



## The Pedagogical Integration of Web 2.0 in K–12 English Teaching: A Systematic Review

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### ABSTRACT

Due to the high development of technology and limited research on pedagogical integration of web 2.0 in K-12 English classrooms, the objective of this study is to understand the web 2.0 technology integration in pedagogy in K-12 English classrooms in recent five years, find the gap, and provide insightful suggestions for further improvement. A systematic review with PRISMA 2020 guidance and theme analysis were conducted to achieve the research goal. The findings of the selected paper indicated that current English teachers valued technology-integrated content instruction, preferring to use more relevant and acceptable elements of teaching tools. The ongoing usage of adopting web 2.0 tool not only benefited students' effective language learning but also enriched teachers' teaching methods and improved teaching levels. Additionally, some obstacles were also revealed to web 2.0 tools' successful adoption in education, including the tool, teachers, and external influences. Relevant suggestions are made to improve the pedagogical integration of various tools.

**KEYWORDS:** Digital teaching; K-12 English; Pedagogical integration; Systematic review; Web 2.0

### 1. Introduction

Current schooling has been modified because of technological progress and digitization. It demands new pedagogy in the classroom to fit with contemporary characteristics and enhance the professional development of instructors. Significantly, ICTs, the means for acquiring new-quality information during data conversion (Shugaeva et al., 2021), occur. It has played a growing role in enabling teachers to educate effectively and efficiently and achieve 21st-century education goals (Jimoyiannis et al., 2013). Web 2.0, founded by O'Reilly, is one of the ICT applications that this article focuses on. It acts as a platform for harnessing collective intelligence derived from collective wisdom (O'Reilly, 2007). Therefore, instructors can utilize web 2.0 technologies such as Wikis, blogs, websites, and YouTube channels to acquire useful information for their classroom instruction and to share their experience and teaching ideas online. However, even though the concept of web 2.0 technology emerged in 2004, its use in the classroom remains limited (Jimoyiannis et al., 2013). Moreover, governments and educational administrations are progressively encouraging K-12 teachers' technology preparation so that they can successfully apply technology in the classroom (King & South, 2017). However, most teachers are unprepared to use and adapt technology in teaching or learning (Lei, 2009; Ottenbreit-Leftwich et al., 2010).

In the past decade, there has been little systematic research on the pedagogical integration of Web 2.0 into this subject. Meanwhile, the demand for teaching with technology is greater than ever before. Some existing research is obsolete in comparison to the requirements of today. In addition, the increased use and focus on Web 2.0 technology in higher education diminishes the significance of the technology in K-12 education (Norton & Hathaway, 2008). Typically, English

teachers are the most inclined to pursue creative measures, such as integrating technology into their classrooms. Researchers should pay more attention to Web 2.0 integration in the K–12 English teaching. Consequently, the aim of this study is to comprehend the amount of the particular technology— web 2.0 integration in K-12 English classroom pedagogy during the past five years, identify the gap, and make suggestions for further improvement. To fulfil the research objectives, the following questions will be addressed:

- What types of web 2.0 technologies are integrated into English instruction?
- What are the benefits of incorporating web 2.0 technologies into English instruction?
- What are the main barriers teachers experience when integrating Web 2.0 into English instruction?

To address the research issues and accomplish the study's objective, the author utilized the PRISMA 2020 declaration of systematic review as a checking and searching guideline to supply a comparatively transparent and exhaustive shifting data procedure. Theme analysis (Braun & Clarke, 2006) was used to classify and analyse the chosen data sample in a systematic way so that the three study goals could be met. The results of this study reveal the actual deployment status of web 2.0 technologies in K-12 English classrooms. Similarly, it can provide more intelligent ideas regarding the pedagogical integration of various tools to ultimately enhance the quality of digital instruction.

## 2. Literature review

### 2.1. Web 2.0 in education

In 1989, Berners-Lee presented the concept of the World Wide Web, a platform where users can read and write on the same device (Carvin, 2005). O'Reilly formally defined Web 2.0 for the first time at a technology-related conference in 2005. He described the considerable changes in web functions and identified various basic competences of web 2.0, particularly with regard to user engagement and writable capabilities (O'Reilly, 2007). Nonetheless, since the notion of Web 2.0 has been introduced and popularized, researchers and academics hold divergent viewpoints on this matter. Abram (2005) argued that Web 2.0 demonstrates interactivity via discussions, personalisation, and interpersonal networking, etc. By stressing the social phenomenon, Barsky (2006) continues to add Web 2.0 traits. Warschauer and Grimes (2007) asserted the actual function of Web 2.0 in society, altering the communicative use of web platforms to introduce fresh energy and version. In addition, the proliferation of Web 2.0 will boost creativity, information exchange, and collaboration (Tu et al., 2008).

Together, these studies emphasize the following basic themes: knowledge creation, information sharing, interaction, and collaboration, with the exception of the various representations of the Web 2.0 definition. Web 2.0 is a read-and-write medium that depends primarily on user engagement and collaboration, as opposed to a read-only tool (Thompson, 2007; Richardson, 2006). Similarly, Downes (2005) supports this claim by explaining how Web 2.0 might encourage users to develop, share, and distribute information. On Web 1.0, a read-only platform, the majority of users passively receive tools without participating actively or interactively. As a result, Web 2.0 has been created to provide a platform for consumer contact and collaboration to compensate for this predicament (Usluel & Mazman, 2009). The usage of Web 2.0 in education represents a dramatic shift from traditional to 21st-century teaching methods. The educational sector's transitional stage is dominated by web 2.0 technologies (Bull & Garofalo, 2006). This remark laid the groundwork for the use of technology aides in the classroom in a mixed capacity. Educators may use Web 2.0 as a platform and tool to revolutionize the teaching and learning process (Alexander & Levine, 2008). Common Web 2.0 technologies include blogs (self-expression), wikis (collaborative content creation), podcasts, and social bookmarking (the social organizing of collective knowledge) (Sykes & Thorne, 2008).

Then, instructors can build a contemporary background and a learning environment in which students can engage and collaborate. Today's language teachers and educators are increasingly incorporating Web 2.0 into foreign language instruction (McLoughlin & Lee, 2007). Simultaneously, Web 2.0 has been recognized as a valuable and conducive application for language teaching and learning. Numerous language instructors and teachers view student participation favourably. Through virtual learning environments and transmissive pedagogy, for example, the incorporation of Web 2.0 into instructional strategies might improve students' performance (Hew & Cheung, 2013). Zeng (2020) stated that web 2.0 might improve language learning in a number of ways, including language input and output, interaction, the language learning environment, and learner autonomy. In addition, Halim and Hashim (2019) argue that prior research demonstrates the clear benefits of web 2.0 technology for ESL learning, such as learning engagement, writing skills, environment, social skills, communication, self-confidence, and peer coaching, among other learners. These findings are roughly compatible with prior research findings about the pedagogical benefits of web 2.0 technology (Alexander, 2006; Brown & Adler, 2008). However, the use of web 2.0 technology in the English classroom will have negative effects on technology relevance, efficacy, adequate teaching resources, and gadgets. It suggests that the majority of educators are optimistic and web-savvy. There is scant mention of the appropriate implementation of web 2.0 technology in schools (Bingimlas, 2017; Pan & Franklin, 2011). Consequently, the systematic evaluation of web 2.0 technology in language schools of the twenty-first century must be ensured and guaranteed.

## 2.2. Web 2.0 technological pedagogical content knowledge (TPACK 2.0)

Insufficient research and analysis have been conducted over the past decade about instructors' adaptation of technology in the teaching context. To increase teachers' pedagogical use of ICT and their knowledge of technology, Mishra, and Koehler (2006) created the TPACK model, which is based on Shulman's (1986) pedagogical content knowledge framework, by adding a new perspective: technology (PCK). The derived model of TPACK consists of seven parts that are both independent and interdependent: (a) content knowledge (requiring educators' knowledge of a particular area), (b) pedagogical knowledge (mastering different teaching strategies and methods), (c) technological knowledge (understanding current widely used technology tools in the educational field), (d) pedagogical content knowledge (knowledge of teaching methods pertinent to subject-matter content), and (e) technological pedagogic content knowledge (knowledge of teaching methods (Teo et al., 2019).

The TPACK concept places greater emphasis on technology and provides a framework for instructors to integrate technology successfully and flexibly into their instruction. The TPACK model can serve as a crucial conceptual and theoretical framework for demonstrating teachers' knowledge of technology in education and guiding teachers to develop their understanding of classroom technology integration (Chai et al., 2010; Mishra & Koehler, 2006; Teo et al., 2019). This model will assist instructors or educators in comprehending the rationale for effective technology adoption in their classrooms and revealing the adaptable TPACK framework (Mishra & Koehler, 2008). Gradually, more teachers will demonstrate their digital savvy and facilitate the use of TPACK in contemporary classroom environments (Borko et al., 2009). Teachers with such expertise will be able to select appropriate teaching resources, access globally connected shared material, and build student-centred activities that correspond with curriculum standards more dynamically and easily (Nelson, 2009).

Thus, teachers will no longer focus on a tool, or the types of activities associated with it, but rather on the actual material that connects with the chosen technology. Input and output of acquired knowledge will be more efficient and effective among students. In a collaborative, authentic, user-friendly, and meaningful environment, students will have more motivation and incentive to acquire knowledge. These will demonstrate the finest practices of teachers and the genuine nature of the pedagogy, content, and technological combination. In the intervening decade, Web 2.0 has been promoted and developed in the education sector due to its consumer-centric, collaborative, and participatory characteristics (Jimoyiannis, 2015). The nature of 21st-century education, the new reformed policy, the digital skills of new generations, and the slow updating of instructors' skills are the four primary components that garner the most growth attention in Web 2.0. (Jimoyiannis, 2015).

In addition, the growth of teachers' professional knowledge of technology indicates a condition of expansion. The whole curriculum design will gradually incorporate internet literacy. Current educators must be able to utilize and integrate Web 2.0 resources to boost student learning. Add 2.0 to the TPACK model to investigate the link between web 2.0 and the TPACK framework. Consequently, Technological Pedagogical Knowledge (TPACK 2.0) is a framework that includes a particular technology-web 2.0-to drive and support instructors' implementation. The original TPACK framework remains unmodified. Web 2.0 will be viewed as a well-defined pedagogical measurement rather than a simple technological tool. For instance, it can direct teachers to employ a variety of teaching methodologies and integrate specific Web 2.0 tools while instructing subjects such as English. It integrates dynamically with the TPACK model to increase the sustainability of technology in education.

In TPACK 2.0, three types of knowledge are required: pedagogical content knowledge (knowledge of specific content), technological content knowledge (knowledge of the application of specific web 2.0 tools for content representation), and technological pedagogical knowledge (knowledge of web 2.0 technology for teaching strategies) (Jimoyiannis et al., 2013). It illustrates the relationship between the technology of web 2.0, content, and pedagogy to integrate the specific tools into the instructional practice of teachers (Jimoyiannis et al., 2011). These three constituents are interdependent. The overlapping connection can facilitate instructors' strategic educational thinking and the implementation of how to apply their professional knowledge or teaching practices with web 2.0 tools. The TPACK 2.0 framework encourages the incorporation of Web 2.0 in teaching settings (Jimoyiannis, 2015).

## 3. Method

The systematic review was utilized to answer the three specific research questions stated previously: the specific web 2.0 tools and their benefits and drawbacks. It can provide a thorough, evidence-based synthesis of existing knowledge on the issue (Aromataris & Pearson, 2014). The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) 2020 statement was developed as a reporting standard for systematic reviews. In 2009, the PRISMA protocol was published, which provides precise and high-quality reporting requirements for future systematic reviews and meta-analyses (Liberati et al., 2009). The PRISMA 2020, a revised version with 27 checklists and a flowchart of the data collection process, will provide a more complete transparent and exhaustive reporting to combat the inadequately reported systematic review

publications (Page et al., 2021). Identification, screening, eligibility, and inclusion are the four essential processes in gathering data. The following will provide specifics:

### 3.1. Identification phase

The author went through two additional rounds of the identification step to increase the comprehensiveness of the data. In the initial step, the author concentrated on identifying information sources. The author identified four journal publishers, Taylor & Francis, ScienceDirect, Sage, and Wiley, based on the advice and help of professional researchers and significant reference sources for education and social sciences research. The author employed search terms linked to "web 2.0 technology" and "English teaching" (ESL, ELT, EFL, TESOEL, English teaching) to find the research topic. These search keywords were also tweaked and altered to accommodate the search engines used for different Journal articles. The time frame was restricted from 2018 to 2022. The objective was to examine the actual implementation of Web 2.0 over the past few years, particularly following Covid-19. Only open-access, full-text publications were accessible in the original set of 1059 findings. For the second step, the author desired to enrich the data sample and obtain more pertinent papers on the issue by including the ERIC database. The ERIC database was renowned for its comprehensive access to education-specific full-text resources. Even though the ERIC database does not align with the previous three journal publishers, the author modified the selection criteria by selecting only peer-reviewed journal articles and omitting novels that do not correspond to journal articles. The ERIC keyword search terms are shown in table 2. The time frame was also 2018 to 2020, and the complete text was accessible. Twelve hundred and twenty items were chosen from ERIC.

### 3.2. Screening phase

Following the screening process, fifty duplicate articles were eliminated. Inclusion and exclusion criteria were established for selecting more specialized publications. The author examined the titles and abstracts of selected publications to ensure they met the predetermined criteria. English-language articles were included to improve data extraction. For their secondary data, systematic review and meta-analysis were removed from the methodology section. The author wished to collect initial data from selected articles in order to contextualize the setting more thoroughly. Higher education, vocational education, and traditional education were excluded since they did not correspond with the scope of the study. K-12 was covered. Since this study focuses on teachers' viewpoints, student and parent research sets were excluded. To capture instructors' actual implementation levels and attitudes in the classroom, the author included both in-service K-12 English teachers and pre-service English teachers who would teach in the K-12 grades. The subject who met English requirements were included. Ultimately, 78 articles matched the aforementioned criteria.

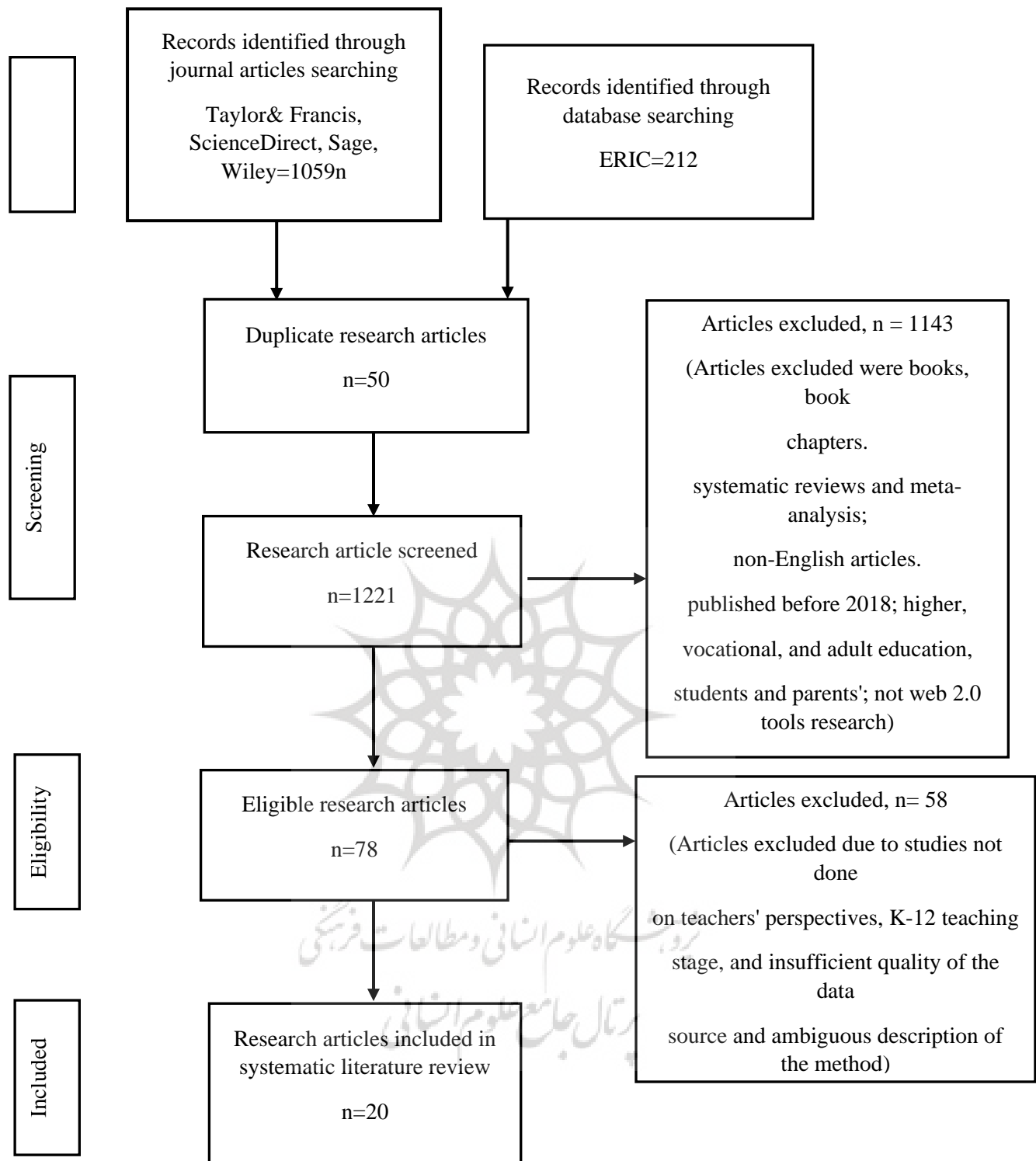
### 3.3. Eligibility phase

To improve the excellent quality and reliability of this article, the author rechecked each abstract and conduct a full-text review to ensure conformity with the criteria already established (see Table 3). Non-English language, quantitative, non-peer-reviewed, and non-journal publications were excluded. In addition, to improve the comprehensiveness and inclusion of data, references that were highly relevant to the issue and match the inclusion criteria were also included in the selected articles. Fifty-eight articles were omitted following this inspection. These were eliminated from three viewpoints. For instance, the first reason was prioritizing students over teachers. The teaching focus shifted to universities and other forms of higher education rather than K-12. Last but not least, the poor quality of the data source and the vague procedure description was excluded.

### 3.4. Extraction phase

Eventually, the author extracted and included 20 articles which were all based on the previous purification (See Appendix). The whole procedure of the PRSMA from stage 1 to stage was presented in the following (See figure 1).





**Figure 1,** The straightforward procedure from stage 1 to stage 4 of the PRISMA.

### 3.5. Data analysis

The selected 20 articles were evaluated and classified by theme analysis (Braun & Clarke, 2006), a qualitative data analysis, after data extraction and full-text reading. In the thematic analysis, an inductive, bottom-up method was utilized to examine the content and theme of the data set. The thematic analysis (TA) is a method for searching and identifying themes systematically in response to specific research topics (DeSantis & Ugarriza, 2000). Primarily, the TA corresponds to the research objective. All detected themes have been subjected to a recursive and repeating procedure in which the author

swings back and forth between the data and coded themes to verify their exhaustiveness, authenticity, and dependability (Braun & Clarke, 2006). As for the analysis procedure, the author went through six processes to do the thematic analysis, including data familiarization, first coding, looking for themes, defining themes, and drafting a report (Braun & Clarke, 2012). In step one, the author engages in "active reading" (Kiteley & Stogdon, 2014) by underlining, taking notes, and making comments. By actively reading, the authors intended to familiarize themselves with the data set and connect it to their complex research concerns. After familiarization, the author carefully began first coding. She categorized the data according to their content significance, and her interpretation was consistent with the research questions. The labeled codes are both descriptive and interpretive. Microsoft Excel was applied to control the coding systems throughout the second step. The spreadsheet has six columns, including articles, aims, methodology, web 2.0 technology, benefits, and challenges about incorporating web 2.0 tools into the classroom. Significantly, the outline of three points: web 2.0 tools, advantages, and problems of integrating web 2.0 in the classroom separately, as opposed to using a single column: significant findings, was intended to more clearly and unambiguously convey salient aspects pertaining to the research questions. When the coding systems were complete, the third step—the search for themes—began. Nonetheless, each must be aligned with the research topics. Then, in step four, reviewing prospective themes, a recursive and iterative procedure was adopted to convey the completeness and reliability of the themes created. By reading articles, the author validated the coding and topics to capture all the data in a relevant manner. After reviewing and double-checking, the author began defining each concept. The designated themes must be informative, succinct, and captivating (Braun & Clarke, 2012). To facilitate comprehension, the author provided subthemes for each theme. The final phase is producing the report, an appropriate process for reporting and analyzing the data in a consistent, logical, and persuasive manner.

#### 4. Findings

In this section, the results collected from the twenty papers listed above will be discussed in detail, separately, and methodically to answer the questions. Each topic is consistent with the research questions of the study. Three themes are included: (1) the types of web 2.0 tools integrated into teaching, (2) the advantages of integrating web 2.0 in the English classroom, and (3) the primary hurdles of integrating web 2.0 in the English classroom (See table 1).

Table 1. The emerging subthemes

Research questions	Themes
1. What are the kinds of technology of web 2.0 integrated in English teaching?	<p>The categories of Web 2.0 tools integrated in teaching:</p> <ul style="list-style-type: none"> <li>• Multimodal presenting platforms</li> <li>• Social networking</li> <li>• Interaction</li> <li>• Authentic teaching resources</li> </ul>
2. What are the advantages of using web 2.0 technology in English teaching?	<p>Two advantages of integrating web 2.0 in English classroom:</p> <ul style="list-style-type: none"> <li>• Promote students' effective language learning and positive learning behaviors</li> <li>• Improve teachers' teaching level and enrich teaching methods.</li> </ul>
3. What are the main barriers faced by teachers when implementing web 2.0 in English teaching?	<p>Three barriers of integrating web2.0 in English classroom:</p> <ul style="list-style-type: none"> <li>• The first-order tool barrier</li> <li>• The second-order teacher barriers</li> <li>• The third- order exterior barriers</li> </ul>

##### 4.1. Types of web 2.0 tools in ELT

The author viewed 20 articles and ultimately selected 18 articles pertaining to tools. Regarding the categories of specific web 2.0 technologies used in English instruction, the topic is subdivided into four extended topics for a more comprehensive presentation of the subject matter and scope. Multimodal presentations of platforms, social networking, engagement, and authentic instructional materials comprise the four expanded themes (See Table 2).

Table 2. Types of web 2.0 tools in ELT

Themes	Sub-themes	Sources
Multimodal presenting platforms	YouTube videos Instagram TIKTOK	Eisenlauer, (2020) Fyfield et al., (2020) Karakas & Kartal, (2020) Lee, (2022) Luy, (2022) Mohammad-Salehi et al., (2021)
Social networking	Weibo; WeChat Pinterest Blog EnglishForum.com Twitter WhatsApp Facebook Zalo	Bener & Yildiz, (2019) Le et al., (2021) Liu et al., (2020) Mei et al., (2018) Mohammad-Salehi et al., (2021) Santos & Castro, (2021) Say & Yildirim, (2020)
Interaction	Kahoot Quizizz Padlet Edmodo Google classroom	Arabaci & Akilli, (2021) Jong & Tan, (2021) Luy, (2022) Santos & Castro, (2021) Say & Yildirim, (2020)
Authentic teaching resources	Canva Podcast TED BBC Wiki	Arabaci & Akilli, (2021) Karakas & Kartal, (2020) Özkan & Güler, (2018) Schmidt & Rye, (2020)

#### 4.1.1. Multimodal presenting platforms

Multimodality is one of the most common functions utilized in English technological environments. Six research demonstrate the trend. Mohammad-Salehi and his colleagues studied the factors influencing the application of web 2.0 technologies in English instruction by Iranian educators. They collected data on the familiarity of 160 EFL teachers in Iran with adopting web 2.0 technologies and reported numerical results. The most surprising finding is that most teachers are conversant with web 2.0 video sharing platforms such as Instagram and YouTube. Students in English courses typically use the two apps as a

platform for video sharing or presentations. Eisenlauer (2020) similarly concentrated on multimodal meaning-making techniques in English learning situations. YouTube was described as a video-sharing and content-sharing tool that could facilitate access to authentic language settings in numerous ways. Karakas & Kartal (2020) also investigated the Web 2.0 tools utilized by English teachers in the classroom. Therefore, YouTube was one of the popularization tools for visualization that allows students to learn English interactively. Luy (2022) also discovered that YouTube was one of the most widely used video platforms for remote education, especially during the Covid-19 pandemic. YouTube videos could aid English teachers in demonstrating and sharing video information with their pupils. Fyfield and his colleagues focused their investigation on YouTube instructional videos in formal education classrooms in 2020. This study demonstrated the dominance and pervasiveness of YouTube as a video-sharing medium for English teachers to better disseminate instructional content and prepare students for future content. Additionally, Lee (2022) analysed the use of Instagram and TikTok for language acquisition in a separate study. Images, audio, space, emojis, and gestures could convey learning to pupils using the picture or visual presentation tool. The multimodality feature of Instagram and TikTok could vividly convey the precise meaning of the content and facilitate successful language acquisition. According to all research, YouTube is the most popular video-sharing platform in web 2.0 technology utilized by EFL teachers nowadays. Teachers can locate numerous relevant videos on YouTube to share with pupils. Multimodality platforms, including YouTube, Instagram, and TikTok, may dynamically blend text and visuals to convey the understanding and significance of instructional information effectively.

#### 4.1.2. Social networking

The second key role of web 2.0 technologies teachers use is social networking, where English teachers engage with one another to share valuable experiences and exchange intelligent teaching-related information. Eight articles discussed various social networking techniques. Blogs are well-known for their social nature and are the most popular tool. Bener and Yildiz (2019) suggested that web 2.0 blogs could be utilized as social networking sites in education. This study highlights the social networking role of Blogs, which provide adequate space for instructors to talk and share their experiences. Mei and his colleagues (2018) discovered that social networking sites like Weibo and WeChat had a reasonably high rate of familiarity and usage compared to other tools. EFL teachers in China primarily utilized Weibo and WeChat as communication platforms where they could communicate with peers or experienced teachers to exchange experiences and severe ideas for improving English teaching standards. Pinterest was employed by Liu and his colleagues (2020) as a research tool to examine social function, professional aims, and educational resources. It indicated that Pinterest could unite teachers worldwide in a socialized knowledge community where they could access and share educational ideas. Subsequently, Mohammad-Salehi and his helpers (2021) investigated teachers' awareness of and use of web 2.0. They discovered that present teachers utilized EnglishFourm sites, Twitter, and blogs as debate and viewpoint exchange platforms. Santos and Castro (2021) also mentioned specific social connection platforms, such as blogs, Facebook, and WhatsApp, allowing education workers to interact with others and receive the updated information. Le and his peers (2021) stressed the importance of social networking platforms for informal professional development. The results demonstrated that Facebook and Zalo were indispensable social networking platforms in casual social settings. Teachers typically used their informal or spare time to seek academic assistance and network. All tools have a crucial feature: social collaboration, in which teachers interact with others, such as peers, educators, and policymakers, to share fresh instructional ideas and connect to worldwide networks.

#### 4.1.3. Interaction

Regarding the integration of instruction, teachers typically prioritize interaction medium in the age of technology-assisted instruction in order to facilitate teacher-student collaboration. Through semi-structured interviews and a questionnaire, Luy (2022) investigated the perspectives of fifty primary school teachers on teaching with technology. Teachers cited Kahoot, Quizizz, and Google classroom as interesting and integrative programs. Particularly following the covid-19 epidemic, teachers had increased their use of this technology. Through the incorporation of online resources, the quality of online instruction was enhanced. Jong and Tan (2021) examined Palette, an online learning platform, to evaluate the most effective educational and technological instruments. The results indicated that Padlet was an effective tool for encouraging kids to write, receiving feedback from teachers, and monitoring their writing development. In their 2021 study, Santos and Castro mentioned Edmodo and Google Classroom as two tools for enhancing online learning engagement. Teachers could use these tools to interact with students more effectively, and students could participate more actively in class. Say, and Yildirim (2020) reported that most teachers consider web 2.0 tools as engagement mediums, such as building classroom groups and delivering presentations. Arabaci and Akilli (2021) highlighted the perceptions of English language teachers towards web 2.0 tools in educational environments. Students and teachers could cooperate interactively to produce a more meaningful event, according to most educators' conceptions of Web 2.0 technology. They had a solid propensity for employing web 2.0 tools in their live instruction classroom to improve students' speaking, listening, reading, and writing skills.

#### 4.1.4. Authentic teaching resources



Teachers will seek and find several relevant teaching-related resources and materials in instructional contexts. Five articles out of twenty research discussed search tools for practical and appropriate teaching resources. The most well-known resource for accurate instructional materials is Wikipedia. Schmidt and Rye (2020) investigated the free online encyclopedia - Wiki - and discovered that the Wiki, a specialized online resource aimed at educators, could assist them in accessing numerous real-world examples. In addition to Wiki, Ozkan and Güler (2018) investigated the opinions and attitudes of pre-service EFL teachers towards the podcast application. The results demonstrated that podcasts are valuable listening options for educational information. Podcasts could assist teachers in creating a realistic learning environment. In their publications, Arabaci and Akilli (2021) cited Canva, a platform for developing teaching resources typically used by teachers to design more contextualized teaching resources and materials individually or jointly from a student-centered perspective. Karakas & Kartal (2020) also mentioned BBC and TED as search engines for authentic educational resources. Compared to other methods, these two are highly popular for collecting more native language usage and content for students to learn. The previous search and creation tools for natural teaching resources can significantly facilitate and diversify teachers' instruction.

#### 4.2. Advantages of integrating web 2.0 in English classroom

According to the study's findings, the benefits of integrating web 2.0 technology into English instruction could be categorized primarily into two groups: students and teachers (See Table 3). A detailed explanation will be provided in the sections that follow.

Table 3. Advantages of integrating web 2.0 in English classroom

Themes	Sub-themes	Sources
Promote students' effective language learning and positive learning behaviors	<ul style="list-style-type: none"> <li>• Language skills: lexical learning; listening; speaking; writing; reading</li> <li>• Learning motivation</li> <li>• Interactive collaboration</li> </ul>	Arabaci & Akilli, (2021) Eisenlauer, (2020) Fakhruddin, (2020) Fyfield et al., (2021) Jong & Tan, (2021) Lee, (2022) Luy, (2022) Mei et al., (2018) Özkan & Güler, (2018)
Enrich teaching methods and improve teachers' teaching level	<ul style="list-style-type: none"> <li>• Authentic and diverse language resources</li> <li>• Contextualize and recontextualize learner-oriented content</li> <li>• Professional learning improvement</li> <li>• Positive attitudes</li> <li>• Social collaboration</li> </ul>	Arabaci & Akilli, (2021) Ballıdağ & Dikilitaş, (2021) Bener & Yildiz, (2019) Eisenlauer, (2020) Fakhruddin, (2020) Fyfield et al., (2021) Jong & Tan, (2021) Karakas & Kartal, (2020) Le et al., (2021) Lee, (2022) Liu et al., (2020) Luy, (2022) Özkan & Güler, (2018)

Say &amp; Yildirim, (2020)

Schmidt &amp; Rye, (2020)

Teo et al., (2019)

Tzotzou, (2018)

#### 4.2.1. Promote students' effective language learning and positive learning behaviours

Arabaci and Akilli (2021) stated in their articles that students' reading, writing, listening, and speaking skills would be enhanced by a foreign language education corporate effective technology. Incorporating Web 2.0 into education or instruction had a high likelihood of improving the situation. Once four fundamental abilities have been mastered, pupils' self-consciousness about automatic learning would skyrocket, and their motivation to learn English would increase. zkan and Güler (2018) concurred that using web 2.0 resources, such as Podcasts, was conducive and valuable for enhancing language abilities (listening, writing, reading, etc.). c. In addition to the four skills of listening, writing, reading, and speaking, Eisenlauer (2020) demonstrated in his study that lexical abilities, such as vocabulary size or chunks, idioms, and phrases, can be gradually enhanced with the help of web 2.0 tools, such as multimodal meaning-making tools in instruction. Under such accumulation, Native-like Fluency and accuracy in English are likely to be attained by students.

As for motivation, Fakhruddin's findings in 2020 indicated that pupils tend to demonstrate a strong and positive attitude about learning when teachers create engaging materials using web 2.0 technology. Under the tech-tool assistance, the difficulty of learning a foreign language was lessened, allowing pupils to identify and comprehend words and sentences readily. Jong and Tan (2021) noted that integrating technological tools could boost students' motivation for writing. Students would like the learning process because of the attractive characteristics of technology tools such as a pallet. Positive attitudes would increase, while frustration and resistance to learning would decrease. Students' active participation and collaboration in the classroom could also be encouraged. Mei and his colleagues (2018) have concluded that ubiquitous learning could be generated by students' high motivation for language learning when technology is integrated. Students quickly access diverse or multimodal resources thanks to technology tools in the classroom. Diverse instructional activities boost students' interest and enthusiasm for English study.

For the interaction, Lee (2022) indicated that some characteristics of technology tools can support the interactive possibilities. Due to the capabilities of technological tools, students are more inclined to communicate and exchange ideas with others. Simultaneously, Luy (2022) claimed that introducing digital tools, such as Kahoot and others, increased student engagement in the classroom. The continuity of students in the classroom was enhanced. Web 2.0 adoption in the classroom facilitated the organization of synchronous instructional activities, particularly following the Coronavirus pandemic. Compared to the traditional knowledge delivery technique, classroom participation and collaboration among students have increased.

#### 4.2.2. Enrich teaching methods and improve teachers' teaching level

According to the 17 papers, teachers' teaching methods and levels can be enhanced by acquiring authentic and diversified teaching resources, contextualizing learning content, a continuum of professional learning growth, increased social collaboration, and improved attitudes. For example, Eisenhauer (2020) demonstrated that technology support not only assists teachers in locating authentic or diverse language materials, but also encourages teachers to contextualize or recontextualize texts. Students can acquire a language more effectively in a natural and contextualized learning setting. Fakhruddin (2020) emphasized that teachers might utilize tool functions, such as editing, combining, and generating, to contextualize and recontextualize student-centered content. These improved teaching or learning resources, which are more authentic and diversified, could spark motivation and positive learning attitudes among students. Moreover, when teachers edited, their professional competencies in digital literacy could be enhanced. Fyfield and colleagues (2021) outlined how a web 2.0 platform could periodically update teachers' instructional materials. These materials serve as a supplement to present instructional content. Teachers' excitement for teaching and learning would increase, and their views toward teaching using technology would continue to improve. In his essay published in 2022, Lee discussed how many search engines could assist teachers in locating authentic content and designing materials based on the teaching context. The role of "hashtag" could facilitate social collaboration by integrating the same experience or group. zkan and Güler (2018) also demonstrated that a positive effect of technology integration in instruction was that teachers not only provide a means to expose students to authentic contexts with authentic resources and a natural learning environment but also equipped themselves with the 21st-century teaching skill requirement of e-teaching. g. Schmidt and Rye (2020) wanted to analyze the web 2.0 tool Wikipedia

usage in the classroom. They discovered that the tool could assist teachers in locating various materials and developing practical teaching contexts. Using technology could provide teachers with authentic and contextualized resources.

For the professional development and social collaboration, Arabaci and Akilli (2021) examined the impact of web 2.0 tools on the educational environment of English instructors and found that most teachers' professional development is encouraged. Specifically, concerning digital literacies, participants reported that their technological competence, such as organizing, designing, editing, and disseminating information with technology, improved significantly as their technological skills grew. Balda and Dikilitaş (2021) also emphasized the online professional development of teachers. Their knowledge and fluency with web 2.0 tools would no longer be a barrier to teachers' efficient use of technology in the classroom. Additionally, social collaboration among teachers could be enhanced. Instructors would devote more time collaborating with experts and seasoned teachers to discuss the optimal implementation in English classrooms. Bener and Yildiz (2019) observed that integrating technology into practice teaching would increase the rate of teacher reflection and social collaboration. Reflection could gradually repair errors and enhance teachers' teaching levels. Conversely, when teachers expressed themselves in an online learning community, it could be seen that their social participation promoted mutual learning by getting diverse and numerous perspectives. Le and colleagues (2021) saw technology instruments' use in professional learning and social collaboration as significant. Teachers actively share their teaching approaches and successes online and connect. Their digital skills and English ability could be enhanced through professional learning development. Liu and his partners (2020) have also demonstrated the benefits of social integration through the general use of technology in the classroom. The formed socialized communities could assist teachers in discovering more diversified materials and acquiring new teaching techniques, which would be conducive to their future professional development. Say and Yildirim (2020) investigated that teacher generally identified web 2.0 as the medium for interacting with others and acquiring English teaching-related information. Teachers demonstrated a strong willingness and good attitudes to use them extensively in the classroom.

As for the positive attitudes, Jong and Tan (2021) analyzed educators' utilization of online teaching platforms. They found that most teachers had good opinions about implementing web 2.0 tools in the classroom. Karakas and Kartal (2020) discovered that teachers had a strong propensity to use social media websites where they may freely engage with others and obtain helpful feedback to improve teaching standards. These allowed teachers to engage in a competitive environment and develop a sense of self-improvement. Teachers would insist on changing their instructional methods. Many teachers had good attitudes toward e-teaching—technology integration in the classroom, as described by Luy (2022) because of the emergence and ubiquity of tech tools. With web 2.0 tools, instructors could build numerous engaging, synchronous, and dynamic educational activities, and their digital literacies of professional development have also been supported. Teo and colleagues (2019) evaluated teachers' adoption of web 2.0 tools in the classroom and found that teachers viewed the benefits of web 2.0 use positively. Particularly after consolidating knowledge of TPACK and widespread implementation in instruction, teachers demonstrated firm, positive, and pleasurable attitudes for its continued use in the future. In his survey, Tzotzou (2018) noted that most EFL teachers had positive attitudes toward the continued integration of web 2.0 tools in EFL classroom settings. Overall, teachers can benefit themselves, like gaining authentic resources, contextualizing content, improving professional development and social collaboration, increasing positive attitudes under the pedagogical application of web 2.0 technology.

#### 4.3. The barriers of integrating web 2.0 in English classroom

Across the reviewed 20 articles, the investigated barriers to impede appropriate implementation of web 2.0 are divided in to three dimensions: the web 2. Tool itself, teachers, and some exterior perspectives (See Table 4).

Table 7. The barriers of integrating web 2.0 in English classroom

Themes	Sub-themes	Sources
The first-order tool barrier		Arabaci & Akilli, (2021).
	• The lack of systematic arrangement	Eisenlauer, V. (2020)
	• low reliability of shared content	Fyfield et al., (2021)
	• commercial-dominated platform	Le et al., (2021)
		Liu et al., (2020)
		Schmidt, K. J., & Rye, E. (2020)

The second-order teacher barriers	<ul style="list-style-type: none"> <li>• Increased workload</li> <li>• Insufficient knowledge of web 2.0 knowledge and skills Social collaboration</li> </ul>	Fakhruddin, (2020)
		Fyfield et al., (2021)
		Karakas & Kartal, (2020)
		Le et al., (2021)
		Lee, (2022)
		Luy, (2022)
		Mei et al., (2018)
		Mohammad-Salehi et al., (2021)
		Teo et al., (2019)
		Tzotzou, (2018)
The third- order exterior barriers	<ul style="list-style-type: none"> <li>• Disparity of digital tool infrastructure</li> <li>• Inadequate guidance and training</li> <li>• Internet connections problems</li> <li>• The lack of parents' support</li> </ul>	Arabaci & Akilli, (2021)
		Jong & Tan, (2021)
		Karakas & Kartal, (2020)
		Le et al., (2021)
		Luy, (2022)
		Mei et al., (2018)
		Mohammad-Salehi et al., (2021)
		Santos & Castro, (2021)
		Teo et al., (2019)
		Tzotzou, (2018)

#### 4.3.1. The first-order tool barrier

Even though web 2.0 technology has been widely disseminated and popularized in the education sector, it has not yet been implemented smoothly. There are three slightly noticeable parts of the tool barrier: lack of systematic organization, limited trustworthiness of shared content, and a platform controlled by corporate entities. For instance, Isenlauer (2020) indicated that some tools often displayed a variety of unorganized material types. Especially for new users, this layout and overview of the information would be overwhelming. Teachers and students would lose interest in its continued use due to its time-consuming approach. Arabaci and Akilli (2021) also noted that the unregulated system of the tool was the most evident detrimental effect of web 2.0 technology on instruction. Due to the unexpected content, which often took considerable time to search, it would be difficult for teachers to teach continuously. For content reliability, Schmidt & Rye (2020) noted in their study that although most internet resources are free, the quality of these sources cannot be assured due to their low academic or school curriculum standards. Due to its incompatibility with Curriculum requirements, Liu and other researchers (2020) asserted that the veracity and precision of disseminated content on various digital tools may be relatively uncertain. On the commercial-dominated aspect, Fyfield and other fellows (2021) asserted that since some technologies were commercially dominated, advertising on those tools would maximize teachers' screen time and may misdirect teachers' initial focus. Teachers are prone to hesitating when deciding which tool is ideal for incorporating into the classroom. Le and helpers (2021) noted that some tools were commercially dominated, which might significantly impact the teacher's attention and time spent searching owing to advertisements. It would be difficult for teachers to choose dependable teaching resources. Ultimately, these obstacles result in poor teaching quality and untargeted content for language learners.

#### 4.3.2. The second-order teachers' barriers

Increased workload and insufficient web 2.0 knowledge and abilities are the primary obstacles aimed at teachers that restrict technology deployment in education. For the increased workload, Le and helpers (2021) found that teachers' workloads

would increase if they were inundated with information. In his article, Lee (2022) showed that implementing technological interaction could increase teachers' workload. Teachers must consciously select and create more multimodal, interactive, and engaging materials. Teachers would most likely be overburdened by the research and planning processes. Luy (2022) remarked that elementary school teachers had a more challenging workload than secondary school teachers since young students required engaging activities to capture their attention. This situation needed teachers to find more relevant interaction design tools, which would increase their workload and cause them to feel stressed. According to Mei and other academics (2018), the increased workload for teachers was one of the primary issues of using Web 2.0 in the classroom. Teachers must devote more effort and time to pre-class and post-class activities if they want to provide a flawless class with technological integration.

As for the insufficient web 2.0 knowledge and skills, Fyfield and other colleagues (2021) stressed that pre-service or beginner instructors would likely lack sufficient web 2.0 knowledge and skills more than in-service or experienced teachers with more collected experience. In their article, Fakhruddin (2020) and Luy (2022) stated that if teachers wished to dynamically and flexibly incorporate web 2.0 in teaching, they needed a high level of digital literacy. However, most teachers still lack the knowledge and abilities necessary to conduct high-demand digital instruction. Karakas and Kartal (2020) observed that teachers were not adequately integrating technological tools into instruction because they lacked the necessary knowledge and skills. Mohammad-Salehi and colleagues (2021) inferred that most teachers could not guarantee the successful incorporation of web 2.0 technology into English instruction due to a lack of specific technical, pedagogy, and subject understanding. A successful classroom of the twenty-first century should demonstrate the combination of technology, pedagogy, and content insertion. Teo and colleagues (2019) discovered that pre-service teachers had little acquaintance with the necessary technologies deployed in contemporary educational environments. Teachers' competency with Web 2.0 tools falls short of expectations. In this essay, Tzotzou (2018) argued that teachers' lack of pedagogical and technical knowledge and utilization would lead to a lack of confidence to continue teaching with technology.

#### 4.3.3. The third-order exterior barriers

The composition of exterior barriers comes from the infrastructure disparity, limited tech training, technical issues, and low support from parents. For equal access to infrastructure, Karakas & Kartal (2020) acknowledged the absence of accessibility issues. There would be a disparity in the distribution of resources among teachers in various geographic regions. Some teachers had a more difficult time gaining access to advanced tools. Luy (2022) stated that the infrastructure in some schools, such as digital gadgets, was incomplete. In addition, many parents demonstrated negative support for teachers' instruction, such as a lack of comprehension of teachers' teaching tempo and a lack of support for learning equipment. Mohammad-Salehi and coworkers (2021) found that the degree to which schools were equipped with technology differs significantly throughout regions according to administrative policies. Some sub-regions had limited digital infrastructure, but others had advanced technological assistance. It was impossible to guarantee the uniformity of web 2.0 implementation in schools. Tzotzou (2018) and Jong and his coworker (2021) showed that certain EFL teachers encountered a lack of digital tool infrastructure availability and accessibility. In addition to receiving insufficient training, teachers were also given fewer digital gadgets. All could contribute to a lack of faith in web 2.0 integration in English instruction. Santos and Castro (2021) have also highlighted the disparity between real-world infrastructure and policy idealization. Schools did not receive sufficient financial aid to construct a stable and somewhat comprehensive infrastructure.

Insufficient and timely training with technology is the second exterior barrier. Mei and other researchers (2018) noted the lack of appropriate training planning and preparation for instructors to become more acquainted with the web 2.0 integration. Typically, inadequate training and police backup occurred. Teo and colleagues (2019) indicated that the shared knowledge and skill of technology integration among pre-service teachers was due to inadequate guidance and training. Teachers have not received sufficient and comprehensive training to support their future teaching careers. According to Le and his colleagues (2021), the lack of support and direction from schools and relevant policy discouraged teachers continued use of web 2.0 tools in the classroom. The lack of policy support from key authorities would result in most teachers receiving inadequate direction and training (Santos & Castro, 2021).

As for the technical issues, Arabaci and Akilli (2021) noted that the internet problem was the most evident detrimental effect of web 2.0 tools on classroom instruction. Due to the unexpected internet outage, which often took considerable time to repair, it would be difficult for teachers to teach continuously. Jong and Tan (2021) also discussed internet connection technical concerns. Many educators would encounter this circumstance and be unsure of how to respond. The quality of instruction would decline. If the government and relevant authorities do not consider these exterior aspects in improvement policies while the pedagogical integration of web 2.0, the reality will not be ideal as expectations.

## 5. Discussion and conclusion



In the study, 20 articles were obtained from four journal publishers and a database in response to the categories of web 2.0 tools, benefits, and difficulties associated with incorporating web 2.0 technology in the classroom. Even though web 2.0 was launched in 2004, the results suggested that its use in the educational field is gaining prominence in many studies. Classroom uses of web 2.0 by English teachers demonstrate that the educational field has developed its use of web 2.0. Remarkably, the multimodal usage allows EFL teachers to upload and download instructional movies from websites. Teachers who employ Web 2.0 technologies observe each tool's functionality and incorporate it into their English lessons. It implies that current English teachers prefer to use more relevant and acceptable elements of teaching tools, recognizing the significance of using technology in topic instruction. It also confirms the hypothesis of TPACK 2.0 (Jimoyiannis et al., 2013) that technology-integrated content instruction can significantly assist teachers in recognizing the three intersections of pedagogy, content, and technology. Following instructional situations and curriculum standards, teachers can select the most effective teaching instruments more dynamically and flexibly.

As for the benefits, previous studies (Hew & Cheung, 2013; Zeng, 2020; Halim & Hassan, 2019) that placed the learning advantages of students as the top priority can be refuted. Teachers, on the other hand, can also be a prioritized analytical target group. Teachers can acquire authentic and diverse teaching resources (Eisenhauer, 2020; Fakhruddin, 2020); Fyfield et al., 2021; zkan & Güler, 2018; Schmidt & Rye, 2020) as well as contextualizing learning content (Eisenhauer, 2020; Fakhruddin, 2020; Schmidt & Rye, 2020), and professional learning development (Arabic & Akili, 2021; Ball u (2018). These advantages among teachers can further illustrate the use of the TPACK 2.0 model in the education field so that instructors can better comprehend the rationale behind advocating the effective implementation of technology in their classrooms. The ongoing usage of web 2.0 technologies in the classroom will demonstrate the technology's viability in education. When schools or police administrations embrace technology, teachers will exhibit less resistance on the field. Similarly, the initiative-driven demand for teacher knowledge, such as technical content, technological pedagogy, and pedagogical content know-how, will positively impact the classroom. With web 2.0 help, teachers may link and apply their professional knowledge and instructional practices more intelligently and strategically. Additionally, the quality of instruction can be improved, and instructors' professional growth will be promoted automatically.

Even though web 2.0 has been developed and promoted for many years, there are still obstacles to its successful adoption in education, including the tool, teachers, and external influences. If teachers want to compensate for their limited knowledge and abilities of web 2.0 technology, well-developed TPACK knowledge and skills are needed. In that case, they will need to commit more time and effort, increasing their burden. In response to professional development training aligned with the TPACK theory, more individual training practices, such as active technology use and meaningful integration of technology, content, and instructional approaches, are required. In the meantime, unsupported school administration policies can eventually result in disparate digital tool infrastructure and inadequate training. There also include some unpredictable components like technical challenges and unsupported attitudes from parents. All the existing issues indicate that changes and improvements must be implemented to promote technology integration in education. To rectify the disparity between reality and ideal, school or police administrations should provide substantial and sufficient financial assistance for infrastructure development, such as acquiring high-tech digital equipment and providing equal access to various tools, etc. Once the essential infrastructure for efficient technology adoption has been established, pre-service and in-service teachers should receive the following professional development courses. In response to the training content, training and implementation should prioritize actual social behaviors and contextualized instruction (Collinson et al., 2009; Corcoran, 1995). To cultivate well-rounded, application-oriented instructors, the content of pre-service teacher training should emphasize the current teaching environment and future requirements.

To contextualize and correct the lack of technology integration in the classroom, schools should arrange in-service teachers' training closely tied to their everyday experiences. Teachers will become increasingly adept and adaptable in dealing with challenging situations. For instance, pre-service education should include technology pedagogical subject understanding and web 2.0 skills. Then, future pre-service teacher applications of acquired knowledge in actual classroom settings are also required. In-service teacher training must also correct and update TPACK 2.0 knowledge and abilities. However, the focus should be on effectively integrating technology into current teachers' classrooms. As for teachers, they should have a strong sense for developing professional learning, such as English proficiency, digital literacy, innovative pedagogy under web 2.0 sustainability, and technology integration-friendly policies. Following the social constructivist learning theory in professional development (Sheffield et al., 2018), teachers should be strongly encouraged to interact with others on collaborative platforms for their high-quality professional development, where they can freely share and communicate their experiences. Expert or experienced teachers must provide more outstanding help for novice teachers and share more critical information and skills via interactive platforms. Under the stimulation of the social community, this can significantly increase social collaboration among instructors and entice teachers' automatic learning for their professional development. Teachers in the classroom must provide students with more straightforward explanations and instructions to reduce student stress and boost their learning motivation. Parents exert an essential function in supporting the incorporation of technology in education. K-12 pupils have comparatively low levels of self-focus and self-discipline compared to higher students. They have a high propensity for internet addiction and immersion. Parents can simultaneously control their

children's behaviour and assist them with learning devices. Technology integration in teaching can eventually be successful, and the health dynamics of teaching and learning with technology can be realized.

This paper proposes a web 2.0 educational framework on pedagogy to improve teachers' professional development and to equip instructors with a comprehensive framework for adopting web 2.0 as an essential and effective learning tool to be integrated into their instructional practices. Educators will be able to select relevant Web 2.0 technology tools for use in the classroom, boost their motivation to continue using Web 2.0 in the classroom, and be aware of potential problems and challenges. It will improve both the teaching procedure and the quality of instruction. However, this paper may have certain drawbacks. Due to the capstone requirement, only the author conducts a comprehensive systematic evaluation of this work, which will likely result in some bias towards particular concerns and research questions. The accuracy and reliability of this work will be inferior to those written by two or three authors. The author scrupulously adheres to the PRISMA 2020 statement on maintaining data transparency and dependability to mitigate personal bias. As for the sample selected for analysis, the author primarily selected journal publishers for the intended sample, reducing the sample sizes necessary for analysis. Significant accuracy will be compromised. In addition, this article focuses mainly on K-12 English classrooms. Other subjects' web 2.0 implementation and higher education level courses are ignored. It will not reflect the entirety of technology integration instruction across all grade levels and classrooms. Therefore, future studies on the pedagogical integration of Web 2.0 should involve a more significant number of researchers and samples to strengthen the data's dependability and precision. In addition to journal papers, cooperative databases can be accessed to ensure data completeness and evidence-based precision when analysing sample size. Additionally, future research should include topics other than English, such as mathematics, physics, and others, to shed light on the application of web 2.0 pedagogy integration in K-12 classrooms. This may reflect the K-12 application and education level as a whole.

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## 7. Appendix

### (The final 20 articles included in the systematic review)

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