

Towards a Future-oriented English Language Education

Summary

This issue of the Digest sets out to explore what it means (and takes) to work towards a future-oriented education in the English Language (EL) classroom in a time of digital technologies. The issue begins with a brief introduction about past waves of societal change and their influence on knowledge, literacy, and learning before going on to elaborate on how technological advances are perceived to be bringing about a new textual and communicative landscape. A synthesis of theoretical and empirical research is also presented to illustrate how ideas about future EL education have been translated into current school practices. Finally, the Digest concludes with a list of recommendations suggested by scholars on the types of support needed to underpin the teaching and learning of new literacies in the Digital age.

Introduction

The aim of education has largely been to ‘provide skills, knowledge, aptitudes, and dispositions’ needed for the young ‘who are experiencing that curriculum to lead productive lives in the societies of their adult periods’ (Kress, 2000, p. 134). According to Kress (2000) and Prensky (2012), even though the aim remains unchanging, the same cannot be said of the needs and requirements of the societies in which our young will live their lives. Educational theorists (e.g., Gilbert, 2007; Kalantzis & Cope, 2012; Kress, 2007) have repeatedly argued that the education we originally designed for the world we *knew* will no longer suffice to address and support the needs of the future. As we move forward into the third decade of the 21st century, how will schools stay relevant and responsive to the demands of the world of the future? Given the pace of technological and social change, what should be done to ensure that the curricula and pedagogies offered are suited to a future that we can only speculate about but cannot be certain of (Kress, 2000; 2007)?

Aims of the issue

The present volume of the ELIS Research Digest is dedicated to exploring topics related to preparing students for the future, ranging from the impact of globalisation on the English language to the skills and competencies needed for the 21st centu-

ry workplace. This first issue of the Digest sets out to explore what it means (and takes) to work towards a future-oriented education in the English Language (EL) classroom in a time of digital technologies. Following the work of Beavis, Davies, and Leander (2009), Honan (2009) as well as Toffler (1980), the issue utilizes the metaphor of a sea to illustrate how EL education, a ‘seaworthy ship packed with crates of books and quills’ (Beavis et al., 2009, p. 1), is being rocked about by the stormy waters of digital technology in its attempt to charter a course through it.

This issue begins first with a brief introduction to what Toffler (1980) describes as the waves of societal change and their influence on knowledge, literacy, and learning. Having established what seem to be the growing demands of an emerging knowledge society, the next section focuses on the new textual and communicative landscape as described by leading scholars before going on to examine how ideas about future EL education have been translated into current school practices. While inevitably this issue may not have captured all possible views of how EL education could be redirected in the context of the present era or what is commonly referred to as the knowledge or digital age, it is hoped that the synthesis of theoretical and empirical research presented in this issue triggers further discussion about what future EL learning could look like for students in Singapore. With this in mind, this issue of the Digest concludes with a list of recommendations

suggested by scholars regarding the types of support needed to achieve desired possibilities.

Riding the waves of societal change

In his seminal book, *The Third Wave*, futurist Alvin Toffler (1980) likened the progression of human society to a succession of waves, where each new wave of societal change largely erased the imprints of the previous one, 'replacing them with ways of life inconceivable to those who came before' (p. 5). Toffler (1980) and other scholars (e.g. Kalantzis & Cope, 2012; Preston, 2001; Trilling & Fadel, 2009) believed that the world, as we know it today, has undergone two significant waves of societal change, and is presently riding the crest of a third. The first wave was commonly thought of as bringing about the advent of agrarian life, while the second wave was described as bringing about the society of the Industrial Revolution (Toffler, 1980). Caldwell and Hayward (1998) as well as other scholars (e.g., Kalantzis & Cope, 2012; Shaffer, 2009) have argued that links between education and the economy were particularly close during the second wave, 'the period in western history when most systems of government or public schools were created' (p. 128). According to Toffler (1980), this period marked the beginning of schools as we know them today (see Meyer, Ramirez, & Soysal, 1992 for the influence of state, church, and societal pressure on education).

The wave of machinery technology

Toffler (1980) postulated that the wave of machinery technology and mass production brought about drastic changes to the nature of production, with mechanisation and automation replacing physical labour previously demanded of humans and animals during the agrarian times. As more jobs moved from farms to factories, there was also a need to fill newly created positions with a skilled labour force. Formal systems of education, according to Toffler (1980), were established and offered to the masses to fill this need. From the viewpoint of Gilbert (2007) and Kress (2000), learners, during this period, were positioned as passive recipients in relation to knowledge and they saw knowledge as having already been produced elsewhere, for their acquisition or consumption only. Because schools assumed the responsibility for preparing children

for future work in factories, the curriculum of mass education was designed based upon the needs for an Industrial Age workforce – 'a strong back, good work ethic and some education' – (Walker, 2007, p. 1). These needs, as captured in the writing of Toffler (1980) in the quotation below, shaped the curriculum offered in public formal schools to the vast majority of the population. Higher education, in contrast, provided more flexible and widely applicable skills for the few needed for managerial and professional work (Toffler, 1980).

Built on the factory model, mass education taught basic reading, writing, and arithmetic, a bit of history and other subjects. This was the overt curriculum. But beneath it lay an invisible or covert curriculum that was far more basic. It consisted – and still does in most industrial nations – of three courses; one in punctuality, one in obedience, and one in rote repetitive work. (Toffler, 1980, p. 45)

Instructional methods used in Industrial Age schools were also modelled after the mass-production assembly line (Conner, 1991; Darling-Hammond, 1997; Kelly, McCain, & Jukes, 2009). According to Kelly et al. (2009), students of the same age group were treated as similar batches of raw materials to be processed uniformly through the implementation of standardised instruction. Darling-Hammond (1997) and Kelly et al. (2009) believed that in these routinised classrooms, teacher-workers dominated as experts whose jobs were to transmit that expertise to large groups of students through lecture, recitation, drill, and practice. Like an assembly line, learning was organised in discrete stages in which predetermined blocks of specialised knowledge were taught in a controlled and cumulative sequence (Darling-Hammond, 2010). According to Kalantzis and Cope (2012), this is what Dewey (1916/1966) referred to as the assimilatory function of schooling – the function of making homogeneity out of differences.

The wave of digital technology

A number of scholars (e.g., Beavies et al., 2009; Kelly et al., 2009; Powell & Snellman, 2004) have noted that developed countries around the world such as Singapore and the United States of Amer-

ica are currently experiencing the latest wave of change – the digital wave, a period where science and information technology bring about innovations and inventions with increasing speed. In the digital age, technological advances in computing and information and communication technology (ICT) have facilitated a growing spectrum of ever more complex innovations, such as the advent of personal computers, the Internet, as well as the web browser, which deliver real-time, high quality multimedia content (Henderson, 2009; Perry, 2013; Powell & Snellman, 2004). Recent years have also witnessed the rise of ubiquitous mobile Internet computing which promises to revolutionise the ways individuals communicate and interact with new data applications as well as with each other (Perry, 2013).

This wave of technological advances, like its predecessors, is expected to bring about economic transformation. Scholars like Gilbert (2007) and Powell and Snellman (2004) suggested that the key driver of productivity and economic growth in this new wave, for example, was knowledge or intellectual capital rather than tangible assets like labour, land, and natural resources. Where the industrial wave was marked by a period of rapid industrial development, the digital wave is characterized by the rapid growth of the service, information, and knowledge sectors that seek to develop and exploit new forms of knowledge (Gilbert, 2007). According to Gilbert (2007) and Kalantzis and Cope (2012), this shift has resulted in a major decline in blue-collar forms of employment, and an increase in professional careers in the corporate world. Instead of a division of labour on an assembly line, companies are now demanding ‘multi-skilled’ workers who possess far more sophisticated literacy skills (e.g., the reading and producing of digital texts) than the foundation skills of comprehension, phonics, and spelling (Kalantzis & Cope, 2012). From the perspective of a number of scholars (e.g., Gee, 2006; Kalantzis & Cope, 2012; Kelly et al., 2009), the days are gone when the most productive and effective workers were those who uncritically complied with the requests and demands from their supervisors. Rather, in the words of Kalantzis and Cope (2012), the type of

Where the industrial wave was marked by a period of rapid industrial development, the digital wave is characterized by the rapid growth of the service, information, and knowledge sectors that seek to develop and exploit new forms of knowledge.

workers valued in today’s society are those who ‘actively participate, who solve problems, who innovate, who take calculated risks and who are creative’ (p. 10). In demand are also what Gee (2006) referred to as ‘shape-shifting portfolio people’, those who are prepared throughout their lives to ‘acquire new knowledge, skills, experiences, and achievements and to be able and willing to redefine these to make themselves ready for new jobs [and] roles’ as they emerge in future (p. 166). According to Darling-Hammond (2010), the skills and competencies demanded of the digital wave may not be new but they were not envisioned for the curriculum of mass education during the industrial wave.

The acceleration of technological growth, as postulated by a number of scholars (e.g., Kelly et al., 2009; Kress, 2007; Lankshear & Knobel, 2003), has the potential to bring about significant changes to

the relationships between school and learning. Kalantzis and Cope (2012) postulated that schools no longer function as the main site of learning with the World Wide Web expanding ‘the reach of learning across time and space, beyond the walls that confine students

to a classroom and a bell that constrains chunks of learning within the set number of minutes for a “lesson”’ (p. 11). Today’s students, or those who Prensky (2001) referred to as digital natives, are often observed engaging in semi-formal and informal learning everywhere and anywhere from a wide variety of sources ranging from self-learning routines on electronic devices to social interactions in social networking websites (Kalantzis & Cope, 2012; Lankshear & Knobel, 2003). Walsh (2008) as well as other scholars (e.g., Bull & Anstey, 2010; Kalantzis & Cope, 2012) argued that these are also the same set of students whose everyday environments are ‘filled with visual, electronic and digital texts that offer facilities for reading, writing, viewing, listening and responding simultaneously’ (Walsh, 2008, p. 101), and who are working on new media spaces that allow them to bring together writing, images, sound, and video in their digital productions (Bull & Anstey, 2010; Prensky, 2001). In other words, today’s students are already socialised in the changed learning and communication context brought about by

the affordances of new digital technologies. Yet, Walsh (2008) observed that many of the EL classrooms have not been adapted to suit this changed context ‘where students are encouraged to be interactive and participatory’ (p. 101). This marked difference in in- and out-of-school learning experiences, according to Kalantzis and Cope (2012), may just be why today’s students are getting increasingly bored and frustrated with teachers who continue to endorse the pedagogy of transmission. Adding to this is the claim made by Kalantzis and Cope (2012) that passive and compliant dispositions espoused by the pedagogy of transmission are no longer sought after in the workplaces of today’s knowledge society.

Moving along in the digital sea

If schools, as asserted by scholars like Kalantzis and Cope (2012) and Kelly et al. (2009), are still operating with the ideas of the Industrial Age wave when the world outside school has transitioned to the Digital Age wave, what then should be the new direction taken by EL education as it continues to navigate through this new wave? What is this ‘future’ that stakeholders of EL education should be working towards? According to Walsh (2008), these are questions that researchers and other stakeholders of EL education worldwide are still investigating and for which there are no easy answers.

The new textual and communicative landscape

A close look at the current literature, however, reveals a general acceptance among scholars (e.g., Cope & Kalantzis, 2010; Kress, 2007; Miller & McVee, 2012; Walsh, 2008) of the need to attend to what Carrington (2005) referred to as the new textual and communicative horizon – the changed and changing context in which children are increasingly exposed to multimodal and electronic texts and new uses of communications technologies, which ‘are no longer print dominated ... but [which] allow children to be producers and disseminators of information’ (pp. 13–14). From the viewpoint of scholars like Carrington (2005), Kalantzis and Cope (2012), and Postman (1994),

this is a departure from the more print-dominated textual landscape created by earlier technologies (e.g., the printing press) which prized the written text as a source of knowledge and authority and, at the same time, positioned learners as passive knowledge consumers.

An example of the shift in the textual landscape is the reduced emphasis on the spoken and written word as the primary means to represent and communicate information and knowledge. Cope (2001) observed that earlier technologies such as the printing press, for the most pragmatic of manufacturing purposes, tended to *separate* the written word from image, gesture, and sound due to the tedious and costly process involved in combining the different modes of representation. In other words, even though different representation modes *could* be put together (e.g., collocation of image and text in textbooks), there

was a tendency to work within the monomodal formalities of the written language (Cope & Kalantzis, 2010; Kalantzis & Cope, 2012). In the present era however, as observed by Cope and Kalantzis (2010) and Walsh (2008), rapid changes in digital communication have provided facilities

for different modalities of meaning (e.g., the written language, oral language, visual representation, audio representation, gestural representation) to be made, stored, and distributed on a common platform with great ease and at almost no cost. According to Cope and Kalantzis (2010), because digital technologies make it easy to integrate multiple modes on the same plane, modes of representation that were kept separated by earlier technologies are becoming even more closely intertwined. As a result, texts that are increasingly pervasive in today’s society (e.g., podcasts, weblogs) are no longer static but are dynamic and ‘complex multimodal ensembles of image, sound, animated movement and other modes of representation and communication’ (Jewitt, 2005, p. 316).

Another observed change in the textual and communicative landscape is the shift in the way individuals are positioned in the meaning-making environments. Cope and Kalantzis (2007, 2010) as

Texts that are increasingly pervasive in today’s society (e.g., podcasts, weblogs) are no longer static but are dynamic and ‘complex multimodal ensembles of image, sound, animated movement and other modes of representation and communication’ (Jewitt, 2005, p. 316).

well as Postman (1994) observed that earlier forms of communications tended to promote a more passive relationship between information/knowledge and individuals or groups by indicating a clear division between those who created information/knowledge and those who consumed information/knowledge. Broadcast television, for example, controlled the flow of information by providing viewers with only a limited number of channels. Encyclopaedias too were regarded as the primary source of definitive knowledge constructed by field experts. In contrast, Cope and Kalantzis (2007) argued that the new media weakens the old boundaries of writer-reader, artist-audience and producer-consumer. According to these scholars, people are positioned as meaning makers as much as they are meaning receptors. Technological advances now, for example, offer interactive television in which viewers can select their own angles on a particular broadcast or surf the Internet for videos posted by others. Rather than view what others have created, there is also the option to make short films or videos that can be easily posted on YouTube or the Internet.

Similarly, Cope and Kalantzis (2010) noted that the digital counterpart of encyclopaedias, Wikipedia, is co-constructed by reader-editors who are encouraged to debate the objectivity of each entry. In other words, the new textual and communicative landscape allows everyone to be a 'prosumer' in the contemporary era, where knowledge and authority is seen as becoming 'more contingent, provisional, and conditional – based on relationships of "could" rather than "should"' (Cope & Kalantzis, 2011, p. 105).

New learning and teaching

If technological advances have brought about a new textual and communicative context, what does it mean to be literate in today's contemporary era and what will it mean in the years to come? What should EL educators do in their bid to develop effective and successful 'prosumers' in this new textual and communicative landscape? For some scholars (e.g., Kress, 2000, 2007; Lank-

shear & Knobel, 2003; New London Group, 1996), the present era is perceived as having created new literacy needs as a result of technological advances which allow for meaning to be made in ways that are increasingly multimodal. As a result, traditional notions of what it means to be literate (e.g., reading and writing print-based texts) or what is referred to as 'Literacy 1.0 or analog forms of literacy' (Knobel & Wilbur, 2009) are often argued to be insufficient for the complex and wide range of reading and writing purposes found in the fast-changing technological world. According to Walsh (2008), if the processes of literacy are to be considered within new mediums of communication, 'it is evident that "reading" can involve the reading of written text, interacting, and responding,

as well as viewing and listening, while "writing" can involve talking, interacting, designing, and producing' (p. 102). For some of these scholars (e.g., Cope & Kalantzis, 2000; Miller & McVee, 2012; Walsh, 2008), what is required in today's society is an expanded notion of literacy that takes into account the multiplicity of text forms and resources for meaning making associated with information and

multimedia technology. From the perspective of Kalantzis and Cope (2012), conventional literacy practices which focus primarily on the reading and writing of print-based materials need to be reconsidered and supplemented with new literacy practices that focus on the teaching and learning of 'multiple literacies for a world of multimodal communication' (p. 5).

Amidst ongoing discussion about the ways in which literacy should be understood and taught within this new textual and communicative landscape, the 'future' of EL education, as observed by Walsh (2008), is often described and predicted by scholars in terms of 'new literacies' (e.g., Lankshear & Knobel, 2003; Miller & McVee, 2012), 'multiliteracies' (e.g., New London Group, 1996; Unsworth, 2001), 'multimodal literacy' (e.g., Jewitt & Kress, 2003; Walsh, 2010) or 'Literacy 2.0' (Knobel & Wilbur, 2009). Despite the variation in the use of terminology, Rowsell and Walsh (2011) noted a common consensus among scholars that new lit-

New literacy practices entail supplementing reading and writing skills with multimodal communication, particularly that typical of new digital media. Students not only need to engage in the reading and writing of a wide range of print-based and digital texts but they also need to understand the meaning making potential of different modes and the ways in which these modes can be appropriated to achieve the intended communicative purpose.

eracy practices entail supplementing reading and writing skills with multimodal communication, particularly that typical of new digital media. Students not only need to engage in the reading and writing of a wide range of print-based and digital texts but they also need to understand the meaning making potential of different modes and the ways in which these modes can be appropriated to achieve the intended communicative purpose (Jewitt, 2005; Kalantzis & Cope, 2012; Rowsell & Walsh, 2011). 'Reading', for example, no longer refers to the process of applying decoding, encoding skills or comprehension strategies (e.g., inferring, predicting, visualisation skills) merely on linguistic texts (Miller & McVee, 2012). Rather, Baily (2012) as well as Miller and McVee (2012) postulated that 'reading texts' in the contemporary world involves employing similar skills in the whole multimodal exploration of colours, images, sounds, gestures and other meaning-making resources (including linguistic texts) used in today's society. According to Rowsell and Walsh (2011), teaching reading with multimodal digital texts should also include an explicit demonstration to students of how to 'choose the most appropriate information and discriminate between non-relevant information as they are processing information through senses of sight, sound, and touch' (p. 57).

In the same light, as Rowsell and Walsh (2011) maintained, the notion of 'writing' now extends beyond composing a linguistic text to 'assembling a product that may contain written text as well as quite sophisticated layout, graphics, photographs and images ... as well as sound and movement' with new technology (p. 58). Bailey (2012) as well as Miller and McVee (2012) explained that new literacy practices had to engage students in meaningful tasks that allow them to work with new technology in a bid to gain knowledge of how different technological tools can be manipulated to represent and communicate meaning. From the viewpoint of some (e.g., Jewitt, 2005; New London Group, 1996; Rowsell & Walsh, 2011), digital natives may well be socialised with reading and producing multimodal digital texts in their everyday lives. But, as these scholars reinforced, in order for digital natives to be *critical* consumers of

information and *effective* producers, they need to be systematically led to consider and understand how different representation modes and features of design may or may not be appropriate in constructing meaning for a particular purpose, audience, and context.

A focus on new literacy practices does not, however, imply a reduced emphasis on conventional practices. In fact, scholars like Kalantzis and Cope (2012), McGinnis (2013) as well as Miller and McVee (2012) cautioned against taking a view that new literacies displace traditional ones or that existing literacy practices are no longer of use in the digital world. On the contrary, Jenkins (2008) like others (e.g., Kalantzis & Cope, 2012; Miller & McVee, 2012) argued that new literacy skills must build on traditional literacy skills. According to De

Souza and Towndrow (2011) as well as Jenkins (2008), while traditional school-valued skills may not be adequate on their own to meet the needs of today's society, these skills are still important in building and communicating knowledge as students venture beyond

Traditional school-valued skills may not be adequate on their own to meet the needs of today's society but these skills are still important in building and communicating knowledge as students venture beyond their use within the classroom into the digital space.

their use within the classroom into the digital space. Students, for example, make use of literal and inferential comprehension skills when reading and/or listening to information found on webpages. Similarly, successful participation in online forums cannot happen if students lack the required sensitivity and expertise to exercise language skills related to argumentative and expository writing (De Souza & Towndrow, 2011). According to Kalantzis and Cope (2012), just as it is important for individuals in today's society to be capable of taking on 'effective communication in diverse settings and the use of tools of text design that are multimodal', it is also critical for learners to possess a good knowledge of the foundational literacy skills (p. 5). Having one or the other is not sufficient for today's functional communication needs.

What kind of learning environment best supports new literacy practices? Scholars (e.g., Cope & Kalantzis, 2010, 2015; Lankshear & Knobel, 2003; Miller & McVee, 2012) maintained that a pedagogy of new literacies or multiliteracies required a move away from the heritage, didactic industrial model of schooling where teachers and textbooks

were seen as authoritative bearers of knowledge while students were seen as a homogeneous group of passive knowledge receivers. According to Cope and Kalantzis (2010), schools should instead position themselves as knowledge-producing communities that ‘create in learners a sense that they themselves are knowledge producers’ (p. 97). There is a need for teachers to design tasks that will allow students to rebuild knowledge in an active and engaging way as if they were experts (Cope & Kalantzis, 2010; 2015). In other words, learning should be understood as an active meaning-making process with students as co-constructors of knowledge in the classroom.

Cope and Kalantzis (2010) also maintained the need for a more inclusive curriculum, specifically one that views diversity of perspective and knowledge as a valuable resource. From their viewpoint, the old one-size-fits-all approach might seem feasible even in present times but it overlooks the particularities of students’ life experiences in favour of a top-down transmission of knowledge. More importantly, it restricts the classrooms from developing and evolving into knowledge ecologies where learners and teachers are equally involved in the construction of knowledge (Cope & Kalantzis, 2010; New London Group, 1996). In contrast, an inclusive approach, with its focus on student engagement, allows knowledge to be co-constructed in the EL classroom. According to Cope and Kalantzis (2010), learning becomes ‘a matter of engagement, moving backward and forward between formally developed or scientific knowledge and the lifeworld’ (p. 100).

The pedagogical model proposed by the New London Group (1996) is an example of an approach in which students can develop the capacity to be agentive designers of knowledge in an inclusive literacy classroom. According to the group of authors, a new approach to literacy pedagogy should involve a range of pedagogical moves termed as situated practice, overt instruction, critical framing, and transformed practice. Kalantzis and Cope (2005) have reframed the respective dimensions of literacy pedagogy above into knowledge processes of experiencing, conceptualising, analysing, and applying. The first, situated practice or experiencing, refers to immersion in meaningful practices that invoke and draw on students’ personal wealth of knowledge,

thus enabling learning from a first-hand experience of meaning making in context-specific ways (Cope & Kalantzis, 2000). The second, overt instruction or conceptualising, acts as a support for students’ situated learning. This stage, as explained by the New London Group (1996), requires explicit instruction on the part of the teacher to demystify the skills and content needed for the task. During this stage, students are also explicitly introduced to the metalanguage so that the various elements that contribute to the meaning of the text in focus can be identified and talked about. The third, critical framing or analysing, has to do with the reflective dimension of literacy instruction. Instead of being told what is right or wrong, students are given opportunities to draw on their accumulated wealth of knowledge to constructively critique what they have learned in relation to its context. The final stage of transformed practice or applying aims to put transformed meanings and knowledge gained from previous practice and instruction into new contexts and to new purposes (Cope & Kalantzis, 2000, 2015). Examples of practical applications of the pedagogical model are illustrated in the next section.

Keeping afloat or sailing ahead on the stormy waters of digital technology

More and more EL classrooms around the world have taken the plunge into the digital sea with the aim of taking full advantage of the affordances offered by new technologies. According to van Leeuwen and Kress (2010), these attempts are very often well-supported by government initiatives to incorporate ICT in education as a strategy to prepare students for the knowledge age. In Singapore, for example, the current national ICT policy (i.e., the Masterplan for IT in education) was conceived and implemented to improve the IT infrastructure across all Singapore schools (Jones, 2003). Since its launch in 1997, all schools in Singapore have been fully networked with both intranet and Internet access, and given classrooms with computers and projection equipment. To ensure that students have hands-on use of computers for at least 30 per cent of their curriculum time, schools are also equipped with one computer for every two students. Recent years have also seen an increase in the number of schools selected to embark on Future-

School@Singapore, an initiative led by the government 'to incubate novel education ideas that harness ICT' (Dimmock & Goh, 2011, p. 236).

Keeping afloat

In contrast to the general assumption that the integration of ICT follows naturally with the availability of both hardware and software (Lim & Khine, 2006), EL teachers seem to experience varying degrees of success navigating through the stormy waters of digital technology. From the observations made by some scholars (e.g., Honan, 2009; van Leeuwen & Kress, 2010), some teachers are, in fact, seen to be struggling to keep afloat (and on course), having been 'caught between tides of government intervention' (van Leeuwen & Kress, 2010, p. x) and 'tide[s] of normative and conventional literacy routines of the classroom' (Honan, 2009, p. 21). As a result, EL classrooms are often described as bearing features of what Beavies et al. (2009) referred to as the 'old wine in new bottles syndrome' – a syndrome typically exemplified when 'new digital technologies are used in ways more commensurate with old literacy practices' (p. 4).

Research documenting portraits of literacy practices in EL classrooms have repeatedly surfaced the print-oriented, presentational uses of technologies, informed by what is commonly referred to as 'a Literacy 1.0 mind-set' (Knobel & Wilber, 2009, p. 21). According to Honan (2009) as well as Knobel and Wilbur (2009), students' engagement with new digital technologies in the language classrooms, for example, often takes the shape of text and content transference obtained from books or through the Internet onto a digital space (e.g., weblog, PowerPoint presentation) instead of the traditional paper-pen medium. Teachers' use of new technologies is also at times seen as a 'benign addition' (Cuban, 2001, p. 67) to reinforce and sharpen school-valued literacy skills and knowledge. In place of frontal teaching, as Cope and Kalantzis (2011) as well as Davidson (2009) observed, students are provided with software programmes and e-learning exercises from which standardized educational content predetermined by their teachers or the software programmers are delivered in a visually pleasing and interactive manner.

While useful in enhancing student motivation,

such forms of engagement in computer-mediated activities, as scholars (e.g., Cope & Kalantzis, 2010, Lankshear & Knobel, 2003) have argued, are attempts at mechanising teaching and learning rather than endeavours to transform literacy practices. From the viewpoint of these scholars, students are merely 'us[ing] new technologies to learn old things in old ways' (Cope & Kalantzis, 2011, p. 88). Because traditional forms of teaching and learning are simply transliterated into the digital media, the underlying relationships between knowledge and pedagogy are essentially the same as that observed of the conventional EL classroom. In other words, the affordances of digital media have not been harnessed in a manner that promotes new ways of learning, doing, or being – opportunities critical for developing students' abilities 'to generate multi-modal texts and to understand principles of making multi-modal meanings' (Lankshear & Knobel, 2003, p. 77).

Sailing ahead

There are also those who sail effortlessly along with the changing tides. Recognising the need for a shift in mind-set to accommodate the changes brought about by new technologies, a growing number of educators and researchers around the world have been making a concerted effort to transform learning environments to allow students to engage with multiple literacies and multiple technologies (Miller & McVee, 2012; van Leeuwen & Kress, 2010;). As can be observed in the review below, the international and local studies in this area may be diverse in their approaches to integrating ICT into the EL classrooms but they share something in common: the attempt to engage students in authentic and/or meaningful digital-mediated tasks that require the use of both traditional literacy skills and new literacies in the process of transforming knowledge into new constructions and representations.

Lessons from distant shores

Efforts to embed new literacies in the EL curriculum as opposed to teaching rules of standard use or implementing constricted programmes of study have been documented in many international studies. Specifically, attempts have been made to design units of work that position students in the EL classrooms as multimodal designers who author and communicate visual, symbolic and linguistic meanings through the use of multi-

ple media. Waller (2009) and Angay-Crowder, Choi, and Yi (2013), for example, reportedly drew on the New London's theory of multiliteracies pedagogy (1996) in their attempts to expand students' conception of composing narratives. The study by Waller (2009) illustrates how young learners created a digital cross-cultural narrative during a four-week long film-making project. Instead of selecting texts (e.g., *High School Musical*, *Hannah Montana*) of popular culture which his Primary 2 students in the United Kingdom were already familiar with, Waller (2009) chose to introduce a text (i.e., *Kiki's Delivery Service* by Kadono, Hayashi, & Riggs (2003)) of a different culture (i.e., Japan). The selected text, which is available both as a picture book and an animated film, tells the tale of a young witch, Kiki, who moves to a new town and sets up a delivery service using her flying broomstick.

In a bid to facilitate students' understanding of literacy as embodying a vast array of modes and textual practices, Waller (2009) designed the unit in a way that facilitated the move in and out of the written and film versions of the selected text across the different phases of the multiliteracies pedagogy. The unit first began with the situated practice phase where the participating students were immersed into the major themes of the story through a range of learning activities (e.g., the dramatization, character profiling, illustrating and retelling of the story). The second phase of overt instruction involved students critically examining the narrative and drawing similarities and differences to other texts that they had experienced, particularly fairy-tales. Students then progressed to the critical framing phase where they focused on the purpose and audience of the text before exploring how the Japanese text could be adapted for a UK audience. In the final phase of transformed practice, students took on the role of digital text designers and recreated a shared narrative where Kiki delivered items to popular fairy-tale characters such as Cinderella and Peter Pan. During the video production process, the participating students were observed to redesign the world created in the original text by incorporating landmarks (e.g., forests, castles) commonly observed in fairy tales. Using digital technologies, students drew their own backgrounds of the settings before employing green screen techniques to appear in front of them on-screen. According to Waller (2009), such literacy projects not only

allow teachers to simulate events linked to students' everyday experiences but also encourage the learning of traditional and new literacy skills in a more meaningful manner.

At the secondary school level, attempts have also been made to engage adolescents in the multiliteracies practice of digital storytelling (i.e., multimedia composing that incorporates different semiotic modes and resources to tell a story). Angay-Crowder et al. (2013), for example, described how they reframed literacy pedagogy with their design and implementation of a digital storytelling curriculum during a four-week summer programme in the United States. Following the theory of multiliteracies pedagogy of the New London Group (1996), the first week of the programme centred on employing situated practice and overt instruction to build students' understanding about digital storytelling. Part of the situated practice included brainstorming sessions where the participating group of 12 adolescents shortlisted some potential topics for their digital stories based on their personal interests. During this time, students were also directed to critically reflect on their topic selection and to assess if their topic could serve their intended purpose (e.g., increase audience awareness of a particular issue) as well as entertain their target audience. Through the use of sample digital stories, the authors provided overt instruction about the nature of digital storytelling and the key steps and strategies to consider when creating an effective digital story. Students were then tasked to work on their initial designs using a storyboard template.

The second week of the programme was dedicated to strengthening students' narratives for their digital creations. As observed by the authors, many of the initial designs seemed to lack a clear sense of purpose and audience, a result of students having paid more attention to locating other non-linguistic resources at the expense of constructing an effective narrative. A series of writing activities (i.e., individual writing conferences, responding to writing prompts, outlining of narratives) was conducted to guide and encourage students to review their initial designs and choice of linguistic resources in a bid to compose more structured and developed narratives. During this time, the authors also created an apprentice-like environment through the use of a wiki where additional resources were shared among the group,

and where students shared information and received feedback about their digital stories. By the end of the second week, students showed considerable improvement in composing narratives that had a clear sense of purpose and audience.

Although the participating students showed a marked improvement in composing narratives that had a clear sense of purpose and audience, the authors were acutely aware of the difficulties students might encounter when adapting non-linguistic modes to digital stories. Hence the primary focus for the third week was to increase students' sensitivity towards selecting, modifying and orchestrating both linguistic and non-linguistic modes to create effective and powerful digital stories for their audiences. Overt instruction was provided to guide students on two main areas of learning: 1) the use of the software, Photostory 3, and 2) the use of non-linguistic modes for digital multimodal practices. According to the authors, the scaffolded technical guidance, while not the focus of the project, was needed to allow students to develop their digital story in a creative and sophisticated manner as afforded by the tool.

Similarly, the authors also saw a need to explicitly scaffold students' learning of multimodal text construction by getting them to read, deconstruct and critique the use of different modes in sample digital stories. Discussions were also held to facilitate students' thinking about the differences and similarities between print based practices and digital multimodal practices commonly seen and experienced in their everyday lives. Again, just-in-time scaffolding was provided during the designing process in a bid to challenge students to critique the aptness of their choice of modes. It was hoped that the engagement in the critical framing of the initial designs would significantly raise students' awareness of the recursive nature of the composing process and enhance their deliberate selection of multiple modes and resources. The result was a rich display of digitally-composed stories which the students proudly shared not only with their classmates and friends but also with a wider audience through YouTube. The success of

the programme led the authors to postulate the need for such forms of curriculum to be a mainstay in the language classroom. By getting students to engage in both conventional print-based and computer-based multimodal composing practices about their personal interest, educators are in fact building bridges between students in school and out-of-school literacy practices while expanding students' literacy repertoires and means of expression in ways valued by the knowledge society (Miller & McVee, 2012).

Other researchers (e.g., Bailey, 2012; Curwood & Cowell, 2011) have also shown how 'the powerful, dynamic and multimodal nature of poetry' (Dymoke & Hughes, 2009, p. 93) naturally creates an invaluable space for the infusion of new literacy practices in the EL curriculum. Bailey (2012), for example, illustrated how a Language Arts teacher created a learning context based on the learning principles associated with new literacies that facilitated her students' reading and interpretation of poetry. Instead of leading the class in interpreting

poems which were of little interest to them, the participating teacher designed a song lyric project which provided students the opportunity to use their knowledge about music to learn about poetry. Part of the project required students to work in small groups to develop a short lesson on poetic elements

which they were to teach through a song of their choice. Although the project did seem more time-consuming than the traditional didactic teaching, the author postulated that this method of allowing students to inquire into their favourite music, combined with the sharing of knowledge with their peers, was an effective way of helping students gain invaluable knowledge about the ways that poets create poems.

The participating teacher also made a point to engage her students in transformed practice through the design and implementation of a multimodal poetry interpretation project. The design of the project once again required students to critically engage with poetry as they selected and presented an interpretation of a favourite poem using a multimodal format. Before embarking on

Students learnt on one occasion about how colours and visual images can be used to convey particular moods and imagery. As a result, many of the participating students began to develop an expansive view of multimodal resources as useful tools that could help deepen and augment their understanding of the main themes found in the poetry.

the projects, students were also explicitly taught how different modes work in complementary ways to create and expand meaning. For instance, students learnt on one occasion about how colours and visual images can be used to convey particular moods and imagery. As a result, many of the participating students began to develop an expansive view of multimodal resources as useful tools that could help deepen and augment their understanding of the main themes found in the poetry. Likewise, as could be seen in their written reflections and digital compositions, many too started to demonstrate a growing ability to think semiotically and to convey meaning through the skilful use of different multimodal resources (Bailey, 2012).

Exemplars from Singapore

Within Singapore, researchers and educators have also worked collaboratively to promote effective and meaningful literacy-technology integration in the EL classroom. Among the many ICT-mediated interventions designed to equip students with the critical competencies and dispositions needed for successful participation in the knowledge economy (see Ho & Gwee, 2015, for a detailed review), a number of studies (e.g., De Souza & Towndrow, 2011; Tan, Bophry, & Guo, 2010; Wales & Mohamed, 2013) have sought to promote and sustain literacy transformations in local classrooms ‘by relating literacy with technology and shifting classroom practices from print literacy to ... other multimedia literacy’ (Tan & Guo, 2009, p. 318).

The case study conducted by Wales and Mohamed (2013), for example, described how a group of Primary 4 Singaporean students were provided multiple authoring opportunities (e.g., email, multimodal digital posters and information reports) to showcase their deepened understanding of a unit of work (i.e., a topic on conservation of endangered species which focused attention on the information text type) over a span of three weeks. In contrast to the didactic approach commonly taken to teach a particular unit of work (e.g., formal explication of text structure in a decontextualized manner), the approach taken by the EL teacher-researcher was to first immerse students in an experiential learning of the conservation issues through a range of drama activities. Instead of introducing students to a text about the endangered leatherback turtle, a photograph of four men handling a turtle on a beach was used

in the introductory lesson to invite students to share their views about what might have happened and to elicit their interpretations of the thoughts and feelings of the men and the turtle. Having conceptualised a dramatic background to the photograph, students, in their small groups, then communicated their range of perspectives collaboratively in a drama education activity known as ‘role-on-the-wall’. Through the use of their school’s Creative Studio as a digital tool, students combined visual (i.e., sketch of the turtle’s silhouette, speech bubbles) and linguistic modes (e.g., the turtle’s thoughts and feelings within the sketch, the thoughts of imaginary onlookers within speech bubbles) to design their imagined narratives about the turtle. The interpretations captured in the role-on-the-wall presentations then served as a shared wealth of knowledge based on which the groups of students were tasked to re-design and dramatize in the follow-up role-play activity. Following the series of drama activities, students were invited to extend their roles as imagined onlookers by composing an email to a park ranger as a ‘concerned citizen’. Driven by the authentic purpose to share their thoughts about the enacted scenes, students demonstrated success in creating a multi-genre text that bore elements of persuasive and information report writing despite the absence of explicit instruction.

Subsequent lessons were designed to direct students’ attention to the reading and designing of information texts. After a close reading of an online book, *The Leatherback Turtle*, and further research conducted on a range of suggested readings, students worked collaboratively in small groups to design a multimodal digital poster aimed at raising community awareness about the endangered leatherback turtles. Common language mistakes (e.g., inconsistent and inappropriate use of pronouns) found in the students’ posters were explicitly addressed before students worked independently on a multimodal information report about an endangered animal of their choice.

A close examination of the students’ work revealed a progressive development of their authoring skills in information writing. According to the authors, many of the students experienced a positive gain in their knowledge of the technical and visual aspects of the information text as evidenced in their increased use of appropriate fonts

and headings to signpost their writing. In terms of their language use, students also demonstrated greater sensitivity to their use of pronouns in the various modes of authoring. As authors of their designed information texts, students made personal appeals on behalf of their studied animals through the use of first person and second person pronouns captured within speech bubbles. Third person pronouns, on the other hand, were typically used to present more objective pieces of information in columns and/or with headings. As asserted by the authors, this positive display of students' composing skills and enhanced understanding of conservation issues was made possible because of the performative affordances of drama and ICT, which together provided students authentic and purposeful opportunities to extend their learning beyond the traditional classroom.

Research conducted by Tan, Guo and colleagues (see Guo, Amasha, & Tan, 2011; Tan et al., 2010; Tan & Guo, 2009) similarly illustrated a successful attempt to facilitate Singapore high school students' critical reading and production of digital texts for academic and functional purposes. Part of the project involved the collaboration of the authors and an EL teacher in designing and implementing a year-long instructional programme that integrated Freebody and Luke's (2003) four resources model, the systemic-functional theorisation of multimodality, and New London Group's (1996) pedagogy of multiliteracies.

The intervention started off with students reading print-based texts (e.g., comprehension passages) before gradually being introduced to print-based multimodal texts (e.g., brochures) and dynamic multimodal texts (e.g., videos, webpages). Within the investigation of each set of target texts (i.e., print-based, print-based multimodal, dynamic multi-modal), lessons were also sequenced in a manner that allowed students to shift from the role of a text decoder (e.g., decoding the conventions of written, spoken, visual texts) to a text analyst (e.g., deconstructing the text to see how linguistic, visual, and audio modes interplayed to construct a particular ideology), and finally, from a text consumer (e.g., reading and interpreting constructed meanings) to a text producer (e.g., consciously constructing texts while attempting to shape consumers' meaning making).

Findings from the qualitative data revealed a posi-

tive shift in the participating teacher's pedagogical practices resulting from her deepened understanding about the different modes of meaning making. Prior to the intervention, her teaching practices focused primarily on developing traditional literacy skills with the occasional use of print-based multimodal texts as lesson triggers. As a result, classroom discussions about the texts focused heavily on increasing students' knowledge about the topic in focus rather than expanding understandings of how meaning making was realised in the various modes. However, as the participating teacher progressively gained understanding of how meaning can be constructed, represented, and communicated in various modes, her use of multimodal texts expanded from an ancillary manner (i.e., a source of motivation to sharpen traditional literacy skills) to a constitutive one (i.e., the main text for class discussions and joint-construction of meaning). Instead of focusing only on *what* was represented in the multimodal text (e.g., the identification of places of interest in Singapore), the participating teacher began to direct her students to read multimodal texts through the use of text-analysing strategies (Tan et al., 2010). Participating students were led to uncover *how* meaning was constructed by the interplay of semiotic modes (e.g., the reason for foregrounding particular visual images, how different camera angles impose certain perspectives on the viewers, how the use of audio and visual modes recreate particular feelings) (Tan et al., 2010).

Participating students in the study were also provided opportunities to apply their conventional literacy and new literacy skills as multimodal text producers (Guo et al., 2011). As part of the intervention, students were tasked to design multimodal texts such as a print-based brochure to promote their school programme to their parents and teachers and a dynamic multimedia presentation to promote their school's Language Arts curriculum to potential students. According to the authors, the students' interview responses revealed their deliberate (and effective) use of a range of modalities (e.g., visual images, written texts, audio clips) to convey their intended message and to draw the attention of their target audience accordingly. By designing tasks that allow students to employ different modes to achieve their communicative objectives, Guo et al. (2011) asserted that teachers were in fact creating op-

portunities for students to make connection with their everyday lives and ‘to articulate, construct, and imagine their versions of the world ... more powerfully and more effectively than if they were requested to learn and practise the basic skills of reading and writing for the purpose of passing their tests’ (p. 82).

In a bid to address the struggles encountered by local teachers to ‘reconcile the transmissionist pedagogy they are accustomed to with the need to meet the changing language and literacy needs of their students’ (De Souza & Towndrow, 2011, p. 25), local researchers (i.e., De Souza & Towndrow, 2011; Towndrow, 2007; Towndrow & Vaish, 2009) have also attempted to design a theory-based, systematic approach to guide teachers in EL task design and implementation. According to the authors, teachers keen on moving away from their usual presentational use of ICT should consider employing the Task Designer’s Mixing Desk (TDMD) (Towndrow, 2007) as an organising principle for planning and designing language tasks that incorporate a generative use of ICT without losing focus on particular traditional literacy skills. The TDMD comprises five scales relating to classroom interactions which language teachers can consider and manipulate to promote desired instructional outputs (De Souza & Towndrow, 2011). The first scale considers the **choice of task** along a continuum from *teacher-initiated* to *student-initiated* while the second is concerned about the type of **media and tools used** along a continuum from *teacher-selected* to *student-selected*. The third and fourth scales consider the number of **outcomes** and **strategies** respectively along a continuum from *single* to *multiple*, and the final scale takes into account the nature of **learning support** as moving from *predetermined and fixed* to *flexible and contextual*.

The study by De Souza and Towndrow (2011) illustrates an example of how a senior teacher from a Singapore high school, in spite of her earlier apprehension regarding the value of ICT in the Language Arts classroom, successfully designed an ICT-incorporated language task through the use of the TDMD model. Instead of the usual didactic approach, the teacher-participant managed to

design a literature task which allowed her students to self-select a particular theme found in the text and to share their understandings in any mode of presentation they chose. As shared by the teacher, the TDMD model not only heightened her awareness of the different task-implementation strategies which she could manipulate purposefully in her future lessons but also allowed her to design tasks that ‘facilitated thinking and knowledge construction in three areas: meaning making, creativity, and resource building for future lessons’ (De Souza & Towndrow, 2011, p. 36). This prompted the authors to urge educators to adopt the TDMD model in their classroom so that they could become effective ‘designer(s) and collaborator(s) of learning environments that help students to become active processors, problem solvers, and producers of information as opposed to being passive receivers of information’ (De Souza & Towndrow, 2011, p. 46).

Teachers are positioned first as learners who need to experience, experiment, and engage with literacy and technology before they resume the responsibility of infusing new literacies and technology into their classrooms.

Implications

The studies reviewed in the previous section are evidence that EL classrooms can be transformed into open learning spaces that draw on the potentials of digital technology in innovative and meaningful ways while allowing for the seamless integration of both conventional literacy and new literacy practices. However, as scholars (e.g., Honan, 2009; Knobel & Wilber, 2009) have surfaced from their observations, there are also teachers who tend to rely solely on a presentational use of ICT and who fail to include new literacy practices in their EL classrooms. Such incidents are not surprising considering the reluctance of some teachers to include literacy-technology integration in their lessons when traditional methods have served them well. Even if they are willing to explore new pedagogies as a result of the emergence of new media and literacies, these teachers are often hindered by a lack of knowledge about what they should change or how to do so. Similarly, Leu and Coiro (2004) argued that it is difficult to expect new literacies to take root in the EL classrooms given the heavy emphasis on high-stakes assessments that favour the standardised testing of traditional literacy skills and knowledge. According to Tan et al. (2010), positive change can

take place if there is a stronger alignment of language curriculum, pedagogy, and assessment.

Professional development

Articulating a vision of how teachers can be supported is an important first step. While there is still a lot of debate about the defining characteristics of *effective* professional development, scholars like Smith and Dobson (2011) as well as Smolin and Lawless (2010) argue that teachers should engage in professional development that will help ‘transform their roles, knowledge, and beliefs – especially their views on what counts as literacy and evidence of learning’ (Miller, 2008, p. 442). In light of this, scholars like McVee, Bailey, and Shahana (2012) as well as Miller (2008) have pushed for professional development, in-service, and pre-service courses to be grounded in approaches operating from the principle of ‘teachers first’ which asserts ‘the need to address teachers’ needs in learning new technologies, and their relationship to language and literacy even before addressing the needs of students’ (Lankshear & Knobel, 2003, p. 67). According to these scholars, a ‘teachers first’ approach to teacher education has the potential to positively shape future teaching and learning in the digital classroom because it considers the importance of helping teachers to *first* develop comfort and familiarity with the technology tools necessary to incorporate multiliteracies into their teaching. In other words, teachers are positioned *first* as learners who need to experience, experiment, and engage with literacy and technology before they resume the responsibility of infusing new literacies and technology into their classrooms (Lankshear & Knobel, 2003; Miller, 2008).

Assessment

Another area of concern raised by scholars is the inadequacy of current assessment methods to measure the skills required by students in today’s society. Despite efforts to develop multimodal learning experiences in the EL classroom, Leu and Coiro (2004) alongside other scholars (e.g., Brown, Lockery, & Caputi, 2010; Kalantzis, Cope, &

Harvey, 2003) observed that the nature of appropriate assessment had yet to keep pace. According to these scholars, it seems that current assessment practices are still geared towards measuring foundational literacy skills and factual knowledge – possibly the central reason for the failure to include new literacies in the EL curriculum. From the viewpoint of Wyatt-Smith and Kimber (2009), new literacy practices can only possibly become a mainstay in the EL classroom if a committed decision is made to deconstruct and

Despite efforts to develop multimodal learning experiences in the EL classroom, the nature of appropriate assessment has yet to keep pace. Current assessment practices are still geared towards measuring foundational literacy skills and factual knowledge – possibly the central reason for the failure to include new literacies in the EL curriculum.

reconstruct existing assessment practices to include the evaluation of multimodal technology-mediated learning – not just of the final product but the ongoing design process, from conception to reflection. A related suggestion offered by Botelho, Kerekes, Jang, and Peterson (2014) was for schools to

conduct investigations into whether they yet have the tools that could offer insights into assessment for learning (i.e., formative and diagnostic assessment), assessment *as* learning (i.e., self- and peer assessment), and assessment of learning (i.e., summative assessment) in a multimodal technology-mediated classroom.

Towards a future-oriented EL education

It is true that we can never be certain when the next wave of societal change will strike or what demands, challenges, and opportunities it might bring along (Kress, 2000, 2007). Yet, scholars like Karchmer-Klein and Shinas (2012) and others (e.g., Kalantzis & Cope, 2012; Kress, 2007; Miller & McVee, 2012) have asserted that it is within our power as educators and stakeholders of education to constructively contribute to a better future. From their perspectives, schools can remain relevant and effective in the years to come if educators take on the responsibility to be vigilant observers of change and, even more than before, be change-makers who are willing to take the helm and navigate their way through the challenging rocks of entrenched beliefs, attitudes, and pedagogical practices. According to these scholars, a concerted effort should be taken to ensure that

the design of a future-oriented EL education is further removed from its roots in the industrial era and remains open to an ongoing process of transformation, one which may involve the change from its oars and sails to a powerful engine strong enough to navigate this new digital

wave. Only then can EL educators and other stakeholders of EL education be on course towards providing students with an education they truly deserve as active designers and developers of our society's future.

References

- 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), 36-45.
- Bailey, N. M. (2012). The importance of a new literacies stance in teaching English language arts. In S. M. Miller & M. B. McVee (Eds.), *Multimodal composing in classrooms: Learning and teaching for the digital world* (pp. 44-62). New York, NY: Routledge.
- Beavis, C., Davies, J., & Leander, K. (2009). Editorial: English afloat on a digital sea. *English Teaching: Practice and Critique*, 8(3), 1-7.
- Botelho, M. J., Kerekes, J., Jang, E., & Peterson, S. S. (2014). Assessing multiliteracies: Mismatches and opportunities. *Language and Literacy*, 16(1), 1-20.
- Brown, I., Lockyer, L., & Caputi, P. (2010). Multiliteracies and assessment practice. In D. R. Cole & D. L. Pullen (Eds.), *Multiliteracies in motion: Current theory and practice* (pp. 191-206). New York, NY: Taylor & Francis.
- Bull, G., & Anstey, M. (2010). Using the principles of multiliteracies to inform pedagogical change. In D. R. Cole & D. L. Pullen (Eds.), *Multiliteracies in motion: Current theory and practice* (pp. 141-159). New York, NY: Taylor & Francis.
- Caldwell, B., & Hayward, D. K. (1998). *The future of schools: Lessons from the reform of public education*. London, UK: The Falmer Press.
- Carrington, V. (2005). New textual landscapes, information and early literacy. In J. Marsh (Ed.), *Popular culture, new media and digital literacy in early childhood* (pp. 13-27). London, UK: RoutledgeFalmer.
- Conner, C. (1991). *Assessment and testing in the primary school*. London, UK: The Falmer Press.
- Cope, B. (2001). New ways with words: Print and etext convergence. In B. Cope & D. Kalantzis (Eds.), *Print and electronic text convergence: Technology drivers across the book production supply chain, from creator to consumer, C-2-C project book 2.1* (pp. 1-15). Melbourne, Australia: Common Ground.
- Cope, B., & Kalantzis, M. (2000). Introduction. Multiliteracies: The beginnings of an idea. In B. Cope & M. Kalantzis (Eds.), *Multiliteracies: Literacy learning and the design of social futures* (pp. 3-8). London, UK: Routledge.
- Cope, B., & Kalantzis, M. (2007). New media, new learning. *The International Journal of Learning*, 14(1), 75-79.
- Cope, B., & Kalantzis, M. (2010). New media, new learning. In D. R. Cole & D. L. Pullen (Eds.), *Multiliteracies in motion: Current theory and practice* (pp. 87-104). New York, NY: Taylor & Francis.
- Cope, B., & Kalantzis, M. (2011). What does the digital do to knowledge making? In B. Cope, M. Kalantzis, & L. Magee (Eds.), *Towards a semantic web: Connecting knowledge in academic research* (pp. 81 – 122). Oxford, UK: Chandos Publishing.
- Cope, B., & 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). London, UK: Palgrave.
- Cuban, L. (2001). *Oversold and underused: Computers in the classroom*. Cambridge, MA: Harvard University Press.
- 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.
- Darling-Hammond, L. (1997). *The right to learn: A blueprint for creating schools that work*. San Francisco, CA: Jossey-Bass.
- Darling-Hammond, L. (2010). *The flat world and education: How America's commitment to equity will determine our future*. New York, NY: Teachers College Press.
- Davidson, C. (2009). Young children's engagement with digital texts and literacies in the home: Pressing matters for the teaching of English in the early years of schooling. *English Teaching: Practice and Critique*, 8(3), 36 -54.

- 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. Ho, K. T. Anderson, & A. Leong (Eds.) *Transforming literacies and language: Innovative technologies, integrated experiences* (pp. 23-50). London, UK: Continuum.
- Dewey, J. (1966). *Democracy and education: An introduction to the philosophy of education*. New York, NY: Free Press. (Original work published 1916)
- Dymoke, S., & Hughes, J. (2009). Using a poetry wiki: How can the medium support pre-service teachers of English in their professional learning about writing poetry and teaching poetry writing in a digital age. *English Teaching: Practice and Critique*, 8(3), 91-106.
- Dimmock, C., & Goh, J. W. P. (2011) Transforming Singapore schools: The economic imperative, government policy and school principalship. In T. Townsend & J. MacBeath (Eds.), *The international handbook of leadership for learning*, (pp. 225-242). New York, NY: Springer.
- Freebody, P., & Luke, A. (2003). Literacy as engaging with new forms of life: The 'four roles' model. In G. Bull & M. Anstey (Eds.), *The literacy lexicon*, (pp. 54-61). Frenchs Forest, Australia: Prentice Hall.
- Gee, J. P. (2006). Self-fashioning and shape-shifting: Language, identity, and social class. In D. Alvermann, K. Hinchman, D. Moore, S. F. Phelps, & D. R. Waff (Eds.), *Reconceptualizing the literacies in adolescents' lives* (2nd ed., pp. 165-185). Mahwah, NJ: Lawrence Erlbaum Associates.
- Gilbert, J. (2007). Catching the knowledge wave? The "knowledge society" and the future of public education. *Education Canada*, 47(3), 4-8.
- Guo, L., Amasha, S. A., & Tan, L. (2011). Multimodal literacy in extended learning activities. In C. Ho, K. T. Anderson, & A. Leong (Eds.), *Transforming literacies and language: Innovative technologies, integrated experiences* (pp. 70-86). London, UK: Continuum.
- Henderson, H. (2009). *Encyclopedia of computer science and technology* (Rev. ed.). New York, NY: Infobase Publishing.
- Ho, C., & Gwee, S. (2015). Information and communication technology-mediated interventions in English Language learning in Singapore: Trends and developments. In R. Stroupe & K. Kimura (Eds.), *ASEAN integration and the role of ELT* (pp. 88-103). Phnom Penh, Cambodia: IDP Education.
- Honan, E. (2009). Fighting the rip: Using digital texts in classrooms. *English Teaching: Practice and Critique*, 8(3), 21-35.
- Jenkins, H. (2008). Media literacy- Who needs it? In T. Willoughby & E. Wood (Eds.), *Children's learning in a digital world* (pp. 15-39). Oxford, UK: Blackwell.
- Jewitt, C. (2005). Multimodality, "reading", and "writing" for the 21st century. *Discourse: Studies in the Cultural Politics of Education*, 26(3), 315-331.
- Jewitt, C., & Kress, G. (Eds.). (2003). *Multimodal literacy*. New York, NY: Peter Lang.
- Jones, R. M. (2003). Local and national ICT policies. In R. B. Kozma (Ed.), *Technology, innovation, and educational change: A global perspective* (pp. 163-194). Eugene, OR: International Society for Technology in Education.
- Kadono, E., Hayashi, A., & Riggs, L. E. (2003). *Kiki's delivery service*. Buffalo, NY. Annick Press.
- Kalantzis, M., & Cope, B. (2005). *Learning by design*. London, UK: Routledge.
- Kalantzis, M., & Cope, B. (2012). *Literacies*. Cambridge, UK: Cambridge University Press.
- Kalantzis, M., Cope, B., & Harvey, A. (2003). Assessing multiliteracies and the new basics. *Assessment in Education*, 10(1), 15-26.
- Karchmer-Klein, R., & Shinas, V. H. (2012). Guiding principles for supporting new literacies in your classroom. *The Reading Teacher*, 65(5), 288-293.
- Kelly, F. S., McCain, T., & Jukes, I. (2009). *Teaching the digital generation: No more cookie-cutter high schools*. Thousand Oaks, CA: Corwin.
- Knobel, M., & Wilbur, D. (2009). Let's talk 2.0. *Educational Leadership*, 66(6), 20-24.
- Kress, G. (2000). A curriculum for the future. *Cambridge Journal of Education*, 30(1), 133-145.
- Kress, G. (2007). Thinking about meaning and learning in a world of instability and multiplicity. *Pedagogies: An International Journal*, 2(1), 19-34.
- Lankshear, C., & Knobel, M. (2003). *New literacies. Changing knowledge and classroom learning*. Buckingham, UK: Open University Press.
- Leu, D. J., & Coiro, J. (2004). New literacies for new times: Why and how the literacy community needs to rethink its mission. *Wisconsin State Reading Association*, 44(5), 3-7.
- Lim, C. P., & Khine, M. S. (2006). Managing teachers' barriers to ICT integration in Singapore schools. *Journal of Technology and Teacher Education*, 14(1), 97-125.

- McGinnis, T. (2013). Creating a balanced literacy curriculum in the 21st century: Authentic integration of Literacy 1.0 with Literacy 2.0. In J. Whittingham, S. Huffman, W. Rickman, & C. Wiedmaier (Eds.), *Technological tools for the literacy classroom* (pp. 64 -81). Hershey, PA: Information Science Reference.
- McVee, M. B., Bailey, N. M., & Shahana, L. E. (2012). The (artful) deception of technology integration and the move toward a new literacies mindset. In S. M. Miller & M. B. McVee (Eds.), *Multimodal composing in classrooms: Learning and teaching for the digital world* (pp. 13-31). New York, NY: Routledge.
- Meyer, J. W., Ramirez, F. O., & Soysal, Y. N. (1992). World expansion of mass education, 1870-1980. *Sociology of Education*, 65(2), 128-149.
- Miller, S. M. (2008). Teacher learning for new times: Repurposing new multimodal literacies and digital-video composing for schools. In J. Flood, S. B. Heath, & D. Lapp (Eds.), *Handbook of research on teaching literacy through the visual and communicative arts* (Vol. 2, pp. 441-460). New York, NY: Routledge.
- Miller, S. M., & McVee, M. B. (2012). Multimodal composing: The essential 21st century literacy. In S. M. Miller & M. B. McVee (Eds.), *Multimodal composing in classrooms: Learning and teaching for the digital world* (pp. 1-12). New York, NY: Routledge.
- New London Group. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review*, 66(1), 60-92.
- Perry, K. (2013). Literacy and technology: A historical view. In J. Whittingham, S. Huffman, W. Rickman, & C. Wiedmaier (Eds.), *Technological tools for the literacy classroom* (pp. 1-9). Hershey, PA: Information Science Reference.
- Postman, N. (1994). *The disappearance of childhood*. New York, NY: Vintage Books.
- Powell, W. W., & Snellman, K. (2004). The knowledge economy. *Annual Review of Sociology*, 30, 199-220.
- Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, 9(5), 1-6.
- Prensky, M. (2012). The world needs a new curriculum. *Educational Technology*, 54(4), 3-14.
- Preston, P. (2001). *Reshaping communications: Technology, information and social change*. Thousand Oaks, CA: Sage.
- Rowell, J., & Walsh, M. (2011). Rethinking literacy education in new times: Multimodality, multiliteracies, and new literacies. *Brock Education*, 21(1), 53-62.
- Shaffer, D. W. (2009). Wag the kennel: Games, frames, and the problem of assessment. In R. Fertig (Ed.), *Handbook of research on effective electronic gaming in education* (Vol. II, pp. 577-592). Hershey, PA: IGI Global.
- Smith, J. J., & Dobson, E. (2011). Beyond the book: Using Web 2.0 tools to develop 21st century literacies. *Computers in the Schools*, 28(4), 316-327.
- Smolin, L. I., & Lawless, K. (2010). Using multiliteracies to facilitate culturally relevant pedagogy in the classroom. In D. R. Cole & D. L. Pullen (Eds.), *Multiliteracies in motion: Current theory and practice* (pp. 173-188). New York, NY: Taylor & Francis.
- Tan, L., Bopry, J., & Guo, L. (2010). Portraits of new literacies in two Singapore classrooms. *RELC Journal*, 41(1), 5-17.
- Tan, L., & Guo, L. (2009). From print to critical multimedia literacy: One teacher's foray into new literacies practices. *Journal of Adolescent and Adult Literacy*, 53(4), 315-324.
- Toffler, A. (1980). *The third wave*. New York, NY: William Morrow.
- Towndrow, P. (2007). *Task design, implementation, and assessment: Integrating information and communication technology in English Language teaching and learning*. Singapore: McGraw-Hill.
- Towndrow, P. A., & Vaish, V. (2009). Wireless laptops in English classrooms: A SWOT analysis from Singapore. *Educational Media International*, 46(3), 207-221.
- Trilling, B., & Fadel, C. (2009). *21st century skills: Learning for life in our times*. San Francisco, CA: Jossey-Bass.
- Unsworth, L. (2001). *Teaching multiliteracies across the curriculum. Changing contexts of text and image in classroom practice*. Buckingham, UK: Open University Press.
- van Leeuwen, T., & Kress, G. (2010). Foreword. In D. R. Cole & D. L. Pullen (Eds.), *Multiliteracies in motion: Current theory and practice* (pp. viii - ix). New York, NY: Taylor & Francis.
- Wales, P. E., & Mohamed, M. (2013). Digital storytelling and drama in the English Language classroom. In L. Y. Tay & C. P. Lim (Eds.), *Creating holistic technology-enhanced learning experiences: Tales from a future school in Singapore* (pp. 59-74). Rotterdam, The Netherlands: Sense Publishers.
- Walker, B. (2007). *Recipe for a blue ribbon school*. New York, NY: iUniverse Inc.
- Waller, M. (2009, July). *Multiliteracies and meaningful learning contexts in the primary classroom*. Paper presented at the 45th United Kingdom Literacy Association International Conference, London.

- Walsh, M. (2008). Worlds have collided and modes have merged: Classroom evidence of changed literacy practices. *Literacy*, 42(2), 101-108.
- Walsh, M. (2010). Multimodal literacy: What does it mean for classroom practice? *Australian Journal of Language and Literacy*, 33(3), 211-239.

- Wyatt-Smith, C., & Kimber, K. (2009). Working multimodally: Challenges for assessment. *English Teaching: Practice and Critique*, 8(3), 70-90.