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Contextual Learning Videos with the REACT Strategy: A Systematic Review of Mathematics Teaching in KRI Tawau CLCs

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Abstract
This study analyzes trends and developments of contextual learning videos and REACT strategies in mathematics education through a Systematic Literature Review (SLR) of 168 papers published between 2020 and 2024. The review followed seven stages: developing research questions, setting selection criteria, designing search strategies, selecting studies, assessing quality, synthesizing results, and reporting findings. Searches were conducted across Scopus, ERIC, ScienceDirect, SpringerLink, and Google Scholar using the keywords "contextual learning video," "REACT strategy," and "mathematics education." Based on the PRISMA flow, 420 articles were initially identified, 241 were screened by abstract, 189 underwent full-text review, and 168 were included for synthesis. The results reveal that publications peaked in 2021, with Research and Development (33.9%) being the most common method, followed by quantitative (25%), qualitative (22%), and Classroom Action Research (19.1%). Most studies involved junior high school students (35.7%), while problem-solving ability was the most frequently explored mathematical skill. However, none of the studies integrated contextual learning videos with the REACT strategy. This gap indicates the potential to develop REACT-based contextual learning videos, especially in contexts such as KRI Tawau, where qualified mathematics teachers and learning resources are limited, providing flexible and accessible media to enhance students' understanding and engagement in mathematics.

Keywords: CLC; learning videos; contextual approach

1. Introduction

The Community Learning Centers (CLCs) in the KRI Tawau working area of Sabah, Malaysia, play a vital role in providing education for the children of Indonesian migrant workers. As of October 30, 2024, there are 101 junior high school–level CLCs under KRI Tawau, consisting of 17 CLCs with NPSN as their parent schools and 84 as Learning Activity Centers (TKB). These centers are supported by 307 teachers 261 supervising teachers and 46 support teachers yet only five of them hold a bachelor's degree in Mathematics Education. This stark shortage of qualified

mathematics teachers has resulted in suboptimal learning outcomes and limited instructional quality. The CLCs, established as part of the Indonesian government's commitment to ensuring educational access abroad, adopt the Merdeka Curriculum currently implemented in Indonesia. However, various studies highlight that limited teacher competence, inadequate educational infrastructure, and scarce learning resources remain persistent challenges in the Sabah region (Annisa & Nizar, 2022; Wong et al., 2021; Handrianto et al., 2021; Jafar et al., 2022; Adam et al., 2022). These conditions underscore the urgent need for innovative learning media and strategies such as contextual learning videos integrated with the REACT approach to enhance mathematics learning and support teachers in delivering effective, engaging instruction in resource-limited CLC environments.

Teachers at CLCs are not just subject teachers or classroom teachers. However, a CLC teacher may teach multiple classes (multi-grade) and multiple subjects (multi-subject), and some mentor teachers may even have to manage several CLCs in geographically distant locations. Furthermore, the majority of CLC teachers have several additional duties, including serving as CLC administrators, cashiers, BMN administrators, and school operators. Furthermore, CLC teachers also assist parents with student documentation, such as obtaining Birth Registration Certificates (SBPK). The role of teachers at CLCs is crucial, yet they often face limitations in both resources and appropriate training. The shortage of mathematics teachers at CLCs is not only limited to quantity but also related to their competency and qualifications. Many CLC teachers lack adequate educational backgrounds in mathematics, making it difficult for them to deliver material effectively (Wong et al., 2021; Handrianto et al., 2021). This situation is further exacerbated by the lack of available professional training and competency development, which results in low teacher motivation and confidence in the learning process (Handrianto et al., 2021). Research shows that CLC teachers often lack access to the professional training necessary to develop their teaching skills (Smith, 2021; Johnson, 2022). Furthermore, research by Rahman (2023) emphasizes the importance of institutional support in increasing the capacity of CLC teachers, which can help improve the quality of education. These limitations can negatively impact the learning process, reduce student motivation, and hinder the achievement of educational goals.

In addition to a shortage of teachers, mathematics learning at CLCs also faces other challenges, such as low student motivation and a lack of adequate learning aids. Many students struggle to understand abstract mathematical concepts without the support of visual aids or technology (Wong et al., 2021; Handrianto et al., 2021). Furthermore, an unsupportive learning environment and limited educational facilities also hinder learning quality (Jafar et al., 2022; Adam et al., 2022).

To address the limitations of mathematics teachers in CLCs, innovative and effective strategies are needed. One approach is the use of technology, such as instructional videos, which can help teachers deliver material in a more engaging and easily understood way for students (Jafar et al., 2022; AlSaqqaf et al., 2024). Instructional videos offer the advantage of explaining complex mathematical concepts through a more visual and interactive approach (AlSaqqaf et al., 2024). Instructional videos are an effective tool for conveying information and concepts visually. Benefits of instructional videos include their ability to explain complex content in a more understandable

way. Contextual instructional videos can support learning by connecting material to students' real-life situations. Research shows that the use of videos in learning can improve comprehension and retention of information (Brown & Green, 2020). Furthermore, instructional videos are flexible, allowing students to learn at their own pace (Miller, 2021). Recent research by Santoso (2022) also shows that well-designed learning videos can increase students' motivation and engagement in the learning process.

According to Dewi and Agustika (2022), learning activities should be carried out by involving students' daily experiences, so that learning becomes more meaningful. One learning approach that links material to students' real lives is the contextual approach (Nursiah, 2022). This is supported by David Ausubel's learning theory (Nurdyansyah & Eni Fariyatul Fahyuni, 2016:50), which states that meaningful learning theory is a process of linking new information to relevant concepts contained in a person's cognitive structure. Research by Anggia and Sukanto (2021) in their research results shows that contextual approaches and realistic mathematics approaches can both be used to improve mathematical representation skills. Further strengthened by Abdullah and Hasanuddin Usman (2023) whose research results state that the increase in mathematical understanding and representation abilities of students who receive a contextual learning approach based on soft skills is higher than students who receive conventional learning. So, in addition to technology, contextual approaches such as the REACT strategy (Relating, Experiencing, Applying, Cooperating, Transferring) can also be applied to improve students' understanding of mathematics material. The REACT strategy was first proposed by the Center of Occupational Research and Development (CORD). This approach focuses on learning that is relevant to students' daily lives, so they can more easily connect mathematical concepts with real experiences (AlSaqqaf et al., 2024; Handrianto et al., 2021). With this approach, students can become more motivated and actively involved in the learning process. This is in accordance with the opinion of Hena Gian Hermana (2020) who stated that the REACT strategy is not just reading facts, memorizing and listening to lectures from teachers. CORD (1999) in its contextual learning theory states that learning occurs only when students process new information or knowledge in such a way that it makes sense to them within their own frame of reference (the world of their own memories, experiences, and inner responses). Crawford (2001: 3) states that there are five steps that must be taken in an effective learning process, namely (1) relating, (2) experiencing, (3) applying, (4) cooperating, and (5) transferring. In Zulkarnain's (2021) research, it was shown that students who used the REACT strategy demonstrated superior mathematical problem-solving abilities compared to those in conventional learning settings.

Based on the analysis of YouTube videos, the majority of available materials provide one-stop learning content. Although many engaging learning videos exist, it remains difficult to find those that explicitly incorporate pedagogical strategies or approaches. This study is novel in its attempt to synthesize recent findings on learning videos and the REACT strategy. The REACT strategy can be effectively embedded into learning videos by designing content that is both relevant and interactive. Case studies demonstrate that implementing the REACT strategy in a CLC context can enhance student engagement and conceptual understanding (Davis, 2023). Similarly, Hidayati (2023) found that learning videos applying the REACT strategy significantly improved student

learning outcomes. Through a contextual approach, the integration of REACT in learning videos is expected to foster higher-order thinking skills and learning motivation. This aligns with Malaluan and Andrade (2023), who reported that contextualized video questions increase student interest and critical thinking in mathematics. Despite positive evidence on videos, contextual learning, and REACT separately, no systematic review to date has articulated an operational integration of contextual instructional videos with the REACT strategy tailored to CLC-type constraints. Therefore, this study seeks to fill that research gap and highlight the potential of combining technology and contextual pedagogy to improve mathematics learning quality in resource-limited CLC environments (Jafar et al., 2022; AlSaqqaf et al., 2024).

This study aims to present a systematic literature review on the use of contextual learning videos to support mathematics teaching in CLCs. By analyzing various studies and best practices, this study is expected to identify effective strategies that can be implemented in CLCs (Jafar et al., 2022; AlSaqqaf et al., 2024). Furthermore, this study also focuses on exploring the effectiveness of the REACT strategy in improving students' understanding and motivation in mathematics (AlSaqqaf et al., 2024; Handrianto et al., 2021).

The primary contribution of this research is to provide practical recommendations for CLC administrators and teachers to address existing limitations. By integrating technology and a contextual approach, this research is expected to help create a more adaptive learning model that meets student needs (Jafar et al., 2022; AlSaqqaf et al., 2024). Furthermore, the results of this study can serve as a reference for policymakers in formulating more inclusive and sustainable education strategies in the KRI Tawau, Sabah, working area (Annisa & Nizar, 2022).

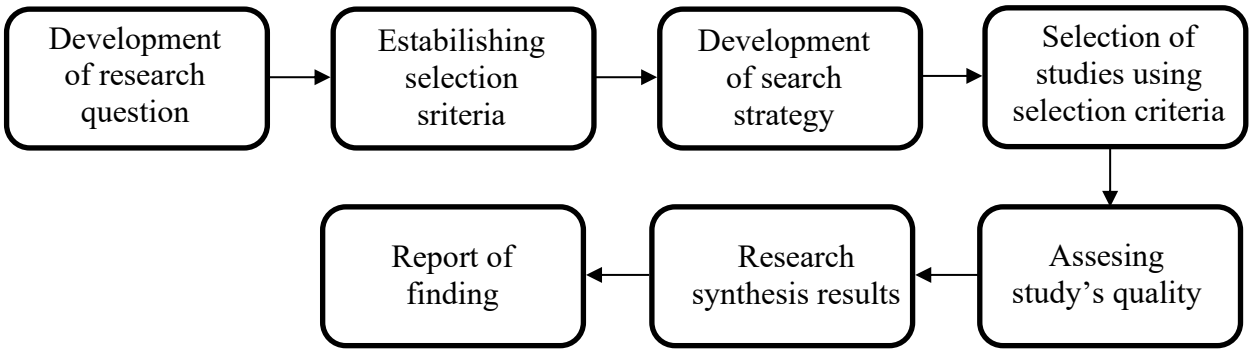
Therefore, this research aims to offer innovative and sustainable solutions to address educational challenges in CLCs. The goal is to improve the quality of education for the children of Indonesian migrant workers in Malaysia (Annisa & Nizar, 2022; Jafar et al., 2022). This is expected to produce a more educated generation prepared to face future global challenges.

2. Methods

The research methodology used in this study was a Systematic Literature Review (SLR), which aims to draw conclusions from research findings investigating contextual learning videos and the REACT strategy. SLR is a systematic and structured research method for collecting, evaluating, and synthesizing existing research findings related to a specific topic. In this study, the focus is on pedagogical innovation, contextual learning videos, and the REACT strategy. The reason for choosing the SLR research method is because it can synthesize scientific evidence in a systematic manner, identify gaps in knowledge, and provide a solid foundation for the development of evidence-based practices (Van Alten et al., 2019). This is in line with Lame's (2019) opinion that the SLR method aims to identify, review, and draw conclusions from all research findings related to the topic under study. The SLR stages in this study are as shown in Figure 1 below.

Figure 1.

Stages of SLR (Richter et al., 2020)



The following is a more detailed explanation of the SLR stages used in this study.

2.1 Development of research questions

The research questions are formulated based on the needs of the research topic taken. Some relevant research questions are as follows: (1) What is the trend in the number of studies on learning videos, contextual approaches and REACT strategies? (2) What methods tend to be used? (3) How are learning videos, contextual approaches and REACT strategies related? (4) What is the diversity of subjects that tend to be used? (5) What is the trend in mathematical abilities integrated with learning video media? (6) What is the trend in the diversity of learning media used? (7) How is the effectiveness of contextual learning videos based on REACT strategies in mathematics learning? (8) What are the benefits of the findings in the context of limited teachers in border areas? (9) What are the relevance, opportunities and challenges of implementing contextual learning videos based on REACT strategies in CLC in the KRI Tawau region, Sabah, Malaysia?

2.2 Building selection criteria

This stage is used to determine whether the literature sources obtained are suitable for use as research data. The criteria for selecting literature for use in this study are inclusion and exclusion criteria. These inclusion criteria aim to ensure that the research included in the analysis is relevant and of high quality, so that the results of the SLR study can provide accurate and useful insights into pedagogical innovation and the use of technology in education. Meanwhile, exclusion criteria are used to exclude studies that do not align with the selected research.

The inclusion criteria used in this SLR are:

a) Literature in the form of journal articles/proceedings.
b) Literature research methods are qualitative, quantitative, PTK or RnD
c) Literature indexed by Sinta and Google Scholar
d) The maximum year of publication of literature is the last 5 years, namely 2020-2024.
e) Literature discusses the scope of mathematics related to CLC teachers, contextual learning videos, REACT strategies, contextual learning videos of REACT strategies

Exclusion criteria include:

a) Year of publication of the article before 2020
b) Literature that does not have a complete structure (e.g., abstract only)
c) Review or conceptual articles that do not report empirical research results

Review or conceptual articles that do not report empirical research results were excluded to ensure the analysis focused on data-based evidence rather than theoretical discussion. Empirical studies provide measurable findings on how contextual learning videos and the REACT strategy are implemented in real settings, allowing for a more valid and practical synthesis especially relevant to addressing instructional challenges in CLC environments.

d) Research that cannot be downloaded as a PDF
e) Research with non-mathematics subjects

2.3 Search strategy development

The collection of literature results that became research data was carried out by searching for research results published in journals online on the Harzing Publish or Perish application in Google Scholar based on inclusion criteria. From the results of the literature search on Publish or Perish indexed by Sinta and Google Scholar, several literatures were obtained that became data in this study. This literature search was conducted on the Google Scholar database using the Harzing Publish or Perish application. Google Scholar is a service on Google that indexes articles published in scientific journals and can be used to search for relevant article sources because it contains articles indexed by Sinta or indexed by Google Scholar based on the required publication year range. The keywords used in the literature search were contextual mathematics learning videos, REACT mathematics videos, mathematics learning videos, contextual mathematics approaches, REACT mathematics strategies, pedagogical innovation, contextual mathematics REACT strategy approaches, contextualized learning, context-based instruction, video-based instruction, REACT pedagogy, and CORD approach.

Population and Sample. The population in this study is all research on the contextual approach and REACT strategy. A total of 255 studies were collected, with details for each keyword as follows.

a) Contextual Approach to Mathematics 101 Research
b) REACT strategy mathematics 23 research
c) Contextual Approach to REACT Mathematics Strategy 1 research
d) Mathematics Learning Video 100 research
e) Contextual Mathematics Video 30 research
f) REACT Mathematics Video 0 research
g) Contextual Video REACT Mathematics Strategy 0 research

Then, from the results of the literature search on the Harzing Publish or Perish application indexed by Sinta and Google Scholar, several literatures were obtained which became data for the research in Table 1 based on the predetermined inclusion criteria.

Table 1.

Literature Information that Becomes Research Data

Inclusion Criteria	Group	Total
Types of Literature	Proceedings	10
	Journal	158
Types of Research Methods	Qualitative	37
	Quantitative	42
	R n D	57
	PTK	32
Indexing	Sinta 1	0
	Sinta 2	5
	Sinta 3	19
	Sinta 4	39
	Sinta 5	27
	Sinta 6	9
	Google Scholar	69
Publication Year	2020	27
	2021	42
	2022	37
	2023	31
	2024	31

2.4 Study selection using selection criteria

The article selection process was conducted in two stages. First, articles were screened based on their title and abstract to assess their suitability for inclusion criteria. Second, articles that passed the initial screening were read in full to assess their suitability. Researchers independently selected the articles, and discussions were held to resolve disagreements until consensus was reached. Data extracted from each article included: author(s), year of publication, research objectives, research methods, sample characteristics, the applied learning video design, effectiveness outcomes (such as learning outcomes, engagement, or participant satisfaction), and the advantages and challenges of integrating approaches/models/strategies into learning videos.

2.5 Assessing the quality of studies

The instrument in this study uses content analysis guidelines that contain the observed aspects which can be seen in Table 2. In this study there are seven aspects to be reviewed, namely: (1) number of publications per year, (2) research methods, (3) mathematical abilities, (4) research subjects, (5) Type of media used, (6) selected mathematical materials, and (7) data analysis. Exceptions in categories (1), (5), (6), and (7) are not determined because there is no previous research to be used as a reference in determining the indicators that need to be used and their general nature. Meanwhile, categories (2) and (4) are adapted from research by Susetyarini & Fauzi (2020). However, in category (4) for research subjects because there are journals with the subject of teachers, I added teachers as a research subject. And for category (3) the mathematical abilities

that students must have according to NCTM (2000) the standard processes that students must have include problem solving, reasoning and proof, communication, connection, representation.

Table 2.
Aspects and Categories used for Content Analysis in the Study

Aspect	Category
Research methods	1. Qualitative 2. Quantitative 3. R n D 4. PTK
Mathematical Ability	1. Problem solving skills 2. Reasoning and proof skills 3. Communication skills (Communication) 4. Connection capability 5. Representation ability
Research Subjects	1. Elementary school students 2. Junior high school students 3. High school students 4. Student 5. Teacher

2.6 Research synthesis results

The extracted data were then synthesized narratively to answer the research questions. Findings from each article were grouped based on similar themes and analyzed descriptively in accordance with the stated research questions. The analysis focused on the impact of using instructional videos, their effectiveness, and the advantages and challenges of using instructional videos. Based on the synthesis of findings, the researchers drew relevant conclusions and provided recommendations for pedagogical practice and further research. This also included identifying gaps in knowledge that could be the focus of future research.

2.7 Findings report

Prepare a report documenting the entire SLR process, including methodology, findings, and conclusions. This report should be transparent and accessible to other researchers for replication or further research.

3. Results and Discussion

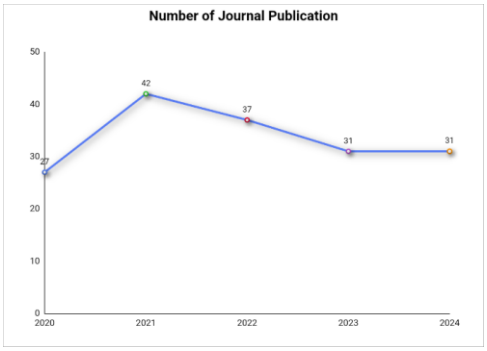
3.1 Result

The results of this study are compiled based on the needs to answer the problem formulation. The literature review will present data from a number of articles reviewed by year of publication, educational level, sample/subjects studied, research methods used, and the conceptual framework of the REACT strategy contextual learning video.

3.1.1 Number of research in the last 5 years

The data presented below in Figure 2 represents the frequency of research publications related to mathematics learning videos, contextual videos, and REACT strategies for the last five years, starting from 2020 to 2024.

Figure 2.
Trend in the number of researches in the last 5 years



The graph in Figure 2 shows that the number of studies related to instructional videos, contextual videos, and the REACT strategy in mathematics learning published from 2020 to 2024 has consistently changed, with both increases and decreases. The graph also shows a peak in the number of publications related to contextual instructional videos and the REACT strategy in 2021. Furthermore, despite a decline in 2023, the graph still shows an increase in 2024, and Indonesian researchers are still interested in studying the topic. Furthermore, most of the research conducted shows that the use of instructional videos can improve students' mathematical abilities and motivation. Therefore, these results can be used as a primary basis for decision-making, and the findings provide credible and useful information for practicing mathematics learning using video media.

3.1.2 Research Methods Used

The data presented in Figure 3 is the number of methods used in research related to mathematics learning videos, contextual videos and REACT strategies for the last five years.

Figure 3.
Distribution of research methods used

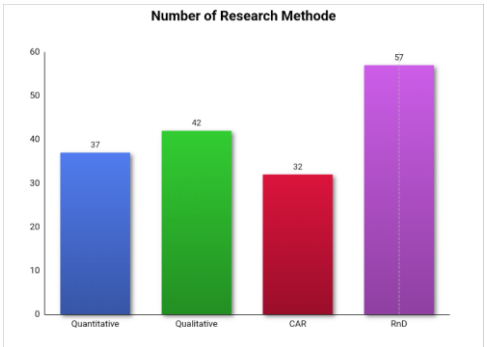
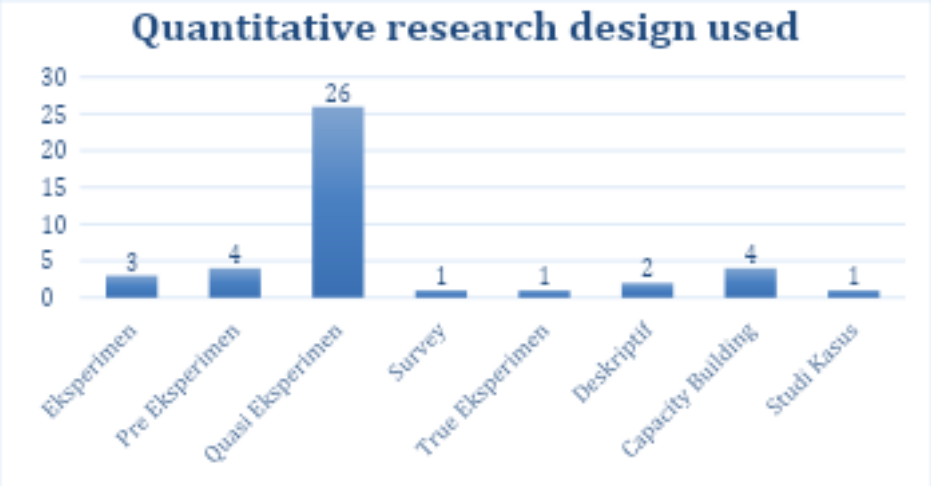


Figure 3 shows that the R&D (Research and Development) method has been predominantly used in researching contextual learning videos and the REACT strategy in mathematics learning over the past five years. The purpose of this research is to produce new products, improve existing ones, and design platform-based learning innovations. Furthermore, qualitative methods and Classroom Action Research (CAR) appear less frequently compared to quantitative and R&D methods, indicating potential opportunities for future researchers to apply these approaches in exploring contextual and REACT-based learning.

Cross-tabulation between research methods and educational levels reveals that R&D methods are mostly conducted at the junior high school (SMP) level (41%), followed by elementary (SD) (29%) and senior high school (SMA) (18%). In contrast, qualitative and CAR studies are more evenly distributed across SD and SMP levels, while quantitative research particularly with experimental designs is concentrated at the SMP level.

Figure 4 further shows that, of the 42 studies using quantitative methods, 26 used quasi-experimental designs, four used true experimental designs, three adopted pure experimental, two used quantitative descriptive, and one each applied a **survey** or **case study** approach. The dominance of quasi-experimental designs indicates researchers' preference for flexible yet controlled testing conditions suited to classroom-based interventions (Randler & Bogner, 2008).

Figure 4.
Variations research design used



The research conducted using quasi-experimental designs can be broadly categorized into several types, namely: providing treatment to two classes using different types of media, comparing classes that use media and those that do not, applying the same media with different learning models, implementing different models in both classes, and comparing classes that use specific models with those that do not. The results indicate that mathematics learning outcomes vary depending on the types of media and learning models applied, showing different levels of effectiveness.

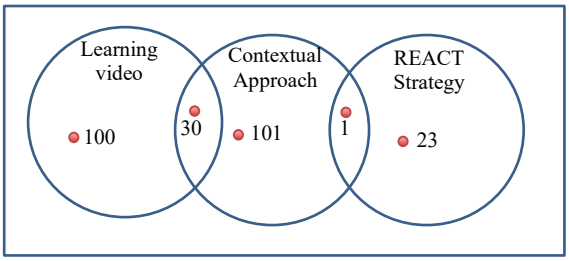
Cross-tabulation between research methods and educational levels shows that quasi-experimental studies are most frequently conducted at the junior high school (SMP) level (43%), followed by elementary school (SD) (31%) and senior high school (SMA) (19%), while the remaining studies are at the higher education level. This pattern suggests that quasi-experimental designs are particularly suited for testing instructional interventions within structured classroom settings such as SMP. Meanwhile, true experimental and quantitative descriptive methods are more common at the SMA level, where research conditions and participant control are easier to manage. These findings highlight how methodological choices align with classroom contexts and educational levels in mathematics learning research.

3.1.3 The relationship between learning videos, contextual approaches and REACT strategies

Related to the distribution of the relationship between learning videos, contextual approaches, and REACT strategies, it can be seen in Figure 5. In Figure 5, there are 100 studies focusing on mathematics learning videos, 30 studies on contextual learning videos in mathematics, 101 studies on contextual approaches, 1 study combining contextual approaches with REACT strategies, and 23 studies focusing solely on REACT strategies. These results clearly indicate zero integration among learning videos, contextual approaches, and REACT strategies, marking a

critical finding that directly answers the research question. This absence of integration highlights a significant research gap and provides a strong rationale for future studies to develop and empirically test contextual learning videos based on the REACT strategy in mathematics education.

Figure 5.
The relationship between learning videos, contextual approaches, and the REACT strategy in mathematics learning.



3.1.4 Research subjects

The research subjects ranged from elementary school students to university students and a teacher. The research subjects are shown in Figure 6 below.

Figure 6.
Research subjects

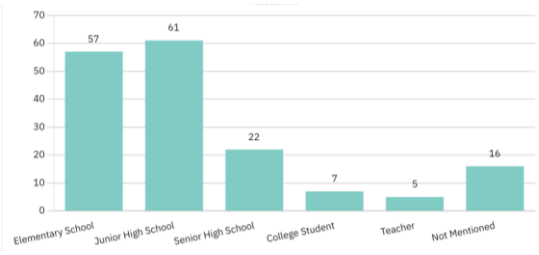


Figure 6 shows that the most frequent research subjects in the articles in this study are junior high school students. Elementary school students are in second place and the next positions are high school/vocational school students, university students, and teachers. In addition, there are 16 unmentioned research subjects. The selection of research subjects is influenced by various factors, one of which is the relevance of the research subjects to the research to be conducted. From these results, it appears that the use of learning videos, contextual approaches, and the REACT strategy is more appropriate to be applied at lower and secondary levels of education. However, this is a challenge for future researchers to conduct research at higher levels, namely high school/vocational school and university students, for better educational development. In addition, researchers can also conduct further research with teachers as research subjects to improve teacher competence and increase innovation in learning.

3.1.5 Mathematical abilities integrated with learning media

Contextual learning at the Community Learning Center (CLC) plays a crucial role in enhancing students' understanding and interest in various subjects, particularly mathematics. This method allows students to connect subject matter to real-life situations, making the learning process more relevant and engaging (Rahmayanti et al., 2020; Ariansyah et al., 2023). Through this approach, students can better grasp mathematical concepts because they see firsthand how the theories they learn can be applied in practical life (Bhure et al., 2021).

Furthermore, contextual-based learning has also been shown to improve student learning outcomes. Research shows that this approach is effective in significantly improving understanding of mathematical concepts (Malmia et al., 2020). This success is due to students' active engagement in the learning process, which encourages critical and creative thinking when solving problems (Ariansyah et al., 2023; Bhure et al., 2021).

This approach can also overcome student boredom in learning mathematics. By linking the subject matter to contexts relevant to them, students become more enthusiastic and motivated to learn (Ariansyah et al., 2023). This high level of interest in the subject plays a crucial role in increasing student engagement and participation during learning, ultimately positively impacting their learning outcomes (Huang et al., 2020).

In CLCs, students often face limited resources and teaching staff. Contextual learning can be a highly effective solution. By utilizing local resources and connecting them to students' daily lives, learning can be more efficient and productive (Nanang, 2020). This method also provides

opportunities for teachers to be more creative in delivering material, even under limited facilities (Sun et al., 2022).

Furthermore, contextual learning can enhance students' critical thinking skills. By being exposed to real-world situations, students are encouraged to analyze, evaluate, and draw conclusions based on the information they obtain (Malaluan & Andrade, 2023). These skills are crucial for everyday life and the workplace, making contextual learning not only academically relevant but also supporting students' life skills development (Elbehary, 2024).

Thus, contextual-based learning in CLCs offers various benefits, such as increasing student interest and achievement, as well as encouraging the development of critical and creative thinking skills. Therefore, this approach is crucial for implementation in CLCs, especially in the face of limited resources and teaching staff.

Regarding the distribution of mathematical abilities that are in accordance with the standards of the mathematics learning process, including problem-solving abilities, reasoning and proof abilities, mathematical communication abilities, mathematical connection abilities and mathematical representation abilities, as shown in Table 3.

Table 3 shows that many studies clearly demonstrate the benefits of research, particularly in improving students' mathematical abilities. Second, related to student learning outcomes. Based on the competencies students must possess, in accordance with the process standards for mathematics learning according to NCTM, the highest integrated skills in learning are problem-solving, followed by communication, and reasoning. Meanwhile, mathematical connection and representation skills offer opportunities for researchers to examine and focus on for further research.

Table 3.
Mathematical Ability and other variables

Mathematical Ability and Other Variables	Number of Research
Problem Solving Skills	8
reasoning and proof	3
Communication	5
Connection	1
Representation	1
activeness, participation, learning achievement, interest and appreciation	12
creative, communication, and collaboration	1
motivation, enthusiasm for learning and understanding	21
critical thinking	2
thinking ability	2
learning outcomes	34
literacy and numeracy	5
spatial ability	1

perception		2
math test		1
not mentioned in the article		69
	Number of Research	168

Other variables that have been the focus of research include learning motivation, enthusiasm for learning, and understanding of mathematical concepts. Furthermore, activeness, participation, learning achievement, interest, and appreciation are also frequently the focus of research.

The variables in a study are influenced by the background of each research problem. It's still necessary to make variables that are rarely the focus of research, such as critical thinking skills, communication skills, and collaboration skills, opportunities for future researchers to integrate into learning media or become the focus of a study.

3.1.6 Diversity of learning media

Regarding the distribution of the diversity of learning media used in this study, it can be seen in Table 4.

Table 4.
Diversity of Media Used in the Study

Type of Learning Media used	Number of Research
Props	2
Contextual Media	4
Module	8
e-Module	1
LKS/LKPD	3
Interactive Multimedia	2
Website Based	1
Android Based	1
Flip pdf corporation edition application	1
learning videos	57
video compact disc	2
animated video	16
audio video	1
interactive video	3
vlog video	1
video storyboard	1
YouTube videos	2
GeoGebra video	1
contextual learning videos	8

contextual learning video REACT strategy	0
Not using media yet	53
Number of Research	**168**

Table 4 shows that instructional videos rank highest as the learning media used in research. However, contextual learning videos using the REACT strategy are still missing. This presents an opportunity for future researchers to integrate contextual approaches and the REACT strategy into instructional videos. The use of contextual-based instructional videos has been proven effective in increasing students' understanding and interest in mathematics. Through these videos, students can see the real-world application of mathematical concepts, making learning more engaging and relevant (Malaluan & Andrade, 2023; Syafitri et al., 2020).

The REACT strategy in learning videos allows students to connect the material to their personal experiences, thereby improving understanding and retention (Elbehary, 2024). This approach makes it easier for students to apply learned concepts in real-life situations, which is one of the main goals of contextual-based learning (Syafitri et al., 2020). The REACT strategy implemented through learning videos also supports the development of students' critical and creative thinking skills. By facing real-life situations presented in the videos, students are encouraged to analyze, evaluate, and make decisions based on the information provided (Malaluan & Andrade, 2023). These skills are crucial for application in everyday life and the workplace (Elbehary, 2024).

In the KRI Tawau region, Sabah, Malaysia, where a shortage of mathematics teachers is a major challenge, contextual learning videos using the REACT strategy can be an effective and efficient learning medium. Videos can serve as a support or even a substitute for teachers in delivering material, thereby helping overcome the limited number of teaching staff (Sun et al., 2022; Nanang, 2020). Furthermore, contextual learning videos using the REACT strategy can increase student interest and motivation in learning mathematics. By presenting material in a relevant and engaging context, students become more engaged and more easily understand the concepts being taught (Huang et al., 2020; Syafitri et al., 2020). This is crucial for improving student learning outcomes, especially in areas with limited educational resources (Ariansyah et al., 2023). Furthermore, videos can be produced once and used repeatedly, saving time and money (Sun et al., 2022). Furthermore, videos can be accessed anytime and anywhere, providing flexibility for students in the learning process (Nanang, 2020). The implementation of contextual-based learning videos with the REACT strategy in CLCs offers numerous benefits. Besides being able to replace the role of teachers, they can also increase student interest and learning outcomes, as well as develop critical and creative thinking skills. Therefore, this approach is crucial for implementation in CLCs, especially given the limited resources and teaching staff.

3.2 Discussion

The results of this study indicate that contextual-based learning videos are an effective solution to overcome the limitations of mathematics teachers in Community Learning Centers (CLCs). Rather than simply summarizing previous findings, these results demonstrate **why**

contextual videos work effectively: they bridge abstract mathematical concepts with real-life representations, offering cognitive scaffolding that supports learners' comprehension through visualization and interactivity. This mechanism aligns with the principles of multimedia learning, where combining visual and verbal information strengthens conceptual understanding. The contextual dimension ensures that learning is meaningful, allowing students to internalize abstract symbols through relevant experiences, which is particularly vital in environments where teachers have limited pedagogical and technological competence.

The REACT (Relating, Experiencing, Applying, Cooperating, Transferring) strategy, on the other hand, enhances **social and experiential engagement**. Each stage in the REACT cycle provides a cognitive path from concrete experiences toward conceptual generalization. For instance, "Relating" and "Experiencing" help activate prior knowledge, while "Applying" and "Cooperating" promote collaborative meaning-making and peer scaffolding, essential in mathematics learning. "Transferring" supports long-term retention as students link mathematical ideas to diverse contexts. In the case of CLC students many of whom are children of migrant workers this relevance fosters emotional engagement and intrinsic motivation, as their lived realities become the foundation for mathematical reasoning.

A central finding from the cross-tabulation analysis is the **zero integration** among contextual learning videos and the REACT strategy across all educational levels and research designs. None of the reviewed studies combine these two approaches, even though both demonstrate strong independent effects on learning outcomes. This absence marks a substantial research gap and represents the **core contribution** of this study: identifying the unexplored intersection between technological media (contextual videos) and constructivist pedagogy (REACT). Integrating the two could theoretically maximize both cognitive and affective dimensions of learning contextualization for understanding, and REACT sequencing for engagement and application.

Variation analysis further shows that most experimental and quasi-experimental designs were conducted at the **secondary school level (SMP/SMA)** in **Asian contexts**, with a smaller number at the elementary level and very few in community-based or non-formal settings like CLCs. Studies from countries such as Indonesia, Malaysia, and the Philippines predominantly emphasize contextual approaches and multimedia, while those from Western contexts focus more on design-based learning and digital pedagogy. This variation underscores that the **integration potential** between contextual videos and REACT remains **underexplored globally**, not only in CLCs but also across formal schooling systems.

In summary, the findings move beyond descriptive recaps to interpret how and why video-based and contextual-REACT learning mechanisms are effective, while highlighting **zero-integration** as a key theoretical and practical gap. Addressing this intersection offers a pathway for future research to design innovative mathematics learning models that are technologically supported, pedagogically grounded, and adaptable across educational levels and cultural contexts.

4. Conclusion

This study concludes that contextual learning, instructional videos, and the REACT strategy each play a significant role in enhancing the effectiveness of mathematics learning. Contextual

learning bridges abstract mathematical concepts with students' real-life experiences, while instructional videos support visualization and accessibility, and the REACT strategy strengthens engagement through experiential and collaborative learning stages.

The systematic literature review (SLR) conducted in this study provides two main contributions. First, it offers a comprehensive mapping of research gaps (zero-integration) by revealing the absence of studies that combine contextual learning videos with the REACT strategy. Second, it identifies key operational design parameters for developing REACT-based contextual learning videos tailored to Community Learning Centers (CLCs), particularly in environments with limited educational and technological resources.

Practical implications suggest that integrating contextual learning videos with the REACT framework can enhance learning relevance and interactivity, especially for students with limited access to qualified teachers. Policy implications emphasize the importance of institutional and governmental support in providing infrastructure and training to enable the development and implementation of such learning media in CLCs. Research implications point to the need for future studies that design, implement, and evaluate REACT-based contextual video models in mathematics learning, thereby filling the integration gap identified in this review.

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