

Research Article

Adult online learning – A dialogic perspective

Vincent English FRSA*

Longford International College, Cambridge University, Cambridge, England

(Received: November 09, 2022; Revised: February 26, 2023; Accepted: February 28, 2023; Published: July 25, 2023)

*Corresponding author: Vincent English FRSA (E-mail: vincent.english@longfordcollege.com)

ABSTRACT

Dialogic education pedagogies trace their roots back to a framework developed by Soviet-Russian philosopher and literary theoretician Bakhtin (Matusov & Lemke, 2015). In Bakhtin's thought, the place from which we speak plays an essential role in determining what we say. Moreover, Bakhtin says that "...In order to understand, it is immensely important for the person who understands to be located outside the object of his or her creative understanding-in time, in space, in culture" (p.xiii). This chapter aims to unpack and map some of the many meanings of dialogic education and their relationship with technology-mediated learning. While the research study is mainly focused on what roles chatbots can assume in online adult education and precisely what needs must they meet for online learners, the chapter starts by delving into the theory of dialogic learning.

Key words: Online learning, Dialogue, Higher education

INTRODUCTION

The ideas of dialogue

According to Wegerif (2007) the default dictionary meaning of dialogic is defined simply as 'pertaining to dialogue'. This is a somewhat over-simplistic view of dialogue and is merely one of three levels regarded by Rupert Wegerif. However, as Wegerif (2007) rightly points out: "...Bakhtin has much more to offer than the idea that dialogue is a 'shared inquiry'..." Thus Bakhtin's quest is for the meaning of texts rather than the "...actual dialogues between people as an empirical fact and site of investigation..." (Wegerif, 2007). Bakhtin (1981) provides a basis from which to build a theory of learning through his account of "...how we appropriate the words of others by taking them into our own store of words, giving them our own accent and our own associations and resonances..." (Wegerif, 2007). Building on the work of Bakhtin, a model of the dialogic self based on a polyphony of competing and cooperating voices was proposed by Hermans (2004). The voices in the self have origins in different contexts, and they can move across the external boundaries to be internalised within the self. A coherence can emerge through the many external voices that emerge and speak independently of each other within the self. The theories of Harman have been applied to collaborative learning using computers by Ligorio & Pugliese, (2004, cited in Wegerif 2007), who suggest that understanding issues of identity are fundamental to comprehending how learners reach a shared understanding of knowledge accessed online.

Bakhtin's thinking, the tensions between monologic and dialogic are never far away. Even though we read a text in a book or online, it is the sum of multiple voices that have

come together to form that text. Thus, Bakhtin often views monologue as been a part of or an illusion within dialogue. Wegerif (2007), suggests that dialogic is an epistemological framework that seeks to explain how meaning comes from dialogue. Thus, meaning begins its lifecycle when a word is constructed between two persons through an '...active, responsive, understanding...' (Volosinov 1929/86, cited in Wegerif, 2007). Bakhtin (1981) offers some guidance in this respect: "... if an answer does not give rise to a new question from itself, it falls out of the dialogue' (Bakhtin, 1981). Bakhtin's analysis of dialogic interactions offers a way to distinguish between social conversations that do not necessarily lead to anything useful in education or, conversely, the nature of dialogue in a context of shared educational inquiry.

In consideration of dialogue as an epistemological framework, there are three key assumptions identified by Rupert Wegerif that contrast the dialogic with the monologic:

Acts of communication are interdependent with other actions of communication being influenced by the communications in the past the future;

Contextual settings such as cultural traditions, social settings, environmental influences, religious beliefs and other acts are dialogic between self and others;

Meaning is constructed during dialogue are not pre-constructed and packaged as the final product for the learner.

The true essence of Bakhtin's dialogic theory extends beyond shared inquiry. Instead, a journey into the meaning of the written texts and the discourses between individuals gets to the heart of dialogism. Indeed, a more precise definition of what is a dialogue in education is offered by (Shor & Freire, 1987):

“...Dialogue is a means to transform social relations in the classroom and to raise awareness about relations in society at large. Dialogue is a way to recreate knowledge as well as the way we learn. It is a mutual learning process where the teacher poses critical problems for inquiry. Dialogue rejects narrative lecturing where [the] teacher talks silence and alienates students...”

Thus meaning should not be simply packaged and given but should be the culmination of the “...Interaction between different voices and different perspectives...” (Wegerif, 2007). As (Bakhtin, 1981) suggests, that meaning is always a response to a question. In relation to technology-mediated learning, such as chatbots, the implications are that meaning should be through the dialogic act of engaging, reading and listening and asking a question about what is heard and read. Following on from Bakhtin's point that meaning is a dynamic communicative act, the process of developing meaning is through the questions posed.

Nevertheless, simplistic as the definition might be, it is essential to contextualise its precise meaning for this study. In this regard, (Wegerif *et al.*, 2020) suggest three levels of educational dialogue:

Level 1: Different voices participating in dialogue equally and being listened to with respect. Contributions are ‘chained’ as interlocutors add responses to the end of preceding responses;

Level 2: New meanings emerge through uncertainty and a multiplicity of perspectives enlarging the dialogic in which educational dialogue operates;

Level 3: The opening of dialogic space is now a ‘real’ thing experienced in an ontological sense. The voices engaged in dialogue open the space where knowledge construction not only occurs, but people develop a greater understanding of themselves. Hence, the net effect is that people are influenced to become more dialogic because of the education dialogues developed.

Wegerif *et al.* (2020) stress that all three levels of dialogue can co-exist simultaneously, just as they can exist separately. Creating an open dialogue space where better quality dialogue can be taught requires a dialogic environment created and then opens a dialogic space for dialogic inspired teaching to thrive. Creating the dialogue space and keep it open is undoubtedly a challenge for a teacher. The challenge to devise AI to be so sophisticated that the same effect could be achieved through chatbots is undoubtedly an even more significant challenge.

The relationship between education and dialogue

Wegerif (2019) reminds us that for dialogic learning to take effect, a proximal relationship of co-created co-construction “... arising out of the tension of different voices...” is required. A way to form a conceptual image of the crucial role of dialogue is to refer to Vygotsky's account of the Zone of Proximal Development (ZPD), or (*zona blizhaishegorazvitiia*, in original Russian) (Vygotsky, 1964). ZPD is usually interpreted as a measure of the distance between what a learner can achieve without help and what they can achieve with the help

of a knowledgeable other until the knowledgeable other is no longer required for the task.

The Vygotsky ZPD has been expanded and modified since its original conception. Mercer 2002, proposes that an *Intermental Development Zone* (IDZ) can be used to build a common language between learner and teacher, facilitating an “inter-think”. What Mercer is alluding to is that the teacher should engage with the student's point of view and vice-versa in creating shared understandings and perspectives. However, there is a divergence between the Vygotskian ZPD view and Mercer's IDZ. The latter proposes that language creates the dialogic space allowing peers to develop their reasoning together through interaction. The work of Mercer is considered vital as it removes the teacher from teaching about a concept to engaging with the student through dialogue as a means to understanding. Therefore, Mercer 2002 suggests a shift towards emphasising the ‘understanding’ of the language used as the main catalyst for learning by the student.

Bakhtin's dialogic theory

Bakhtin made many critical intellectual contributions to many areas of scholarship, leading literary scholars to consider him as offering important contributions in fields as diverse as linguistics or anthropology. Bakhtin's focuses on the gap or boundary between the knower and the learner because dialogue runs deeper than explicit language. Stimuli provoked through the orientation or openness of the other, including the personality, tone or body language, are regarded by Bakhtin as an integral component of dialogue. Thus, Bakhtin's stance runs deeper than Vygotsky in that dialogue is more than mere language to more the construction of meaning. Indeed, for many, “...modern thinking about thinking...” traces its roots to Bakhtin's concept of dialogue (Holquist, 2003).

In order to get to the heart of dialogism, the principle of simultaneity takes centre stage. In much the same way as Einstein's Theory of Special Relativity used thought experiments to describe the meaning of speed from one observer relative to another, Bakhtin also regards dialogue as a simultaneous kinetic exchange. Thus, as in Einsteinian motion, the reality is not merely perceived but is an observer's experience from a particular frame of reference or as an event experienced by an observer. Just as in relativity, the observations made by two different observers can be different for the same event. The human mind is structured such that experiences are against the contrast of something else.

Similarly, a conversation between two people is much like Einstein's travellers; there must also be a dualistic reference frame. Both observers can observe an event the other cannot see that is behind them that is denied to their vision. Both observers occupy different positions in time and space and have different perceptions of events. The inference is thus that all meaning is relative and can only come about as the result of an exchange between two bodies (observers) simultaneously communicating between different physical spaces. The analogue between the travellers in Einstein's

world can be similarly applied to the construction of meaning through dialogue. The different frames of references in Einstein's world are the same as the different options, kinds of knowledge or understanding between two people engaged in conversation. The sharing of information from one person's perspective (frame of reference) to the other is how meaning and understanding are ultimately achieved. This, I believe, is the fundamental doctrine of dialogism.

To reconcile the conceptual relativistic kinetic notion of Einsteinian time and space with the Bakhtinian version, concepts that could act as dialogical indicators of the 'identity positions' of 'interlocutors' were proposed. Much in the same way as position and velocity are reference tools used in Special Relativity, the parallel conceptualisation in Bakhtinian 'mechanics' the concept can be expressed in terms of "polyphony" and "chronotopes". Bakhtin (1981), similar to the observers in Einstein's Special Relativity, stresses the interdependence of the temporal and the spacial.

Polyphony, based on a musical term in Russian which describes the diversity of voices or points of view expressed simultaneously in a narrative in all its forms. Therefore, dialogue gives rise to polyphony in the written word that is uniquely sense-making in a way monologic discourse can ever be. Bakhtin was greatly influenced by the works of Dostoevsky, whose radical thinking allowed voices to become disaggregated, thereby offering different senses and perspectives of reality. Monologue, by contrast, is a one-way discourse where the truth is external or a disembodied truth. The monologic truth can only be measured by its accuracy, or otherwise, to the object in question. As such, it is irrelevant who (or collectively whom) communicates the truth; it will always be communicated as a single systematisation of truth. The rigidity of a monologic narrative is set free in the polyphonic text, where the voices are free to emerge, and the monologic control over the writing is relinquished.

Bakhtin introduced the term 'chronotope' to analyse temporal and spatial categories basis of all narratives and other linguistic acts. The basic idea of the chronotopes is that time cannot be understood without reference to a spatial dimension because they are intertwined (Vaara & Pedersen, 2013). Thus, chronotopes are capable of facilitating an event around discourse or narrative because it connects the temporal and spatial dimensions. Therefore, a chronotype is a unit of analysis and an axis through which experience is transmitted (Ligorio *et al.*, 2013).

If we can take anything from Bakhtin's interpretation of what constitutes meaning is that it is always a response to a question crafted from the interaction of different voices from a different perspective. Where diverse ideas from different voices in a learning environment are presented, tested and discussed is the basis of dialogic pedagogy. In contrast to monologised pedagogical dialogue, the teachers do not actively seek to expose errors in the students' understanding of knowledge but instead, "...learns from the student how the student sees the world and him/herself..." (Matusov, 2004).

Reasoning that truth is fundamentally a dialogic paradigm. Disagreements between teacher and student are valued and respected as a natural process of learning between the continuum of teacher and student. Moreover, disagreements should be expected because the truth is not born within the individual but collectively as a dialogic process (Bakhtin & Emerson, 1999). Truth is born out of the dialogue, and by inference, to build a pedagogy on truth is to dialogue the truth through teaching of the curriculum.

Thus, 'dialogicality' can be viewed as a term that captures the relational nature of learning and texts and describes the "...way in which dialogue occurs within and across particular utterance." (Koschmann, 1999). In other words, the voices and interactions of others become intertwined with our thoughts, what we say, and how we think. Kristeva (1980), suggests that the texts derived from relational experiences should be an extension of discourse and proposed the term intertextuality. Accordingly, we can view dialogicality as more than mere relational interactions between different voices responding to each other. Wegerif 2007, looks deeper by suggesting that participants will also "...respond in a way that takes into account how they think other people are going to respond to them." In a similar vein, (Perry & Barwise, 1983) refer to a circular attunement phenomenon that is bi-directional and a natural human method of interaction. In taking this view, a conflict between monologic and dialogic interactions is inevitable. Circularity in the dialogic sense cannot then be genuinely understood using monologic models since the natural human condition is towards a continuing dialogue.

Technology mediated dialogue

While the print media has dramatically influenced the path, structure, and understanding of education, the internet offers new possibilities. Even the development from Web 1.0 to Web 2.0 influenced a giant leap in the affordances of the internet as a pedagogical tool. Web 2.0 was able to support video content, virtual meetings and social media in a way that Web 1.0 could not. The 'web' moved from a static to a dynamic environment where the instantaneous transfer of information has become the norm. In this context, the proliferation of e-learning platforms has become commonplace in almost all universities. Whether the use of print material, classroom teaching, or the use of the internet purposes, education implies a "...expansion of the dialogue space-time..." continuum that coalesces separate and distinct of "...initially separate islands of experience into dialogue with each other..." (Wegerif, 2019)

Vygotsky, 1964 refers to 'mediating means' facilitating communication and learning, which is still relevant today. This study will take the view that technology is, broadly speaking, a mediator that facilitates communication and action (Wegerif & Major, 2018). The argument advanced in this chapter is that education has always been influenced by the mediation of one form or another. Adopting this stance allows the study to progress towards its goal which is to

determine if technologically mediated pedagogies can expand and enrich dialogue.

Research into classroom talk and dialogue is well established. However, research into digitally mediated technology dialogue in the classroom and dialogue is sparse (Major *et al.*, 2018). The scarcity of extant research is due to the nascent nature of digital technology in the classroom and perhaps, a reticence to use it by some practitioners. A related area of emerging scholarship is Computer-Supported Collaborative Learning (CSCL), which has also contributed to developing theoretical frames in collaborative interactions using technology (Jeong & Hmelo-Silver, 2016). However, similarities between the different literature streams are found in-classroom dialogue, dialogic pedagogies and digital technology (Major *et al.*, 2018). A common theme is shared insofar as "...dialogue is a way to recreate knowledge as well as the way we learn..." (Shor & Freire, 1987).

Whether dialogue is practised in a face to face classroom context, or a distance learning online context, the basic premise of 'dialogic teaching' emphasises the process through which students learn collaboratively and develop higher-order thinking, reasoning, discussion, critical reflecting and constructive argumentation in their progress towards 'meaning' (Alexander, 2008). Constructive dialogue mediated by technology is not only possible but necessary for the adult learner in the modern age. Chatbot technology can also help fill a void in dialogue space, in what Buber refers to as space 'in-between' ("das Zwischen" in the original text). As technology continues to change rapidly, the notion of singular 'space' is perhaps too simplistic. As Wegerif and Major (2018), remind us, the "das Zwischen" will take on different manifestations according to the mediating technologies.

Technology and the practice of dialogic education

While the change from oracy to print literacy as the dominant method of communication had profound implications for education, so will the influence of the internet. The affordances of the internet mean that the dissemination of knowledge moves from the one-to-one relationship with print media to the one-to-many (Ritzer, 2014). As print media did not subsume oracy, it will not be replaced entirely by the internet; it will be available in a different form. As an example, print books are available as eBooks, newspapers available online, and academic papers as downloadable PDFs. Therefore, a view can be taken that as new technologies emerge, an augmentation process is associated with them. Wegerif (2019) insightfully points out that the internet is reaffirming the importance of the affordances of oral dialogic pedagogies but connecting more learners in numbers far higher than traditional face to face groups.

The multi-modal communication facilitated by the internet is not limited to textual exchanges through blogs or messaging services but through visual and audible encounters through standardly available programmes. Whereas print is a one to many media, with the production and dissemination

of knowledge dependent on access to a printing press, the internet is a many to many media allowing every participant to be a producer as well as a consumer of knowledge (Ritzer, 2014). In this way, the internet returns us to some of the dialogic affordances of oral societies but with the difference that the dialogue is now no longer limited to face-to-face groups. Of course, previous modes of communication and associated educational and cognitive practices continue.

Technology can also blur the edges of the dialogic interaction between real voices and that of the mediating technology. Buber's vision of dialogic space has an underlying truth: 'man is twofold' based on the two fundamental modes of being (the I-Though and the I-It). The early seminal writings of (Buber, 2003) contrast the two primary human attitudes and how they influence the approach to existence. The 'I-Thou' relationship characterises the nature of the relationship that is open, direct, mutual and present (in the senses that it exists). The 'I-Thou' relationship does not necessarily have to be between humans. It may be with a family pet, a work of art, a plant, or a computer device. In contrast, 'I-It' typifies an a subject-object relationship without "... allowing them to exist for oneself in their uniqueness..." (Buber, 2003). Nevertheless, if an inanimate object (such as a tree) becomes special in a way that no other similar object does, the relationship becomes 'I-thou'. Primarily, Buber is drawing a fundamental distinction between knowledge generation "...between learning from a living dialogue involving responsive voices." in 'I-thou', and that from all other single perspectives dialogic otherness ('I-It') (Wegerif & Major, 2018). As far as Buber was concerned, the ultimate truth was that of the 'Eternal Thou', referring to the presence of an omnipotent being who is the ultimate knower. In the case of the internet, as will be discussed later, the concept of the 'Eternal Thou' is given a more concrete conceptualisation insofar that questions posed on forums or search engines will come back with an answer which as originated in a nebulous cloud of electrons!

The opening of a Buber's dialogue space has particular implications for technology-mediated dialogic education. Buber's two modes of being are integral into the opening of the dialogic space. In twofold nature of technology is examined and how the use of language can be considered a technology in its own right.

Dialogue space with educational technologies

If technology-mediated collaborative learning is to be effective, it must be able to facilitate a change in dialogic space and expand it in ways that have educational significance. In the context of 'cyberspace' learners are inducted into this "... imaginary, but real world, where the frontiers are blurred, the 'other' exists through the inference of communication." (Wegerif & Major, 2018). Cyberspace provides a medium for a dialogic space where there can be an interplay between seemingly endless voices. Despite the significant contributions made to dialogue by early cave paintings, and the writings of the great philosophers and educators, the internet has facilitated

a multi-modal experience of video content, animation, pictures, and mere words. The internet can support infinite creative capabilities to support a borderless dialogue (Fuchs, 2005). Accordingly, "...engagement in educational dialogues online offers a new form of dialogue not found in face-to-face situations or dialogue with computers in classrooms..." (Wegerif & Major, 2018).

Engaging in an online dialogue presents an alternative platform to the traditional face to face approach or the monologic dialogue with computer simulation software in a classroom. Suppose online line collaboration can be regarded as a suitable proxy for face to face approaches. In that case, the view that the internet is an integral part of the online dialogue and not some that are external 'ether' is a reasonable assertion. As discussed in the previous section, the view that the internet is an integral part of an online dialogue gives a more concrete grounding of Buber's 'Eternal Thou' conceptual meaning.

Related to the notion that the internet as a whole is a grouped intelligence composed of millions of networks of contributors. It would be incorrect to advance the notion that the internet is a distributed artificial intelligence because that implies that it is itself an independent learner. However, the internet is a distributed collected intelligence which "...is a form of universal, distributed intelligence, which arises from the collaboration and competition of many individuals..." (Salminen, 2012). Distributed collected intelligence (DCI) has its roots in 'swarm intelligence' (SI). Swarm intelligence is defined as the cooperation of two or more individuals operating independently or semi-independently who collaborate through social interaction to find a solution to a problem that could not have been achieved on their own (Krause *et al.*, 2010). The similarity between DCI and SI is such that the terms are often used interchangeably. Lévy (1997, 2013) defines CI as a form of universal, distributed intelligence which arises from the collaboration and competition of many individuals.

Wegerif and Major, 2018 make the connection between DCI with the "the kind of intelligence" that is similar to what Dewey (1909) termed 'social intelligence', in the sense that it supports dialogic education. The works of Dewey were grounded in pragmatism and were not directly focused on 'dialogism', but they did lay a conceptual foundation for the paradigm.

Computer-mediated communication

The true essence of dialogic education is about engagement with different relationships that offer different perspectives that expand the learner's comprehension. In so doing, the learner can articulate understanding from multiple perspectives. Accordingly, in the words of Wegerif and Major (2018, 109) "... dialogic education, [is] learning, of as about collecting facts and returning them in an examination..." Thus, Buber has laid the foundations (through I-thou and I-it) to interpret dialogue under the guise of two separate consciousnesses and how they can co-exist and engage. Buber was, obviously, not

referring to engaging with technology as we know it today. Still, his dialogic theory unpacks a method by which it is possible to understand the essential role that technology can play in dialogue.

Technology is often viewed as the medium or carrier of a face-to-face interaction that would not be otherwise possible for students who study remotely from a university. Thorpe (2009) suggests that a view can be that a technologically-mediated approach is a proxy for the face-to-face experience but presupposes a real context "...that exists prior to the use of technology and that this context is what we mediate for learning to be enabled in the virtual environment...". The counter view is that the use of technology can develop new practices that develop with it and configure distinctive learning contexts. In terms of dialogic pedagogy, this view fits an open group constructivist approach very well. Therefore, care needs to be taken when evaluating how learning contexts develop. The direct effect of the learning technologies and tools used is not what we should be observing, but, instead, the practices deployed mediated through the technology. It is important to remember that learning technologies may well facilitate face-to-face learning contexts and stimulate specific student experiences, but the ultimate learning context may have little in common with a real face-to-face learning context.

As Wegerif and Major (2018) correctly point out, technology continues to 'co-evolve' and is an integral part of human development. Moreover, building on Stiegler (1998), who asserts that humans are already technological, (Wegerif & Major, 2018) posit that our technologically shaped reality continually mediates the human capacity to think. The central point by Wegerif and Major, 2018 is that technology facilitates the "...space of difference required for reflection, particularly the technology of language...". Taking this view positions the spoken language as more than just a "...natural extension of our bodies and so of ourselves...", but more of a tool that is a constituent part of language technology. From Buber's I-It perspective, spoken language is transformed into mere words that co-evolve in collaboration between different voices to communicate ideas, design new technologies, and educate others to build newer technologies. The realisation from the I-It perspective is that language is the original technology that has shaped human endeavour from the earliest of times and has, as it does now, provide a supportive medium for others.

The view that language is itself a technology has important implications when considering how technology facilitates education in a broader sense. However, the researcher must always remain vigilant in how technology is viewed in its mediating role and how the power balance of subservience between humans and technology is determined. Wegerif and Major (2018) suggest that:

"...technology is not an optional extra that we can ignore but, rather, is essential to our nature. In doing so, technological drives combine with, and co-evolve with, human drives and continue to define who we are and how we develop over history..."

As researchers, we are in danger of thinking that technology is here to serve the interests of humans, whereas the opposite might be true. In modern education systems, technologies are introduced into the curriculum and practitioners are forced to make their pedagogies fit the technology requirements. Sometimes that fit is not good, and because of political capital and favourable press headlines, technology is not utilised to its maximum effect.

Computers are a collection of electronic circuits and plastic boxes that house the sensitive parts, all made operational by an intricate suite of programmes composed of code, which is the language that powers the machine. Despite the incredible advances in computer technology, the language remains monologic. However, the language of the computer code has by design to be precise and entirely devoid of any ambiguities. According to Pylyshyn and Bannon (1989), the language is fixed in the 'I-It' mode; thus, only one 'true' perspective is articulated from the cacophony of voices that have combined to build the computers as we know it. In terms of how Buber defined intelligence as being born out of the 'I-Thou' interaction, then the view taken of artificial machines that they are artificially intelligent is perhaps ambitious.

Dialogic space and the complexity of online dialogue

As briefly touched up in the foregoing discussion, Buber (2003) proposed the view that dialogue takes place in 'a space in-between' ("das Zwischen") outside of the 'space and time' within the meaning of its conceptualisation as defined by the laws of physics. Therefore, it is not a space that can be expanded in the physical sense but one that is conceptual in nature and that is created when a dialogic interaction begins between teacher and student. If dialogue space is therefore conceptual in nature and an instantaneous state created between different voices and different perspectives, then there must exist shared experiences that are lived and experienced by all participants. Mercer aptly describes it where they describe dialogic space as a non-physical notion, "...but rather in the sense of a social realm of activity within which people can think and act collectively..."

An important distinction needs to be drawn on the notion of dialogic space in the context of computer-supported collaborative learning (CSCL). Some streams of scholarship have tended to view CSCL as merely a means to an end. Others (such as Wegerif) adopt a more theoretical perspective in that technology can facilitate dialogue - which is an educational goal. Therefore, how we as educators "...understand the 'mediating' role of technology in cognition is central to debates about design frameworks for CSCL..." (Wegerif, 2007).

A comparison of how Vygotsky's and Bakhtin's view on 'thinking' in dialogic terms is necessary at this point. Both considered language as a tool that mediated "thinking", but their conceptual divergence is in how they view the supporting view of technology in education. Vygotsky views knowledge as an object that is socially constructed through technology. On the other hand, Bakhtin views knowledge, not as an object

but an event that occurs in a dynamic way. The favoured metaphor is the 'spark of insight', which is prepared to the spark generated by the bring together of two wires connected to the separate terminals of a battery. The resulting spark is the event, or the moment of insight where meaning is born in a learning experience. Hence, when designing chatbots or other AI CSCL, the main design parameter should not be how to generate more and more content but to generate more and deeper insight.

CONCLUSION - THE CONNECTED FIELDS OF CLASSROOM DIALOGIC LEARNING AND CHATBOTS

The use of digital tools in the classroom has been facilitated by the increasing ubiquity of affordable devices and technological advances. As technology becomes 'smarter' and the hardware costs become more affordable, the probability that digital tools will become more engrained in the classroom dialogue of the future. Indeed, there has been increased emphasis in the literature on the interaction and possible future interdependency of dialogic pedagogy and digital technology (Major & Warwick, 2019). The place of language as a core component of learning in the sociocultural context of cognitive development has been highlighted by Vygotsky (1964). As described above, language is necessary for the development and sharing of knowledge amongst learners and for structuring the 'supporting processes and content of individual thought' (Major & Warwick, 2019). Therefore, the primacy of language provides a theoretical basis as a cultural and educational tool linking the domains of the social and psychological aspects of learning (Fernández *et al.*, 2015). As discussed in the foregoing, (Major & Warick, 2019) quote Mortimer & Scott, (2003) thus: "...dialogic pedagogical practices assert that classroom dialogue is 'central to the meaning-making process and thus central to learning'..."

Major and Mercer's, 2019 extensive scoping review of research into how digital technology supports classroom dialogue identifies that this is a rapidly developing field. Although they primarily focussed the scoping review on the research into interactions between classroom dialogue and technology, there are some useful parallels with online learning. The review revealed 72 studies between 2000 - 2018 reported on the use of digital technologies as a support to dialogue in the classroom. The number of studies attests to the novelty of the research area and the lack of attention given to adult education (30 studies exclusively focussed on secondary/high schools; 35 on primary; and 7 on both secondary primary). Nevertheless, conclusions can also be extrapolated to adult online education through the three main inter-related themes from the scoping study in the enhancements reported using digital technology, leading to more productive classroom dialogue. The three main themes identified are: (i) 'dialogue activity', (ii) 'learning environment' and (iii) 'technological affordances'. Since the study is clearly focused on using technology as a facilitator of increased classroom dialogue, it is worth unpacking the three

main themes because they may be relevant to online chatbot facilities dialogic learning.

In the first central theme, dialogue activity, the sub-themes that emerged were: (i) alternative perspectives; (ii) knowledge co-construction; (iii) using dialogue to express meta-cognitive learning; and (iv) using dialogue to scaffold understanding. Taking each subgroup in turn and matching them against chatbot dialogic intercourses, alternative perspectives appear to be the most difficult to replicate. The difficulty would likely be the exposure to alternative perspectives and taking into account the views of others mediated through a chatbot. Knowledge co-construction that is purposeful and sustained is possible with AI at the present moment. However, dialogic that can critically engage between the student and the chatbot is unavailable. The third sub-theme of dialogue to express meta-cognitive learning can be mediated effectively by chatbots at our current level of technology. The final sub-theme of scaffolded learning is where chatbots can be particularly effective, where ANN algorithms can easily be deployed to support learning, building concept by concept.

The second theme, the 'learning environment' is of particular significance for chatbot mediated learning. This theme identified the complexities of the classroom environment as being of significance. Of the five further sub-themes stressing the connections between dialogue and digital technology, the most relevant are: (i) learner autonomy; and (ii) learner inclusion & participation. For students who study remotely, learner autonomy is vital for self-motivation. Early research in the area of learner autonomy focussed on the one-directional impact of using technology by providing a level of learners' independence such that they work at times and in locations of their own choosing (Reinders & White, 2016). Continued research also provides us with a better "... understanding of learner autonomy and, more broadly, the roles of learners and teachers..." (Reinders & White, 2016).

REFERENCES

- Alexander, R. J. (2008). *Towards dialogic teaching: Rethinking classroom talk*. (4th ed.). York: Dialogos.
- Bakhtin, M. (1981). *The Dialogic Imagination: Four Essays*. (Vol. 1). Austin: University of Texas Press.
- Buber, M. (2003). *Between man and man*. (2nd ed.). New York, US: Routledge.
- Dewey, J. (1909). *Moral principles in education*. New York, US: Houghton Mifflin Company.
- Fernández, M., Wegerif, R., Mercer, N., & Rojas-Drummond, S. (2015). Re-conceptualising "scaffolding" and the zone of proximal development in the context of symmetrical collaborative learning. *The Journal of Classroom Interaction*, 36/37(2/1), 40-54.
- Fuchs, C. (2005). The internet as a self-organising socio-technological system. *Cybernetics & Human Knowing*, 12(3), 37-81.
- Hermans, H. J. M. (2004). Introduction: The dialogical self in a global and digital age. *Identity*, 4(4), 297-320. https://doi.org/10.1207/s1532706xid0404_1
- Holquist, M. (2003). *Dialogism: Bakhtin and his world*. (2nd ed.). London, UK: Routledge.
- Jeong, H., & Hmelo-Silver, C. E. (2016). Seven affordances of computer-supported collaborative learning: How to support collaborative learning? How can technologies help? *Educational Psychologist*, 51(2), 247-265. <https://doi.org/10.1080/00461520.2016.1158654>
- Koschmann, T. (1999). Toward a dialogic theory of learning: Bakhtin's contribution to understanding learning in settings of collaboration. Proceedings of the 1999 conference on Computer support for collaborative learning (pp. 38).
- Krause, J., Ruxton, G. D., & Krause, S. (2010). Swarm intelligence in animals and humans. *Trends in Ecology & Evolution*, 25(1), 28-34. <https://doi.org/10.1016/j.tree.2009.06.016>
- Kristeva, J. (1980). *Desire in language: A semiotic approach to literature and art*. New York, US: Columbia University Press.
- Lévy, P. (1997). Education and training: New technologies and collective intelligence. *Prospects*, 27, 248-263. <https://doi.org/10.1007/BF02737169>
- Lévy, P. (2013). The creative conversation of collective intelligence. In A. Delwiche & J. J. Henderson (Eds.), *The Participatory Cultures Handbook* (pp.99-108) London, UK: Routledge.
- Ligorio, M. B., Loperfido, F. F., & Sansone, N. (2013). Dialogical positions as a method of understanding identity trajectories in a collaborative blended university course. *International Journal of Computer-Supported Collaborative Learning*, 8, 351-367. <https://doi.org/10.1007/s11412-013-9174-3>
- Major, L., & Warwick, P. (2019). 'Affordances for dialogue': the role of digital technology in supporting productive classroom talk. In N. Mercer, R. Wegerif & L. Major (Eds.), *The Routledge International Handbook of Research on Dialogic Education* (pp. 394-410) London, UK: Routledge.
- Major, L., Warwick, P., Rasmussen, I., Ludvigsen, S., & Cook, V. (2018). Classroom dialogue and digital technologies: A scoping review. *Education and Information Technologies*, 23, 1995-2028. <https://doi.org/10.1007/s10639-018-9701-y>
- Matusov, E. (2004). Guest editor's introduction: Bakhtin's dialogic pedagogy. *Journal of Russian & East European Psychology*, 42(6), 3-11. <https://doi.org/10.1080/10610405.2004.11059237>
- Matusov, E., & Lemke, J. (2015). Values in dialogic pedagogy. *Dialogic Pedagogy: An International Online Journal*, 3. <https://doi.org/10.5195/dpj.2015.141>
- Mercer, N. (2002). *Words and minds: How we use language to think together*. (1st ed.). London, UK: Routledge. <https://doi.org/10.4324/9780203464984>
- Perry, J., & Barwise, J. (1983). *Situations and Attitudes*. Massachusetts, US: MIT Press Cambridge.
- Pylyshyn, Z. W., & Bannon, L. (1989). *Perspectives on the computer revolution*. Bristol, UK: Intellect Books.
- Reinders, H., & White, C. (2016). 20 years of autonomy and technology: How far have we come and where to next? *Language Learning & Technology*, 20(2), 143-154.
- Ritzer, G. (2014). Prosumption: Evolution, revolution, or eternal return of the same? *Journal of Consumer Culture*, 14(1), 3-24. <https://doi.org/10.1177/1469540513509641>
- Salminen, J. (2012). Collective intelligence in humans: A literature review. *Collective Intelligence conference*, arXiv preprint arXiv:1204.3401. <https://doi.org/10.48550/arXiv.1204.3401>
- Shor, I., & Freire, P. (1987). What is the "dialogical method" of teaching? *Journal of Education*, 169(3), 11-31. <https://doi.org/10.1177/002205748716900303>
- Stiegler, B. (1998). *Technics and time: The fault of Epimetheus* (Vol. 1). Stanford, CA: Stanford University Press.

- Thorpe, M. (2009). Technology-mediated learning contexts. In R. Edwards, G. Biesta & M. Thorpe (Eds.), *Rethinking Contexts for Learning and Teaching: Communities, activities and networks* (pp. 119-132) London, UK: Routledge.
- Vaara, E., & Pedersen, A. R. (2013). Strategy and chronotopes: A Bakhtinian perspective on the construction of strategy narratives. *DANS M@n@gement*, 16(5), 593-604.
- Vygotsky, L. (1964). Thought and language. *Annals of Dyslexia*, 14(1), 97-98.
- Wegerif, R., Kershner, R., Hennessy, S., & A. Ayesha. (2020). Foundations for Research on Educational Dialogue. In R. Kershner, S. Hennessy, R. Wegerif, R. & A. Ahmed (Eds.), *Research Methods for Educational Dialogue* (pp. 9-26) London, UK: Bloomsbury Publishing. <https://doi.org/10.5040/9781350060111.ch-002>
- Wegerif, R. (2007). *Dialogic education and technology: Expanding the space of learning* (Vol. 7). Springer Science & Business Media.
- Wegerif, R. (2019). Towards a dialogic theory of education for the Internet Age. In N. Mercer, R. Wegerif & L. Major (Eds.), *The Routledge International Handbook of Research on Dialogic Education* (pp. 14-26). London and New York: Routledge.
- Wegerif, R., & Major, L. (2018). Buber, educational technology, and the expansion of dialogic space. *AI & Society*, 34, 109-119. <https://doi.org/10.1007/s00146-018-0828-6>