

Towards a dialogic theory of education for the Internet Age.

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Abstract

This chapter outlines key components of an emerging new dialogic theory of education appropriate for the Internet Age. The affordances of print literacy have shaped what we currently understand by education. The Internet offers new possibilities. The dialogic theory put forward in this chapter offers answers to the questions that any theory of education needs to address: How do students learn? What should we teach? How should we teach it? Education is understood as a response to being called into dialogue by others: specific others such as parents, generalized others such as the voice of Mathematics, and otherness in general referred to as the 'Infinite Other'. Learning involves some distinctively dialogic mechanisms including opening dialogic space(s) and promoting dialogic switches in perspective around a dialogic gap. Education implies the expansion of dialogic space-time; this expansion is the bringing together of initially separate islands of experience into dialogue with each other. Teaching builds a two-way bridge between local face-to-face dialogues and the global long-term dialogue of culture now carried by the Internet. Putting these components together gives us a distinctive new theory of education which responds to some of the challenges and the opportunities for education in the Internet Age.

Introduction

This chapter begins with a brief outline of the way in which print literacy influences the practice of education, how we think about education and also, more generally, how we think about anything and everything. A dialogic theory of education is then outlined that can apply equally to education in oral societies, literate societies and the emerging global Internet based society. This theory is outlined in the form of answers to the questions: How do children learn? What should we teach them and how should we teach them?

1. The importance of communications technology to the practice and the theory of education

Education in oral societies is different from education in literate societies. As well as apprenticeship education through a relationship with specific others (Rogoff et al, 2003), most oral societies have initiation ceremonies drawing young people into a living relationship with more generalised cultural voices sometimes referred to as the ancestors (Turner, 1987).

Modern mass schooling developed after the advent of print literacy with a focus on teaching literacy and numeracy. Subjects in schools and universities are still largely defined by the key textbook or canon of books that need to be read. The specific cognitive affordances of literacy combined with printing presses make it possible to see education as the transmission of knowledge. In contrast to oral education the idea here is that knowledge is not always bound up with living relationships but is something that can be stored in books and transmitted into brains. Print literacy lies behind and makes possible a decontextualized understanding of thinking and of knowledge (Toulmin, 1990; Goody, 1977; Ong, 1982). Both Piaget and Vygotsky, for example, developing their theories in the 1920s, describe the development of knowledge and understanding in terms of abstract cognitive schemas largely divorced from contextual embodiment in living relationships with other voices (Wegerif, 1999; Wertsch, 2013, Matusov & Hayes, 2000). In oral societies, by contrast, thinking and knowledge are always experienced in the context of living relationships between embodied¹ voices (Ong, 1982; Goody 1977).

The change in the dominant means of communication from print literacy to the Internet has implications for how we think that are potentially as significant as the change from oracy to literacy (Poster, 1995; Wegerif, 2013). Whereas print is a one to many medium, with the production and dissemination of knowledge dependent on access to a printing press, the Internet is a many to many medium 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. Literacy did not replace oracy but augmented it. Similarly, print literacy continues into the Internet age. But the Internet transforms print into a medium capable of supporting near instantaneous dialogue between an indefinitely large number of people and augments print with multi-modal communication producing a new and extended form of embodiment.

¹ The word 'embodiment' used here, and also in the work of Bakhtin, does not always refer to the flesh. Cultural voices or 'spirit' voices are embodied in personalities with characteristics including emotional tone.

Dialogism was the default mode for oral societies. The fact that there is so much interest in dialogism now might be because the Internet has brought something of a return to ways of thinking and educating in oral societies. Walter Ong referred to electronic communication as a 'secondary orality' (Ong, 1982) and Geoffrey Ulmer refers to the new form, 'Electracy', which has many features of oracy but in an augmented and extended form (Ulmer, 2003).

2. A dialogic theory of how children learn.

The word education is from a Latin root meaning 'to lead out'. A dialogic theory of education returns to this root meaning of the word education in claiming that we learn through dialogues and that we are first called into dialogue by others. It is part of the argument that the experience of the otherness of others is not easy to separate out into neat categories. A newborn infant, for example, experiences his or her mother as a specific individual and, at one and the same time, as a stand-in for human otherness in general. Nonetheless it is useful analytically to think about the call of otherness in education in terms of three categories of others; specific others, generalised others and the Infinite Other. In a child's development, it makes sense to focus initially on the educational role of apparently specific others such as parents. When it comes to formal education non-physical non-present generalised cultural others play a more explicit role. Teachers serve as professional 'stand-ins' for more generalised cultural voices that children and students have to engage with. In addition to specific others and generalised others, children are always in dialogic interaction with otherness in general. Following Levinas otherness in general, or the otherness of others, is referred as the 'Infinite Other'. The concept of the Infinite Other is not a 'Big Other' concept, as some critics sardonically suggest (Zizek, 2011), but it is rather a grammatical nominalisation or giving a name to a process, in this case the process of going beyond. In mathematics infinity is introduced to children with the idea that however big a number they can think of there is always a bigger number. In a similar way the infinity of the Infinite Other lies in always going beyond whatever image we have formed of the other.

2.1 Being called into dialogue by specific others

The visual cliff experiment is dramatic: if you have not seen it before I recommend looking it up on YouTube. Transparent Perspex is used to create an apparatus which confronts infants with the realistic illusion of a cliff edge which they can crawl out over. In an evocative experiment Sorce and his colleagues (Sorce et al, 1985) demonstrated that infants would only crawl out over the cliff if their mothers were standing on the far side of the cliff encouraging them with positive emotional signals such as smiles. By contrast if their mothers frowned or showed signs of fear then the infants would refuse to cross the apparent cliff. This experiment can serve as an evocative metaphor for the role of significant others in education.

The importance that the quality of relationships has for cognitive, social and emotional development is a finding of many studies (Baron-Cohen 2011; Hobson 1998; Sethna et al 2017). Research also suggests that the kind of relationship that is good for cognitive development is a dialogic or reciprocal turn-taking relationship (Braten, 1988; Trevarthen, 1979). The importance of dialogue for development has recently been confirmed by a large empirical research study. Investigating the earlier hypothesis that the number of words children hear before the age of 3 influences their language development, a team at MIT led by Rachel Romeo demonstrated that the number of words were not as significant as the number of conversational turn-taking interactions (Romeo et al 2018).

In some branches of communications theory, it is posited that transmitters of information first have intentions then encode their ideas into a signal and then transmit to the receiver for decoding (Shannon, 1948). This transmission model of communication is still sometimes assumed as the default model in psychology. Causation in dialogue is different because the other or addressee is not only found at the end of a transmission process but is always also already there at the beginning of each utterance (Rommetveit, 1992). For example, when a six year old girl asks me to help her build a lego model I spontaneously respond to her with very different language and intonation than I find myself using when my dean asks me to explain the latest research funding figures. Exploring this phenomenon in the interaction of babies with mothers and other primary care-givers, Braten posited an innate capacity to participate in the expressions and feelings of others which he calls the 'virtual other' on the inside of the self and relates to the recent discovery in neuroscience of mirror-neurons (Braten, 2003). The claim from Braten, Hobson, Trevarthen and others is that we do not smile *in order to* communicate our inner feelings to a baby: the baby smiles and we are *called* to smile back.

The paradox of education is how anyone can ever learn anything new. If we know what we are looking for, Socrates pointed out in the Meno, then there is no need to inquire into it but if we do not know what we are looking for then we cannot know how to begin to inquire into it and we would not recognise it even if we found it (Plato, 380 BCE/2006). The dialogic theory answer to this challenge is that, in a dialogue, we are always already on two sides, both inside and outside of ourselves, looking out from the inside of the dialogic couple to the other and also looking in from the outside to locate the self. When I speak to you in a dialogue you are already inside me, I embody you in order to be able to speak to you. When you speak to me, on the other hand, I have to see myself as if from your point of view and, indeed, beyond that from an outside point of view in general. Studies of early cognitive development, like those of Braten and others referred to by Gallagher (2012) as well as those of Romeo and colleagues (2018), appear to be supporting the dialogic claim, that it is the 'inside-out' and 'outside-in' nature of dialogic interactions that explain how learning occurs. Bakhtin, for example, pointed out that there is a big difference in educational effect between an authoritative voice and an internally persuasive voice. The authoritative voice, he claims, remains outside of me and orders me to do something in a way that forces me to accept or reject it without

engaging with it whereas the words of the persuasive voice enter into the realm of my own words and change them from within (Bakhtin, 1981, p. 343). Education, as opposed to training or dressage, requires this persuasive or dialogic voice that crosses the boundary between self and other to speak to the student as if from within.

2.2 Being called into dialogue by Generalised others

In South Africa an educational intervention using mobile phones can be used to illustrate how central to education the generalised other is and how spontaneously it arises. The project used mobile phones and text messaging to provide help with homework for children. Children could text a question about their maths homework and volunteers would answer them. The volunteers were anonymous members of a network called 'Dr Maths'. To get help the children had to question 'Dr Maths' and respond to 'Dr Maths' (Butgereit, 2007). Here the specificity of the others as Sue or John was not nearly as important as their generality as stand-ins for the cultural voice of mathematics.

Relationships with specific others are particularly important to learning in the early years and continue to be important for learning throughout life. However formal education in particular brings in a relationship with a more generalised other. The Generalised Other is an idea from George Herbert Mead. He used the example of learning to play organised games such as football for the way in which children do not just learn to relate to specific individuals but also learn to relate to the general norms and rules of a culture. As well as learning how to argue in order to persuade specific others, children have to learn how to argue in terms of 'what anyone would think' which is to learn the norms and rules of thinking within a community (Mead, 1934).

In every area of formal education, one does not just learn mathematics, science or history one learns how to be able to invoke the voice of mathematics, science or history and to think with that voice. The process of education then is only partly about using cultural voices as tools to think with (Wertsch, 1991) it is also partly about allowing oneself to be possessed by cultural voices, the voices of the ancestors, so that one can incarnate these voices. When education works what could be experienced as the possession of the self by initially alien voices is matched by the expansion and empowerment of the self. The original voices of the self engage in dialogue with the new incoming voices in such a way that shared new educational self dialogues emerge (Hermans, 2002 and Marsico et al this volume).

The theory that school subjects such as Mathematics have voices and personalities has practical implications for education. Most learning theories refer to reflection as a causal driver leading to change as if reflection was an emotionally neutral and purely mechanical kind of process. In Piaget's theory, for example, it is a learner's reflection on the logical inconsistencies in his or her experience that drives development (Piaget, 1970; Simon et al 2004). This theory does not explain why children, of similar ability, react to challenges in different ways (Littleton et al 1999). Dialogic education

theory offers an explanatory hypothesis that all ‘reflection’ is a form of dialogue. Asking children to ‘reflect’ in the maths classroom can be the same as asking them to engage in open-ended dialogue with ‘Dr Maths’. Some might respond well because they like Dr Maths, others might be terrified by Dr Maths (Carey et al, 2019) and others might just fail to connect because the image of Mathematics found in the cultural image, its masculinity and lack of emotion for example, does not connect with them (Walkerdine, 1990). The implication here is that education as a whole can be understood using the metaphor of the visual cliff experiment: those children who manage to develop a warm relationship with the Generalised Other voices that call to them from the other side of the cliff of unknowing are able to carry on crawling forwards whilst those who do not develop such a relationship get left behind or, indeed, turn back in fear.

2.3 Being called into dialogue by the Infinite Other

Mead refers to the Generalised Other as the voice of the community as if this was singular and coherent. But Mead was writing at a time before the Internet when communities were commonly thought of as relatively homogenous. Diversity has increased. With the Internet it is possible to participate in many different cultural communities in a short space of time without even the need for physical travel. This cultural diversity raises an issue for the Generalised Other concept: How do we educate children to think well in the context of multiple voices when these are apparently pulling in different directions?

Bakhtin claimed that there is, structurally, always a ‘third voice’ in every dialogue, the voice of the witness (Bakhtin, 1986 p168). We can illustrate this with a practical example from classroom research. A group of three 9-year-old children are trying to solve a non-verbal reasoning test problem. This involves seeing patterns in graphical puzzles. One of them (Trisha) says words to the effect that ‘It is answer A because look ..(pointing to a feature of the puzzle). Another child (George) responds ‘No it’s not, it’s answer B, because look .. (pointing to a different feature of the puzzle)’. Trisha replies to this challenge ‘You’re right it is not A’ and looks perplexed as does George and Sue (the other member of the group). (the original example roughly paraphrased here can be found in more detail in Wegerif, 2005). One common way of referring to what is happening in this kind of classroom dialogue is that Trisha has learnt to see the puzzle through the eyes of George. His pointing to key features has directed her gaze to see what he sees. But this is not what happened. Trisha does not engage with his point of view at all. The moment that he challenges her she looks again at the puzzle and sees that her original answer cannot be right. In changing her mind Trisha did not rely on

George's voice but on another voice in the dialogue, seeing as if through the eyes of a witness or taking the perspective of Bakhtin's superaddressee.

In some ways Bakhtin's superaddressee concept could be seen as another version of Mead's Generalised Other concept. However, there is a notion of infinity at the heart of Bakhtin's concept that we do not find in Mead (to my knowledge). The superaddressee is the listener who understands and, according to Bakhtin, the word's search for understanding is infinite, it does not stop at any point. This is why for Bakhtin there is no final meaning of the word (1986). It follows from Bakhtin's account that if you try to pin down this superaddressee position in order to dialogue with it you will always find another superaddressee position popping up. While within a specific cultural context the superaddressee might take on a particular form which we dialogue with, this could be an image of Dr Math (or an image of God or an image of Science) then there will also be a witness or superaddressee position generated by this dialogue which challenges that image. In other words, if one is open in a dialogue and listens closely, there is no final position but always a voice from outside the current consensus knocking on the window with a new perspective, asking to be heard².

Adding a concept of the Infinite Other to our understanding of how educational dialogue works has practical implications. The voice of the Infinite Other is an aspect of every dialogue. It accounts for the potential creativity of every dialogue. The concept of the Infinite Other is another of saying that we should orient ourselves towards the other in any dialogue with humility and with a spirit of openness to the possibility of learning something new.

3 The dialogic educational relationship

The learning that occurs in education as a response to being called out by the other, whether conceptualised as a specific other, Generalised Other or Infinite Other, is dialogic learning which means that it is always a creative co-construction arising out of the tension of different voices held together in a relationship of proximity. One way to understand the key role of dialogue in education is through re-visiting and re-thinking Vygotsky's account of the Zone of Proximal Development or ZPD (Vygotsky, 1987). Vygotsky describes how, in the ZPD, children can be led by teachers to link their spontaneously arising understandings to concepts already existing in the culture. For example,

² Tindale brings out the parallels between Bakhtin here and Perelman's claim that argumentation always needs a concept of a universal audience (Perelman, 1971; Tinsdale, 1999). For Perelman the universal audience was not a merely abstract concept but it actively entered into the construction of arguments.

the child's procedural understanding of addition derived from counting on their fingers, can be connected with a more conceptual understanding of addition which, once learnt can then be disembedded from the context of using fingers and applied to new contexts such as writing numbers on a page. In the ZPD there is a dialogic tension between the voice of a child's spontaneously arising understanding on the basis of their own experience and the voice of the teacher representing, according to Vygotsky, cultural knowledge. In Vygotsky's version the spontaneously arising concepts of the child are grafted onto a system of pre-existing cultural concepts in a one-way journey. Mercer has developed Vygotsky's ZPD into the concept of an Intermental Development Zone where the teacher has to engage with the point of view of the student and vice versa in a dialogue out of which open-ended new learning is co-created (Mercer, 2000).

Entering into dialogue implies a kind of double-identity or double-voicedness which often looks like an oscillation between two identities over time. To simplify the experience for the sake of clarity: in the moment of speaking I identify as one voice within the dialogue and in the moment of listening I identify with the dialogue as a whole. This is not only true of face-to-face dialogues but of dialogues at every level including, for example, long-term cultural dialogues such as the dialogue of science. When I send a new article for review by a journal I identify with that article and the specific contribution that it makes to the field, but when I review articles sent to me by a journal I identify with the field of science that the journal represents and I ask what contribution does this article make to the dialogue so far within that field.

The double identity or double-voicedness required of dialogue takes on a new and interesting form in Internet mediated dialogues. The Internet supports a new kind of educational dialogue supporting peer-to-peer learning. Someone has a problem, types their problem into a search engine, and finds a previous exchange on an Internet forum that provides a solution to the problem. Such searches easily lead not only to vicarious participation in other people's past exchanges, but also to becoming drawn into participation in an ongoing shared inquiry. This new form of educational dialogue brings out universal aspects of educational dialogue. In face to face dialogue it is easy to assume that a dialogue is between person A and person B, when in reality, as has been described above, other invisible non-present voices are also invoked. In Internet mediated educational dialogue the constitutive role of invisible non-present voices is more evident. Each question is sent out to an unknown horizon. That horizon is often imagined as an online 'community' but, except where messages are exchanged in closed sites, what is meant by 'community' has no clear boundary. Each response comes back from that horizon giving the 'community' an apparent concrete form but really it remains as nebulous as an electron cloud. Behind the specific voices of the respondent and the imagined form of the online community lies the Internet itself. The Internet is unbounded and

constantly expanding. In asking questions to the Internet the idea of the Infinite Other takes on form and becomes a concrete dialogue partner.

In every kind of dialogue, whether face to face dialogue, Internet mediated dialogue or the long-term cultural dialogue of science, learning occurs only when other voices are allowed to enter into us and change us from within. We can learn from dialogues only because, in a dialogue, we, to some extent, are led to identify with both sides. Every dialogue has the structure of having several different perspectives held together around a gap of difference. This gap of difference is essential to how dialogues work to generate new meaning. New meaning emerges as a co-creation or co-authoring out of the creative tension that is the gap of difference within dialogues. The dialogic gap operates like a hinge around which we can switch perspectives to see as if from another point of view, not only that of specific others but also that of General Others and the ‘witness’ voice or perspective of the ‘Infinite Other’.

4 A dialogic theory of what to teach and how to teach

Understanding how children and students learn has implications for a theory of teaching, both how we should teach to support learning and also what kinds of dispositions and identities we should promote through our teaching. Some responses of dialogic theory to the question of what we should teach and the question of how we should teach it are outlined below.

4.1 Teach dialogue as an end in itself

Dialogue is usually taken as part of the ‘how’ of teaching rather than an answer to the question ‘what should we teach?’. Dialogic education turns this around and says that dialogue, as an end in itself, is one of the most important, perhaps the most important, objective of education.

Students can be taught to be better at dialogue. Being better at dialogue means learning how to ask better questions, how to listen better, hearing not only the words but also the implicit meanings, how to be open to new possibilities and new perspectives while, of course, learning how to think critically about new perspectives through comparing different points of view. More than all these specific skills, it means being someone who enjoys dialogue and who is open-minded enough to try to understand new perspectives and to try to see things both in ways that others see them and in any new ways that they could possibly be seen. In brief: to be more dialogic means to be more open to learning.

There is good evidence that children and students of every kind can be taught to be better at dialogue and that their thinking and their learning improves as a result (Resnick et al 2018). Some other

chapters in this handbook say more about how that can be done and also more about the evidence for success in teaching dialogue.

4.2 Teach 'The dialogue so far'

If you arrive late at a meeting where people have been working together on a problem it would probably not be very polite or very useful to immediately share your views. Most likely it would be wiser to listen for a while in order to find out what has been said already, what the key issues are and so to figure out how you might most usefully contribute. Shared cultural knowledge, knowledge of natural science, history, mathematics and so on, is carried within dialogues some of which have been going on for thousands of years. Children cannot be expected to reproduce all of this knowledge this for themselves through their own enquiries. Teachers have a useful role in summarising and sharing the dialogue so far so that late-comers can catch up. This is similar to the traditional view of education as the transmission of cultural knowledge across generations. The main difference with a dialogic approach is that knowledge should not simply be transmitted but should be taught as participation in an ongoing and open-ended shared inquiry.

Dialogues go on at many levels. As well as short-term face to face dialogues there are long term cultural dialogues. Oakeshott (1960) argues that all of these long-term cultural dialogues connect together in one single global 'conversation of mankind' or dialogue of humanity. Teaching the dialogue so far in a way that gives students access to participation in this ongoing global dialogue of humanity is in fact just another way of teaching dialogue as an end in itself.

4.3 Teach participation in living dialogues

When Oakeshott wrote about a conversation of mankind beginning in the primeval forests he did not mention that the only parts of such conversations that are part of education are those that had been written down. The words of Socrates, an oral thinker, are still discussed because they were written down by his student, Plato. This unacknowledged reliance on the technology of writing shapes Oakeshott's theory of education in other ways. Oakeshott describes education largely in terms of a dialogue with the past writing about giving children access to their 'inheritance'. The speed of knowledge generation and sharing in the print age was, by comparison with the Internet age, very slow. Now the dialogue of mankind that Oakeshott refers to is being lived out in real time on the Internet. Rather than focussing on transmitting the knowledge of the past, education can now focus on inducting students into participation in knowledge constructing dialogues in the present. It is possible

to engage students in cutting edge debates in every area using online videos of talks, following twitter accounts or by participating more directly in citizen science projects mediated by the Internet (Bonney et al 2009).

4.4 Expand dialogic space(s)

The kind of talk moves promoted in dialogic education usually include asking open questions such as ‘why do you think that?’. Investigating how such talk moves actually function in collaborative group works found that it is probably not right to conceptualise them as if they were positive tools aiding the co-construction of new meaning since they usually work in a more indirect way to open a space for the diffractive resonance of multiple voices out of which a creative response might (or might not) emerge.

Opening a dialogic space begins with a relationship within which it is possible to shape the attention of the other. The opening teacher move, or peer move, is drawing attention to unknowing by asking a question or posing a challenge. In some cases, this is drawing students into dialogue about immediately present objects or issues but in others it might be helping to graft them onto long term dialogues of the culture so as to ask questions within a tradition, questions that continue that tradition and take it further.

Widening the space is asking everyone what they think and also actively seeking out a range of views perhaps by going to the internet to find alternatives and to invite in different voices.

Deepening the space is questioning the frame that has been assumed up to now, asking ‘what are the assumptions that we have taken for granted? Are we sure that they are right? Could the whole area or issue be seen differently?’ A deepening move that I have exemplified in this chapter, for example, is that of asking: ‘is everything we now think about education shaped by print literacy?’ prompting an exploration of what education was like before print literacy and where there is no print literacy in order to see if our theories of education can apply equally in that expanded context.

Dialogues occur in time as well as space and they create their own sense of time as well as their own sense of space. Bakhtin uses the concept of a ‘chronotope’ (literally time-space). Education implies the expansion of dialogic time as well as the expansion of dialogic space. Focussing on the dimension of time can help clarify important aspects of dialogic education. When Vygotsky described the role of the teacher in the ZPD as bridging between the spontaneous concepts of the child and the concepts of the culture he is talking about linking different chronotopes. The time-space of the dialogue of science extends over thousands of years and is global in reach. The role of the science teacher in the

classroom is to weave together the very large time-space perspective of science with the smaller and narrower time-space perspective of a face to face dialogue with a child in a classroom. The same general point could be made about other long-term dialogues of culture and, indeed, about culture as a whole understood, with Oakeshott, as a single dialogue or ‘the conversation of mankind’.

4.5 Teach the future

The movement for teaching ‘21st Century skills’ claims that rapid technological change is making much past knowledge irrelevant such that education needs to switch its focus from transmitting the knowledge of the past to helping students prepare for the future. Interestingly the new ‘skills’ proposed for the 21st Century, the ‘4Cs’ of collaboration, communication, creativity and critical thinking, are all aspects of dialogue (Wegerif, 2018). Learning to learn together (L2L2) with new technology has been put forward as perhaps the core complex competence required for the future (Wegerif, 2015).

As the actual 21st Century progresses a new term needs to be found for the kind of education being referred to. Increasingly this new term is ‘Education for the Future’ or more simply ‘Future Education’. The recent Worldwide Educating for the Future Index (<https://yidanprize.org/the-worldwide-educating-for-the-future-index/>) focuses on defining and recording such education in order to compare different countries. This index, quite rightly, includes education for the kind of values that we need for survival and flourishing in the future. The values they include such as global-citizenship, open-mindedness, empathy and tolerance of difference are related to the values implicit in dialogic education.

Values and an orientation towards creating the future together, are inevitably part of dialogic education. There is a simple contrast at the heart of dialogic education; a contrast between accepting a claim as true on the default basis of who has the most power (Bakhtin’s authoritative talk) and the dialogic alternative of truth emerging from the play of free and open debate (Bakhtin’s internally persuasive talk). The dialogic value that it is better to solve disputes through dialogue rather than force is pragmatically sensible if we want students not only to survive the future but also to thrive in the future. Helping to push the world towards a global dialogic democracy of the future is always an aspect of dialogic education, whether this political aim remains implicit or is acknowledged and promoted explicitly.

4.6 Dialogic teaching needs to be done dialogically

Freire, the first to advance an explicitly dialogic theory of education (1968/2005), stresses the importance of teaching in a way that engages and empowers students, encouraging and supporting them as they find their own words to name the world. Freire’s concern with empowerment and inclusion is continued today in most dialogic education approaches. It is perhaps most exemplified in the dialogic learning approach developed in Spain by Ramon

Flecha and his team. Their ‘circles of learning’ approach goes beyond schools to include members of the wider community in educational dialogue groups where the members all support and encourage each other (Flecha, 2000). This is a version of the community of inquiry approach widely used in philosophy for children, where students and their teacher or teachers sit around in a circle to discuss topics together in an open-ended way. Respect for the diversity of student voices is a key component of dialogic education. Even when a shared curriculum is being taught and learnt dialogic theory claims that each act of learning is creative which means that each individual learner will learn in their own way such that what they learn can empower them in their own unique life context.

Some argue that teaching in areas of the curriculum with right and wrong answers like maths and the physical sciences is different from teaching in areas like philosophy where there can be more debate between views (Sfard, this volume). It is true that some difference in pedagogy is required if the objective is for students to end up knowing a correct way as opposed to where the objective is to explore the range of ways. However, these different objectives and associated pedagogies can both be valued and combined in any subject area (Scott Mortimer & Aguiar, 2006). Ellen Langer’s experiments in what she called ‘mindful education’ suggest that students taught only the right procedures are not able to adapt these and to be creative. Her suggestion is that everything should be taught in the context of a range of perspectives and as emerging from debate (Langer, 2016). This is not to suggest that all points of view are equally valid. It is more to suggest that understanding why one way is better than another (in a context) requires understanding the contrasting views and so requires mastering a dialogic space or dialogic field of debate (Phillipson & Wegerif, 2017; Marton & Haggstrom, 2017). The main value of teaching everything as fallible in this way is that it leaves students free to question what they have been taught and to challenge and develop it in the future. Even mathematics procedures can be taught with context and with alternatives in a way that prepares students to become creative mathematical thinkers and not just accurate calculating machines.

Summary and conclusion

This chapter proposes a theory of dialogic education in the form of a response to the three big questions of education: How do students learn? What should we teach? And how should we teach it?

- 1) Students learn through being called out by others into active engagement in ongoing dialogues,

- 2) We should teach is dialogue in various forms including, a) face-to-face dialogue with specific others, b) dialogue with generalised cultural voices c) participation in the unbounded dialogue of humanity and d) dialogue with the Infinite Other
- 3) We should teach by building relationships, empowering students and inducting students into active engagement in ongoing dialogues through persuasive rather than authoritative discourse.

The theory put forward in this chapter is a response to the challenge to traditional theories of education raised by the Internet age. The Internet throws everyone into a space of multiplicity and uncertainty that most established theories of education seem ill-equipped to cope with. The Internet also offers new educational affordances that are hard to understand from the point of view of theories of education that reflect the prejudices of print literacy. Dialogic educational theory, inspired by Bakhtin is different because it gives an important role to non-present cultural voices including, most especially, the role of the witness position in every dialogue. This witness position helps us to see things as if from the outside and so calls us out beyond the horizon of our current prejudices.

Recently, as I write this, there have been many stories about the Internet not living up to its educational potential. Stories about the internet encouraging tribalism and bullying or leading to political populism instead of the kind of careful dialogic and deliberative decision making that we need. These stories should remind us of how the new technology of writing was seen by Socrates as a moral danger (Plato, 360BCE/2005). It helps to understand contemporary mass education as a way of responding both to the danger and to the potential of writing. Through mass education we have tamed and harnessed writing into a medium supporting collective thinking. The Internet is a major new step in communications technology offering in its turn a threat to social life but also an even greater potential for collective thinking than literacy alone can provide. To tame that new threat and to realise that great potential we need to develop new forms education. The theory of dialogic education put forward in this chapter suggests that, if we are to adapt to the challenge of the Internet age, we need to actively teach children from an early age how to talk together respectfully and effectively so as to be able to learn from each other. The idea is that education then works to carry forward the values, dispositions and dialogic identities developed through face to face dialogues on to the larger scale of global dialogues mediated by the Internet.

References

- Bakhtin, M. M. (1986). *Speech Genres and Other Late Essays*, Austin, TX: University of Texas Press.
- Baron-Cohen, S. (2011). *Zero Degrees of Empathy: A new theory of human cruelty*. London: Penguin/Allen Lane.
- Bonney, R., Cooper, C. B., Dickinson, J., Kelling, S., Phillips, T., Rosenberg, K. V., & Shirk, J. (2009). Citizen science: a developing tool for expanding science knowledge and scientific literacy. *BioScience*, 59(11), 977-984.
- Bråten, S. (1988). Dialogic mind: The infant and the adult in protoconversation. In *Nature, Cognition and System I* (pp. 187-205). Springer, Dordrecht.
- Bråten, S. (2003). Participant perception of others' acts: Virtual otherness in infants and adults. *Culture & Psychology*, 9(3), 261-276.
- Butgereit, L. (2007) Math on MXit: using MXit as a medium for mathematics education. Meraka INNOVATE Conference for Educators, CSIR, Pretoria, 18-20 April 2007, pp 13
- Carey, E., Devine, A., Hill, F., Dowker, A., McLellan, R., & Szucs, D. (2019). Understanding Mathematics Anxiety: Investigating the experiences of UK primary and secondary school students. <https://doi.org/10.17863/CAM.37744>
- Flecha, R. (2000). *Sharing words: Theory and practice of dialogic learning*. Rowman & Littlefield.
- Freire, P. (2005). *Pedagogy of the Oppressed/Paulo Freire*. New York.–London: Continuum.
- Gallagher, S. (2012). Neurons, neonates and narrative. *Moving ourselves, moving others*. Amsterdam: Benjamins, 167-196.
- Goody, J. (1977). *The domestication of the savage mind*. Cambridge: Cambridge University
- Habermas, J. (1984). *The Theory of Communicative Action, Volume 1*. Cambridge: Polity Press.
- Hermans, H. J. (2002). The dialogical self as a society of mind: Introduction. *Theory & Psychology*, 12(2), 147-160.
- Hobson, R.P. (1998). The intersubjective foundations of thought, in (S. Braten, ed.). *Intersubjective Communication and Emotion in Ontogeny*. Cambridge: Cambridge University Press: 283–96.
- Langer, E. J. (2016). *The power of mindful learning*. Hachette UK.
- Lewens, T. (2016). *The meaning of science: An introduction to the philosophy of science*. Hachette UK.

- Littleton, K., Light, P., Joiner, R., Messer, D., & Barnes, P. (1998). Gender, task scenarios and children's computer-based problem solving. *Educational Psychology*, 18(3), 327–340
- Marsico, G., Tateo, L., Cerqueira Gomes, R., Dazzani, V. (2019) Educational Processes and Dialogical Construction of Self. This volume.
- Marton, F., & Häggström, J. (2017). Teaching through Variation. In *Teaching and Learning Mathematics through Variation* (pp. 389-406). SensePublishers, Rotterdam.
- Matusov, E., & Hayes, R. (2000). Sociocultural critique of Piaget and Vygotsky. *New Ideas in Psychology*, 18(2-3), 215-239.
- Mead, G. H. (1934). *Mind, self and society* (Vol. 111). University of Chicago Press.: Chicago.
- Mercer, N. (2000) *Words and Minds*. Routledge
- Oakeshott, M. (1960). The voice of poetry in the conversation of mankind.
- Ong, W. J. (1982). *Orality and Literacy: The Technologizing of The Word*. Methuen, London.
- Perelman, C. (1971). The new rhetoric. In *Pragmatics of natural languages* (pp. 145-149). Springer, Dordrecht.
- Phillipson, N. & Wegerif, R. (2016). *Dialogic Education: Mastering core concepts through thinking together*. Routledge.
- Piaget, J. (1970). *Genetic epistemology*. New York, NY: Columbia University Press.
- Plato (360 BCE/2006). *Phaedrus* (B. Jowett, trans.). Available online at: <http://ebooks.adelaide.edu.au/p/plato/p71phs/> (accessed 31 March 2019).
- Plato (380 BCE/2006). *Meno* (B. Jowett, trans.). Available online at: <http://ebooks.adelaide.edu.au/p/plato/p71phs/> (accessed 31 March 2019).
- Poster, M. (1995). *The Second Media Age*. Oxford: Blackwell.
- Resnick, L. B., Asterhan, C. S., Clarke, S. N., & Schantz, F. (2018). Next Generation Research in Dialogic Learning. *The Wiley Handbook of Teaching and Learning*, 323-338.
- Ritzer, G. (2014). Prosumption: Evolution, revolution, or eternal return of the same?. *Journal of Consumer Culture*, 14(1), 3-24.
- Rogoff, B., Paradise, R., Arauz, R. M., Correa-Chávez, M., & Angelillo, C. (2003). Firsthand learning through intent participation. *Annual review of psychology*, 54(1), 175-203.
- Romeo, R. R., Leonard, J. A., Robinson, S. T., West, M. R., Mackey, A. P., Rowe, M. L., & Gabrieli, J. D. (2018). Beyond the 30-million-word gap: children's conversational exposure is associated with language-related brain function. *Psychological science*, 29(5), 700-710.

- Rommetveit, R. (1992). Outlines of a dialogically based social-cognitive approach to human cognition and communication, in A. Wold (ed.), *The dialogical alternative: towards a theory of language and mind*. Oslo: Scandanavian Press.
- Scott, P. H., Mortimer, E. F., & Aguiar, O. G. (2006). The tension between authoritative and dialogic discourse: A fundamental characteristic of meaning making interactions in high school science lessons. *Science education*, 90(4), 605-631.
- Sethna, V., Perry, E., Domoney, J., Iles, J., Psychogiou, L., Rowbotham, N. E., ... & Ramchandani, P. G. (2017). Father-child interactions at 3 months and 24 months: Contributions to children's cognitive development at 24 months. *Infant mental health journal*, 38(3), 378-390.
- Sfard, A. (2019) Learning, discursive faultiness, and dialogic engagement. This volume.
- Shannon, C. E. (1948). A mathematical theory of communication. *Bell system technical journal*, 27(3), 379-423.
- Simon, M., Tzur, R., Heinz, K., & Kinzel, M. (2004). Explicating a mechanism for conceptual learning: Elaborating the construct of reflective abstraction. *Journal for Research in Mathematics Education*, 35, 305-329.
- Sorce, J. F., Emde, R. N., Campos, J. J., & Klinnert, M. D. (1985). Maternal emotional signaling: its effect on the visual cliff behavior of 1-year-olds. *Developmental psychology*, 21(1), 195.
- Tindale, C. W. (1999). Arguing for Bakhtin. In *Proceedings of the Fourth International Conference of the International Society for the Study of Argumentation*, Sic Sat, Amsterdam(pp. 786-790).
- Toulmin, S. (1990). *Cosmopolis: the hidden agenda of modernity*. New York: Free Press.
- Trevarthen, C. (1979). Communication and cooperation in early infancy: A description of primary intersubjectivity. *Before speech: The beginning of interpersonal communication*, 1, 530-571.
- Turner, V. (1987). *Betwixt and between: The liminal period in rites of passage*. *Betwixt and between: Patterns of masculine and feminine initiation*, 3-19.
- Ulmer, G. L. (2003). *Internet Invention: From Literacy to Electracy*. New York: Longman.
- Vygotsky, L. S. (1987). *The collected works of L. S. Vygotsky. Volume 1. Problems of general psychology. Including the Volume Thinking and speech.* (N. Minick, ed. and trans.). New York: Plenum Press.
- Walkerdine, V. (1990). *Mastery of reason: Cognitive development and the production of rationality*. London: Routledge.
- Wegerif, R (1999). Two models of reason in education. *The School Field*, 9 (3-4): 77-107.
- Wegerif, R. (2005). Reason and Creativity in Classroom Dialogues. *Language and Education*, 19(3). 223-38.

- Wegerif, R. (2013) *Dialogic: Education for the Internet Age*. London and New York: Routledge.
- Wegerif, R. (2015). Technology and teaching thinking: Why a dialogic approach is needed for the twenty-first century. In *The Routledge international handbook of research on teaching thinking* (pp. 451-464). Routledge.
- Wegerif, R. (2018). A dialogic theory of teaching thinking. In *Theory of Teaching Thinking* (pp. 101-116). Routledge.
- Wertsch, J. V. (1991). *Voices of the Mind*. New York: Harvester.
- Wertsch, J. V. (2013). The role of abstract rationality in Vygotsky's image of mind. In *Piaget Vygotsky* (pp. 33-52). Psychology Press.
- Žižek, S. (2011). A plea for ethical violence. *The Bible and Critical Theory*, 1(1).