
Title	Multimodality in the English language classroom: A systematic review of literature
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Multimodality in the English language classroom: A systematic review of literature

Abstract

A number of systematic reviews on multimodal pedagogies in English language classrooms were conducted from the 1990s to early 2010s. However, there is no recent review examining the thematic issues related to multimodal pedagogies in the English language classroom. This systematic review addresses this gap by examining research articles published from 2010 to 2021 on multimodal pedagogies in the primary and secondary English language classrooms. A qualitative thematic analysis of 98 articles gathered from two systematic search cycles uncovered five common themes including engagement with multimodal texts from students' lifeworld, the use of critical, creative and culturally responsive multimodal pedagogies, explicit teaching of multimodal literacy, affect in multimodal learning, and concerns over multimodal assessment. The article discusses these themes in relation to the thematic findings of existing review studies with the same focus of multimodality in the English language classroom, and proposes directions for future research.

Keywords: Multimodality; Multimodal pedagogies; Multimodal literacy; Systematic review; Qualitative thematic analysis; English language classroom

1. Introduction

Literacy in the 21st century is now no longer regarded simply as the ability to use a language competently in a mono-cultural setting (New London Group, 1996; Cope & Kalantzis, 2009). Literacy today involves students knowing how to navigate across an increasingly complex communication landscape and to negotiate a range of contexts and patterns of intercultural meanings as well as the prevalence of multimodal texts (Cope & Kalantzis, 2021).

Contemporary communication environment is characterised by multimodal meaning-making, that is the “multiplicities of media and modes”, as well as “increasing local diversity and global connectedness” (New London Group, 1996, p. 62) which necessitates a shift in the pedagogical approaches that are adopted by teachers (Morita-Mullaney, 2021). This is especially so in the digital age where a sole focus on language in literacy is no longer sufficient for the new workplace given that a revised sense of ‘competence’ is required (Palsa & Mertala, 2019; van Leeuwen, 2017). The recognition of social diversity also demands pedagogical approaches that engages with the transcultural (de Souza, 2017) and multicultural (Mizusawa & Kiss, 2020) classroom. Issues of the day such as fake news (Douka et al., 2017; Weninger, 2019) and social justice concerns (de Souza, 2019; Andrews et al., 2020) also need to be addressed in the literacy classroom.

Multimodality focuses on understanding how semiotic resources (visual, gestural, spatial, linguistic, and others) work and are organised. Multimodality in education adopts an expanded view of literacy to include the range of multimodal communicative practices which young people are involved in in today’s digital age. Multimodal pedagogies refer to the ways in which the teacher can design learning experiences using a range of multimodal resources (Bezemer & Kress, 2016). It involves teachers making design choices in the ways in which the curriculum content is expressed, arranged, and sequenced multimodally (Kress & Selander, 2012). Multimodal pedagogies also involve designing opportunities for students to explore and perform ideas and identities using a range of meaning-making resources (Lim, Towndrow, & Tan, 2021). The teaching and learning activities often involve drawing from the students’ funds of knowledge and their lifeworld (New London Group, 1996). With multimodal pedagogies, teachers orchestrate the learning process by weaving together a series of knowledge representations into a cohesive tapestry and in so doing make apt selection of meaning-making resources to design the students’ learning experience.

Multimodal literacy (Jewitt & Kress, 2003; van Leeuwen, 2017) is about knowing how to engage aptly with multimodal texts, both in interpreting the meanings made critically and in producing multimodal artefacts creatively. To engage aptly with multimodal texts involves

understanding the affordances of the different meaning-making resources and how they work together to produce a coherent and cohesive multimodal text (Kress, 2009). This understanding will enable one to use the most apt mode for a particular communicative purpose. Multimodal texts comprise a range of semiotic resources, such as words, images, symbols, and animation. They are often multimedia in format and digital in materiality although printed texts such as posters and collages are considered multimodal texts as well. Multimodal discourse also includes communicative and performative events such as a presentation, with the use of talk and slides, as well as a skit, which draws on the semiotic resources of facial expressions, gestures, and proxemics. Multimodal literacy can be expressed as a codified set of knowledge, skills and semiotic awareness that can be developed through the pedagogic metalanguage of multimodality (Lim, 2021a; Lim & Tan-Chia, forthcoming).

To address the expanded notion of literacy, educational researchers and teachers across schools of many countries have explored various multimodal pedagogies in the English classroom for multimodal literacy learning. As such, it is of value to take stock of the current state of the art as reported in relevant studies over the past decade. This study aims to consolidate the understandings on the nature of multimodal pedagogies and multimodal literacy learning across different parts of the world and propose implications and research directions to advance the integration of multimodality in literacy education. Our systematic review focuses on how multimodal meaning-making is shaping pedagogical practices in the English classroom and is guided by the following research question:

What is the nature of multimodal pedagogies and multimodal literacy learning reported based on a systematic review of 10-year international studies that explicitly reference multimodality in the English language primary and secondary classrooms?

2. Previous systematic reviews

Kulju et al. (2018) conducted a systematic literature review of multimodal pedagogies in primary classrooms of peer-reviewed papers published from 1997 to 2014. Their focus was on multimodal literacy and reading in primary classrooms and includes student or classroom data. Using the main criteria that the articles must include empirical data focusing on students in primary school classrooms, they narrowed down an initial number of 338 articles to a final sample of 67 articles. Article topics were divided into five main categories including writing and text production, ICT, reading and analysing texts, classroom practices, and aspects of diversity for further discussion. They found that writing and text production was a common topic in the reviewed articles and students created a range of multimodal texts such

as digital videos, television advertisements, and web pages using information and communications technology. In our systematic review, we intend to find out if similar findings such as a range of multimodal texts were used by teachers in the reviewed studies to engage students in multimodal literacy learning in the classroom. Kulju et al. (2018) also found that many of their reviewed studies involved classroom practices with instructional support and scaffolding for children detailing how children engage with new literacies and multimodal semiotic practices using available classroom materials. Our study is similar to Kulju et al.'s (2018) study in that most of the studies reviewed are qualitative studies based on classroom observational data. However, our study systematically reviews multimodal papers from 2010-2021. Additionally, while their study is conducted in the primary classrooms, our systematic review covers a broader range of studies that includes primary and secondary classrooms.

Yi (2014) also conducted a review of a decade of empirical research from 2003 to 2013 to address the possibilities and challenges of digitally-mediated multimodal pedagogies in learning and teaching English as an additional language, specifically for adolescent multilingual English language learners. Yi (2014) reported that multimodal literacy learning includes the development of multimodal communicative competence, exploring identities, improving academic literacies, and developing critical perspectives. Multimodal meaning-making practices that are situated within students' lives provide affordances to connect the school discourse/academic literacy practices with out-of-school discourse/literacy practices. The challenges of integrating multimodal literacy learning in the classroom include the unequal digital literacies of diverse students, the difficulties faced in helping English language learners develop conventional, academic literacy together with digital and multimodal literacies, and learners' limited exposure to multiple genres. Additional challenges include the incompatibility between digitally-mediated curriculum and the conventional curriculum, the emphasis on high stakes language-dominant testing over multimodal literacy practices, and the tacit hierarchy among print and digital/multimodal texts that perceive multimodal literacies as a less legitimate form of academic practice. In our systematic review, we consolidate the understandings on the nature of multimodal pedagogies and consider the themes in relation to other systematic reviews such as Kulju et al. (2018) and Yi (2014).

Table 1 summarises the findings of related studies conducted on multimodal pedagogies. The related studies are compared against our study based on the thematic findings.

Reviews	Years	Student Profile	Country	Themes
Kulju et al. (2018)	1997-2014	Primary classroom	International	<ol style="list-style-type: none"> 1. Writing and production of a variety of texts 2. Text production often involved ICT 3. Evidence of multimodal pedagogies in classroom practices 4. Text production took precedence over text reception 5. Diversity, multimodal meaning-making, multiculturalism, and multilingualism in classroom practices
Yi (2014)	2003-2013	Adolescent multilingual ELLs	International	<ol style="list-style-type: none"> 1. Multimodal literacy practices can develop students' multimodal communicative competence and allow them to explore and perform identities. 2. Multimodal literacy practices can develop students' academic and critical literacy. 3. Connecting students' in and out-of-school knowledge/experiences 4. Skills in implementing and designing multimodal pedagogies as part of English language teachers' professional repertoire 5. Impeding factors include time constraints, high-stakes language-dominant testing, and traditional focus on print texts.
Our systematic review	2010-2021	Primary and secondary classroom	International	<ol style="list-style-type: none"> 1. Engagement with multimodal texts from student's lifeworlds 2. Critical, creative, and culturally responsive multimodal pedagogies 3. Explicit teaching of multimodal literacy 4. Attention on affect in multimodal learning 5. Concerns over multimodal assessment

Table 1 A comparison of related studies and thematic findings.

3. Methods

We conduct a high-level review of the available, relevant information to extract and analyse data to address the research question (Schaefer & Myers, 2017). Our review is guided by the stages of research synthesis (Cooper, 2016) that include (1) formulation of research question, (2) selection of journals, (3) definition of inclusion and exclusion criteria, (4) specifying search terms, (5) data extraction, coding, thematic analysis, and (6) synthesis.

Following the synthesis, we report the results of the systematic review, discuss the findings, and conclude the paper.

3.1. Selection of journals

We identified reputable journals from which papers are selected for inclusion based on the research question. This includes relevant articles from Q1 journals such as *Journal of Literacy Research* and *Research in the Teaching of English*, as well as relevant articles that include the integration of multimodality and multiliteracies pedagogy into the English language classroom from peer reviewed journals such as *Language and Literacy*, *The Reading Teacher*, and *Journal of Adolescent & Adult Literacy*.

3.2. Inclusion and exclusion criteria

The inclusion criteria to guide the article selection process are:

- Articles published between 2010 to 2021.
- Articles published in English language.
- Articles reporting empirical studies published in peer reviewed journals and book chapters.
- Articles focusing on the integration of multimodal literacies pedagogies with reference to teachers' pedagogical practices in the primary and secondary English language classrooms.

The exclusion criteria are:

- The reported studies must not be conducted in the home context.
- The reported studies must not be conducted in non-English language classrooms.
- Non-English language articles are excluded.
- Studies that are conducted in preschools and universities are excluded.
- Conceptual articles are excluded.
- Articles not focusing on multimodal pedagogies are excluded.

3.3. Search strategy and filtering process

Two search cycles were used for the paper selection and filtering process for relevant articles. During the first search cycle, a comprehensive search was conducted using Google Scholar and the online NIE library search. We conducted the search on Google Scholar using the incognito mode to maximise replicability of the search. Keyword search terms included "multimodality", "EL classroom", "pedagogy", and "digital multimodal composing".

The search terms were combined using “AND”, “OR”, and “NOT” or the minus sign operators to form the search string: “digital multimodal composing AND pedagogy AND EL classroom AND (primary classroom OR secondary classroom) AND student -home -science”. The last search was conducted on August 24, 2020. Two researchers read through the full texts of the papers and selected the relevant papers based on the inclusion and exclusion criteria. During the first search cycle, 67 articles were gathered including 54 international empirical papers.

To ensure that we have covered the relevant papers related to multimodality and pedagogy, we conducted a second search cycle and broadened our search. During the second search cycle, Google Scholar and education-related databases such as ProQuest, ERIC (Education Resources Information Center), Web of Science, and ScienceDirect were searched using the following search terms. Examples of search terms that were included for selecting the articles included “multimodality”, “linguistic”, “visual”, “aural”, “gestural”, “spatial”, “EL classroom”, “pedagogy”, “visual pedagogy”, “English language teaching”, “English language learning”, and “multimodal composing”. The search terms were combined with Boolean operators such as “AND”, “OR”, and “NOT” or the minus sign (depending on the database) to enable us to focus the search and connect various pieces of information to find exactly what we were looking for.

The search string for Google Scholar was “(multimodal composing OR multiliteracies OR multimodal* OR linguistic OR visual OR aural OR gestural OR spatial) AND (pedagogy* OR teaching method* OR English language teaching OR English language learning) AND (English language classroom OR EL classroom) AND (primary classroom OR secondary classroom) -home -science -college -preschool -kindergarten”. The search string for ERIC, ProQuest, and Web of Science was “(multimodal composing OR multiliteracies OR multimodal* OR linguistic OR visual OR aural OR gestural OR spatial) AND (pedagogy* OR teaching method* OR English language teaching OR English language learning) AND (English language classroom OR EL classroom) AND (primary classroom OR secondary classroom) NOT home NOT science NOT college NOT preschool NOT kindergarten”. The search string for ScienceDirect was “(multimodal composing OR multiliteracies OR multimodality OR linguistic OR visual OR aural OR gestural OR spatial) AND pedagogy AND English language classroom AND (primary classroom OR secondary classroom) AND NOT university”. The last search was conducted on March 20, 2021. The search produced 890 results from the search terms and designated time period.

The RIS files including the titles and abstracts of the 890 results were downloaded from the databases and then imported into the online platform, Covidence for title and abstract

screening. Covidence detected 51 duplicates and deleted them, leaving us with 839 records for abstract and title screening. We reviewed the titles and abstracts of the 839 papers based on the inclusion and exclusion criteria to quickly filter and remove the irrelevant ones. Two researchers independently reviewed the 839 papers on Covidence. Disagreements between the two coders were resolved through discussion and further review of the disputed studies. An example of a disagreement that the two coders had involved whether to include lessons that were held in an online environment. This was resolved by excluding articles that were not based in the physical classroom. 753 irrelevant records were excluded during the titles and abstracts screening, leaving us with 86 papers for full text screening.

During the full text screening, all the articles were read in their entirety to verify that these articles met our inclusion criteria. The two researchers independently reviewed all the 86 papers and disagreements between the two coders were resolved through discussion and further review of the disputed studies. 55 full text articles were excluded, with reasons (see Figure 1). During the second search cycle, 31 articles met the criteria for inclusion in the final review. 5 articles were found to overlap with the included articles in the first search cycle and were excluded to form a final number of 26 included articles in the second search cycle. The journal peer review process also led to the addition of 5 papers. The papers found from the two search cycles and informed from the journal peer review process (67+26+5) were combined to form a total number of 98 articles (see Appendix 1).

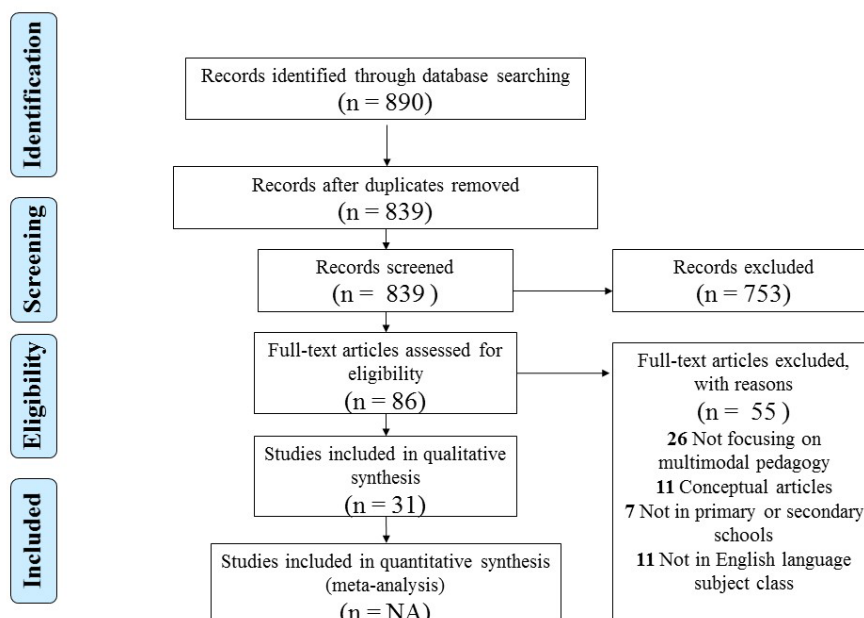


Figure 1 PRISMA flow diagram for the screening of papers

3.4. Data extraction, coding, and thematic analysis

After an agreement between the two researchers on the data extraction form, the following data were extracted from the selected articles in the systematic review and were coded based on the following dimensions:

1. Study design and type of methodology used (e.g., qualitative case study)
2. Country/region
3. Type of pedagogical approach
4. Type of multimodal pedagogies
5. Modes in multimodal pedagogies
6. Type of educational technologies
7. Factors hindering the integration of multimodal pedagogies
8. Factors facilitating the integration of multimodal pedagogies
9. Implementation results of multimodal pedagogies

A second researcher checked the coding and a consensus was reached in relation to any disagreements in the coding of the studies analysed during the discussion. Figure 2 illustrates the generation of the coding scheme to the coding process that led to the development of major themes.

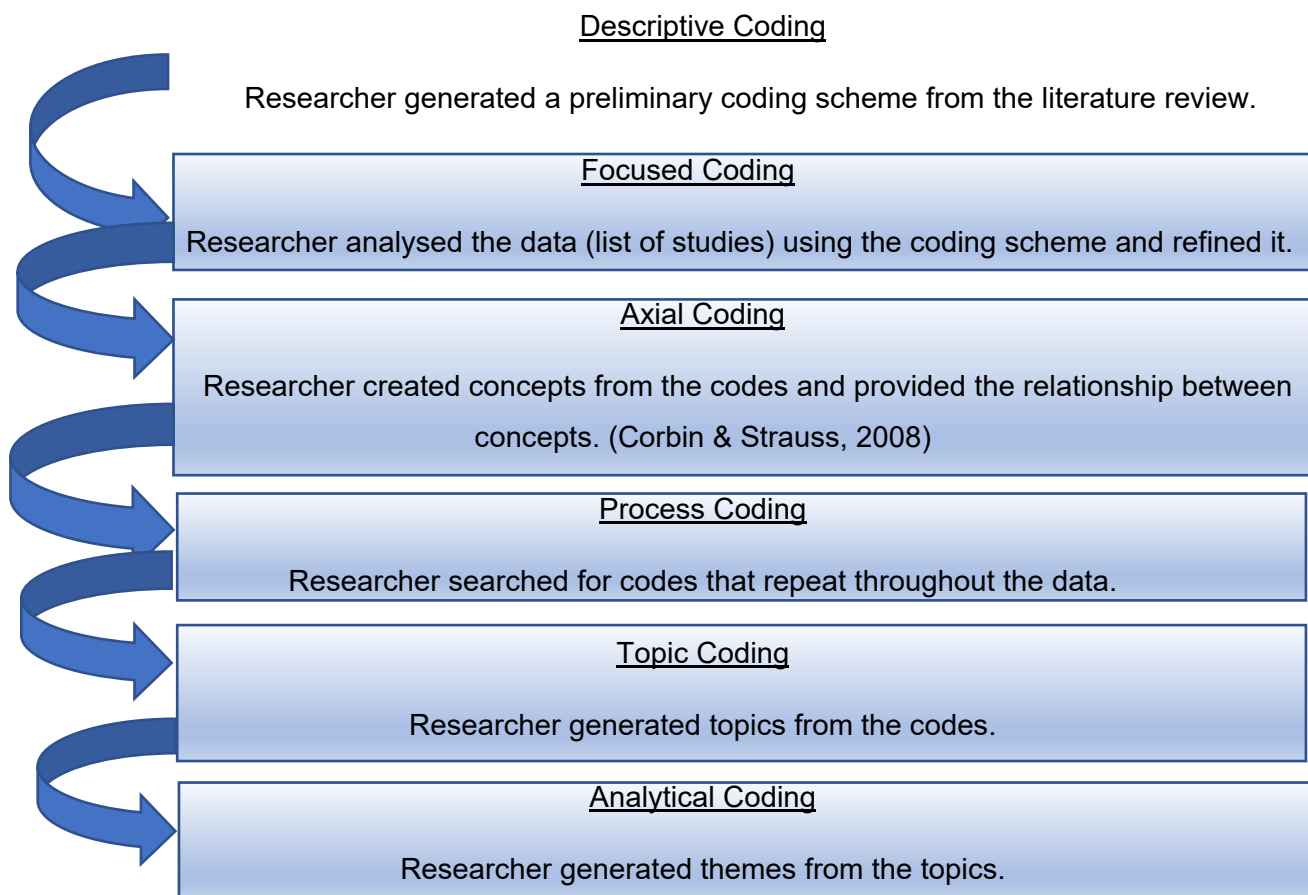


Figure 2 Qualitative coding process for the study

3.5. Synthesis of results

The heterogeneity of the selected studies in the systematic review did not enable a standard quantitative synthesis (i.e., meta-analysis) to be conducted. Instead, the synthesis was narrative and a thematic analysis (Grant & Booth, 2009) was performed to extract large scale patterns from the analysis of past studies. The summary tables in Appendix 1 presented the synthesis results based on the categories discussed in the data extraction and coding section. During the synthesis process, the studies' results were critically discussed and aggregated by two researchers with the aim of identifying descriptive categories (i.e., multimodal literacy and multimodal pedagogies), to which the implementation results (e.g., learning outcomes) could be assigned based on evident similarity. Uncertainties were resolved through a consensus-based decision.

4. Findings

Based on the synthesis and thematic analysis, the reviewed studies have been organised according to the following thematic categories for discussion: 1) engagement with multimodal texts from student's lifeworld, 2) critical, creative, and culturally responsive multimodal pedagogies, 3) explicit teaching of multimodal literacy, 4) attention on affect in multimodal learning, and 5) concerns over multimodal assessment.

4.1. Engagement with students' lifeworld

A common theme in the synthesis of past international studies is that teachers have used a range of multimodal texts to engage students' diverse interests in the classroom activities. Likewise, this broad range of multimodal text was observed in our synthesis. Examples of these texts include digital games (e.g., Marcon & Faulkner, 2016), digital books (Brown, 2020), poetry (e.g., Giampapa, 2010), videos (e.g., Doerr-Stevens, 2017; Edwards-Groves, 2012; Lenters & Smith, 2018; Miller, 2010, Tan et al., 2010; Weninger, 2019), comics (e.g., Danzak, 2011), graphic novels (e.g., Brown, 2013; Noel, 2015; Pishol & Kaur, 2015; Sun, 2017), novels (e.g., Burke & Hardware, 2015; Healey, 2016; Jakobsen & Tønnessen, 2018), digital photostories (Burke & Hardware, 2015; Cummins et al., 2015), Internet websites (Iddings & Rose, 2012), and advertisements (Cloonan, 2011). Students were also encouraged to engage in hands-on multimodal composing activities to create video artifacts (Anderson et al., 2017; de Souza & Towndrow, 2011; Hung & Yuen, 2014; Lee & Ho, 2013;

Price-Dennis, 2016; Tan & Guo, 2014; Towndrow, 2015; Towndrow & Vallance, 2013), memoirs (Bomer et al., 2010), photos (Kendrick et al., 2010; Roswell & Kendrick, 2013), multimodal self-portraits, and collages that included their salient identity traits (Villacañas De Castro et al., 2018) to develop multimodal literacy. The range of multimodal texts drew upon the students' funds of knowledge (e.g., Dantas-Whitney et al., 2012; Schultz & Coleman-King, 2012), home language (e.g., Cummins et al., 2012, 2015; Giampapa, 2010), and out-of-school literacies in the classroom context for learning activities. New technologies such as smartphones (e.g., Cruz-Arcila, 2018), Facebook (e.g., Kaur et al., 2012), augmented reality (e.g., Ho et al., 2011), the interactive whiteboard (e.g., Prinsloo & Sasman, 2015), and a multimodal analysis software in combination with social media platforms such as Hangout in Google+ (e.g., O'Halloran et al., 2017) have also been used to connect with students' lifeworld (Hines & Kersulov, 2015; Cruz-Arcila, 2018).

A popular multimodal text genre used to engage with students' lifeworld is graphic novels or comic books. Students' expression of their immigration narratives in the style of a graphic novel allowed the multimodal meanings of *Graphic Journeys* to become visually evident, as written text and images converged to tell the students' personal stories (Danzak, 2011). Student-centred learning activities such as reflective journals, family interviews, and peer-to-peer editing were conducted in support of the graphic story composing. Educational technologies, such as the *Comic Life* software, were used to compose the final product. Teachers can use these texts as the basis for instructional conversations about the form and features of texts to develop students' multimodal literacy (Sun, 2017). The use of graphic novels in the classroom also offers opportunities for students to engage in critical and complex analyses of dominant texts by focusing on themes rather than solely texts (Dallacqua & Sheahan, 2020).

Engagement with the students' lifeworld is also expressed through the writing of dual language, multimodal "identity texts" to incorporate students' linguistic and cultural forms of capital, and their identities (Giampapa, 2010). Students' literacies and identities were valued as the teacher broadened the classroom curriculum to incorporate students' linguistic and cultural resources to give students a purposeful reason for writing in their first language. Students also developed collaboration skills as they worked with each other to compose narratives, visually represented their stories in various languages, and shared their multimodal texts on the Internet beyond their social context.

Other forms of engagement with the students' out-of-school social media practices include having students create digital videos (Miller, 2010). Digital multimodal composing connects classroom literacies to students' everyday literacies. Digital storytelling has been used for

students to access their rich communicative repertoires and express their identities more fully using non-linguistic modes such as visuals and audio (Burke & Hardware, 2015). An example is the use of digital storytelling as a pedagogy by a teacher in a Canadian school where immigrant students created their digital stories using the digital storytelling software Photo Story 3 and music to express their difficult experiences and emotions living in Syria and nurture their awareness of their resilience and strength of character in their journeys to Canada (Johnson & Kendrick, 2016). In another digital storytelling project, students created their multimodal artefacts to connect their everyday literacies to academic literacies (Pyo, 2016). Ideas that were communicated using the multimodal artefacts such as PowerPoint included social issues such as stereotyping. Students developed multimodal literacy as well as positive affective and epistemic stances toward writing, which contributed to authorial agency. Cummins et al. (2012) reported on a digital storytelling project in an English as a Second Language classroom that drew on the range of students' cultural knowledge and linguistic abilities within the context of the Literacy Engagement framework. The teacher designed the lesson using resources such as dual language texts, electronic translators, and visual aids to meet the needs of the diverse learners. Students created their digital multimodal texts collaboratively and then presented their work for peer feedback.

Documentary video composing has been used to create new spaces for students to develop critical media and multimodal literacies by enabling students to critically engage with topics related to their personal and community identities (Mills & Exley, 2014; Doerr-Stevens, 2017). With scaffolding from the teacher in the form of critical guiding questions and the documentary plan checklist, the students embarked on their documentary video composing on the topic of riding the bus. They adopted ethnographic methods such as field-based observations, interviews with people, and reflection essays to facilitate the video composing. By engaging in the documentary video composing, students developed empathetic learning, critical media literacy, and broadened their real-life experiences. Another example is the Neighbour Stories Project (Jocius, 2016) where students created their personalised multimodal artefacts to tell their own stories of unseen and unheard spaces. In the next section, we will discuss how teachers have designed for critical, creative, and culturally responsive multimodal pedagogies to scaffold students' multimodal literacy learning in the classrooms.

Although a range of multimodal text types have been found to be used by teachers in the classrooms, a more nuanced analysis of the studies that identifies modes more specifically shows that the dominant modes being taught in the classrooms include the linguistic, verbal, aural (music and sound), and visual (images and animation) modes. Less frequent modes include gesture, interactivity, haptic (touch), and body movements in embodied interaction.

Other modes such as the olfactory mode are not present in the multimodal pedagogies of the studies analysed, the reason that the linguistic, verbal, aural, and visual modes are dominant might be due to the English language classroom's traditional focus on the language-based literacy such as reading, writing, speaking, and listening.

4.2. Critical, creative and culturally responsive multimodal pedagogies

Teachers have reported using critical, creative, and culturally responsive multimodal pedagogies in the English classroom (e.g., Ajayi, 2011; Flint et al., 2019; Jocius, 2016; Skerrett, 2013). Critical multimodal pedagogies involves guiding the students in interpreting and evaluating the semiotic choices made in the multimodal texts, often with the support of a metalanguage that provides a vocabulary to describe the features in the texts (Lim, Cope & Kalantzis, 2022; Shin et al., 2020). Creative multimodal pedagogies refer to teaching and learning activities that are process-oriented, human-centred, and are grounded on an inquiry-discovery approach (Arnott & Yelland, 2020). A culturally responsive multimodal pedagogy includes the diverse and lived experience of the students (Kiss & Weninger, 2017) and the teacher designs the curriculum to connect home and school experiences by drawing upon students' everyday literacy practices to develop school literacy practices. Teachers' pedagogies included direct instruction and scaffolded support for students based on frameworks such as the New London Group's (1996) pedagogy of multiliteracies, the Literacy Engagement framework (e.g., Cummins et al., 2012), multimodal ethnography (e.g., Doerr-Stevens, 2017), the research pedagogies approach (e.g., Wissman et al., 2015), and improvisational comedy and assemblage theory (e.g., Lenters & Smith, 2018). The critical games literacy model (e.g., Apperley & Beavis, 2013), pedagogy of critical multimodal literacy (e.g., Ajayi, 2015; Craig & Porter, 2014), translanguaging pedagogy (e.g., Rincón & Olarte, 2016; Takaki, 2019), and a genre-based pedagogy that prioritise multimodal genres (e.g., Pacheco-Costa & Guzmán-Simón, 2020) have also been used by teachers in the English classroom.

Skerrett (2013) described a teacher's use of the Learning by Design framework (Cope & Kalantzis, 2015) to guide students' development of multiliterate and multilingual writing practices. The four dimensions of the pedagogy – situated practice, overt instruction, critical framing, and transformed practice, positioned learners as members of interconnected literacy communities of practice that included school and students' multiple languages. Implementation of this pedagogy has helped her students to engage in conversations by using outside-school language and literacy practices as learning tools for schools. The New London Group's (2000) pedagogy of multiliteracies has also been used to design lessons for

third grade students to enable their diverse interpretations of videos and representations of multimodal artefacts in the form of drawings for sociocultural learning (Ajayi, 2011).

Improvisational comedy is another example of multimodal pedagogies that has been used by teachers to engage students in multimodal story building (Lenters & Smith, 2018). Improvisational comedy involves unscripted dialogue and action, and the performance is generated spontaneously as the performers interact with one another on stage. The open-ended activities allow students to take the learning about comedic composing in their own directions. As students used their experience and knowledge of humour in their everyday lives to conceptualise and film a story together, students developed creativity and collaboration skills.

The critical games literacy model (Apperley & Beavis, 2013) is a pedagogical model that is developed for teaching both computer games and videogames in the classroom for teachers. The model conceptualises games as text and action and it is argued that the development of curricula around and with games and gaming cultures can incorporate and capitalise on approaches to learning and identity that students have developed in their own gaming practices. A lesson unit for teaching using *Minecraft* was designed to investigate its learning potential in the classroom (Marcon & Faulkner, 2016). Students created videos together and used actions within *Minecraft* to blend videos and screenshots of their play with the use of Instagram. Creativity and digital skills were demonstrated as students designed their virtual landscapes for visual appeal based on pragmatic and narrative choice. Multimodal literacy and communication skills were also demonstrated as students used language conventions with text structures and language features in their videos through their Instagram design for online audiences.

Another example of a pedagogy that can support students is the social justice pedagogy that engaged students in digital literacy practices that interrogate systemic inequities in society, such as through the Black girls' literacies framework (Price-Dennis et al., 2015). Digital storytelling (Angay-Crowder et al., 2013; Staley & Freeman, 2017) and digital multimodal composing (Cercone, 2017; Colton & Shattock, 2019; Curwood & Cowell, 2011; Jiang & Gao, 2020; Simon et al., 2018; Smythe & Neufeld, 2010; Zammit, 2016) are other student-centred pedagogies that involved the use of digital tools to engage students in multimodal meaning-making and dialogue about important social and community issues as students develop, refine, and produce personal multimodal stories/texts that can potentially impact self and others.

Other multimodal pedagogies include the use of competitive games and art projects in an urban primary school in Southern Mexico (Dantas-Whitney et al., 2012). The activities

enabled the students to use language in creative ways, allowed collaborative problem-solving amongst students, and enabled students to use multiple modes, including physical movement, songs, play, and drawing for embodied learning. The students tapped on their funds of knowledge as resources for learning when familiar songs and games were used. As the games offered opportunities for collaborative and creative co-construction of new understandings as well as unrehearsed production of output, students could express their identities as they reflected on issues they faced in their lives.

The foundation of multimodal pedagogies is premised on the recognition that the instructional guidance from the teacher is crucial to help the students make the connection between their lifeworld, and school-based literacy practices. The teacher's understanding of the students' literate lives was crucial in designing her curriculum to bridge home and school experiences by drawing upon their daily lives and language and literacy practices to develop school literacy practices. The integration of students' everyday literacies into the classroom involves the broadening of the learning space to include students' communities as spaces that offer opportunities for inquiry-based learning (Rincón & Olarte, 2016). Students' community spaces can provide opportunities for students to explore authentic ways to communicate what matters. This could be in the form of using translanguaging, which involves the use of students' L1 and L2 in their literacy learning in the English language classroom (Takaki, 2019). Teachers have also engaged students in meme composing and the performance of a dance class to allow students to draw upon their life experiences in multimodal literacy learning as well as designed opportunities for students' digital multimodal composing on personal and social topics such as immigration (Skerrett & Bomer, 2013). Students were also instructed to take photographs of things that represent who they are, their favourite places, and activities that they think girls and women do to help them in their literacy and English language learning (Kendrick et al., 2010).

4.3. Explicit teaching of multimodal literacy

Another common theme that is found in the synthesis of past studies is that teachers have directed a focus on the explicit teaching of multimodal literacy (Moses, 2016). Teachers combined direct instruction with whole-class, small-group, and independent instructional activities for teaching students visual meaning-making skills and competences to learn how to understand, interpret, and analyse the meaning potential of a range of text types such as picture books, comics, graphic novels, magazines, and webpages using a metalanguage (e.g., Cloonan, 2011; Mills & Unsworth, 2018; Mills et al., 2020; Pantaleo, 2011, 2012, 2013, 2014, 2017a, 2017b, 2020; Reid, 2020).

The teaching of multimodal literacy involved students in composing multimodal artefacts and participating in interviews about their work. In a lesson unit connected to the reading and composing of multimodal artefacts related to the memoir, *The Warrior's Heart*, students learnt through explicit instruction, modelling, constructivist, and social constructivist learning activities in the classroom (Pacheco & Smith, 2015). For example, students were given explicit instructions on how to use PowerPoint and were taught other technical skills, such as recording their voices and editing images. They were provided with teacher-created and real-world examples of multimodal artefacts to learn how to model the creation of the multimodal artefact by understanding why and how a multimodal project was created. The students then proceeded to record an interview with their hero in their heritage languages and used PowerPoint to create a multimodal presentation that provided background information of their hero, a synthesis of their interview, connections to the novel, and personal reflections. Finally, the students shared their work in whole-class presentations, gallery walks, and peer workshops. In the explicit teaching of multimodal literacy, the teacher engaged with the students' culture and guided the students through the process of multimodal composing.

Explicit guidance on multimodal literacy learning often occurs through the introduction of a metalanguage. The value in introducing a metalanguage to teach multimodal literacy explicitly is discussed by Serafini (2011) who advanced that a metalanguage allows students to interrogate the meanings which text producers expressed through the semiotic choices in the texts. For example, having students learn the forms of metalepsis (Pantaleo, 2016) and the focal visual elements of picture book design such as colour, line, point of view, perspective, framing, typography, and paneling (Pantaleo, 2015) can develop students' composing and visual literacy skills, aesthetic appreciation, and higher-level thinking skills, such as critical thinking, logical reasoning, inferencing, and evaluation skills.

An instructional intervention that introduced a metalanguage of visual design for teaching and learning multimodal and visual literacy skills in students was carried out in a state primary school in the city of Ptolemaida, northern Greece (Papademetriou & Makri, 2015). The teacher implemented scaffolded instruction with individual student and groupwork activities in multimodal artefact composing. In overt instruction, teachers introduced the concept of multimodality, the principles/systems of composition, and the modelling of teaching the metalanguage of "visual grammar" to students. In situated practice, students engaged in individual and group work to compose their multimodal artefacts using the metalanguage taught to them. Finally, students revised their multimodal artefacts. The implementation results of this intervention demonstrated that students developed multimodal, visual, and critical literacies.

In Australia, Thomas (2012) also implemented a multimodal authoring project that involved the explicit teaching of a metalanguage for multimodal authoring with open ended tasks that allowed students to analyse and evaluate ways to communicate multimodal meanings. Teachers explicitly taught students the metalanguage of multimodal grammatical design for them to compose multimodal narratives using the 3D animation software program called *Kahootz*. As a result of undergoing this pedagogy, students developed varied degrees of knowing how to combine image, verbiage, and sound to create narratives in their multimodal artefacts.

Unsworth (2014) argues that teachers and students benefit from having a metalanguage for talking about multimodal texts and how they make meaning. Mills et al. (2020) report on a multisite qualitative study in Australia where students were taught a multimodal language of attitude and learnt to use the attitudinal language adapted from Martin and White's (2005) appraisal theory, in terms of affect, judgment, and appreciation, in digital comic making. The researchers taught teachers the metalanguage comprising the attitude network through a series of professional development workshops, which was subsequently applied in their classroom programs in a series of six lessons. Direct instruction was used to teach students the facial expressions, extended vocabulary, and colours for different emotions in the lessons and the students modelled the teachers' examples using the metalanguage to create drawing animations individually on iPads using a stylus. Mills et al. (2020) reported that the students expanded their vocabulary for inscribing feelings, learnt how to orchestrate the semiotic elements to provoke emotions, and articulate emotions through the creation of animation. In a similar study, Unsworth and Mills (2020) also demonstrate how students were able to apply the evaluative language taught in their multimodal composing, and highlight the improvements made in the students' post-test results. The implementation of this systematic framework aims to provide teachers with practical examples of how a metalanguage can be usefully integrated into the classroom for teaching students visual literacy, semiotic knowledge, communication skills using emotions, multimodal narrative technique of point of view, and technical skills with animation design by using apps for learning.

The learning of multimodal literacy has often been accomplished with the introduction of a pedagogic metalanguage. The metalanguage organises the students' viewing around the meaning potential in the multimodal genres to achieve specific purposes – that is, how the textual features fulfil typical functions (Lim, 2018). The metalanguage, based on the work of Kress and van Leeuwen's (1996) visual grammar has been introduced to support the teaching of print advertisements (Lim & Tan, 2017) and film texts (Lim & Tan, 2018) to secondary school students as well as for the teaching of digital multimodal compositions

(Liang & Lim, 2021), the use of video games for learning (Toh & Lim, 2021) and educational apps (Lim & Toh, 2022). In the next section, we will move on to discuss the importance of teaching affect in multimodal pedagogies.

4.4. Attention on affect in multimodal learning

The systematic review surfaced a number of studies that centred on affect in literacy learning. Affect in multimodal literacy is important because it allows for visceral engagement with the curricular content through embodied teaching (Lim, 2021b) and learning (Lenters, 2016) and expression of emotions through the learning activities and multimodal artefacts (Gray & Lee, 2019). As previously highlighted, texts from the students' lifeworld, such as comics, trending videos on social media, and advertisements, are now commonly used to engage students in their literacy learning. Metalanguages have been developed to scaffold student's learning of the language of affect to understand and communicate meaning using multiple semiotic resources for audience and purpose (e.g., Lowien, 2016; Mills & Unsworth, 2018; Mills et al., 2020).

An example of the affective turn in multimodal pedagogies is the study that was implemented for Korean elementary EFL learners where they were encouraged to express their emotions through the graffiti that they drew on their textbooks to challenge the dominant representations in the multimodal text (Gray & Lee, 2019). Students drew the graffiti to express various emotions such as anger about study-related stress directed at the textbook. They also used humour and mockery in their graffiti to undermine the power of textbook representations. Some of the students expressed the emotions of hate, loneliness, and displeasure in their drawings to express their personal engagement with the pages in the textbook. The results of the study demonstrate that students could engage with, transform, and criticise textbook contents not only with English but also using other expressive modes. The multimodal nature of the activity included students in the learning activity and provided them with agency by allowing them to express their emotions freely in the classroom in school. Students also have their voice heard as they could express themselves in multiple ways that were not restricted to the use of language.

The adoption of an affective and embodied approach to composing multimodal artefacts for students using mobile devices, such as the iPad has been reported to be effective in scaffolding their digital composing activities as they integrated bodily experiences, sensations, and movements through classroom space with literacy learning (Ehret & Hollett, 2014). This pedagogical approach can go beyond the limits of multimodal, social semiotic theoretical approaches to pedagogy that foreground textuality and artificially bifurcate body

and screen. The use of mobile devices in the classroom necessitates a pedagogy that recognises students' embodied experiences, sensations, and movements through classroom space for literacy learning as the body plays a crucial role in meaning-making and transforms the composing process. Additionally, to incorporate digital technologies into the classroom requires a reorganisation of classroom space to include students' ways of being with mobile devices in their everyday lives.

The importance of movement and embodied pedagogies is further demonstrated through an ethnographic study of students' digital video production and their multimodal emotional responses to places, such as happiness, security, and satisfaction as they reflected actively on their placed experiences through think-aloud protocol (Mills et al., 2014). The adoption of the affective stance to meaning-making is not only important to address the need to enable students to communicate their emotions multimodally for socioemotional well-being, but it also enables teachers to understand how to motivate students emotionally for their literacy learning in academic contexts by incorporating movement and embodied teaching and learning. Students were taught filmmaking through workshops to heighten their sensory awareness of places. Then, they edited videos with peers on computers to create their multimodal artefacts. The use of metacognitive scaffolds enabled students and researchers to socially negotiate knowledge to understand students' mental processes when creating the videos. By participating in the affective pedagogies, the study reported that the students developed knowledge of how to orchestrate semiotic resources to represent emotions.

Towndrow et al. (2013) also highlighted the importance of focusing on affect in the teaching of multimodal literacy in Singapore. They found that the digital storytelling rubric teachers used to evaluate students' work included "emotional content" in the "content" category. However, there was no specification of what "emotional content" consisted of. They argued that teachers cannot be expected to assess students' multimodal literacy capacities if they do not know what these literacy capacities comprise and how to recognise and interpret their realisations in practice. The challenges of assessing multimodal literacy and the importance of building the teachers' capacity to teach multimodal literacy are discussed in the next section.

4.5. Concerns over multimodal assessment

The spectre of assessment has been reported to continually haunt many of the English classrooms where teachers innovate with multimodal pedagogies and focus on multimodal literacy learning. Literacy development beyond singular focus on language learning was viewed as extra-curricular activities (e.g., Schultz & Coleman-King, 2012), and viewed as a

distraction that took time away from test preparation (Jocius, 2016) due to the limited curricular time (Pishol & Kaur, 2015). Many of the studies have highlighted the disconnect between the high-stakes assessment/language-dominant standardised examinations and the multimodal pedagogies that focused on creativity, multi-perspectival thinking using multiple semiotic resources, and students' diverse identities (e.g., Ajayi, 2011, 2015; Hung & Yuen, 2014; Jakobsen & Tønnessen, 2018; Noel, 2015; Reid, 2020; Roswell & Kendrick, 2013; Schultz & Coleman-King, 2012). Similarly, the critical review conducted by Tan et al. (2020) highlights that assessment remains language dominant as teachers tend to prioritise products of learning over processes of learning.

Several national curricular and syllabi have accorded increasing recognition and emphasis on the importance of multimodal literacy teaching and learning. However, research (Unsworth, 2014, 2017; Unsworth et al., 2019) have shown that in several contexts, including Australia, the UK and the USA, an 'educational chasm' (Unsworth et al., 2019, p. 128) - also referred to as a 'multimodality chasm' (Unsworth, 2017, p. 102) - exists between the national literacy curriculum and the respective national literacy assessment practices in terms of the 'minimal attention [paid] to assessing students' reading of images'. National literacy and reading assessments have more often than not failed to address 'the reality of the prominence of multimodal texts in lives of students', resulting in a glaring discrepancy where the assessment practices do not respond to expected curricular outcomes (Unsworth, 2017, p. 100). For example, Unsworth et al. (2019) observed that despite there being an abundance of detailed requirements in the Australian National Curriculum with regard to developing multimodal literacy in students, the national reading comprehension tests of the Australian National Assessment Programme in Literacy and Numeracy (NAPLAN) did not commensurate with the syllabus requirements in recognising knowledge of image-language integration. The overwhelmingly monomodal design of the NAPLAN reading test items also differed from the greater proportion of test items that addressed image-language relations in large scale international assessments, such as the Trends in International Mathematics and Science Study (TIMSS), the Programme for International Student Assessment (PISA), and the Progress in International Reading Literacy Study (PIRLS).

The focus of assessment also has a profound influence over the teachers' pedagogical practices in the classroom. For example, in their implementation of the lesson package to teach multiliteracies in the English classroom, Lim, Weninger & Nguyen (2020) found that both teachers and students were concerned about the lack of representation of digital multimodal composing in the national assessment. The absence of the assessment of representation skills such as digital multimodal composing in the national assessment led to a disconnect between pedagogy, curriculum, and assessment for the teaching and learning

of multimodal literacy. As a result, both teachers and students felt that learning digital multimodal composing activities might not prepare students sufficiently for the national assessment in the examinations, which is language-focused.

It is recognised that assessment of multimodal learning is important for the development of students' multimodal literacy in the classrooms. Even though multimodal resources, such as videos, have been used to develop students' critical thinking (Toohey et al., 2012), the teachers' use of these multimodal texts to assess students' learning were rare (Colton & Shattock, 2019). When multimodal assessments are used, concerns have also been raised in relation to the lack of assessment rubrics developed for evaluating students' multimodal literacy learning and multimodal artefacts in the classroom (Sen & Towndrow, 2013). It has also been observed that current assessment processes are incapable of evaluating the skills and competencies associated with multilingual and multimodal production, such as students' abilities to learn, work, and produce multimodal artefacts collaboratively (Jenson et al., 2011). Teachers also did not perceive the learning activities involving multimodal production seriously because they treated the linguistic text as the most important part of the exercise (Dagenais et al., 2017).

Teachers were also reported to be uncertain of how to evaluate multimodal literacies (Aagaard & Lund, 2013) and multimodal compositions, such as videos and digital stories, as these multimodal artefacts require different forms of assessment compared to print-based literacy assignments (Burke & Hardware, 2015). Towndrow et al. (2013) argued that teachers need to develop a semiotic awareness as part of reforming the assessment approach to more fully recognise and value the students' multimodal meaning-making. They opine that assessing students multimodal composing involves deconstructing students' artefacts to tease out the ways they have designed the meanings.

Callow (2020) proposed that the assessment of students' reading of multimodal texts should be used in conjunction with quality literature together with a range of other reading assessment strategies such as anecdotal records, discussion, and comprehension questions that explore the connections between image and text. He also proposed the use of a digital visual response task that can allow students to demonstrate their knowledge of visual features and provide specific data for teachers to assess what multimodal concepts students understand. While assessing students' multimodal knowledge, he found that even though their responses showed some development towards all the curriculum outcomes as well as a range of metalinguistic terms and concepts, many did not exhibit a semiotic awareness (Unsworth & Macken-Horarik, 2015).

Despite the challenges that teachers faced in relation to assessing students' multimodal artefacts, multimodal assessments can support students' learning by situating the academic content within the lived experiences of students. Multimodal assessments can provide students with diverse receptive and expressive opportunities, position students to take on critical stances, and allow children to demonstrate diverse assets, depths of thinking, and areas of growth in language and literacy (Lawrence & Mathis, 2020).

The studies reviewed are revealing of the challenges teachers face with regard to multimodal pedagogies and multimodal literacy learning as systemic structures, such as the assessment regime may run counter to their efforts to design for multimodal meaning-making in the classroom. While the broadening of the literacy curriculum is a welcome change, it is not sufficient to bring about systemic shifts if the national, and school-based assessments remain solely focused on language. Even so, the incorporation of multimodal assessment in the English classroom is not without challenges. Concerns have been raised with regard to the ways of evaluating student's multimodal literacy learning and multimodal artefacts aptly and fairly. The need for teachers to build up their capacity to design for and evaluate students' learning using multimodal assessment rubrics is growing in urgency as the trend surfaced from this systemic review suggests that multimodal meaning-making is likely to become more embedded in the English classroom in the next decade.

5. Discussion

The thematic findings from the systematic review offer insights into the current state of multimodality practices in the English classroom. Specifically, the findings are revealing of the nature of multimodal pedagogies and multimodal literacy learning that are either prevalent or present in education systems around the world. The themes identified in this review have a strong line of continuity from the earlier systematic reviews conducted by Kulju et al. (2018) and Yi (2014), indicating a sustained development over the years in particular aspects. For example, our review has identified a strong engagement with multimodal texts from the student's lifeworld and this was observed by Kulju et al. (2018) who observed the use of a variety of multimodal texts for literacy learning as early as the late 1990s. Similarly, Yi (2014) also surfaced the theme of connection between out-of-school experiences with the students' in-school learning. The sustained nature of this theme across the studies suggests that the use of multimodal texts as a bridge between the student's informal communicative practices from their lifeworld, with formal learning literacy practices in school is a well-developed and distinctive feature of multimodal meaning-making in the English classroom.

Our study also goes beyond the earlier systematic reviews conducted by Kulju et al. (2018) and Yi (2014) in uncovering the use of new technologies that contribute to the expansion of multimodal text types that teachers can use as part of their multimodal pedagogies. These new technologies include virtual and augmented reality (e.g., Ho et al., 2011), smartphones (e.g., Cruz-Arcila, 2018), and iPads (e.g., Mills et al., 2020) that provide new affordances and offer embodied modes for interaction such as the haptic mode on a digital device that students can engage with to connect with their learning experience in the classroom. Virtual reality can provide a simulated learning environment that immerses and motivates students in their English language learning (Chen et al., 2021; Mills & Brown, 2021) and augmented reality can allow students to overlay images over other modes in their multimodal text to create different layers in their multimodal texts to enhance their learning experience.

Our review also surfaced the theme of critical, creative, and culturally responsive multimodal pedagogies in the English classroom. While a variety of multimodal pedagogies have been reported in the studies reviewed, they share a common focus in developing criticality and creativity in students through the learning activities. In particular, the recognition and inclusion of the students' cultural identities and lifeworld encourage them to build on their funds of knowledge through culturally responsive pedagogies. The teachers' use of multimodal pedagogies has also been broadly identified in Kulju et al.'s (2018) review, without defining the nature of the multimodal pedagogies. Their review has also identified the presence of multiculturalism and a diversity of multimodal meaning-making practices in the classroom. Likewise, Yi's (2014) review also highlighted the connection between multimodal literacy learning with students' multimodal communicative competence and critical literacy development as well as in providing opportunities for the exploration and performance of identities. Yi (2014) also discussed the growing importance of the skills of designing and implementing multimodal pedagogies as part of the professional repertoire of the English teachers. Our review advances this theme by surfacing examples from studies which feature multimodal pedagogies from teachers that foster criticality and creativity as well as being culturally responsive in nature. In contrast to the earlier studies conducted by Kulju et al. (2018) and Yi (2014), our study has found a range of multimodal pedagogies that include those that are designed for teaching students how to combine the different modes of new media such as digital games and digital videos in the classroom.

Another theme surfaced from our review is the explicit teaching of multimodal literacy, often through the introduction of a metalanguage to offer students a vocabulary to describe and discuss the semiotic choices made in the multimodal texts. While not explicated in earlier reviews, the importance of a pedagogic metalanguage is not new, given that many

scholars, including the New London Group, have argued that “it is important to have a meta-language to denote semiotic resources beyond language so as to describe meaning in various realms” (New London Group, 2000, p. 4). Our review has identified studies from the United States, Greece, Australia, and Singapore, which share a common approach in guiding students to engage in the interpretation and creation of multimodal texts with a pedagogic metalanguage either developed or translated from research ideas and frameworks on multimodality. These studies reflect the usefulness of having a codified set of knowledge and skills in multimodal literacy learning to develop students’ semiotic awareness (Lim, 2021a) which can “structure their noticing, offering a fresh view of choices that may have been taken for granted” (Macken-Horarik et al., 2011). In our review, we go beyond the earlier reviews conducted by Kulju et al. (2018) and Yi (2014) in identifying recent studies that have designed metalanguages for the explicit teaching of engagement with new media such as digital games (e.g., Apperley & Beavis, 2013) and videos production (Liang & Lim, 2021) to connect with students’ out-of-school literacy.

A theme of interest that has emerged from the studies on multimodality in the English classroom is the attention on affect. A number of studies have drawn attention to the embodied nature of teaching and learning (Lenters, 2016; Lim, 2021b) and shared a focus on emotions in the lesson experience. They include developing in students a semiotic awareness of how emotions can be expressed through various semiotic resources as well as encouraging students to express their emotions through multimodal composing. These studies indicate a discernible broadening of scope beyond the learning of knowledge and skills in a literacy classroom to an exploration of affect in meaning-making with multimodal resources. The emergence of this theme possibly reflects the zeitgeist where the communicative practices on social media are often emotionally laden (Chmiel et al., 2011; Stieglitz & Dang-Xuan, 2014). This theme is different from the earlier reviews conducted by Kulju et al. (2018) and Yi (2014) who have not found studies with multimodal pedagogies that engages with affect in the English classroom.

Finally, the concern over multimodal assessment remains perennial. In an earlier review, Yi (2014) identified that one of the impeding factors for multimodal literacy learning is the high-stakes language dominant testing. Kulju et al. (2018) mentioned that in countries such as Australia, the national standards require that children in year 1 start to create multimodal texts with written texts and supporting images. However, their review did not include studies that focus on an in-depth discussion of multimodal assessment in the English classroom. Concerns over assessment have similarly surfaced in the studies we reviewed. Our review is more nuanced in identifying the different aspects of the concern in addition to language dominant nature of assessment. Recent studies have highlighted the disconnect between

curriculum reforms to incorporate multimodality and the scant attention given to multimodality in national assessment (Unsworth, 2017, Unsworth et al., 2019). The selective testing of text interpretation rather than text composing has also influenced the classroom practices where more interest and time is given to the former. Another aspect of concern over multimodal assessment is the challenges in evaluating students' artefacts. While rubrics have been widely reported to be used, the challenge remains whether teachers have the semiotic awareness to aptly evaluate student's multimodal creations (Towndrow et al., 2013). The answers to the critical questions of what and how to assess in multimodal literacy remain elusive from the studies reviewed. As such, we opine that multimodal assessment remains a crucial area to be addressed in the next decade of work on multimodality in the English classroom.

Having discussed the thematic findings from the systematic review, we will now propose future directions for research. For the first theme on the types of multimodal texts for literacy learning, we propose that future research can integrate newer multimodal texts such as digital games and educational apps into the classroom to find out how teachers can guide students to be more critically aware and reflective of the multimodal representations in this text type (e.g., Stufft & Gillern, 2021; Lim & Toh, 2022). Further research can also explore how teachers who integrate new technologies such as virtual and augmented reality (Papanastasiou et al., 2019) that provide an ambient sensory experience can enhance students' learning through sensory stimulation such as ambient scents in the English language classroom. Teachers can also explore combining neglected semiotic modes such as the olfactory mode (e.g., scent) with music in the English language classroom to create new multimodal text types such as those found in olfactory storytelling (e.g., Spence, 2021) and explore the effects of using new combinations of modes on the learning experience of the students.

In relation to critical, creative, and culturally responsive multimodal pedagogies in the English classroom, research can explore if teachers can use novel multimodal text types to enhance students' critical thinking, creativity, and intercultural awareness. Further research could explore online learning in virtual worlds such as *Second Life*, *Minecraft*, *Roblox*, or *Animal Crossing*. The game factor in these virtual worlds can transform a conventional English class into a fun virtual learning playground and virtual world affordances such as avatar anonymity can empower learners to build confidence and boost motivation for English language learning (Chen & Kent, 2020) as well as to develop students' critical thinking, creativity, and intercultural awareness when students can interact with participants from different countries online.

Teachers can also co-design lesson packages or metalanguages with educational researchers to enable them to explicitly teach students viewing and representing skills for newer multimodal text types such as interactive stories on digital media (e.g., Chew & Mitchell, 2020), serious games (e.g., Wong et al., 2021), storygames (e.g., Mitchell & Kway, 2020), alternate reality games (e.g., Liang et al., 2021), augmented reality learning games (e.g., Wen, 2021), ebooks (e.g., Rvachew et al., 2017), and so on. Given the rapid advancement of technology and digital media, there is a greater need for teachers to guide students how to understand, interact with, and create new multimodal texts so that they can have a greater sense of the affordances of new technologies for their meaning-making.

As students are increasingly using social media for their daily interactions with family and friends, teachers can explore multimodal pedagogies which involve the use of social media such as Twitter (e.g., Duncombe, 2019), Facebook (e.g., Bi, 2021), TikTok (e.g., Southwick et al., 2021), and YouTube (e.g., Crilley & Chatterje-Doody, 2020). Teachers can guide students to understand and be more critically aware of information communicated through social media where emotional appeals are often used to manipulate public sentiments on issues.

Concerns over the challenges of multimodal assessment can be informed by research to explore ways where the students' meaning-making with both linguistic and non-linguistic modes are valued during classroom learning activities and/or in the examinations. Educational researchers can work together with teachers to design multimodal assessment rubrics for evaluating the non-linguistic modes such as moving images in students' video artifacts, interactivity in digital games, the olfactory mode in olfaction-enhanced multimedia applications (e.g., Ghinea & Ademoye, 2011), and the haptic mode in virtual and augmented reality installations. They can design the multimodal assessment rubrics by analysing, deconstructing, and reverse engineering students' multimodal compositions as suggested by Towndrow et al. (2013). In addition, greater attention can also be devoted in designing assessment items that tests the students' multimodal literacy, such as their interpretation of images (Lim, & Tan, 2021; Unsworth et al., 2019).

6. Conclusion

In this paper, we reviewed relevant studies from the past decade on multimodality in the English classroom. The aim is to consolidate the understandings on the nature of multimodal pedagogies and multimodal literacy learning across different parts of the world and propose implications and research directions to advance the integration of multimodality in literacy. We also compare the themes that emerged from our review with past reviews on a similar

focus to highlight aspects of continuity and change over the years from the observations made and propose directions for future research.

Even as forward-looking education systems expand their literacy curriculum to incorporate multimodal meaning-making, real change arguably happens only in the classroom – through how the teachers teach and what the students learn. Our review seeks to shed light on these changes to advance a relevant literacy education for our charges.

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References

- Aagaard, T., & Lund, A. (2013). Mind the Gap: Divergent Objects of Assessment in Technology Rich Learning Environments. *Nordic Journal of Digital Literacy*, 8(4), 225–243.
- Ajayi, L. (2011). A Multiliteracies Pedagogy: Exploring Semiotic Possibilities of a Disney Video in a Third Grade Diverse Classroom. *Urban Review*, 43, 396–413. <https://doi.org/10.1007/s11256-010-0151-0>.
- Ajayi, L. (2015). Critical Multimodal Literacy: How Nigerian Female Students Critique Texts and Reconstruct Unequal Social Structures. *Journal of Literacy Research*, 47(2), 216–244. <https://doi.org/10.1177%2F1086296X15618478>.
- Anderson, K. T., & Wening, C. (2012). Tracing ideologies of learning in group talk and their impediments to collaboration. *Linguistics and Education*, 23, 350–360.
- Anderson, K. T., Stewart, O. G., & Kachorsky, D. (2017). Seeing Academically Marginalized Students' Multimodal Designs From a Position of Strength. *Written Communication*, 34(2), 104–134. <https://doi.org/10.1177%2F0741088317699897>.
- Andrews, G., Prozesky, M., & Fouché, I. (2020). The Multiliteracies Learning Environment as Decolonial Nexus: Designing for Decolonial Teaching in a Literacies Course at a South African University. *Issues in English Studies in Southern Africa* 25(1), 64–85. <https://doi.org/10.1080/18125441.2020.1800806>.
- Angay-Crowder, T., Choi, J., & Yi, Y. (2013). Putting Multiliteracies Into Practice: Digital Storytelling for Multilingual Adolescents in a Summer Program. *TESL Canada Journal*, 30(2), 37–45. <https://doi.org/10.18806/tesl.v30i2.1140>.
- Apperley, T., & Beavis, C. (2013). A Model for Critical Games Literacy. *E-Learning and Digital Media*, 10(1), 1–12. <https://doi.org/10.2304%2Flea.2013.10.1.1>.

- Arnott, L., & Yelland, N. J. (2020). Multimodal lifeworlds: Pedagogies for play inquiries and explorations. *Journal of Early Childhood Education Research*, 9(1), 124–146.
- Bezemer, J., & Kress, G. (2016). *Multimodality, Learning and Communication: A Social Semiotic Frame*. Routledge.
- Bi, N. C. (2021). How emotions and issue controversy influence the diffusion of societal issues with imagined audience on Facebook. *Behaviour & Information Technology*. <https://doi.org/10.1080/0144929X.2020.1869307>.
- Bomer, R., Zoch, M., & David, A. D. (2010). Redesigning Memoir: A Design-Based Investigation of Materiality and New Literacy Practices in an Elementary Classroom's Writing Workshop. In R. T. Jiménez, V. J. Risko, M. K. Hundley, & D. W. Rowe (Eds.), *59th Yearbook of the National Reading Conference* (pp. 216–229). National Reading Conference, Inc.
- Brown, S. (2013). A blended approach to reading and writing graphic stories. *The Reading Teacher*, 67(3), 208–219. <https://doi.org/10.1002/TRTR.1211>.
- Brown, S. (2020). Pushing against hegemonic practices: emergent bilinguals respond to children's literature. *European Early Childhood Education Research Journal*, 28(2), 242–255. <https://doi.org/10.1080/1350293X.2020.1735742>.
- Burke, A., & Hardware, S. (2015). Honouring ESL students' lived experiences in school learning with multiliteracies pedagogy. *Language, Culture and Curriculum*, 28(2), 143–157. <https://doi.org/10.1080/07908318.2015.1027214>.
- Callow, J. (2020). Visual and verbal intersections in picture books – multimodal assessment for middle years students. *Language and Education*, 34(2), 115–134. <https://doi.org/10.1080/09500782.2019.1689996>.
- Cercone, J. (2017). "Standing at the Crossroads": Content Creation in the 21st-Century English Classroom. *English Journal*, 106(3), 25–31.
- Chen, J. C., & Kent, S. (2020). Task engagement, learner motivation and avatar identities of struggling English language learners in the 3D virtual world. *System*, 88, 1–14. <https://doi.org/10.1016/j.system.2019.102168>.
- Chen, C.-H., Hung, H.-T., & Yeh, H.-C. (2021). Virtual reality in problem-based learning contexts: Effects on the problem-solving performance, vocabulary acquisition and motivation of English language learners. *Journal of Computer Assisted Learning*, 37(3), 851–860. <https://doi.org/10.1111/jcal.12528>.
- Chew, E. C., & Mitchell, A. (2020). Bringing Art to Life: Examining Poetic Gameplay Devices in Interactive Life Stories. *Games and Culture*, 15(8), 874–901. <https://doi.org/10.1177%2F1555412019853372>.
- Chmiel, A., Sobkowicz, P., Sienkiewicz, J., Paltoglou, G., Buckley, K., Thelwall, M., & Holyst, J. A. (2011). Negative emotions boost user activity at BBC forum. *Physica A: Statistical Mechanics and its Applications*, 390(16), 2936–2944.
- Cloonan, A. (2011). Creating multimodal metalanguage with teachers. *English Teaching: Practice and Critique*, 10(4), 23–40.
- Colton, J., & Shattock, A. (2019). Deep Learning with digital tools in Year 9 English: New applications in teaching Anne Frank's Diary of a Young Girl. *Literacy Learning: The Middle Years*, 27(3), 36–46.
- Cooper, H. (2016). *Research Synthesis and Meta-Analysis: A Step-by-Step Approach*. 5th Ed. SAGE Publications, Inc.

- Cope, W., & Kalantzis, M. (2009). "Multiliteracies": New Literacies, New Learning. *Pedagogies*, 4(3), 164–195. <https://doi.org/10.1080/15544800903076044>.
- Cope, W., & Kalantzis, M. (2015). The things you do to know: An introduction to the pedagogy of multiliteracies. In B. Cope & M. Kalantzis (Eds.), *A Pedagogy of Multiliteracies: Learning by Design* (pp. 1–36). Palgrave Macmillan.
- Cope, Bill, & Kalantzis, M. (2021). Pedagogies for Digital Learning: From Transpositional Grammar to the Literacies of Education. In M. G. Sindoni & I. Moschini (Eds.), *Multimodal Literacies Across Digital Learning Contexts* (pp. 34–53). Routledge.
- Corbin, J., & Strauss, A. (2008). *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory* (3rd ed.). Sage.
- Craig, M., & Porter, C. (2014). "Speaking back" from the English periphery: Art-work in a South Korean high school English classroom. *English Teaching: Practice and Critique*, 13(2), 35–54.
- Crilley, R., & Chatterje-Doody, P. N. (2020). Emotions and war on YouTube: affective investments in RT's visual narratives of the conflict in Syria. *Cambridge Review of International Affairs*, 33(5), 713–733. <https://doi.org/10.1080/09557571.2020.1719038>.
- Cruz-Arcila, F. (2018). The wisdom of teachers' personal theories: Creative ELT practices from Colombian rural schools. *Profile: Issues in Teachers' Professional Development*, 20(2), 65–78. <https://doi.org/10.15446/profile.v20n2.67142>.
- Cummins, J., Mirza, R., & Stille, S. (2012). English Language Learners in Canadian Schools: Emerging Directions for School-Based Policies. *TESL Canada Journal*, 29(6), 25–48. <https://doi.org/10.18806/tesl.v29i0.1121>.
- Cummins, J., Hu, S., Markus, P., & Montero, M. K. (2015). Identity texts and academic achievement: Connecting the dots in multilingual school contexts. *TESOL Quarterly*, 49(3), 555–581. <https://doi.org/10.1002/tesq.241>.
- Curwood, J. S., & Cowell, L. L. H. (2011). iPoetry: Creating Space for New Literacies in the English Curriculum. *Journal of Adolescent & Adult Literacy*, 55(2), 110–120. <https://doi.org/10.1002/JAAL.00014>.
- Dagenais, D., Toohey, K., Fox, A. B., & Singh, A. (2017). Multilingual and multimodal composition at school: ScribJab in action. *Language and Education*, 31(3), 263–282. <https://doi.org/10.1080/09500782.2016.1261893>.
- Dallacqua, A. K., & Sheahan, A. (2020). Making space: Complicating a canonical text through critical, multimodal work in a secondary language arts classroom. *Journal of Adolescent & Adult Literacy*, 64(1), 67–77. <https://doi.org/10.1002/jaal.1063>.
- Dantas-Whitney, M., Clemente, A., & Higgins, M. J. (2012). Agency, identity and imagination in an urban primary school in Southern Mexico. *Calidoscópico*, 10(1), 114–124. <http://dx.doi.org/10.4013/cld.2012.101.10>.
- Danzak, R. L. (2011). Defining identities through multiliteracies: EL teens narrate their immigration experiences as graphic stories. *Journal of Adolescent & Adult Literacy*, 55(3), 187–196. <https://doi.org/10.1002/JAAL.00024>.
- De Souza, L. M. T. M. (2017). Multiliteracies and Transcultural Education. In O. Garcia, N. Flores, & M. Spotti (Eds.), *The Oxford Handbook of Language and Society* (pp. 261–81). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780190212896.013.20>.

- De Souza, L. M. T. M. (2019). Decolonial Pedagogies, Multilingualism and Literacies. *Multilingual Margins*, 9(1), 9–13.
- De Souza, D. E., & Towndrow, P. A. (2011). The Generative Use of ICT in the Language Arts: Strategies in Learning Task Design and Implementation. In C. M. L. Ho, K. T. Anderson, & A. P. Leong (Eds.), *Transforming Literacies and Language* (pp. 23–48). Continuum.
- Doerr-Stevens, C. (2017). Embracing the Messiness of Research: Documentary Video Composing as Embodied, Critical Media Literacy. *English Journal*, 106(3), 56–62.
- Douka, A., Fterniati, A., & Archakis, A. (2017). Teaching News Discourse in the Greek Lyceum: Language Teaching Proposals Based on the Multiliteracies Framework. Paper presented at the *Confronting Contemporary Educational Challenges Through Research: International Conference on Educational Research*. Patras GR.
- Duncombe, C. (2019). The Politics of Twitter: Emotions and the Power of Social Media. *International Political Sociology*, 13(4), 409–429. <https://doi.org/10.1093/ips/olz013>.
- Edwards-Groves, C. (2012). Interactive Creative Technologies: Changing learning practices and pedagogies in the writing classroom. *Australian Journal of Language and Literacy*, 35(1), 99–113.
- Ehret, C., & Hollett, T. (2014). Embodied Composition in Real Virtualities: Adolescents' Literacy Practices and Felt Experiences Moving with Digital, Mobile Devices in School. *Research in the Teaching of English*, 48(4), 428–452.
- Flint, P., Dollar, T., & Steward, M. A. (2019). Hurdling Over Language Barriers: Building Relationships with Adolescent Newcomers Through Literacy Advancement. *Journal of Adolescent & Adult Literacy*, 62(5), 509–519. <https://doi.org/10.1002/jaal.927>.
- Ghinea, G., & Ademoye, O. A. (2011). Olfaction-enhanced multimedia: perspectives and challenges. *Multimedia Tools and Applications*, 55, 601–626. <https://doi.org/10.1007/s11042-010-0581-4>.
- Giampapa, F. (2010). Multiliteracies, Pedagogy and Identities: Teacher and Student Voices from a Toronto Elementary School. *Canadian Journal of Education*, 33(2), 407–431.
- Grant, M. J., & Booth, A. (2009). A typology of reviews: An analysis of 14 review types and associated methodologies. *Health Information and Libraries Journal*, 26(2), 91–108. <https://doi.org/10.1111/j.1471-1842.2009.00848.x>.
- Gray, S., & Lee, R. (2019). Textbook Graffiti as a Critical, Multimodal Classroom Activity for Korean Elementary EFL Students. *STEM Journal*, 20(2), 43–66. <https://doi.org/10.16875/stem.2019.20.2.43>.
- Healey, A. (2016). Transforming pedagogy with multiliteracies in the English classroom. *Literacy Learning: The Middle Years*, 24(1), 7–17.
- Hines, M. B., & Kersulov, M. (2015). Engagement and resistance at Last Chance High: a case study of twenty-first-century literacies and identities in one English classroom. *The Curriculum Journal*, 26(2), 224–248.
- Ho, C. M. L., Nelson, M. E., & Müller-Wittig, W. (2011). Design and implementation of a student-generated virtual museum in a language curriculum to enhance collaborative multimodal meaning-making. *Computers & Education*, 57(1), 1083–1097.
- Hung, V. H. K., & Yuen, A. H. K. (2014). Learning with Video Representation: A Case Study on the Usage of Multimodal Elements for Explaining Community Issues. *Journal of Communication and Education*, 1(1), 28–38.

- Iddings, A. C. D., & Rose, B. C. (2012). Developing pedagogical practices for English-language learners: a design-based approach. *Pedagogies: An International Journal*, 7(1), 32–51. <http://doi.org/10.1080/1554480X.2012.630510>.
- Jakobsen, I. K., and Tønnessen, E. S. (2018). A Design-Oriented Analysis of Multimodality in English as a Foreign Language. *Designs for Learning*, 10(1), 40–52. <http://doi.org/10.16993/dfl.89>.
- Jenson, J., Taylor, N., & Fisher, S. (2011). *Critical Review and Analysis of the Issue of 'Skills, Technology and Learning'* (Final Report). http://www.edugains.ca/resources21CL/Research/Research_JenniferJensonReport.pdf.
- Jewitt, C., & Kress, G. (Eds.). (2003). *Multimodal literacy*. Peter Lang.
- Jiang, L., & Gao, J. (2020). Fostering EFL Learners' Digital Empathy through Multimodal Composing. *RELC Journal*, 51(1), 70–85. <https://doi.org/10.1177%2F0033688219898565>.
- Jocius, R. (2016). Telling Unexpected Stories: Students as Multimodal Artists. *English Journal*, 105(5), 16–22.
- Johnson, L., & Kendrick, M. (2016). "Impossible Is Nothing": Expressing Difficult Knowledge Through Digital Storytelling. *Journal of Adolescent & Adult Literacy*, 60(6), 667–675. <https://doi.org/10.1002/jaal.624>.
- Kaur, S., Ganapathy, M., & Sidhu, G. K. (2012). Designing Learning Elements Using the Multiliteracies Approach in an ESL Writing Classroom. *3L: The Southeast Asian Journal of English Language Studies*, 18(3), 119–134.
- Kendrick, M., Jones, S., Mutonyi, H., & Norton, B. (2010). Using drawing, photography, and drama to enhance English language learning in Uganda. In M. Dantas-Whitney & S. Rilling (Eds.), *Authenticity in the language classroom and beyond: Children and adolescent learners* (pp. 181–197). TESOL.
- Kiss, T., & Weninger, C. (2017). Cultural learning in the EFL classroom: the role of visual. *ELT Journal*, 71(2), 186–196. <https://doi.org/10.1093/elt/ccw072>.
- Kress, G. (2009). *Multimodality: A Social Semiotic Approach to Contemporary Communication*. Routledge.
- Kress, G., & Selander, S. (2012). Multimodal design, learning and cultures of recognition. *The Internet and Higher Education*, 15(4), 265–268. <https://doi.org/10.1016/j.iheduc.2011.12.003>.
- Kress, G., & van Leeuwen, T. (1996). *Reading images. The grammar of visual design*. Routledge.
- Kulju, P., Kupiainen, R., Wiseman, A. M., Jyrkiainen, A., Koskinen-sinisalo, K.-L., & Makinen, M. (2018). A review of multiliteracies pedagogy in primary classrooms. *Language and Literacy*, 20(2), 80–101. <https://doi.org/10.20360/langandlit29333>.
- Lawrence, W. J., & Mathis, J. B. (2020). Multimodal assessments: affording children labeled 'at-risk' expressive and receptive opportunities in the area of literacy. *Language and Education*, 34(2), 135–152. <https://doi.org/10.1080/09500782.2020.1724140>.
- Lee, S. Q. Y., & Ho, C. (2013). 'I Can Animate!' Project: A Multimodal Construction and Analysis of Animated Digital Stories. In L. Y. Tay & C. P. Lim (Eds.), *Creating Holistic Technology Enhanced Learning Experiences: Tales from a Future School in Singapore* (pp. 93–116). Sense Publishers.

- Lenters, K. (2016). Telling “a Story of Somebody” Through Digital Scrapbooking: A Fourth Grade Multiliteracies Project Takes an Affective Turn. *Literacy Research and Instruction*, 55(3), 262–283. <https://doi.org/10.1080/19388071.2016.1162234>.
- Lenters, K., & Smith, C. (2018). Assembling Improv and Collaborative Story Building in Language Arts Class. *The Reading Teacher*, 72(2), 179–189. <https://doi.org/10.1002/trtr.1689>.
- Liang, H.-Y., Hsu, T.-Y., & Hwang, G.-J. (2021). Promoting children's inquiry performances in alternate reality games: A mobile concept mapping-based questioning approach. *British Journal of Educational Technology*, 52(5), 2000–2019. <https://doi.org/10.1111/bjet.13095>.
- Liang, W.J., & Lim, F. V. (2021). A pedagogical framework for digital multimodal composing in the English Language classroom. *Innovation in Language Learning and Teaching*, 15(4), 306-320. <https://doi.org/10.1080/17501229.2020.1800709>
- Lim, F.V. (2018). Developing a systemic functional approach to teach multimodal literacy. *Functional Linguistics*, 5(13). <https://doi.org/10.1186/s40554-018-0066-8>.
- Lim, F.V. (2021a). Towards Education 4.0: An agenda for teaching multiliteracies in the English language classroom. In F.A. Hamied (Ed.), *Literacies, culture, and society towards Industrial Revolution 4.0: Reviewing policies, expanding research, enriching practices in Asia*. (pp. 11-30). New York: Nova Science.
- Lim, F.V. (2021b). *Designing learning with embodied teaching. Perspectives from multimodality*. London & New York: Routledge.
- Lim, F.V., Cope, B., & Kalantzis, M. (2022). A metalanguage for learning: Rebalancing the cognitive with the socio-material. *Frontiers in Communication*. 7:830613. <https://doi.org/10.3389/fcomm.2022.830613>.
- Lim, F.V., & Tan, K.Y.S. (2018). Developing multimodal literacy through teaching the critical viewing of films in Singapore. *Journal of Adolescent & Adult Literacy*, 63(3), 291–300. <https://doi.org/10.1002/jaal.882>.
- Lim, F.V., & Tan, J.M. (2021). Curriculum and assessment mismatch: Examining the role of images in literacy assessments. *Australian Journal of Language and Literacy*. 44(3), 22-33.
- Lim, F.V. & Tan-Chia, L. (forthcoming). *Designing learning for multimodal literacy: Teaching viewing and representing*. London & New York: Routledge.
- Lim, F.V., & Toh, W. (2022). Developing a metafunctional framework for understanding the design of educational apps. In S. Diamantopoulou & S. Ørevik (Eds.), *Multimodality in English language learning, Routledge studies in multimodality*. (pp.117-130). London & New York: Routledge.
- Lim, F. V., & Toh, W. (2022). Considerations on the curation of educational apps for digital play and learning. *Contemporary Educational Technology*. 14(3), ep366. <https://doi.org/10.30935/cedtech/11809>
- Lim, F.V., Towndrow, P.A., & Tan, J.M. (2021). Unpacking the teachers' multimodal pedagogies in the Singapore primary English language classroom. *RELC Journal*. Advance online publication. <https://doi.org/10.1177/00336882211011783>.
- Lim, F.V., Weninger, C., & Nguyen, T.T.H. (2021). ‘I expect boredom’ – Students’ experiences and expectations of multiliteracies learning. *Literacy*. 55(2) 102-112. <https://doi.org/10.1111/lit.12243>.

- Lowien, N. (2016). 'It's easy!': Scaffolding literacy for teaching multimodal texts. *Literacy Learning: The Middle Years*, 24(1), 38–52.
- Macken-Horarik, M., Love, K., & Unsworth, L. (2011). A grammatics 'good enough' for school English in the 21st century: Four challenges in realising the potential. *Australian Journal of Language and Literacy*, 34(1), 9–23.
- Marcon, N., & Faulkner, J. (2016). Exploring *Minecraft* as a Pedagogy to Motivate Girls' Literacy Practices in the Secondary English Classroom. *English in Australia*, 51(1), 63–69.
- Martin, J. R., & White, P. R. R. (2005). *The language of evaluation: Appraisal in English*. Palgrave Macmillan.
- Miller, S. M. (2010). Reframing multimodal composing for student learning: Lessons on purpose from the Buffalo DV project. *Contemporary Issues in Technology and Teacher Education*, 10(2), 197–219.
- Mills, K. A., & Brown, A. (2021). Immersive virtual reality (VR) for digital media making: transmediation is key. *Learning, Media and Technology*. <http://doi.org/10.1080/17439884.2021.1952428>.
- Mills, K. A., & Exley, B. (2014). Time, Space, and Text in the Elementary School Digital Writing Classroom. *Written Communication*, 31(4), 434–469. <https://doi.org/10.1177/0741088314542757>.
- Mills, K. A., & Unsworth, L. (2018). iPad Animations: Powerful Multimodal Practices for Adolescent Literacy and Emotional Language. *Journal of Adolescent & Adult Literacy*, 61(6), 609–620. <https://doi.org/10.1002/jaal.717>.
- Mills, K. A., Stone, B. G., Unsworth, L., & Friend, L. (2020). Multimodal Language of Attitude in Digital Composition. *Written Communication*, 37(2), 135–166. <https://doi.org/10.1177%2F0741088319897978>.
- Mills, K. A., Unsworth, L., Bellocchi, A., Park, J. Y., & Ritchie, S. (2014). Children's emotions and multimodal appraisal of places: walking with the camera. *Australian Journal of Language and Literacy*, 37(3), 171–181.
- Mitchell, A., & Kway, L. (2020). "How Do I Restart This Thing?" Repeat Experience and Resistance to Closure in Rewind Storygames. In A. G. Bossler, D. E. Millard, & C. Hargood (Eds.), *Interactive Storytelling. ICIDS 2020*. Lecture Notes in Computer Science, vol 12497. Springer. https://doi.org/10.1007/978-3-030-62516-0_15.
- Mizusawa, K., & Kiss, T. (2020). Connecting Multiliteracies and Writing Pedagogy for 21st Century English Language Classrooms: Key Considerations for Teacher Education in Singapore and Beyond. *Journal of Nusantara Studies*, 5(2), 192–214. <http://doi.org/10.24200/jonus.vol5iss2pp192-214>.
- Morita-Mullaney, T. (2021). Multilingual Multiliteracies of Emergent Bilingual Families: Transforming Teachers' Perspectives on the 'Literacies' of Family Engagement. *Theory into Practice*, 60(1), 83–93. <https://doi.org/10.1080/00405841.2020.1829382>.
- Moses, L. (2016). Young bilinguals' voices: reflecting on being experts and becoming literate. *Pedagogies: An International Journal*, 11(4), 311–334. <https://doi.org/10.1080/1554480X.2016.1229619>.
- New London Group. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review*, 66(1), 60–92. <https://doi.org/10.17763/haer.66.1.17370n67v22j160u>.

- New London Group. (2000). A pedagogy of multiliteracies designing social futures. In B. Cope & M. Kalantzis (Eds.), *Multiliteracies: Literacy learning and the design of social futures* (pp. 9–74). Routledge.
- Noel, R. R. (2015). Grade 7 students actively creating graphic narratives: A linear process? *Studies in Comics*, 6(1), 168–178. https://doi.org/10.1386/stic.6.1.168_1.
- O'Halloran, K. L., Tan, S., & E, M. K. L. (2017). Multimodal analysis for critical thinking. *Learning, Media and Technology*, 42(2), 147–170. <https://doi.org/10.1080/17439884.2016.1101003>.
- Pacheco-Costa, A., & Guzmán-Simón, F. (2020). Developing Multimodal Narrative Genres in Childhood: An Analysis of Pupils' Written Texts Based on Systemic Functional Linguistics Theory. *Education Sciences*, 10(11), 1–19.
- Pacheco, M. B., & Smith, B. E. (2015). Across Languages, Modes, and Identities: Bilingual Adolescents' Multimodal Codemeshing in the Literacy Classroom. *Bilingual Research Journal*, 38(3), 292–312. <https://doi.org/10.1080/15235882.2015.1091051>.
- Palsa, L., & Mertala, P. (2019). Multiliteracies in Local Curricula: Conceptual Contextualizations of Transversal Competence in the Finnish Curricular Framework. *Nordic Journal of Studies in Educational Policy*, 5(2), 114–26. <https://doi.org/10.1080/20020317.2019.1635845>.
- Pantaleo, S. (2011). Grade 7 students reading graphic novels: 'You need to do a lot of thinking'. *English in Education*, 45(2), 113–131. <https://doi.org/10.1111/j.1754-8845.2011.01093.x>.
- Pantaleo, S. (2012). Meaning-making with colour in multimodal texts: an 11-year-old student's purposeful 'doing'. *Literacy*, 46(3), 147–155. <https://doi.org/10.1111/j.1741-4369.2012.00664.x>.
- Pantaleo, S. (2013). Paneling "Matters" in Elementary Students' Graphic Narratives. *Literacy Research and Instruction*, 52(2), 150–171. <https://doi.org/10.1080/19388071.2012.754973>.
- Pantaleo, S. (2014). Exploring the Artwork in Picturebooks with Middle Years Students. *Journal of Children's Literature*, 40(1), 15–26.
- Pantaleo, S. (2015). Language, literacy and visual texts. *English in Education*, 49(2), 113–129. <https://doi.org/10.1111/eie.12053>.
- Pantaleo, S. (2016). Primary Students Transgress Story World Boundaries in Their Multimodal Compositions. *Journal of Research in Childhood Education*, 30(2), 237–251. <https://doi.org/10.1080/02568543.2016.1143897>.
- Pantaleo, S. (2017a). The semantic and syntactic qualities of paneling in students' graphic narratives. *Visual Communication*, 18(1), 55–81. <https://doi.org/10.1177%2F1470357217740393>.
- Pantaleo, S. (2017b). Exploring the artwork of young students' multimodal compositions. *Education 3-13*, 45(1), 17–35. <https://doi.org/10.1080/03004279.2015.1033438>.
- Pantaleo, S. (2020). Slow looking: "reading picturebooks takes time". *Literacy*, 54(1), 40–48. <https://doi.org/10.1111/lit.12190>.
- Papademetriou, E., & Makri, D. (2015). The Metalanguage of "Visual Design" into the Classroom for the Construction of Intermodal Meanings. *International Journal of Education & Literacy Studies*, 3(2), 32–43.

- Papanastasiou, G., Drigas, A., Skianis, C., Lytras, M., & Papanastasiou, E. (2019). Virtual and augmented reality effects on K-12, higher and tertiary education students' twenty-first century skills. *Virtual Reality*, 23, 425–436. <https://doi.org/10.1007/s10055-018-0363-2>.
- Pishol, S., & Kaur, S. (2015). Teacher and Students' Perceptions of Reading a Graphic Novel Using the Multiliteracies Approach in an ESL Classroom. *Malaysian Journal of Learning and Instruction*, 12, 21–47.
- Price-Dennis, D. (2016). Developing Curriculum to Support Black Girls' Literacies in Digital Spaces. *English Education*, 48(4), 337–361.
- Price-Dennis, D., Holmes, K. A., & Smith, E. (2015). Exploring digital literacy practices in an inclusive classroom. *The Reading Teacher*, 69(2), 195–205. <https://doi.org/10.1002/trtr.1398>.
- Prinsloo, M., & Sasman, F. (2015). Literacy and language teaching and learning with interactive whiteboards in early schooling. *TESOL Quarterly*, 49(3), 533–554. <https://doi.org/10.1002/tesq.237>.
- Pyo, J. (2016). Bridging in-school and out-of-school literacies: an adolescent EL's composition of a multimodal project. *Journal of Adolescent & Adult Literacy*, 59(4), 421–430. <https://doi.org/10.1002/jaal.467>.
- Reid, S. F. (2020). Playful Images and Truthful Words: Eighth-Graders Respond to Shaun Tan's Stick Figures. *Journal of Language & Literacy Education*, 16(1), 1–22.
- Rincón, J. A., & Olarte, A. C. (2016). Fostering EFL learners' literacies through local inquiry in a multimodal experience. *Colombian Applied Linguistics Journal*, 18(2), 67–82. <https://doi.org/10.14483/calj.v18n2.10610>.
- Roswell, J., & Kendrick, M. (2013). Boys' hidden literacies: The critical need for the visual. *Journal of Adolescent & Adult Literacy* 56(7), 587–599. <https://doi.org/10.1002/JAAL.184>.
- Rvachew, S., Rees, K., Carolan, E., & Nadig, A. (2017). Improving emergent literacy with school-based shared reading: Paper versus ebooks. *International Journal of Child-Computer Interaction*, 12, 24–29. <https://doi.org/10.1016/j.ijcci.2017.01.002>.
- Schaefer, H. R., & Myers, J. L. (2017). Guidelines for performing systematic reviews in the development of toxicity factors. *Regulatory Toxicology and Pharmacology*, 91, 124–141. <https://doi.org/10.1016/j.yrtph.2017.10.008>.
- Schultz, K., & Coleman-King, C. (2012). Becoming Visible: Shifting Teacher Practice to Actively Engage New Immigrant Students in Urban Classrooms. *Urban Review*, 44, 487–509. <https://doi.org/10.1007/s11256-012-0204-7>.
- Sen, N. S., & Towndrow, P. A. (2013). Multimodality and metacognitive instruction in developing two reading strategies. *International Journal of Innovation in English Language Teaching and Research*, 2(1), 5–25.
- Serafini, F. (2011). Expanding the four resources model: Reading visual and multi-modal texts. *Pedagogies: An International Journal*, 7(2), 150–164. <https://doi.org/10.1080/1554480X.2012.656347>.
- Shin, D.-S., Cimasko, T., & Yi., Y. (2020). Development of metalanguage for multimodal composing: A case study of an L2 writer's design of multimedia texts. *Journal of Second Language Writing*, 47, 1–14. <https://doi.org/10.1016/j.jslw.2020.100714>.

- Simon, R., Hicks, B. L., Walkland, T., Gallagher, B., Evis, S., & Baer, P. (2018). "But in the end, you are all beautiful": Exploring Gender through Digital Composition. *English Journal*, 107(3), 39–46.
- Skerrett, A. (2013). Building Multiliterate and Multilingual Writing Practices and Identities. *English Education*, 45(4), 322–360.
- Skerrett, A., & Bomer, R. (2013). Recruiting Languages and Lifeworlds for Border-Crossing Compositions. *Research in the Teaching of English*, 47(3), 313–337.
- Smythe, S., & Neufeld, P. (2010). "Podcast Time": Negotiating Digital Literacies and Communities of Learning in a Middle Years ELL Classroom. *Journal of Adolescent & Adult Literacy*, 53(6), 488–496. <https://doi.org/10.1598/JAAL.53.6.5>.
- Southwick, L., Guntuku, S. C., Klinger, E. V., Seltzer, E., McCalpin, H. J., & Merchant, R. M. (2021). Characterizing COVID-19 Content Posted to TikTok: Public Sentiment and Response During the First Phase of the COVID-19 Pandemic. *Journal of Adolescent Health*, 69(2), 234–241.
- Spence, C. (2021). Musical Scents: On the Surprising Absence of Scented Musical/Auditory Events, Entertainments, and Experiences. *iPerception*, 12(5), 1–31. <https://doi.org/10.1177/20416695211038747>.
- Staley, B., & Freeman, L. A. (2017). Digital storytelling as student-centred pedagogy: empowering high school students to frame their futures. *Research and Practice in Technology Enhanced Learning*, 12(21), 1–17. <https://doi.org/10.1186/s41039-017-0061-9>.
- Stieglitz, S., & Dang-Xuan, L. (2014). Emotions and Information Diffusion in Social Media—Sentiment of Microblogs and Sharing Behavior. *Journal of Management Information Systems*, 29(4), 217–248.
- Stufft, C. J., & Gillern, S. V. (2021). Fostering Multimodal Analyses of Video Games: Reflective Writing in the Middle School. *Journal of Adolescent & Adult Literacy*. <https://doi.org/10.1002/jaal.1198>.
- Sun, L. (2017). Critical Encounters in a Middle School English Language Arts Classroom: Using Graphic Novels to Teach Critical Thinking & Reading for Peace Education. *Multicultural Education*, 25(1), 22–28.
- Tan, L., & Guo, L. (2014). Multiliteracies in an Outcome-Driven Curriculum: Where Is Its Fit? *The Asia-Pacific Education Researcher*, 23, 29–36. <https://doi.org/10.1007/s40299-013-0082-0>.
- Tan, L., Bopry, J., & Guo, L. (2010). Portraits of New Literacies in Two Singapore Classrooms. *RELC Journal*, 41(1), 5–17. <https://doi.org/10.1177/0033688210343864>.
- Tan, L., Zammit, K., D'warte, J., & Gearside, A. (2020). Assessing multimodal literacies in practice: a critical review of its implementations in educational settings. *Language and Education*, 34(2), 97–114. <https://doi.org/10.1080/09500782.2019.1708926>.
- Takaki, N. H. (2019). Towards Translanguaging with Students at Public School: multimodal and transcultural aspects in meaning making. *Calidoscópico*, 17(1), 163–183.
- Thomas, A. (2012). Children's writing goes 3D: a case study of one primary school's journey into multimodal authoring. *Learning, Media and Technology*, 37(1), 77–93. <https://doi.org/10.1080/17439884.2011.560160>.

- Toh, W., & Lim, F. V. (2021). Using Video Games for Learning: Developing a Metalanguage for Digital Play. *Games and Culture*, 16(5), 583–610. <https://doi.org/10.1177%2F1555412020921339>.
- Toohy, K., Dagenais, D., & Schulze, E. (2012). Second Language Learners Making Video in Three Contexts. *Language and Literacy*, 14(2), 75–96. <https://doi.org/10.20360/G2S59R>.
- Towndrow, P. A. (2015). Instructional principles and practices in a digital storytelling one-to-one laptop English language program. *International Journal of Learning Technology*, 10(2), 137–150.
- Towndrow, P. A., & Vallance, M. (2013). Making the right decisions: leadership in 1-to-1 computing in education. *International Journal of Educational Management*, 27(3), 260–272. <http://dx.doi.org/10.1108/09513541311306477>.
- Towndrow, P. A., Nelson, M. E., & Yusuf, W. F. B. M. (2013). Squaring Literacy Assessment with Multimodal Design: An Analytic Case for Semiotic Awareness. *Journal of Literacy Research*, 45(4), 327–355. <https://doi.org/10.1177%2F1086296X13504155>.
- Unsworth, L. (2014). Multiliteracies and Metalanguage: Describing Image/Text Relations as a Resource for Negotiating Multimodal Texts. In J. Coiro, M. Knobel, C. Lankshear, & D. J. Leu (Eds.), *Handbook of Research on New Literacies* (pp. 379–408). Routledge.
- Unsworth L. (2017). Image–Language Interaction in Text Comprehension: Reading Reality and National Reading Tests. In C. Ng & B. Bartlett (Eds.), *Improving Reading and Reading Engagement in the 21st Century* (pp. 99–118). Springer.
- Unsworth, L., & Macken-Horarik, M. (2015). Interpretive responses to images in picture books by primary and secondary school students: Exploring curriculum expectations of a ‘visual grammatics’. *English in Education*, 49(1), 56–79. <https://doi:10.1111/eie.12047>.
- Unsworth, L., & Mills, K. A. (2020). English language teaching of attitude and emotion in digital multimodal composition. *Journal of Second Language Writing*, 47, 1–17. <https://doi.org/10.1016/j.jslw.2020.100712>.
- Unsworth, L., Cope, J., & Nicholls, L. (2019). Multimodal literacy and large-scale literacy tests: Curriculum relevance and responsibility. *Australian Journal of Language and Literacy*, 42(2), 128–139.
- van Leeuwen, T. (2017). Multimodal literacy. *mETaphor*, 4, 17–23.
- Villacañas De Castro, L. S., Cano Bodi, V., & Hortelano Montejano, A. (2018). Teaching English as a Non-Imperial Language in an Underprivileged Public School in Spain. *TESOL Quarterly*, 52(4), 943–970. <https://doi.org/10.1002/tesq.442>.
- Wen, Y. (2021). Augmented reality enhanced cognitive engagement: designing classroom-based collaborative learning activities for young language learners. *Educational Technology Research and Development*, 69, 843–860.
- Weninger, C. (2019). *From language skills to literacy: Broadening the scope of English language education through media literacy*. Routledge.
- Wissman, K. K., Staples, J. M., Vasudevan, L., & Nichols, R. E. (2015). Cultivating Research Pedagogies with Adolescents: Created Spaces, Engaged Participation, and Embodied Inquiry. *Anthropology & Education Quarterly*, 46(2), 186–197.

- Wong, J., Foong, P. S., & Mitchell, A. (2021). Contemplative Interactions: Exploring the Use of Defamiliarization in a Serious Game to Promote Reflective Thinking about Personal Health. In *Designing Interactive Systems Conference 2021 (DIS '21)*, June 28-July 2, 2021, Virtual Event, USA. ACM. <https://doi.org/10.1145/3461778.3462046>.
- Yi, Y. (2014). Possibilities and Challenges of Multimodal Literacy Practices in Teaching and Learning English as an Additional Language. *Language and Linguistics Compass*, 8(4), 158–169. <https://doi.org/10.1111/lnc3.12076>.
- Zammit, K. (2016). Responding to literature: iPads, apps and multimodal text creation. *Literacy Learning: The Middle Years*, 24(2), 6–16.