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Project-Based Learning, Interactive Video, and Creativity in Relation to Critical Thinking in EFL Learning: An Integrative Literature Review and Hypothetical Conceptual Model

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Abstract

Critical thinking is a fundamental twenty-first century competence that English as a Foreign Language (EFL) learners need in order to comprehend texts, evaluate information, and construct logical arguments in the target language. Studies with student samples suggest that critical thinking remains a concern, and language classrooms that are teacher-centered and rely on conventional print media may offer limited opportunities to practice it. This article presents an integrative literature review that examines what the available literature indicates about the relationships among Project-Based Learning (PjBL), interactive video, creativity, and critical thinking, and proposes a hypothetical conceptual model for EFL learning. An integrative design was used (Whittemore & Knafl, 2005). The PRISMA 2020 statement was consulted only as a reporting guide; PRISMA flow numbers, per-database search strings, search dates, and a formal quality appraisal are not reported (see Method and Limitations). Sources were analyzed thematically and separated into theoretical support and empirical or review sources. Four themes were identified: (1) PjBL and analytical, problem-solving, and evaluative thinking; (2) interactive video and learner attention, motivation, and comprehension; (3) the relationship between creativity and critical thinking; and (4) a conceptual inference about combining the three. None of the sources cited directly tested interactive-video-supported PjBL in EFL classrooms; the combined model is therefore an inference from separate and mostly indirect lines of evidence, and each of its links is labeled as indirectly supported or inferred. The article offers theoretical grounding informed by constructivist, multimedia learning, and creativity theories and hypotheses for future testing; it does not demonstrate that the combined approach is effective.

1. Introduction

The rapid advancement of technology and information flow requires English language education to produce learners who not only master linguistic knowledge but also possess higher-order thinking abilities. Within twenty-first century learning frameworks, EFL learners need competencies that support adaptability, problem-solving, and sound decision-making across communicative situations. One competence with a strategic role in meeting these demands is critical thinking (Facione, 2015; Partnership for 21st Century Skills, 2019).

Critical thinking enables learners to comprehend spoken and written texts in depth, evaluate the credibility of information, and construct arguments based on logical reasoning. In EFL learning, this competence is essential because learners are required to interpret meaning from authentic input, identify communicative problems, analyze linguistic and contextual data, and draw conclusions supported by evidence within the target language (Brookhart, 2010). Consequently, English instruction should not be oriented solely toward linguistic accuracy but should also cultivate higher-order thinking skills through meaningful language tasks.

Nevertheless, studies with student samples suggest that critical thinking and related dispositions remain a concern (Akpur, 2020; Álvarez-Huerta, 2022). These studies were not conducted specifically with young EFL learners, so the implication for EFL classrooms is an inference. It is plausible that many EFL learners are not yet accustomed to producing well-reasoned arguments, evaluating information critically, or resolving communicative problems systematically, which would suggest that prevailing instructional practices may not fully provide opportunities to exercise critical thinking while engaging with the target language.

One possible contributing factor is the persistence of teacher-centered instruction, in which learners may more often receive linguistic input passively than construct meaning actively. As a result, opportunities for exploration, negotiation of meaning, discussion, and problem-solving in the target language may become limited. In addition, the use of monotonous instructional media may reduce learner interest and engagement during the language learning process (Prensky, 2010).

Project-Based Learning (PjBL) is an instructional model that has been proposed to support the development of critical thinking in language classrooms. This model provides learners with opportunities to acquire language competence through project work connected to authentic, real-world communicative problems. Through planning, implementation, and evaluation phases, learners are encouraged to seek information, collaborate, negotiate ideas, and determine solutions using the target language as a medium of thought and communication (Bell, 2010; Kokotsaki, Menzies, & Wiggins, 2016; Thomas, 2000).

It has been suggested that PjBL in language classrooms may be supported by interactive video as instructional media. Interactive video presents linguistic and communicative material more engagingly through the combination of images, sound, animation, and learner-embedded activities such as quizzes and reflective prompts. The use of such media may help learners comprehend abstract linguistic concepts while simultaneously increasing attention and motivation toward learning English (Mayer, 2021).

Beyond instructional model and media, creativity is also a contributing factor to the development of critical thinking in language learning. Creativity enables learners to generate diverse linguistic expressions, view communicative problems from multiple perspectives, and develop varied alternative solutions when negotiating meaning in English

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(Guilford, 1967; Torrance, 2008). Creativity and critical thinking therefore may function as two mutually reinforcing competencies within the language learning process.

Numerous studies have examined Project-Based Learning, interactive video, and creativity in relation to learning outcomes and learner thinking processes. However, to the authors' knowledge, research that integrates these three constructs within the specific context of critical thinking development in EFL classrooms remains limited, and prior reviews have mostly addressed these variables separately or within general education contexts rather than within language teaching and learning. This review therefore synthesizes what the available literature indicates about the relationships among Project-Based Learning, interactive video, creativity, and critical thinking, and proposes a hypothetical conceptual model as a starting point for developing more innovative and pedagogically relevant EFL instruction that addresses twenty-first century skills demands.

Research Objectives

This study aims to:

1. Synthesize what the literature indicates about the contribution of Project-Based Learning to the development of critical thinking in EFL learning, distinguishing theoretical support from empirical evidence.
2. Examine what the literature indicates about the role of interactive video as instructional support, including within Project-Based Learning, in language classrooms.
3. Examine the reported relationship between creativity and critical thinking.
4. Formulate a hypothetical conceptual model of the relationships among PjBL, interactive video, creativity, and critical thinking in EFL learning, indicating which links are indirectly supported and which are inferred.

2. Method

Research Design

This study employed an Integrative Literature Review (ILR) design to examine the literature related to Project-Based Learning, interactive video, creativity, and critical thinking in EFL learning. This approach was selected because it permits the inclusion of diverse sources, namely theoretical, empirical, and review literature, and allows critical synthesis across studies with diverse designs (Whittemore & Knafl, 2005). Unlike a systematic review, an integrative review aims to build a conceptual understanding and a basis for hypotheses; it does not estimate the effectiveness of an intervention.

Literature was explored in Scopus, Web of Science, ERIC, ScienceDirect, and Google Scholar using keyword combinations related to Project-Based Learning, interactive video, creativity, critical thinking, and EFL learning. The PRISMA 2020 statement (Page et al., 2021) was consulted as a guide for reporting. However, this review does not claim PRISMA compliance: the numbers of records identified, screened, assessed, excluded (with reasons), and included, the duplicates removed, the exact search string for each database, and the date of each search are not reported (see the subsection on study selection reporting and quality appraisal below).

Sources meeting the selection criteria were analyzed using thematic analysis. This technique was used to organize the literature into major themes so that the relationships among instructional model, instructional media, creativity, and critical thinking could be examined.

Data Sources

The data used in this study were secondary data derived from scholarly sources. The sources fall into two groups. Theoretical and foundational sources (for example, Piaget, 1970; Vygotsky, 1978; Mayer, 2021; Guilford, 1967; Torrance, 2008; Facione, 2015) were used to define constructs and to interpret relationships. Empirical and review sources, namely journal articles, a literature review, a proceedings paper, and a research report, were used to examine what has been reported about PjBL, interactive media, and creativity or critical thinking (Table 1). Literature was explored in databases with broad coverage of English language education and instructional technology, namely Scopus, Web of Science (WoS), ERIC (Education Resources Information Center), ScienceDirect, and Google Scholar.

The selection of these databases was based on considerations of publication quality, completeness of article collections, and relevance to the research topic. Retained sources discussed one or more of the research variables, namely Project-Based Learning, interactive video, creativity, critical thinking, and EFL instruction. Retrieved records were managed using reference management software to facilitate categorization and removal of duplicate records.

Literature Search Strategy

The literature search used keyword combinations adjusted to the research focus. The primary keywords included "Project-Based Learning", "Interactive Video", "Creativity", "Critical Thinking", and "EFL Learning". Related terms such as PjBL, Video-Based Learning, Creative Thinking, Critical Thinking Skills, and English Language Teaching were also used.

Boolean operators such as AND and OR were used to broaden or narrow the search results. Retrieved records were screened based on the relevance of title, abstract, keywords, and content to the research objectives. Because the search was exploratory and was not documented separately for each database, it is not reproducible in the strict sense required of a systematic review, and its coverage should be regarded as illustrative rather than exhaustive.

Selection Criteria for Empirical and Review Sources

The following criteria guided which sources were retained as empirical or review evidence: (1) preferably published between 2015 and 2026 to ensure currency, with earlier works (for example, Thomas, 2000; Krajcik & Blumenfeld, 2006; Bell, 2010) retained as foundational sources for PjBL; (2) preferably published in accredited national or reputable international journals, with proceedings papers and reports retained only as supporting sources and labeled accordingly; (3) available in full text; (4) empirical or review studies employing quantitative, qualitative, mixed-methods, experimental, or design-and-development approaches; (5) addressing at least one of the variables Project-Based Learning, interactive video or interactive media, creativity, or critical thinking; and (6) conducted with learners in formal education contexts, with studies in English language learning contexts prioritized and studies from other educational contexts retained as indirect evidence and labeled as such.

Exclusion Criteria

Opinion pieces, editorials, commentaries, and conceptual articles unsupported by empirical data were not treated as empirical evidence, although conceptual and theoretical works were retained as theoretical support. Undergraduate theses, dissertations, and unpublished research reports were excluded from the empirical evidence.

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Sources unavailable in full text, duplicated across databases, or failing to address any of the research variables were eliminated. Whether screening was performed independently by more than one reviewer, and the number of sources excluded for each reason, are not reported.

Data Analysis Technique

Data obtained from selected articles were analyzed using Thematic Analysis. This technique was used to identify, organize, and interpret patterns of findings emerging from the various studies analyzed. Thematic analysis was selected because it can produce an in-depth synthesis regarding the relationship among Project-Based Learning, interactive video, creativity, and critical thinking (Braun & Clarke, 2006).

The analysis process was carried out through several stages. The first stage was data collection, namely compiling all articles meeting the research criteria. The second stage was data reduction, namely selecting information relevant to the research objectives. The third stage was coding, namely assigning codes to important information found within each article. The fourth stage was theme categorization, namely grouping codes with similar meanings into major themes. The final stage was research synthesis, namely integrating the findings into a cautious interpretation of the relationships among the variables examined. In this stage each source was also labeled by evidential status: theoretical support, indirect evidence (relevant to a single variable or to a non-EFL context), or direct evidence (testing the combined approach in EFL).

Study Selection Reporting and Quality Appraisal

The PRISMA 2020 statement (Page et al., 2021) describes four stages: identification, screening, eligibility assessment, and inclusion. These stages were used as a general guide to organize the selection process in this review: records were collected through keyword searches, duplicate records were removed, titles, abstracts, and keywords were screened, and full texts were read against the selection criteria.

However, the numerical outputs of these stages (records identified, duplicates removed, records screened, full texts assessed, studies excluded with reasons, and studies finally included), a PRISMA flow diagram, the exact search string for each database, and the date of each search are not reported. This review therefore cannot be described as PRISMA-compliant or as a systematic review.

No formal quality-appraisal procedure, such as a critical appraisal checklist, was applied. The sources are heterogeneous (theoretical works, a literature review, development studies, and other empirical studies) and are used to build a conceptual argument rather than to estimate effect sizes, and no single appraisal tool applies across all of these designs. This is consistent with the integrative-review approach, in which diverse sources are included and their appraisal is acknowledged to be complex (Whittemore & Knafl, 2005).

As a consequence, no source was weighted by methodological quality, and conclusions are drawn cautiously. Each source is labeled by evidential status, and the findings should be read as an interpretive synthesis rather than as evidence of effectiveness.

3. Results

The thematic analysis identified four themes describing the relationship between Project-Based Learning (PjBL), interactive video, creativity, and critical thinking in EFL learning: (1) the contribution of Project-Based Learning to critical thinking; (2) the role of interactive video in learner engagement; (3) the relationship between creativity and critical thinking; and (4) a conceptual inference about combining Project-Based Learning, interactive video, and creativity. Theoretical support is attributed to the original theorists,

whereas statements about reported findings are limited to the empirical and review sources in Table 1. None of the sources in Table 1 directly tested interactive-video-supported PjBL in EFL classrooms. Evidence for Themes 1 to 3 is therefore indirect, and Theme 4 is a conceptual inference.

Table 1. Characteristics and Evidential Status of the Sources Used

Source	Type / design	Context (as indicated by the publication)	Construct(s)	Use in this review	Evidential status
A. Empirical and review sources					
Kokotsaki et al. (2016)	Literature review	Education, general	PjBL	Overview of PjBL as an instructional model	Indirect (not EFL-specific)
Thomas (2000)	Research review (report)	Education, general	PjBL	Foundational description of the PjBL model	Indirect; foundational
Bell (2010)	Journal article (conceptual overview)	Education, 21st-century skills	PjBL	Rationale for PjBL	Indirect; conceptual
Jalinus et al. (2017)	Proceedings paper	Vocational students (per title)	PjBL; productive competences	Problem-solving orientation of PjBL	Indirect (vocational, not EFL)
Harahap & Siregar (2020)	Journal article; media development (per title)	Interactive learning media; motivation and learning outcomes	Interactive media	Participation through embedded activities	Indirect (not EFL; not video-based PjBL)
Hidayah et al. (2021)	Journal article	Elementary school (per title)	Interactive learning media	Motivation reported with interactive media	Indirect (not EFL)
Akpur (2020)	Journal article (empirical)	Students; not EFL-specific	Critical, reflective, and creative thinking	Concern about critical thinking; creativity-critical thinking relationship	Indirect (association only)
Álvarez-Huerta (2022)	Journal article (empirical)	Higher education students (per title)	Critical thinking disposition; creative confidence	Creativity-critical thinking relationship	Indirect (association only)
B. Theoretical support (not empirical findings)					
Piaget (1970); Vygotsky (1978)	Theory (books)	Cognitive development; social learning	Constructivism	Interpretive lens in the Discussion	Theoretical
Mayer (2021)	Theory (book)	Multimedia learning	Interactive video	Rationale for the role of interactive video	Theoretical
Guilford (1967); Torrance (2008)	Theory; test manual	Creativity	Divergent thinking; creativity	Rationale for creativity and critical thinking	Theoretical

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Source	Type / design	Context (as indicated by the publication)	Construct(s)	Use in this review	Evidential status
Krajcik & Blumenfeld (2006)	Handbook chapter	Learning sciences	PjBL	Theoretical basis for analysis activities in PjBL	Theoretical
Facione (2015); Partnership for 21st Century Skills (2019); Brookhart (2010)	Framework; report; book	Critical thinking and 21st-century skills	Critical thinking	Definition and rationale of critical thinking	Theoretical / framework

Note. Participants, country, sample size, and detailed design were not systematically extracted in this review; the information shown is limited to what the publication type and title indicate.

Theme 1: Project-Based Learning and Critical Thinking (Indirect Evidence and Theoretical Support)

The reviewed sources suggest that PjBL is an instructional model that may support the development of learners' critical thinking. The model positions learners at the center of instruction through investigation, exploration, collaboration, and project completion connected to authentic problems (Kokotsaki et al., 2016; Thomas, 2000). Active engagement at each stage of a project is theorized to encourage deeper thinking than conventional instruction, but the sources cited here do not provide direct EFL evidence for this comparison.

PjBL and Analytical Ability

Analytical ability is a key indicator of critical thinking involving the capacity to identify information, connect concepts, and interpret data logically. The literature suggests that PjBL may strengthen analytical ability because learners must examine problems in depth before determining an appropriate response. In EFL classrooms, activities such as needs investigation, information gathering, and analysis of authentic texts could provide opportunities to analyze information, distinguish fact from opinion, identify cause-and-effect relationships, and construct arguments supported by textual evidence (Krajcik & Blumenfeld, 2006). This is a theoretical argument rather than a finding from an EFL study.

PjBL and Problem-Solving Ability

A defining characteristic of PjBL is its orientation toward authentic, real-world problems. Each project contains a challenge that must be resolved through systematic thinking, which may encourage learners to develop alternative solutions, weigh their strengths and weaknesses, and select a course of action (Jalinus et al., 2017). That source concerns vocational students, so transfer to EFL learners is an inference.

Through this process, learners may acquire not only conceptual and linguistic knowledge but also skills in addressing complex communicative problems. Problem-solving ability developed during project work is a plausible contributor to critical thinking.

PjBL and Evaluative Ability

Evaluative ability refers to the capacity to assess information, ideas, or work outcomes according to specific criteria. In PjBL, learners are typically expected to reflect on the process and outcomes of their projects, evaluate the success of the project, identify obstacles, and determine improvement strategies.

Such activities may train learners to think objectively and reflectively, and project presentations and group discussions can provide opportunities to give and receive feedback in English. Evaluative ability may therefore develop alongside critical thinking, although this link is inferred from the nature of the activities.

Overall, the reviewed sources suggest that PjBL is associated with, and may support, analytical, problem-solving, and evaluative abilities, which are core components of critical thinking (Facione, 2015). Direct evidence for EFL learners was not identified among the sources cited here.

Theme 2: Interactive Video and Learner Engagement (Indirect Evidence and Theoretical Support)

Beyond instructional model, instructional media may also support critical thinking. The reviewed sources suggest that interactive video may enhance learner engagement through material that is attractive, contextual, and comprehensible, although the cited empirical sources concern interactive learning media in general rather than interactive video in EFL classrooms.

Learner Attention

Interactive video combines visual, audio, animation, and interactive elements that may capture learner attention. Unlike conventional one-directional media, it may allow learners to participate through embedded quizzes, simulations, or reflective questions (Harahap & Siregar, 2020).

Attention is a plausible prerequisite for effective language learning: learners who remain focused on the material may find it easier to comprehend linguistic input and connect it to prior learning experiences.

Learning Motivation

The cited studies on interactive media suggest that it may enhance both intrinsic and extrinsic motivation (Hidayah et al., 2021). Engaging and interactive presentation may make learners more interested in participating and more driven to complete assigned tasks. These studies were not conducted in EFL contexts.

Higher motivation may contribute to greater engagement, such as asking questions, participating in discussion, and exploring information related to English language material, which could indirectly support the development of critical thinking. This indirect pathway is inferred.

Comprehension of Linguistic Concepts

English learning often involves abstract linguistic and pragmatic concepts that may be difficult to grasp through verbal explanation alone. According to multimedia learning theory (Mayer, 2021), presenting such concepts through visual illustration, animation, and simulation may make them more concrete and easier to understand.

Ease of concept comprehension may be a foundation for analyzing, evaluating, and solving problems. Interactive video may thus function not merely as an information delivery medium but also as support for critical thinking; this remains a hypothesis.

Theme 3: Creativity and Critical Thinking (Indirect Evidence and Theoretical Support)

Creativity is a competence conceptually related to critical thinking. Studies with student samples have examined relationships among creativity-related and critical-thinking-related variables (Akpur, 2020; Álvarez-Huerta, 2022), which is consistent with the possibility that learners with higher creativity may tend to show stronger critical thinking. These studies did not involve EFL learners, and association does not establish causation.

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Creativity and Divergent Thinking

Divergent thinking is the ability to generate multiple ideas or alternative solutions to a given problem (Guilford, 1967). From this theoretical perspective, creativity may allow learners to view communicative problems from various perspectives and produce more diverse linguistic expressions.

In EFL learning, divergent thinking could help learners generate multiple possible responses to communicative tasks; the greater the number of alternatives generated, the greater the likelihood that learners may identify appropriate and effective linguistic solutions. This is a theoretical expectation.

Creativity and the Problem-Solving Process

Problem-solving requires not only analytical ability but also creativity in generating novel solutions. Creativity may help learners develop different strategies when facing communicative challenges.

Creative learners are often described as more flexible in their thinking, more receptive to new ideas, and more adaptable to changing situations, characteristics that may be relevant to critical thinking and decision-making in language use.

Creativity and Higher-Order Thinking

Creativity and critical thinking are both commonly classified as Higher Order Thinking Skills (HOTS). From a theoretical perspective, creativity drives learners to generate new ideas, while critical thinking helps evaluate and refine those ideas (Torrance, 2008).

This complementary relationship could enable learners both to produce innovative linguistic ideas and to assess their feasibility and effectiveness rationally. Creativity may therefore support the development of critical thinking in EFL learning, although the direction and strength of the relationship require empirical testing in EFL contexts.

Theme 4: Combining Project-Based Learning, Interactive Video, and Creativity (Conceptual Inference)

The fourth theme is a conceptual inference rather than an empirical finding. None of the sources cited here directly tested the combination of Project-Based Learning, interactive video, and creativity in EFL classrooms. The theme is formed by reasoning from the separate lines of evidence in Themes 1 to 3 and from the theories discussed in Section 4.

Possible Interaction among the Three Variables

The synthesis suggests a possible complementarity. PjBL may provide a learning environment in which learners actively complete projects and solve communicative problems; interactive video may help learners comprehend linguistic concepts and increase engagement; and creativity may serve as an internal factor that drives innovative ideas throughout instruction. Whether these components reinforce one another when combined has not been tested in the sources cited.

If such complementarity exists, the combination could create a more meaningful, contextual, and challenging learning experience that may support critical thinking. This is a hypothesis for future research.

Factors That May Influence Instructional Effectiveness

The effectiveness of PjBL supported by interactive video would likely be influenced by teacher competence in managing instruction, the quality of the interactive video used, learner characteristics, availability of facilities and infrastructure, and the support of the learning environment. These factors are proposed on the basis of general instructional reasoning and were not tested in the cited sources.

Teachers may play an important role in designing projects appropriate to learners' developmental level and in facilitating instruction effectively. In addition, the interactive video used would need adequate visual, audio, and interactivity quality to support the achievement of instructional objectives.

Possible Impact on Learners' Critical Thinking

Based on the synthesis, it is hypothesized that integrating Project-Based Learning, interactive video, and creativity development may support learners' critical thinking, for example in analyzing information, evaluating alternative solutions, solving communicative problems systematically, and making decisions based on relevant evidence within the target language. This hypothesis is not established by the sources reviewed.

EFL instruction that integrates innovative instructional models, interactive digital media, and creativity development may therefore hold potential to support twenty-first century competencies, particularly critical thinking, but this potential requires empirical confirmation.

4. Discussion

Constructivist Perspective

The reviewed literature can be interpreted through constructivist theory. The combination of Project-Based Learning (PjBL) and interactive video is conceptually consistent with the constructivist theory proposed by Jean Piaget and Lev Vygotsky, which emphasizes that knowledge is actively constructed by learners through meaningful learning experiences. This is a theoretical interpretation, not an empirical result of the present review: the theories are used to interpret the hypothetical model, not to confirm it.

Piaget's Perspective

According to Jean Piaget (1970), learning is an active process in which learners construct their own knowledge through interaction with the environment. Piaget explained that cognitive development occurs through the processes of assimilation and accommodation, in which learners connect new linguistic input with existing knowledge structures and adjust their understanding to new experiences.

In this review, the PjBL model is interpreted as providing learners with opportunities to explore communicative problems, gather information, analyze linguistic data, and produce products or solutions based on their own understanding. Such activities could encourage learners to construct knowledge independently, which may support critical thinking. Interactive video may also help learners obtain more concrete and contextual learning experiences, which could facilitate the formation of new concepts consistent with their cognitive developmental stage.

Accordingly, the hypothetical model is consistent with Piaget's view that learner-centered instruction involving direct experience may enhance comprehension quality and higher-order thinking, but this consistency does not constitute empirical support for the model.

Vygotsky's Perspective

Lev Vygotsky's (1978) perspective emphasizes that learners' cognitive development is strongly influenced by social interaction and cultural environment. Vygotsky introduced the concept of the Zone of Proximal Development (ZPD), namely the gap between what learners can achieve independently and what they can achieve with assistance from teachers or peers.

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PjBL as interpreted here would enable learners to work collaboratively in groups. Through discussion, cooperation, and idea exchange in English, learners could receive social support that helps them comprehend more complex linguistic and communicative concepts, and interactive video could function as a form of scaffolding that facilitates comprehension of material and completion of tasks.

The hypothesized increases in engagement, motivation, and critical thinking are consistent with Vygotsky's theory that instruction involving social interaction and appropriate support may optimize cognitive development; this remains to be tested.

Theoretical Synthesis

Drawing on Piaget and Vygotsky, the possible benefit of PjBL supported by interactive video can be interpreted as arising because learners do not merely receive linguistic input passively but may actively construct knowledge through experience, exploration, collaboration, and reflection. The model is therefore consistent with constructivist principles that position learners as primary agents of instruction. Whether it improves critical thinking and learning outcomes in EFL classrooms has not been established.

Multimedia Learning Theory Perspective

The reviewed literature on interactive media suggests possible benefits for engagement and comprehension, which can be interpreted through the Cognitive Theory of Multimedia Learning proposed by Richard Mayer. Because the cited empirical sources were not conducted on interactive video within PjBL in EFL classrooms, this is a theoretical interpretation.

Mayer's Perspective

According to Richard E. Mayer (2021), learners learn more effectively from a combination of words and pictures than from words alone. Mayer's Multimedia Learning Theory is based on three principal assumptions:

1. Dual Channel: individuals process information through two separate channels, namely visual and verbal channels.
2. Limited Capacity: each channel has a limited capacity for processing information.
3. Active Processing: learning occurs when learners actively select, organize, and integrate incoming information.

Interactive video presents material through a combination of text, images, animation, audio, and interactive activities that can allow learners to receive information through multiple channels. From the perspective of multimedia learning theory, this presentation may help learners comprehend linguistic concepts more easily than instruction relying solely on lecture or text, but this was not tested in the sources cited.

Moreover, interactive features within the video may encourage learners to engage actively through observation, analysis, and reflection on the material studied, which aligns conceptually with the principle of active processing proposed by Mayer.

Accordingly, Mayer's theory provides a plausible rationale for the proposed role of interactive video, namely that appropriately designed multimedia may enhance instructional effectiveness, conceptual comprehension, motivation, and engagement. It does not demonstrate that these effects occur in the context examined here.

Creativity Theory Perspective

The creativity theories developed by Guilford and Torrance offer a way to interpret how PjBL supported by interactive video might give learners opportunities to explore ideas, solve problems, generate solutions, and create meaningful products in English. This is a theoretical interpretation, not an empirical finding of this review.

Guilford's Perspective

According to J. P. Guilford (1967), creativity is closely related to divergent thinking, namely the ability to generate various alternative answers or solutions to a problem. Guilford identified several indicators of creativity, including:

a. Fluency of thinking
b. Flexibility of thinking
c. Originality of ideas
d. Elaboration of ideas

In PjBL as hypothesized here, learners would design, develop, and complete projects through various stages of problem-solving in the target language. This process could provide space for learners to generate diverse ideas, select appropriate strategies, and produce unique outputs, which would reflect the divergent thinking described by Guilford.

The hypothesized link between creativity and critical thinking is therefore consistent with Guilford's creativity theory, but it has not been tested in the present review.

Torrance's Perspective

According to E. Paul Torrance (2008), creativity is an individual's ability to recognize problems, formulate hypotheses, generate new ideas, test solutions, and communicate the results of their thinking. Torrance also emphasized four principal aspects of creativity, namely:

a. Fluency
b. Flexibility
c. Originality
d. Elaboration

PjBL could provide learners with opportunities to engage in the entire creative process: actively identifying problems, seeking relevant information, formulating solutions, and generating products as a form of applied knowledge.

Interactive video may help enrich information sources and provide stimuli that can spark new ideas, so that learners may obtain a learning environment that supports the development of creativity through exploration, collaboration, and reflection.

Theoretical Synthesis

Drawing on Mayer, Guilford, and Torrance, the use of interactive video within Project-Based Learning can be interpreted as potentially creating an active, engaging, and meaningful learning experience. Interactive video may help learners comprehend material through multimedia presentation, while PjBL may provide space for creative thinking, idea generation, and problem-solving. Increased engagement, creativity, critical thinking, and learning outcomes are therefore possible outcomes that multimedia learning theory and creativity theory can help explain, but they were not demonstrated by the sources reviewed.

Proposed Hypothetical Conceptual Model

Based on the synthesis, the researchers propose a hypothetical conceptual model of the relationships among interactive video, Project-Based Learning (PjBL), learner engagement, creativity, and critical thinking in EFL instruction. The model is conceptual and has not been empirically tested. Table 2 indicates, for each link, whether it is indirectly supported or inferred; no link is directly supported by a study of interactive-video-supported PjBL in EFL.

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Model Explanation (Hypothesized Links)

The model hypothesizes that interactive video may function as an instructional stimulus that enhances learners' attention, motivation, and initial comprehension of instructional material, thereby facilitating engagement in instructional activities (indirectly supported by Harahap & Siregar, 2020, and Hidayah et al., 2021, on interactive media, and by Mayer, 2021, in theory).

Interactive video is hypothesized to support the implementation of Project-Based Learning (PjBL), as learners may acquire sufficient information and comprehension to carry out instructional projects (inferred). Within PjBL, learners are expected to explore communicative problems, gather information, engage in discussion, and produce outputs relevant to the material studied (Kokotsaki et al., 2016).

Active project implementation is hypothesized to increase learner engagement, encompassing cognitive, emotional, and behavioral dimensions (inferred from the nature of project work). High engagement is then hypothesized to facilitate the development of creativity, as learners gain opportunities to develop ideas, explore alternative solutions, and produce innovative work (inferred).

Creativity is hypothesized to contribute to enhanced critical thinking. Studies with student samples that examined relationships between creativity-related and critical-thinking-related variables (Akpur, 2020; Álvarez-Huerta, 2022) provide indirect support for an association, but not for the direction of the sequence proposed here.

Thus, the hypothetical model proposes that learners' critical thinking may not develop directly but through a sequence of processes initiated by the use of interactive video, reinforced through PjBL implementation, increased learning engagement, and the development of learner creativity. As a sequence, this is an inference.

Table 2. Evidential Status of Each Link in the Hypothetical Conceptual Model

Link in the model	Evidential status	Basis
Interactive video → attention, motivation, and comprehension	Indirectly supported	Harahap & Siregar (2020); Hidayah et al. (2021) (interactive media, not EFL); Mayer (2021) (theory)
Interactive video → effectiveness of PjBL implementation	Inferred	No cited source tested interactive video within PjBL; reasoned from Themes 1 and 2
PjBL → analytical, problem-solving, and evaluative thinking	Indirectly supported	Kokotsaki et al. (2016); Jalinus et al. (2017) (vocational); Krajcik & Blumenfeld (2006) (theory); not EFL
PjBL → learner engagement	Inferred	Nature of project activities (Kokotsaki et al., 2016; Thomas, 2000); not tested in EFL
Engagement → creativity	Inferred	Theoretical reasoning (Guilford, 1967; Torrance, 2008)
Creativity → critical thinking	Indirectly supported (association only)	Akpur (2020); Álvarez-Huerta (2022); direction not established; Torrance (2008) (theory)
Full sequence: interactive video → PjBL → engagement → creativity → critical thinking	Inferred	Not tested in any cited source

Figure 1. Hypothetical Conceptual Model of Variable Relationships (Inferred; Not Empirically Tested)

Interactive Video → Project-Based Learning → Student Engagement → Creativity → Critical Thinking

Research Implications

Theoretical Implications

This review contributes to EFL instructional research by using constructivist, multimedia learning, and creativity theories as a lens for a hypothetical model. The model suggests that interactive video combined with the Project-Based Learning model may create a learning environment that supports learner engagement, creativity, and critical thinking; this suggestion requires empirical testing.

In addition, this review proposes a hypothetical conceptual model of the relationships among interactive video, Project-Based Learning, learner engagement, creativity, and critical thinking in EFL instruction. The model can serve as a starting point for hypotheses in future research on instructional strategies oriented toward twenty-first century language skills; it is not a validated theory.

Accordingly, this study adds to the discussion of innovation in EFL instruction by indicating where the available evidence is indirect and where it is absent.

Practical Implications

For English Teachers.

The reviewed literature suggests that English teachers may consider trying interactive video and the Project-Based Learning model in EFL instruction. This strategy may help foster learner engagement, creativity, and critical thinking, although its advantage over teacher-centered instruction in EFL has not been shown by the sources cited. Teachers would need to design projects that are contextual and appropriate to learner characteristics so that instruction becomes more meaningful.

For School Principals.

Principals may support the piloting of innovative instruction by providing instructional technology facilities and infrastructure, teacher training, and policies that encourage active, project-based instructional models. Such support could help cultivate a school culture that promotes twenty-first century competencies, ideally accompanied by evaluation of its effects.

For Curriculum and Material Developers.

The review can inform curriculum and material development that gives greater emphasis to the integration of instructional technology, project-based instruction, and the strengthening of critical thinking and creativity, with the integrated approach treated as a design hypothesis to be evaluated. Curricula designed to be adaptive and contextual may help learners face the challenges of language learning in the digital era.

For Language Education Researchers.

This study opens opportunities for future researchers to empirically test the hypothetical conceptual model across various educational levels, subject areas, and instructional contexts. Further research may also examine other factors that potentially influence critical thinking, such as learning motivation, digital literacy, collaborative ability, and learning environment support.

Accordingly, this study offers a conceptual contribution and tentative practical considerations that stakeholders may use as hypotheses when seeking to improve the quality of EFL instruction.

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5. Conclusion

Within the limits of the evidence cited, this integrative review suggests that Project-Based Learning (PjBL) may contribute to the development of critical thinking among EFL learners, with indirect support from the general PjBL literature and from theory; direct evidence from EFL classrooms was not identified among the sources cited. Through investigation, problem-solving, collaboration, and project development, learners may have opportunities to analyze information, evaluate alternative solutions, and make decisions logically and reflectively within the target language.

Interactive media are associated with attention, motivation, and engagement in the cited studies, and multimedia learning theory provides a rationale for why interactive video might help learners comprehend linguistic concepts more concretely. Whether interactive video strengthens the effectiveness of PjBL implementation has not been tested in the sources cited and is proposed as a hypothesis.

Creativity appears to be related to critical thinking in studies with student samples, and creativity theories suggest that it may support critical thinking by helping learners generate and refine ideas. The direction and strength of this relationship in EFL contexts remain to be examined.

Overall, integrating Project-Based Learning, interactive video, and creativity development is a promising but untested proposition for EFL instruction. The hypothetical conceptual model proposed here (Figure 1 and Table 2) is an inference from separate lines of evidence and still requires empirical testing, for example through quasi-experimental studies and path analysis or Structural Equation Modeling, before any claim about its effectiveness can be made.

Research Limitations

Every study has limitations that must be considered when interpreting its results. The limitations of this study are as follows:

Limited Article Sources.

This study explored articles available in specific databases, and the sources cited are relatively few and heterogeneous. Therefore, there remains a possibility that other relevant studies were not identified or were inaccessible during the literature search process.

Limited Publication Time Range.

Empirical and review sources were preferentially restricted to 2015-2026, although earlier foundational works were also cited. Studies published outside this range may not be covered in this review.

Absence of Meta-Analytic Statistical Analysis.

This study employed an integrative review approach focused on descriptive analysis and thematic synthesis. Consequently, it did not calculate effect sizes statistically as in meta-analysis studies, so the magnitude of the effect of PjBL supported by interactive video on critical thinking could not be measured quantitatively.

Variation in the Characteristics of Studies Reviewed.

The articles analyzed differed in research design, learner characteristics, instructional context, and instruments used. This variation may affect the consistency of the results obtained in the synthesis process.

No Direct Evidence of the Combined Approach.

None of the cited sources directly tested interactive-video-supported PjBL in EFL classrooms, and most of the empirical sources concern other educational contexts or only one of the constructs. Statements about the combined approach are therefore conceptual inferences, not empirical findings.

Incomplete Reporting of Study Selection and No Quality Appraisal.

PRISMA flow numbers, per-database search strings, search dates, and reasons for exclusion are not reported, and no formal quality appraisal was conducted. The review is therefore not reproducible in the strict sense of a systematic review, and sources were not weighted by methodological quality.

Recommendations

Based on the research findings and limitations identified, several recommendations for future research are proposed as follows:

Experimental Research in EFL Instruction.

Future research is recommended to employ experimental or quasi-experimental designs to directly examine the effect of PjBL supported by interactive video on learners' critical thinking in English language classrooms. Such research can provide stronger empirical evidence regarding the effectiveness of the instructional model applied.

Research Using Mixed-Methods Approaches.

Future research may employ mixed-methods approaches combining quantitative and qualitative data. This approach allows researchers to obtain a more comprehensive understanding of the instructional process, learner engagement, creativity development, and factors influencing critical thinking.

Meta-Analysis on the Effectiveness of PjBL Supported by Interactive Video.

Once a sufficient number of primary studies are available, meta-analytic research could be conducted to calculate the effect size of implementing PjBL supported by interactive video on learners' critical thinking. Meta-analysis results would provide a more objective picture of the effectiveness level of this instructional model based on various completed studies.

Development of Digital Project-Based Instructional Models for Language Classrooms.

Future research may also focus on developing digital project-based instructional models that integrate instructional technology more optimally, such as interactive video, online learning platforms, Artificial Intelligence, and other digital media. Such models are expected to enhance the quality of EFL instruction while strengthening the twenty-first century competencies required by learners in the digital era.

Empirical Testing of the Proposed Conceptual Model.

Further research also needs to empirically test the hypothetical conceptual model produced in this study, namely the relationship among interactive video, Project-Based Learning, learner engagement, creativity, and critical thinking. Testing of this model may be conducted using quantitative approaches, such as path analysis or Structural Equation Modeling (SEM), to examine the relationships among variables in greater depth.

Accordingly, future research is expected to strengthen the findings obtained in this study and generate increasingly effective instructional innovations for improving the quality of EFL instruction.

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