Article

Remember: We are all wearing spectacles!
What is research about and what can we do with it?

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As both consumers and creators of research our goal is to realise adequate and legitimate knowledge. There is no lack of information to create knowledge, with wave after wave coming from government, academic and professional journals, textbooks, commercial organizations, webinars, independent researchers and experts. In this digital maelstrom there is no shortage of apparently genuine but sometimes contradictory reports, from a plethora of 'experts' who have volunteered to translate and guide us to an understanding of the science.

Yet, what can we do when the contexts and origins of knowledge are obscure or misaligned? How can we know if translations of research are critically comprehensive and disinterestedly real? Could the evidence have been constructed through a lens of covert, personal preferences, that presents only the translator's perspective as the definitive truth?

With an unrelenting worldwide online platform, we need to identify what is credible, useful, and applicable to our lives and worlds. This short article offers some ideas for reflection and an invitation to dig deeper into the nature of research and its practical uses.

To make an informed opinion and to take rational choices about research credibility, we should consider what actually is research, and to consider that, we first have to think about what we mean by knowledge, reality and truth?

What is knowledge?

Let's start with this statement: The search for the source and meaning of knowledge, truth and reality drives all research (Crotty, 1998; Kincheloe, 2005; Van Manen, 2014).

Although we create our own meaning, we are also born into a world of meaning. As individuals, we construct our realities and, through our engagement and experience, we continually contribute to changes in individual and collective interpretations of that reality. We are sense-making creatures, so knowledge is 'neither inside a person nor outside in the world but exists in the relationship between persons and world' (Kvale and Brinkmann, 2009:53). It is through engagement at individual and collective level that we amend 'dynamic meaning systems' to support shared understanding and so adapt personal-meaning constructs (Hughes, 2010:41).

Willig (2013) proposes that factual data can only have relevance when it is interpreted and communicated through personal, cultural and historical lenses. Only then is meaning and understanding created and a truth and reality status assigned. This suggests that our knowledge is always situated in a time, a place and a person, so rooted in the very relations it attempts to explain and understand (Andrews, 2012; Riessman, 2008; Smith, 1998).

Therefore, through time, with social and technological changes and globalization, truth and relevance must continually change, which itself contributes to a perpetual re-construction of our world. Looking back historically at early research, what was accepted as truth and reality was strictly governed by the natural sciences and positivist methodologies. However, in the 21st century debates on the nature of knowledge and scientific explanation recognise the contribution of human agency, language and interpretation to reality, knowledge and understanding (Milliken and Schreiber, 2012; Stryker, 2008). Further, there is recognition that well-established research identities can create 'silos of thought systems', which become increasingly defined and powerful, so are at more risk of being less reflective and responsive to one another (Lamont and Swidler, 2014; Wolgemuth, 2016).

Point 1. There is a symbiosis and recursivity to 'knowing', in that, over time, knowledge changes through our engagement with ourselves, with others and with the natural world. We (that includes you) are integral to defining truth and reality because we are all trying to make sense of the world whilst also being part of it. Therefore, we endorse the belief that 'the way to knowledge and understanding begins in [our]wonder' (Van Manen, 2014:223)

What does any researcher bring to research?

Meaning can only be constructed by conscious engagement, in that the way 'things are' reflects the sense made by that person in that particular time within that cultural context. Meaning is the process by which we make sense of what is happening, and it emerges from our immersion in culture, communication and interactions with others (Milliken and Schreiber, 2012).

Therefore, all researchers come to research with some particular preconception of what the 'research something' is: the 'something' identified for scrutiny, must already have some meaning and relevance to the researcher. Research that is labelled 'credible' reflects, and is boundaried by, the researchers understanding of what can exist and how meaningful knowledge can be created. As a result, research that is not aligned with one's personal discipline or belief system is more likely to be dismissed as inadequate or inappropriate (Davis, 2009; Gray and Milne, 2015; Moon and Blackman, 2014). Dismissal of research may reflect informed decisions or result from an identifiable allegiance to an alternative belief system. However, too often, adults are unaware of their belief systems, looking through rather than reflecting on them (Pratt,1997). Indeed, 'one's theoretical/conceptual framework serves as spectacles through which to see the world, [but] at the same time, it places boundaries on one's vision and horizons' (Imenda, 2014:194).

Point 2: No research or 'expert' is totally objective, so when we engage with any research or listen to any expert, we must consider how they define what is truth and reality to 'situate' their research findings. We need access to information to reference: when was the research carried out; by whom; what was the size of the study; who were the participants and how were they selected; how was the data gathered and analysed; how should the credibility and reliability of their analysis and conclusions be interpreted; and so on. It is important to be aware of the superficial power of the popular media and self-appointed 'experts' and to remain critically attentive to alternative approaches and opinions.

Does language use matter in research?

Language is a cultural sense-making tool that, through defining, labelling and naming, allows individuals and groups to understand and share meaning. However, language also shapes and creates our social realities, as 'language and culture precede us, although our actions might alter them' (Charmaz, 2014:269). So, to talk of the construction of 'meaning' is also to talk about the construction of what is meaningful 'reality' (Crotty, 1998).

The language we choose to use reveals the philosophical perspectives which inform beliefs, actions and engagements. It illuminates the assumptions which define our truth, meaning, reality and knowledge, and reveals what we use to view and make sense of the world. Yet, we also need words and conversations to engage in any understanding about how to live and behave. This is because meaningfulness is experienced when we 'can talk with and make sense to each other' (Arendt, 1998:4). Therefore, 'human knowledge is always in danger of being misled, distorted, or adulterated by the notions, concepts, and paradigms employed' (Schmidt, 2012:6).

As consumers and drivers of research we should be vigilant of potential ambiguity of language 'as it shapes what we ask, see and tell' (Charmaz, 2014:284). We need to be sensitive to the meaning conveyed by the researcher's preferred discourse and, in particular, their acceptance (and rejection) of words and phrases. As stated earlier,

tightly boundaried thought systems can support a well-defined knowledge and understanding, promoting shared confidence. However, boundaries also need to be permeable to allow connections to other ways of thinking. Knowledge progresses through equitable and informed debate that challenges and ignites rather than extinguishing shared scientific progress.

> **Point 3:** *If there is a failure to convey the principles and assumptions that are embedded in belief systems informing research actions, then the integrity and validity of any research can be questioned (Crotty, 1998; Davis, 2009; Kincheloe, 2005; Moon and Blackman, 2014). We use language and metaphors to share understanding and it is only through genuine, open dialogue and trusted interaction that we can become aware of others' perceptions, feelings and attitudes (Milliken and Schreiber, 2012). So, consumers and drivers of research need an awareness and tolerance to difference and diversity and must look beyond the words to ensure meaning is based on credible understanding.*

New ways of researching- new ways of knowing

Scientific explanation and progress are found 'not in moving from the complex to the simple, but in the replacement of less intelligible complexity by one which is more so' (Levi-Strauss, 1962:248). In practice, each academic discipline has a dominant interpretation of the world in which we live. It is only when theories are unable to explain observed phenomena or become challenged by a more realistic alternative explanation that paradigms - the ways of thinking - change.

Neither the natural nor social sciences have been able to fully capture the complexity or nuances of the human condition, let alone translate into everyday understanding. The technology revolution has allowed data sharing that has stimulated collaborative research and the creation of multi-disciplinary knowledge systems (Berman, Chafee and Sarmiento, 2018:16). Recognising that learning 'by its very nature is both social and emotional' new specialisms, such as educational neuroscience and interpersonal neurobiology (IPNB) have emerged. IPNB proposes we focus on 'an integrated view

of how human development occurs within a social world in transaction with the functions of the brain that give rise to the mind' (Davis and Wilson, 2009:1).

However, multidisciplinary collaboration takes time to establish and is not without problems. Pedagogical confusion from naïve translation of scientific research has led to a proliferation of neuromyths and some media hysteria (Howard-Jones, 2014; Rose and Abi-Rached, 2013). Already, there exists a global education-economy driven by profit margins and folk-science rather than credible evidence or relevance to children's learning (Ecclestone, 2017).

Some, in an attempt to educate others and share meaningful understanding to shape practices, inadvertently are endorsing 'bad science'. Yes, it is both interesting and necessary to recognise the wrestling of theoretical ontological and epistemological debates that shape an emerging multidisciplinary approach to our understanding of learning. Nevertheless, care needs to be taken that this academic debate is not confabulated with practical teaching and learning guidance. Implying that specific language and narratives, such as brain metaphors, are significant contributors to adverse educational and personal outcomes in society is excessive and alienates colleagues. It deters rather than encourages informed, critical debate and confuses rather than informs understanding and learning. Consequently, in an attempt to reveal the power of discourse, the discourse itself leads to fragmentation, disengagement and disempowerment.

Issues such as these are indeed important and do need to be 'aired' and addressed within and between research communities, in appropriate venues. However, to encourage genuine debate about how knowledge, understanding and meaning informs multidisciplinary practice, care must be given to use, rather than abuse or hijack, real and virtual public and professional fora. Respectfully acknowledging all credible research that informs the current debate, along with the contexts of research studies (e.g. unrepresentative or atypical populations), offers real representation to allow fair consideration of arguments. Personal commentary is valid; however, it must be clearly identifiable as such, and every effort should be made to promote discussion focused on consilience and collaboration.

That being said, learning necessitates the risk to challenge oneself and others to

question the familiar, master new skills and explore new understandings. Thinking creatively and productively is a cornerstone of research science and although 'life on the disciplinary boundaries is never easy… the rewards to be derived from the hard work demanded are profound' (Kincheloe 2001:691). Although change can be challenging 'communication across segments increases the probability of encountering ideas that can generate novel insights unavailable if communication is limited to persons sharing the same idea' (Stryker, 2008:21).

Learning is all about tolerating ambiguity and a willingness to make mistakes. These beliefs inform pedagogical philosophy yet are less synonymous with andragogy. Interdisciplinary researchers and practitioners should harness opportunities to develop a reciprocal empathetic and nurturing approach to working together. With a shared trust and robust debate, effective and sustainable practices in working with children could be encouraged. For example, affective and social neuroscience research suggests that children's experiences shape their biology as much as biology shapes their development (Immordino - Yang, 2016). Therefore, when discussing learning in childhood it would seem prejudiced, for fear of reflecting neuro-essentialist or biological deterministic tenets, to not acknowledge that learning happens primarily in the brain. Studying the neuroscientific bases of learning 'provides educational insights that, with *careful* implementation and evaluation, may improve schools and other learning environments for the generations to come' (Immordino- Yang and Fischer, 2009:9).

Additionally, there is a demand and increasing expectations that neuroscience is included in teacher training to provide holistic understanding of children's development to inform effective learning practice (Brookman-Bryne and Commissar, 2019). Therefore, academics need not exclude nor deter practitioners but ensure their professional instruction is contextually factual. Engaging with professional development benefits practitioners by raising awareness of the learning brain. It supports the development of critical skills to make informed opinions about evidence-based practices, including the exclusion of neuromyths, and promotes open debate to support inclusive scientific understanding of the whole child (Betts et al., 2019).

> ***Point 4:*** *The brain is seen as both a physical and social organ, built and maintained through experiences, so the social world has significant influence on the construction of an individual (Cozolino, 2006, 2013; Siegel, 2014; Porges, 2011, 2015). Educators, psychologists and neuroscientists must continue to have the confidence to talk, to debate, to share and discuss and explore tools, techniques, assumptions and approaches that can guide appropriate research on children's learning. Interaction, interconnection and relationships are considered integral, as are contingent and recursive processes. There is a need to develop a shared critical ability to translate and evaluate interdisciplinary findings for potential applicability in the classroom.*

Returning to the original question, what is research about and what can we do with it, I hope you can accept that research is contextual and always in a state of flux. May I leave you to ponder, what if the goal for promoting mental health and wellbeing in educational research shifted away from 'prove it or lose it' to a focus on an 'improve it to move it' approach (Weissberg, 2019). Currently, energy and talent seem to be wasted on self-justification through vilification of alternatives, which can only lead to fragmentation. Perhaps, efforts can now focus on supporting genuine collaboration to educate and improve practice as well as promote good science.

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