Digital Teaching-Learning Technologies: Fostering Critical Thinking in Language Classrooms in Saudi Arabia

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Abstract

This study investigates the wide variety of the current digital teaching-learning technologies that Saudi EFL teachers use to engage students' critical thinking skills. Furthermore, this research also explores the critical thinking skills that developed as a result of the use of technology in the Saudi context. Data were collected through a questionnaire to get teachers' feedback and opinions about digital applications used and the critical thinking skills employed. Forty teachers from six English language institutes and four English departments in different cities of Saudi Arabia participated in this study. Results indicate that the use of technology tools /applications, and popular game and pool apps in teaching English including games and pools using Kahoot!, Quizziz, and Quizlet is highly favored in language classes. Moreover, following instructions and applying language rules are the priority critical skills targeted by language teachers when they use games and pools, and breakout groups using Blackboard, Zoom, Google Meet, Chat, Online Forum, and Instant Messaging are most employed by language teachers for collaboration and discussion purposes in their classes. This study also found that applying language rules, following instructions, brainstorming, determining facts and opinions, stating opinions and analyzing problems are the more frequently targeted critical thinking skills. It is recommended that teachers and trainers with an insight on how to harness and perhaps integrate these technological tools in their teaching-learning.

Keywords: 21st century education, critical thinking, digital teaching-learning, engagement

1. Introduction

Theories and practices in language education have tremendously changed with the emergence of a wide variety of teaching and learning technologies. Thinking in theories of learning, teaching methodologies, and results of learning goals achievement have undergone change since the advent of Information and Communication Technologies (ICT) in education (Bonk & Zhang, 2008; Jonassen, 2006; Lave & Wenger, 1991; Stahl et al., 2006). As explained by Jimoyiannis (2013), ICT can change classroom environments and processes by adding dimensions to them which were previously missing in the conventional system. Where the earlier design was limited to an almost one-way transmission of information sans any depth in the content 'covered', the new approaches focus on firing the thinking of learners, helping them 'build' active knowledge, all attributable to activities directed at this aim. Critical thinking plays an important role in enhancing students' academic performance (Foo & Quek, 2019). Teachers continue to explore teaching methodologies, resources, and technologies to realize their daily goals to facilitate learning and acquisition of knowledge. Abbasova and Mammadova (2019) claimed that the benefits of using digital technology in English language teaching are considered to be really determinative particularly by the younger generation teachers. As educators continue to focus on enhancing learning and performance through innovative research, sharing and collaboration (Alahdal & Al Ahdal, 2019), new teaching and learning trends emerge and blend with time tested pedagogies, giving way to a variety of practices accessible to teachers and school administrators. In the face of contemporary developments in technology in the language classroom, the aim of this study is to document major digital tools employed by teachers to address the development of critical thinking skills.

2. Literature Review

Critical thinking

Critical thinking (CT) is considered a tool that facilitates individuals achieve autonomy in learning, thinking, and other aspects of their lives (Paul and Elder, 2002). Fisher (2001) described critical thinking as a multifaceted tool which identifies and acknowledges learning issues, resolves these in practical ways, collects relevant information towards achievement of these, and to comprehend and use language with accuracy and clarity. Critical thinking naturally involves data interpretation, identification and evaluation of evidence and arguments, as well as recognizing the status of the logical relationships between possibilities, and deriving precise conclusions and generalizations from these.

Many educators and scholars agree that developing critical thinking is central to the goals of

education and training (Piro & Anderson, 2015; Yang et al., 2013; DeNoyelles & Reyes-Foster, 2015). Anderson and Krathwohl's (2001), revising Bloom's taxonomy, considered the fundamental descriptor of higher order thinking skills, has classified the critical thinking skills shown in the Table 1.

Table 1. Bloom's taxonomy (revision by Anderson & Krathwohl, 2001)

Knowledge Dimension	**Cognitive Process Dimension**		
	C4 Analyze	C5 Evaluate	C6 Create
Factual	Make structure	Compare, correlate	Join
Conceptual	Classify, Explain	Examine, Interpret	Plan
Procedural	Analyze, Distinguish	Conclude, Resume	Arrange, Formulate

Brookhart (2010) has identified three steps in the development of higher order thinking skills (HOTS): transfer, critical thinking, and problem solving. Transfer refers to learners' ability to retain knowledge in both short and long term, as well as form connections with this and later knowledge, effectively using learning. Barahal (2008) earlier defined critical thinking as being made up of rational thinking, probing, discerning, comparing and connecting knowledge. Reflection is an integral component of critical thinking and focuses on the choices made in the learning process (Norris & Ennis, 1989). Meanwhile, Nitko and Brookhart (2007) defined problem solving, one of the key elements of HOTS, goal attainment by applying one or several proesses of HOT. Gök çarslan et al. (2019), further enumerated upon the elements that make for critical thinking as logical exploration, autonomy, commenting, identifying assumptions, giving explanations, and evaluating.

With the information revolution, the need to emphasize the use of critical thinking skills in learning cannot be more ignored (Vivekanandan & Pierre-Louis, 2020). With the accessibility of all forms of information made possible by unlimited and sophisticated technological tools and applications, students must be guided to master skills to analyze, synthesize, evaluate, and eventually recreate or create thoughtful decision or output (Alexander et al., 2010; Liu et al., 2015; Schellens, Keer, Wever, & Valcke, 2009).

Critical thinking has now become a major part of the structure of the everyday lesson in most language skills classes and courses. For example, several academic institutes in Saudi Arabia use reference materials such as *Q-Skills* by Oxford University Press (OUP) and *Unlock* by Cambridge University Press (CUP). They connect critical thinking skills, language skills, and learning outcomes. Thought provoking questions engage students with the topic and provide critical thinking framework for the unit Q:Skills for Success, Reading and Writing, (Caplan & Douglas, 2015), and Q:Skills for Success, Listening and Speaking by (Scanlon et al., 2011). The Critical Thinking sections in *Unlock* are based on Benjamin Bloom's classification of learning objectives to ensure that learners develop their lower and higher order thinking skills, ranging from demonstrating knowledge and understanding to in-depth evaluation. Critical thinking in the *Unlock 3 and 4*, Listening, Speaking, and Critical Thinking Second Edition and *Unlock 3 and 4*, Reading, Writing, and Critical Thinking Second Edition (2021) is informed by a range of academic research from Bloom in the 1950s to Krathwool and Anderson in the 2000s, and to more recent considerations relating to 21st Century Skills so that students have the best possible chance of academic success. The critical thinking in this reference material has a refined syllabus with a better mix of higher-and lower order thinking skills and is measurable as it goes with objectives and evaluation so students can track their critical thinking progress. Moreover, the critical thinking section is transparent so teachers and students know when and why they're developing critical thinking skills.

Engaging students in critical thinking is ensured by the variety of academic tasks that are embedded in the syllabi of the OUP and CUP English courses. These academic tasks include broad and diverse higher-order thinking skills such as, to create a talk for a specific audience, give a two-minute presentation, take part in a debate, give a presentation to

discuss a problem and suggest solutions, take part in a discussion, present and defend a research study, take part in an interview, write a comparison and contrast essay, write a problem-solution essay, write a balanced opinion essay, write an analysis essay, or write a research paper.

Critical thinking is significant in boosting learners' academic output (Foo & Quek, 2019) by giving them the ability to connect knowledge across subject areas and finding connections with their lives. When learners use learning and connect it with their real lives, the learned content penetrates deeper and is more durable (Paul & Elder, 2012). Apart from this, learners with developed critical thinking abilities achieve learning independence and autonomy. This is facilitated by their taking stock of the strengths and weaknesses of their own learning styles using those very critical thinking skills and taking greater ownership of their learning (Alexander et al., 2010).

Educational technologies for teaching and learning

One of the most important realities of the 21st century is the power of technology that grants every individual access to a large amount of not just information, but also powerful tools and applications which are very relevant and substantial to be able to handle the expectations, practices, and skills of the 21st century classrooms, workplaces, and societies. The unlimited capability of digital tools in language education is supported by numerous current research studies.

Stanley (2013) identified several ways in which technology is critical in the teaching-learning milieu of a language: (1) reaching language and other information; (2) greater exposure to the language being learnt; (3) enjoyment of learning (i.e. reading/listening for pleasure); (4) creating and (5) publishing own work; (6) peer interaction ; (7) creating language community; (8) classifying and utilizing learning (e.g. learning management systems, online vocabulary notebooks, etc.). Further, Stanley (2003) classified learning technologies as shown in Table 2.

Table 2. Stanley's (2013) classification of learning technologies

The Internet	Software	Hardware
automatic translators	apps	CD-ROMS
blogs	authoring software	computer room
comic-creator software	concordances	data projectors
image-creation software	eBooks	digital cameras
instant messaging	electronic dictionaries	DVDs
news websites	email	interactive whiteboards
online games	interactive fiction	laptops
podcasts	mind-mapping software	mobile phones
poster websites	music software	Mp3 players
social networks	presentation software	netbooks
survey websites	quiz-making software	pen/flash drives
text and voice chart	screen-capture tools	tablets
text and voice forums	social bookmarking	video cameras
video-sharing websites	sound editing software	voice recorders
wikis	word processors	webcams

Foo and Quek (2019) reviewed studies suggesting that asynchronous online discussion (AOD) to teach critical thinking can successfully equip learners with skills deemed essential to educational settings of the contemporary times which rely heavily on asynchronous online discussion. Furthermore, a number of researchers identified some of the possible main reasons that motivate the use of AOD forums to promote students' CT. One, AOD platforms are asynchronous by nature and this feature enables learners to overcome limitations placed by time and place and participate in the processes (Hew & Cheung, 2010; Hou et al., 2008; Vonderwell et al., 2007). Moreover, given the flexibility of the forums, learners have great opportunity in terms of time to review peer responses and check out other resources prior to making their contribution in the discussion (Arend, 2009; Hsieh & Tsai, 2012; McLoughlin & Mynard, 2009). Not only this, but learners have the choice of exerting greater effort in crystallizing their ideas before posting them online and this adds to the quality of their contribution while also boosting their confidence (Wang & Woo, 2007, 2010).

Mashrah (2017) concluded that in the current times, social networks are a great influence on the second language teaching-learning scenario with the main educational uses of the technology being:: a) Brainstorming to gather ideas before writing, b) aiding the less than average learners interact with advanced level peers, c) making the learning environment motivating by adding enthusiasm to the learners' experience, d) ensuring immediacy and ease of feedback on learners' output, e) providing opportunities for real time interactions with native speakers for authentic language exposure, and f) providing unique possibilities for developing academic standards via analysis of these sites which combine peer familiarity, written interactions, and writing performance.

Reinhardt (2019) noted that research on social media in second language education is vast and useful. Other studies (Bin-Hady & Al-Tamimi, 2021) concluded that the informal application of social media in education can foster understanding for other cultures, enhance learners' pragmatic abilities, improve their language consciousness, develop learner identities, and improve specific literacies. In combined use with agency and awareness, social media can be a breaking ground for ensuring learner autonomy. Moreover, it cannot be denied that specific abilities and skills may be developed using certain media such as reflection via blogs, and collaboration via wikis which are easily available to media users today. This is a potential field that needs research and development in education in second language.

Luo (2013) reviewed current studies and literature on Web 2.0 tools and concluded that with Web 2.0 tools and their interactive, social and collaborative features, language acquisition can be more engaging, motivating, and collaboration-oriented. His review suggests that employing Web 2.0 tools in multimodal education has great promise for language learners. This agrees with Wang and Vasquez's (2012) findings which suggest that these tools have the potential to assist learners develop the skills of collaboration, communication and problem-solving apart from specific language skills. Needless to say, these skills can be called essential in the contemporary times.

Nguyen (2021) investigated the effectiveness of video-based projects in communicative grammar lessons in the Vietnamese context, and concluded that the participants showed improvements in their English grammar performance. Moreover, video-based projects are viewed as interesting and motivating by the participants describing their experience with the digital tools.

Dzieciol-Pedich and Dudzik (2021) recognized that asynchronous communication tools become a necessity taking into account the fact that education has largely moved online and synchronous communication tools do not always allow for effective development of speaking skills. Their analysis of three teaching-learning tools seems to suggest that Flipgrid is the best tool for developing ESP speaking skills at the tertiary level. However, their study also suggested that websites such as, EnglishCentral and MedicalEnglish, can be implemented as supporting tools, depending on the requirements of the teaching and learning situation. Nevertheless, their study recommended that teachers should bear in mind that the latter tools complement rather than replace the former ones in developing speaking skills.

The biggest change of the century has been the inclusion of technology as a learning tool and it is a change that has deeply affected both teaches and learners. One of its features that makes technology indispensable is the degree of learner engagement ensured with it use in classrooms in the EFL context (Al-Ahdal, 2020; Maisa, 2020). Another of the results of this study was that learner motivation is positively affected in EFL classrooms that employ a variety of media and also encourage teachers to develop e-learning compatible materials.

Abbasova and Mammadova (2019) claimed that teachers trained in the contemporary times are more inclined to the application of ICT in ELT given that they are more in tune with tech much like their learners. Some of the factors declared to be of utmost importance in the use of ICT in ESL in this study were good internet connection, personal devices such as tabs and laptops, electronic recorders, online dictionaries, videos, and electronically enabled booths in the ESL classrooms.

Chhabra (2012) identified a diverse range of technological tools and systems that can be utilized in e-learning to enhance teaching and learning situations by making learning more interesting, motivating, stimulating and meaningful to the students. Table 3 shows what Chhabra has described as potentially powerful enabling tools for educational change and reform that are making their mark where the integration of technology in English language teaching is concerned. Also, table 3 shows the uses of these tools by teachers and students.

Table 3. Chhabra's (2012) EFL teachers' and students' uses of technological tools and systems

Technological Tool and System	Teacher's Use	Students' Use
Internet	Work on projects collaboratively and prepare materials online	Spelling Bee is one of those internet resources, which helps the students to spell English words.
YouTube	Authentic examples of everyday English used by everyday people	Enhance the four language skills. Broaden vocabulary, give exposure to language accents, educate on right pronunciation, familiarize with tone, pitch etc.
Skype	Teachers and students to collaborate	Writing and/ or research projects can be taken up collaboratively by the learrners
Twitter	Engage students in classroom activities	Learn concepts
Smart Boards	Can combine video, audio, Web browsing and word processing to teach students interactively	Learn through anagrams or jumbled sentences. Use international journals Memorize collocations, antonyms and synonyms. Edit paragraphs or proofread them Write a story collaboratively with everyone contributing to its creation.
Mobile Phones	Assign a theme for the documentary	Make a photo documentary
Podcasting	Assign a podcast assignment for homework and form a discussion on the topic the next day.	Listening to news clips, music, and video clips via the Web. Exposure to authentic new channels for speech modulation, and other creative uses of language
Blog	Share information and generate discussion	Posts quickly, writing a short comment related to the content post their writing output on the blog

Li (2017) shared results when a variety of social media tools were employed showing that teachers are equipped to use Dropbox, Google Drive, Socrative, Poll Everywhere, Padlet, and the Blog, Forum and Wiki tools provided on an e-learning platform (eLearn) in his teaching with students from all his classes as well as with fellow teachers. Table 4 shows the media tools and the teaching functions as adapted by the teacher in the case study.

Table 4. Li's (2017) use of digital tools in teaching

Media Tools	Teaching-Learning Uses
Dropbox and Google Drive	to survey students
Socrative's Quizzes	Helps evaluate how far the subject matter has been grasped by the learners
Poll Everywhere and Padlet	brainstorming activities
eLearn Blogs, Forums and Wikis	Collaborating vis sharing information, and discussing ideas during group writing activities.

21st Century Skills: Blended Technology and Critical Thinking

Gökçearslan et al. (2017) examined some of the current technologies which are said to affect critical thinking skills and described the new technologies which differentiate current forms of interaction and communication in learning environments from traditional class environments. The study also evaluated some potential effects of these technologies on critical thinking and concluded that the biggest advantage of new technologies in the context of developing critical thinking like in their potential for autonomy for the learner as well as in providing a platform for collaboration in learning, enhancing motivation to learn, opportunities for research not bound by time and place, and the facility of sharing. Table 5 reveals the highlights of the evaluation of current technologies and their potential effects on critical thinking.

Table 5. Current technologies and their potential effects on critical thinking

Current Technologies	Potential Effects on Critical Thinking
Discussion forums	Sharing of ideas with individuals or groups (MacKnight, 2000).
	Make an open environment available to the learners for discussions which in turn, fosters learning communities online wherein learners can communicate their knowledge with others including teachers, for academic and social purposes without the constraints of time and place (Corrich et al., 2004).
	Such environments encourage meaningful communication opportunities for learners (MacKnight, 2000).
	Markel (2001) suggests that learner engagement and learning are maximized in online courses where there are discussion opportunities.
	As per MacKnight (2000), this technology is great for teachers too as they can closely follow the progress in learning and critical thinking skills which are fostered by cooperation, reflection, discussion, peer feedback, all of which enhance participation and collaboratiuon in learning.
	Bender (2012), supporting MacKnight's opinions (2000), holds that online discussions see greater participation and cooperation from students as the opportunities that these provide are open and broad.
	Peer interaction is one of the pillars of online education and opportunities for this are ample inn these environments which naturally demand cooperation from participants, thus enhancing the communicative environment (Hoffman, 2010).
	Gokhale (1995) stated that when small groups actively exchange ideas in an online environment, critical thinking cooperative learning are naturally boosted.
WEB 2.0 TOOLS	The access and sharing of information is increased exponentially with the use of Web 2.0 technologies which fosters learning via cooperation. (Ajjan & Hartshorne, 2008).
e blog, wiki, podcast and social networks	Using Web 2.0 tools, teachers can share a whole lot of information in so many different forms such as podcasts, videos, film clips, wikis, and presentations, none of which require any specific or advanced tech skills. Similarly, students also can create online content, collaborate with peers across borders and have more satisfying learning experiences where they get to display their studies to the whole world in these environments.
	Students' abilities for cooperation, collaboration, creativity, and communication stand to benefit when they use these tools while the other skills such as reading, writing etc. are enhanced at school (Solomon & Schrum, 2011). Learners can develop their critical and language skills in these using blogs to write and share ideas and experiences, posting scholarly or general articles, preparing vlogs or videos, and sharing these, apart from clarifying doubts and seeking answers on academic or other content from experts.
	All types of personal and public needs and skill sets can use the Web 2.0 technologies to create, combine, organize and share content using 148 Critical Thinking and Digital Technologies (McLoughlin & Lee, 2007).
	Sharing of opinions, recognizing them, and reactions to them has been made possible with blogs (Ocak et al., 2014); wikis are a great platform for group work in writing, composing, brainstorming, and presenting (Cole, 2009; Gokcearslan & Ozcan, 2011); podcasts enable autonomous student participation (Armstrong et al., 2009).
Virtual learning environments	These environments train learners in online cooperation (Resta & Laferrière, 2007) and foster multiple relations between teachers and learners (Piccoli et al., 2001). These environments contribute to makinf learners' lives creative and also provide opportunities for interaction with others and exploration of the surroundings near and far (Solomon & Schrum, 2011). Student autonomy is remarkable in these as they support, each other, connect across boundaries, interact freely, and have a more wholesome learning experience. These environments are more fulfilling for learners as compared to the computer-aided method as they redefine education (Piccoli et al., 2001)
Social networks	According to the study by Saadé et al. (2012), the biggest advantage of these environments is their contribution to enhancing critical thinking skills which is a result of the high degree of interactiveness between pedagogy and system (Saadé et al., 2012). Social networks are effective learning tools which also build learners' critical thinking. According to another researcher, the key to using social media is the ability to evaluate the reliability of the information source without considering the real content (Pattison, 2012). At the same time, the reliability of information exchanged in these needs to be carefully examined as this is ensured in conventional book-based learning where the materials are duly validated much like any other official document. This validation , in itself, calls for highly developed critical thinking skills (Pattison, 2012)
Simulations	The platform is very flexible and can be molded as per needs and situations that call for quick and

	instant decision taking in learning (Lockard & Abrams, 2003). The only perceptible challenge is in making oneself believe that the experience and activities that one is engaged in, are real life to feel part of the interaction (Lamb & Johnson, 2006)
	Simulations are a great source of development of one's creativity (Edwards, 2012). The simulations in these environments are of real-life situations and therefore, are very close to the principle of 'learning by doing and living' (Alessi & Trollip, 2001).
Digital stories	Digital storytelling is more than preparing simply a slide show (Dreon et al., 2011).
	This required the conception and creation of a plot and storyline, putting these on paper, enacting them by speaking out dialogues, preparing videos of these, organizing and editing, and finally, presenting the output. Thus, multiple skills and knowledge are needed here (Ohler, 2006).
	Digital stories allow students to speak in their own language – that is, to express what they understand about topics in ways familiar to them (Ohler, 2013)
	Many tech tools are available for creating digital stories such as PowerPoint, Movie Maker, iMovie, Illustrator promote cooperation, project management and learning by producing (Sadik, 2008).
	The other skills sharpened alongside critical thinking are scheduling all activities, foreseeing and identifying obstacles, solving these, researching, collection of materials and data, analysis of data, decision-taking on many micro matters, thinking as the audience of one's iown product, in short, evaluating the product and the process.
	Jonassen et al. (1996) indicate that more than the use, the creation of hypermedia will benefit the learners more as they will engage in many micro operations such as research, data collection, analysis , organization, production, which will enhance their critical thinking. The other skills which will benefit are the skills of interpreting, forming conclusions (Sims, 2004) and decision-making (Maier & Fisher, 2006) to create a story and gain the audience's interest while telling a story.

Purpose of the study

This study investigated the wide variety of the current digital teaching-learning technologies in language education in the 21st century and the engaged students' critical thinking as stimulated, utilized, evaluated, and discovered in the process by all those involved in e-Teaching and e-Learning. Further, this research explored the wide range of new technology tools to choose from offline or online media. To realize the purpose of this study, the following research questions were examined:

1. What teaching-learning technologies do EFL language teachers in KSA employ to engage students' critical thinking?
2. What critical thinking skills do EFL teachers in KSA plan to engage using the teaching-learning technologies?

3. Methods

Research design

Both qualitative and quantitative research designs were applied to highlight the processes, progress, and results of this study. It was designed to explore the current range of learning and teaching approaches intended by teachers with different digital tools and platforms as well as the critical thinking skills targeted by teachers in conducting their instruction and those that are applied by students in going through the daily process of their distance education.

Participants

The participants of the study were 40 teachers, all currently employed in different English language institutes and departments from different cities of Saudi Arabia. The researcher used snowball sampling in which he shared the link with the teachers and requested his friend in the assigned institutes and colleges to share it with their friends. All ethical considerations were fulfilled. The researcher obtained permission from the Research Committee at his current educational institute to conduct this research (July 20, 2022). Furthermore, no participant was obligated to respond to the questionnaire, it was purely voluntary. Their anonymity was duly protected.

Instrument

The data were collected through a questionnaire to get teachers' feedback and opinions about digital applications used and critical thinking skills employed. The questionnaire: Digital Teaching Tools and Intended Critical Thinking Skills Questionnaire is especially designed for teachers. The formulated tool was evaluated by experts in the field for validation. The questionnaire was based on Anderson and Krathwohl's (2001) Taxonomy, a revision of Bloom's Taxonomy of 1956 and common reference materials used in language teaching in Saudi Arabia. Likewise, the identified learning-teaching digital tools were based on interviews with current educators handling language

classes, conference presentations, and research studies.

The questionnaire comprised six major questions with each question providing options for both short response as well as open response to leverage free discussion and independent comments. To fortify this procedure, model digital instructional materials or activities by teachers and academic outputs of students using learning technologies were analyzed. The tools used were weighted mean, percentage, and rank.

4. Results

RQ1: What teaching-learning technologies do EFL language teachers in KSA employ to engage students' critical thinking?

The results showed that Kahoot, Quizlet, and Quizziz are the most frequently utilized by teachers in their language classes for language teaching as shown in Figure 1. The results suggest 86% of the participating teachers recognize the capability of games and polls to facilitate student engagement and critical thinking compared to 14% who have not explored yet technology-based games and polls as teaching tool. Kahoot (66%) is the top choice among the teacher-respondents, Quizziz (29%) and Quizlet (20%) come second and third respectively, while six percent (6%) use other technologies.

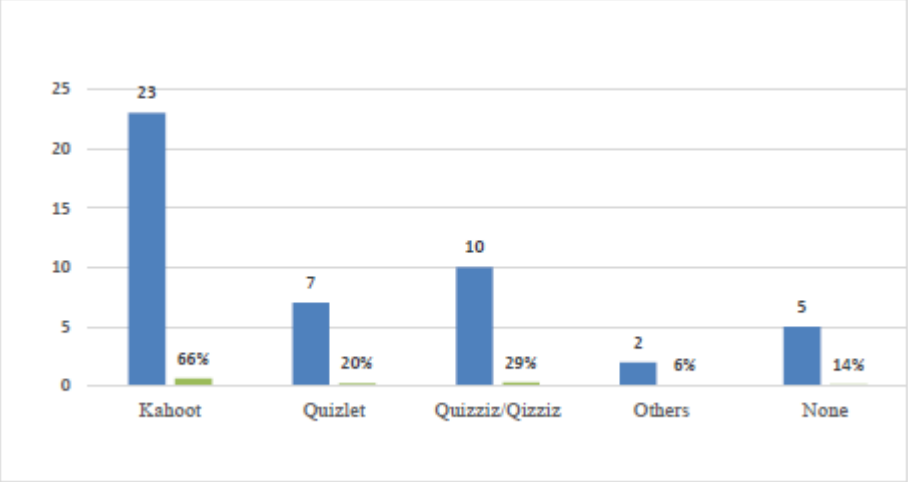

Figure 1. Teaching technologies for games and polls

Applications used to teach English

Figure 2 demonstrates the variety of discussion and collaboration tools employed by language teacher-participants. Findings show 100% of the participants have used discussion and collaboration technologies in meeting their teaching objectives. The diverse digital tools for discussion and collaboration include Breakout groups using Blackboard, Google Classroom, or Zoom (74%) and Chat, Online Forum, and Instant Messaging (60%) which are the preferred choices of the teachers given their ease of use for online discussion and collaboration. Others (23%) include Flipgrid, Parlay, Yo!Teach, Padlet and Quizlet.

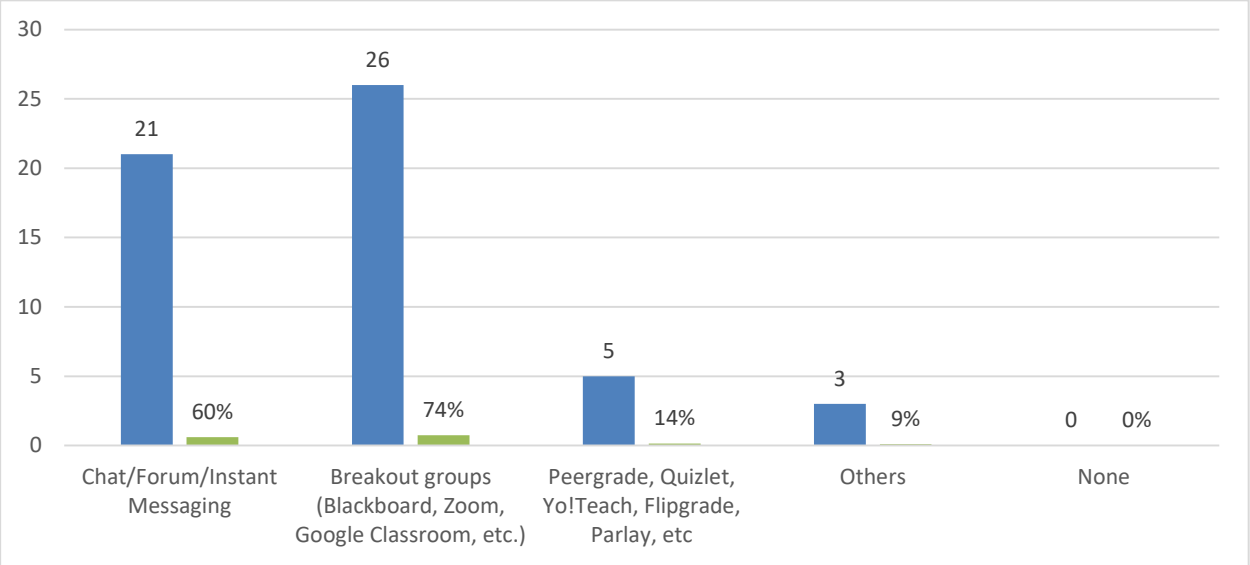

Figure 2. Discussion and collaboration tools that Saudi EFL teachers use

Production and creativity tools used by teachers

Language teachers in KSA include a number of production and creativity tools in their language teaching to encourage critical thinking. These technologies as Figure 3 shows, include YouTube (60%), Word and email (60%), Mind Maps (18%), PowerPoint, Presentation Plus, and Active Presenter (37%). Other production and creativity tools include Google Forms (20%), Flipgrid (6%), and Wiki (6%).

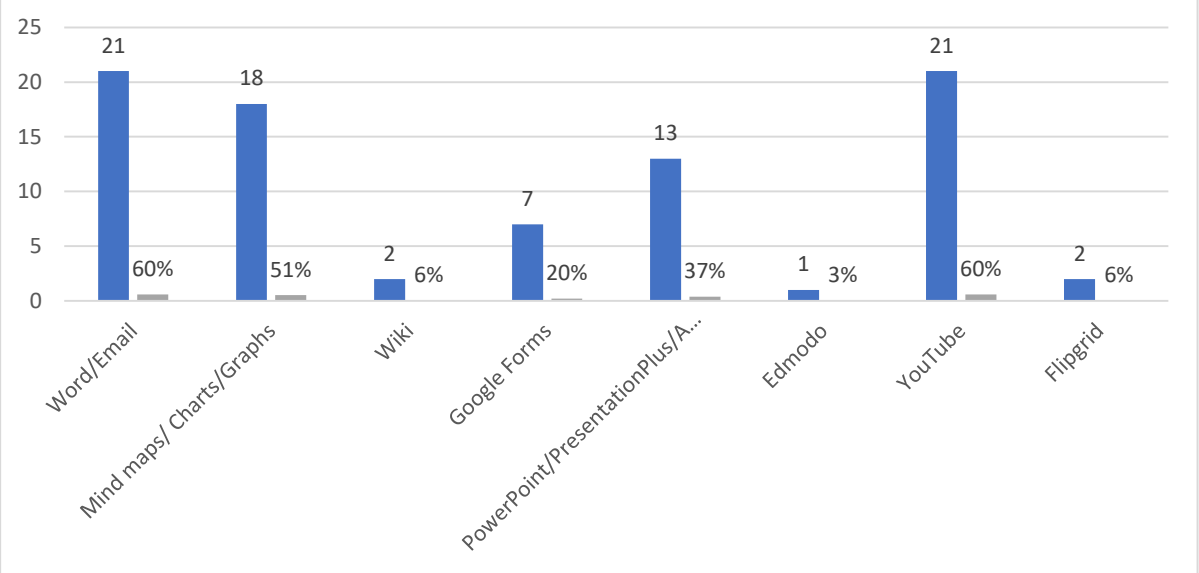

Figure 3. Production and creativity technologies that EFL use

RQ2: What critical thinking skills do EFL teachers in KSA plan to engage using the teaching-learning technologies?

Thinking skills to engage using digital games and polls

Figure 4 shows, teachers plan to train students in a range of critical thinking skills. Among the most integrated and targeted thinking skills are: following instructions (54%), and applying language rules (54%). Other skills include comparing and contrasting available responses (34%), relating present concepts to existing knowledge (26%), analyzing given responses (23%), and creating own response (6%).

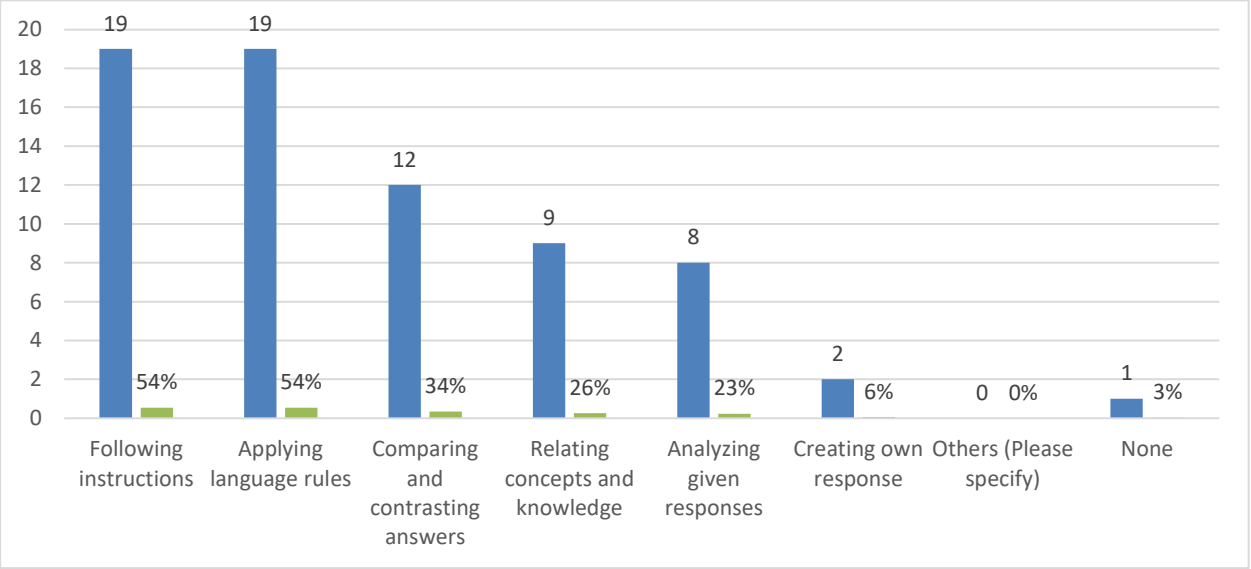

Figure 4. Critical thinking skills that engaged in games and polls

Thinking skills to engage using discussion tools

Figure 4 shows an interestingly diverse range of thinking skills targeted by teachers when they plan a part of their lesson using discussion and collaboration tools. These thinking skills are: applying language rules (57%), following instructions (40%), brainstorming (43%), determining facts and opinions (37%), stating opinions (34%), analyzing problems (29%), synthesizing and summarizing ideas (26%), analyzing questions (26%), relating cause and effect (23%), classifying and categorizing (20%), and organizing information (17%).

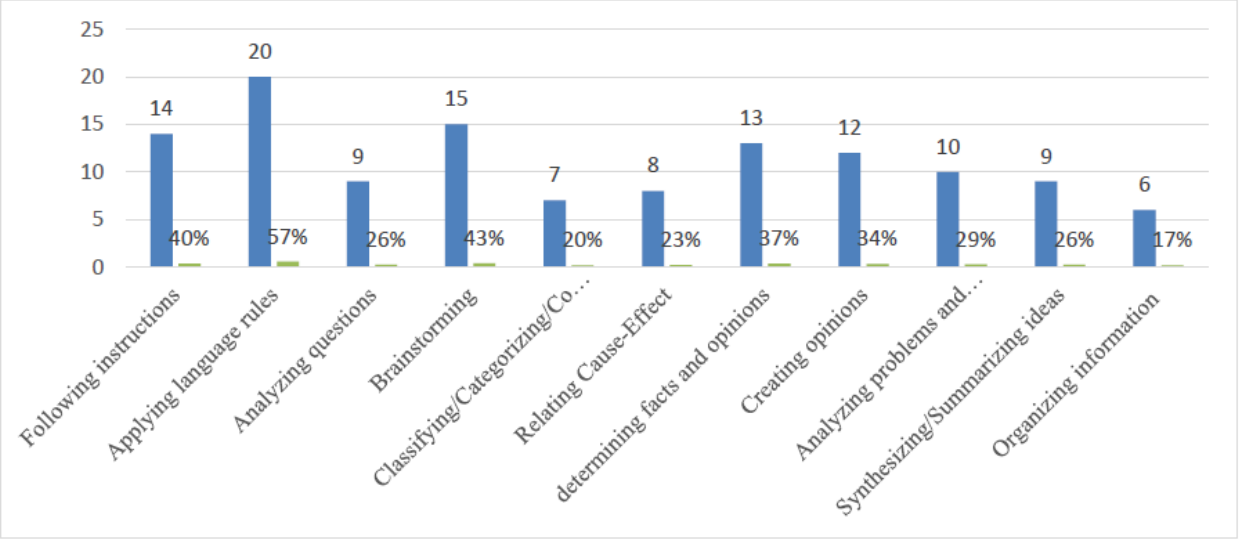

Figure 5. Critical thinking skills that EFL teachers target to employ in the discussion and collaboration

Thinking skills to engage using production and creativity tools

Figure 6 shows the thinking skills targeted by language teachers as they use a variety of production and creativity tools. Brainstorming (57%), creating topic sentences or main idea sentences (51%), and organizing ideas (37%) are the priority skills they targeted for when they use production and creativity skills. Other skills include creating supporting sentences (26%), presenting a speech (26%), presenting facts and opinions (26%), creating opinions (23%), giving recommendations (23%), and writing full essay (17%), synthesizing and summarizing (14%).

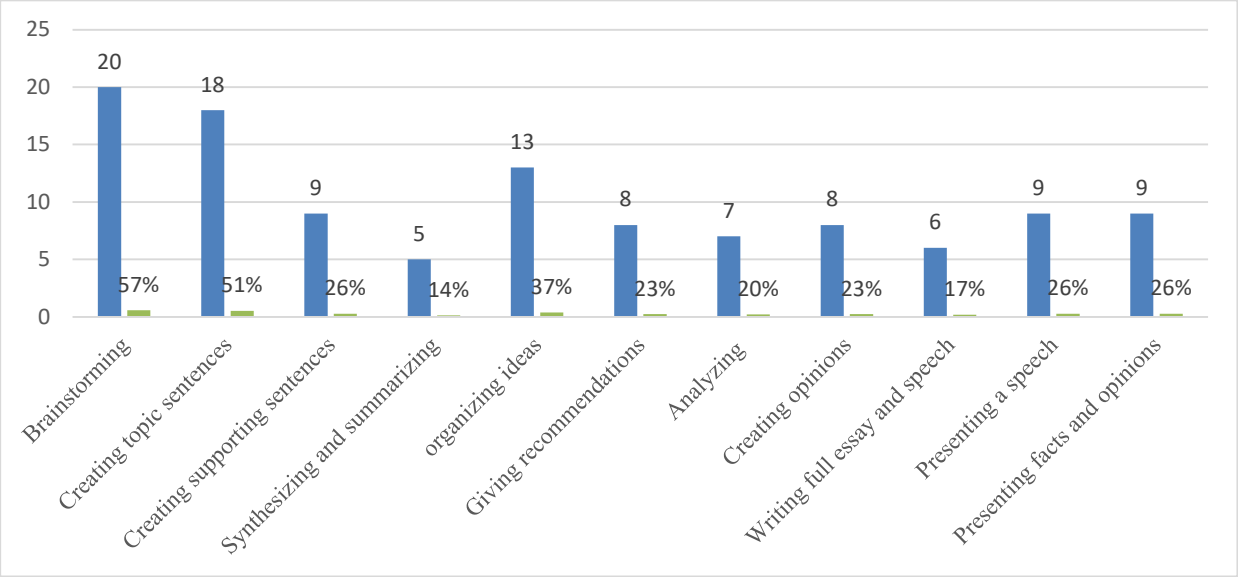

Figure 6. Critical thinking skills that teachers intend to use in production and creativity tools

5. Discussion

The first query that this study explores is to determine the teaching-learning technologies that EFL teachers in KSA employ to engage students' critical thinking. The results showed that Kahoot, Quizlet, and Quizziz are the most frequently utilized by teachers in their language classes for language teaching. This finding suggests that games and polls continue to attract teachers and learners as they are used in different way for engaging learners and stimulating critical thinking. Several studies support the use of games and polls as platforms to engage critical thinking in language classes. Wang and Tahir (2020) cited scholarly papers on the capability of several student response systems (SRSs) such as Kahoot!, Socrative, and Quizlet. Kahoot! is a game-based learning platform used to review students' knowledge, for formative assessment or as a break from traditional classroom activities. The platform is among the most popular within game-based learning, with over 70 million monthly active unique users and used by 50% of US K-12 students (Lunden, 2018). Several SRSs have introduced game-features to increase the engagement of the students, such as the Space Race games in Socrative (Dervan, 2014) and Quizlet (Chien, 2015). However, Kahoot! was the first SRS designed to provide a game experience using game design principles from theory on intrinsic motivation (Malone, 1981) and game flow (Sweetser & Wyeth, 2005). Plump and LaRosa (2017) argued that with the widespread use of gamification in the learning environment, there has been a noticeable shift from student response systems such as “iClicker” and “Poll Everywhere” to more contemporary game-based student response systems (GSRSs) such as Kahoot! and Socrative GSRSs as examples of a gamification approach that makes use of game principles and student response systems tools to support learning, engagement, motivation and fun during the learning process.

The study also reported that Blackboard, Google Classroom, or/ and Chat, Online Forum, and Instant Messaging are the easy choices for the teachers for online discussion and collaboration. Others include Flipgrid, Parlay, Yo!Teach, Padlet and Quizlet. These findings corroborate a number of research studies conducted in the recent years. Sharma and Barrett (2007) and Lewis (2009) advanced that computer-mediated communication (e.g., email, chats and text messaging) can blend with interpersonal communication skills, presenting information, critical and analytical thinking skills, writing and editing skills. A study by Yilmaz and Saglam (2011) investigated the effects of using online discussion on Turkish EFL students’ achievement in online courses and showed that students who used discussion boards produced higher scores than those who did not use the platforms. Furthermore, the study showed that students who participated in discussion board activities were writing better using morphosyntactic operation and access more additional resources for their response writing. According to Tangpijaikul (2008), Thai EFL students used more modal markers in online bulletin board writing than in academic writing. Kanokpermpoon (2012) who affirmed the previously cited studies likewise argued that bulletin boards are useful tools for developing students’ discussion and writing skills.

Findings also show the production and creativity tools used by teachers include YouTube Word and email, Mind Maps, PowerPoint, Presentation Plus, and Active Presenter. The use of these technologies is affirmed by Hastie et al.

(2011) who argued that for educators to optimize the full potential of the new digital tools, they must encourage the 'Net Gen' to exhibit how best they can use it. Being born in the midst of tech, contemporary learners are most at ease with new digital tools that help them think and learn while interacting with peers, their educators, and with language experts. In short, the digital tools that today's digital learners manouvre so effortlessly fulfil the promise of them having a say in what they are learning. The tools empower them to be creators of information as much as the teachers by becoming content contributors, and reach beyond just knowing what or how. Our work points to opportunities that will shape our thinkers, now and in the future.

The second query that this study tries to resolve is to identify the critical thinking skills EFL teachers in KSA plan to engage using the teaching-learning technologies. The creative thinking skills that Saudi EFL teachers plan to engage are using digital games and polls to train students are following instructions and applying language rules. These results are supported by the findings presented by Klimova and Klimova (2017) who identified several studies revealing the positive impact of language learning video games on the learners' language learning skills and performance. Klimova and Kacet concluded that computer games, especially the educational ones, are effective in vocabulary acquisition in foreign language learning. In addition, there are other benefits of using computer games in classrooms such as exposure to the target language, increased engagement, or enhancement of learners' involvement in communication. On the other hand, however, the findings reveal certain limitations of their use in language learning such as the fact that high interactivity may hinder vocabulary acquisition and learning, not all games are useful for language learning, or a lack of knowledge about computer games among language teachers and institutions hinders their proper use. Méndez and Slisko (2013) and Plump and LaRosa (2017) further claim that the use of GSRSs in the form of gamification requires participants to activate previous knowledge and assess their performance as they play and learn the content of a subject.

The study also found that Saudi EFL teachers use discussion tools including applying language rule, following instructions, brainstorming, determining facts and opinions, stating opinions, and analyzing problems. These findings support several studies on the capabilities of current technologies intended for discussions and interaction. The active exchange of ideas between small groups promotes critical thinking in cooperative learning (Gokhale, 1995). MacKnight (2000) suggested that these digital discussion environments focus on students' understanding and how to interact with other people or ideas meaningfully and that this technology provides an opportunity to closely monitor students' learning and critical thinking skills through cooperation, reflection, discussion, peer tutoring, and it increases participation and cooperation in the learning process. Online discussions provide open and broad opportunities for students to participate and cooperate actively (Bender, 2012; MacKnight 2000). Markel (2001) suggested that online discussions can maximize learning and develop students' involvement. Corrich et al. (2004) claim that online discussion forums enable learners to discuss issues in an open environment, provide an opportunity for online learning communities and learners to interact with other learners or teachers any time academically and socially. These environments create a cooperative learning environment by giving students the opportunity to communicate with other students and enable student-student interaction, which is an important part of online education (Hoffman, 2010). MacKnight (2020) concluded that people like to share their ideas with each other or with other groups.

Finally, the study revealed that Saudi EFL teachers applied production and creativity tools to engage their students. The study found that brainstorming, creating topic sentences or main idea sentences, and organizing ideas are the most applied tools. The results suggest a trend among teachers to explore the bigger potential of technology as a platform to foster higher order thinking skills. The findings have strong corroboration from a stream of studies that earlier highlighted the connection between technology and creativity skills in writing.

6. Conclusion

Emerging or new technologies continue to challenge current teaching practices as learners discover more ways to help themselves employ technology to their learning advantage. Language educators, who are always guided by their teaching goals, do not simply communicate knowledge to learners, but more importantly, they aim at equipping every learner with critical thinking skills that are relevant to the 21st century.

Based on the findings of the study, the following are the conclusions of the study:

1. The use of technology tools or applications in teaching English is a trend in language institutes, colleges and universities in the KSA.
2. Games and pools using Kahoot!, Quizziz, and Quizlet are among the more popular game and pool apps used in language classes.

3. Following instructions and applying language rules are the priority critical skills targeted by language teachers when they use games and pools.
4. Breakout groups using Blackboard, Zoom, Google Meet, Chat, Online Forum, and Instant Messaging are the most employed by language teachers for collaboration and discussion purposes in their classes.
5. Applying language rules, following instructions, brainstorming, determining facts and opinions, stating opinions and analyzing problems are the more frequently targeted critical thinking skills when teachers use collaboration and discussion applications.
6. YouTube, Word, Email, PowerPoint, Presentation Plus, and Active Presenter top the applications used by teachers for production and creativity goal in their language classes.
7. Brainstorming, creating topic sentences or main idea sentences, organizing ideas are the priority skills targeted by teachers when they employ these production and creativity apps.
8. Teachers continue to explore the engagement of the 21st century skills: thinking blended with technology.
9. Technology developers continue to create applications and tools to support educational trainings.

7. Recommendations

In the light of the current findings, the following are the recommendations:

1. Guided by the studies and relevant documents on the blending of critical thinking and teaching and learning technologies, more experimental research studies should be conducted focusing on the application of certain digital teaching-learning tools in the language classrooms.
2. Based on current findings and studies, scholars should develop rubrics or measuring systems to help teachers assess the impact of learning technologies on the students' learning and performance.

8. Limitations

Though a unique study in the Saudi EFL context, this study was limited by the relatively small number of participants. The other limitation was non-consideration of gender as a factor governing the choice of tools and attitudes to the use of technology in the language classroom.

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