pedagogy, Culture & Society, 31*(4), 707–724. https://doi.org/10.1080/14681366.2021.1948444

Petersen, D. (2022). Dimensions: A research tool for librarians. *Journal of Electronic Resources in Medical Libraries, 19*(3), 94–100. https://doi.org/10.1080/15424065.2022.2113348

Pinto, B. L. (2023). Distinguishing between case based and problem based learning. *International Journal of Kinesiology in Higher Education, 7*(3), 246–256. https://doi.org/10.1080/24711616.2022.2111286

Puri, S. (2022). Effective learning through the case method. *Innovations in Education and Teaching International, 59(*2), 161–171. https://doi.org/10.1080/14703297.2020.1811133

Purwanti, I. T., Suryawati, E., & Eliwarti. (2022). Video lectures in online EFL flipped-classroom: Effectiveness, students' evaluation and experiences. *European Journal of Educational Research, 11*(2), 885–898. https://doi.org/10.12973/eujer.11.2.885

Qian, Q., Yan, Y., Xue, F., Lin, J., Zhang, F., & Zhao, J. (2021). Coronavirus disease 2019 (COVID-19) learning online: A flipped classroom based on micro-learning combined with case-based learning in undergraduate medical students. *Advances in Medical Education and Practice, 12,* 835–842. https://doi.org/10.2147/AMEP.S294980

Rahayu, S., Setyosari, P., Hidayat, A., & Kuswandi, D. (2022). The effectiveness of creative problem solving-flipped classroom for enhancing students' creative thinking

skills in online physics educational learning. *Jurnal Pendidikan IPA Indonesia, 11*(4), 649–656. https://doi.org/10.15294/jpii.v11i4.39709

Rehman, R., & Fatima, S.S. (2021). An innovation in flipped class room: A teaching model to facilitate synchronous and asynchronous learning during a pandemic. *Pakistan Journal of Medical Sciences, 37*(1), 131-136. http://doi.org/10.12669/pjms.37.1.3096

Robertson, W. H. (2022). The constructivist flipped classroom. *Journal of College Science Teaching, 52*(2), 3–5. https://doi.org/10.1080/0047231X.2022.12290644

Sanchez-Muñoz, R., Carrió, M., Rodríguez, G., Pérez, N., & Moyano, E. (2022). A hybrid strategy to develop real-life competences combining flipped classroom, jigsaw method and project-based learning. *Journal of Biological Education, 56*(5), 540–551. https://doi.org/10.1080/00219266.2020.1858928

Sánchez, S. P., López-Belmonte, J., Moreno-Guerrero, A.-J., Reche, J. M. S., & Cabrera, A. F. (2020). Effect of bring-your-own-device program on flipped learning in higher education students. *Sustainability, 12*(9), 3729. https://doi.org/10.3390/su12093729

Sezer, T. A., & Esenay, F. I. (2022). Impact of flipped classroom approach on undergraduate nursing student's critical thinking skills. *Journal of Professional Nursing, 42,* 201–208. https://doi.org/10.1016/j.profnurs.2022.07.002

Shi, Y., Ma, Y., MacLeod, J., & Yang, H. H. (2020). College students' cognitive learning outcomes in flipped classroom instruction: A meta-analysis of the empirical literature. *Journal of Computer in Education, 7*, 79–103. https://doi.org/10.1007/s40692-019-00142-8

Sointu, E., Hyypiä, M., Lambert, M. C., Hirsto, L., Saarelainen, M., & Valtonen, T. (2023). Preliminary evidence of key factors in successful flipping: Predicting positive student experiences in flipped classrooms. *Higher Education, 85,* 503–520. https://doi.org/10.1007/s10734-022-00848-2

Suhartini, A., & Marianti, A. (2023). The effect of flipped-problem based learning on curiosity, creative thinking and problem-solving ability. *Journal of Biology Education, 12*(3), 379–389. https://doi.org/10.15294/jbe.v12i3.71844

Sullivan, J. M. (2022). Flipping the classroom: An innovative approach to graduate nursing education. *Journal of Professional Nursing, 38,* 40–44. https://doi.org/10.1016/j.profnurs.2021.11.005

Topperzer, M. K., Roug, L. I., Andrés-Jensen, L., Pontoppidan, P., Hoffmann, M., Larsen, H. B., Schmiegelowa, K., & Sørensen, J. L. (2022). Twelve tips for postgraduate interprofessional case-based learning. *Medical Teacher, 44*(2), 130–137. https://doi.org/10.1080/0142159X.2021.1896691

Tunggyshbay, M., Balta, N., & Admiraal, W. (2023). Flipped classroom strategies and innovative teaching approaches in physics education: A systematic review. *Eurasia Journal of Mathematics, Science and Technology Education, 19*(6), em2283. https://doi.org/10.29333/ejmste/13258

Turan, Z., & Akdag-Cimen, B. (2020). Flipped classroom in English language teaching: a systematic review. *Computer Assisted Language Learning, 33*(5–6), 590–606. https://doi.org/10.1080/09588221.2019.1584117

Väisänen, S., & Hirsto, L. (2020). How can flipped classroom approach support the development of university students' working life skills? University teachers' viewpoint. *Education Sciences, 10*(12), 366. https://doi.org/10.3390/educsci10120366

Wang, T., Sun, C., Mei, Y-J., Hou, C-Y., & Li, Z-J. (2021) Massive open online courses combined with flipped classroom: An approach to promote training of Resident Physicians in Rheumatology. *International Journal of General Medicine, 14,* 4453–4457. https://doi.org/10.2147/IJGM.S325437

Wang, Y. (2020). A study on college english high-efficiency class based on blended teaching mode of flipped classroom. *Theory and Practice in Language Studies, Vol. 10*(9), 1066–1071. http://dx.doi.org/10.17507/tpls.1009.08

Weiss, S., Steger, D., Kaur, Y., Hildebrandt, A., Schroeders, U., & Wilhelm, O. (2021). On the trail of creativity: Dimensionality of divergent thinking and its relation with cognitive abilities, personality, and insight. *European Journal of Personality, 35*(3), 291–314. https://doi.org/10.1002/per.2288

Wilson, K. (2023). What does it mean to do teaching? A qualitative study of resistance to Flipped Learning in a higher education context. *Teaching in Higher Education, 28*(3), 473–486. https://doi.org/10.1080/13562517.2020.1822312

Wilson, R. C., Guilford, J. P., Christensen, P. R., & Lewis, D. J. (1954). A factor-analytic study of creative-thinking abilities. *Psychometrika, 19*, 297–311 https://doi.org/10.1007/BF02289230

Yan, J., Yang, H., Niu, J., & Chen, Y. (2022). Smart teaching reform and practice of flipped classroom in culture Geography course based on Chaoxing Learning Platform. *Journal of Education and Learning, 11*(6), 103–110. https://doi.org/10.5539/jel.v11n6p103

Yang, F., Lin, W., & Wang, Y. (2021). Flipped classroom combined with case-based learning is an effective teaching modality in nephrology clerkship. *BMC Medical Education, 21*(276), 1–7. https://doi.org/10.1186/s12909-021-02723-7

Yen, T. F. (2020). The performance of online teaching for flipped classroom based on covid-19 aspect. *Asian Journal of Education and Social Studies, 8*(3), 57–64. https://doi.org/10.9734/ajess/2020/v8i330229

Youhasan, P., Chen, Y., Lyndon, M. P., & Henning, M. A. (2022). University teachers' perceptions of readiness for flipped classroom pedagogy in undergraduate nursing education: A qualitative study. *Journal of Professional Nursing, 41*, 26–32. https://doi.org/10.1016/j.profnurs.2022.04.001

Zain, F. M., Sailin, S. N., & Mahmor, N. A. (2022). Promoting higher order thinking skills among pre-service teachers through group-based flipped learning. *International Journal of Instruction, 15*(3), 519–542. https://doi.org/10.29333/iji.2022.15329a