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Can Research Contribute to Improve Educational Practice?

Marta Ferrero

Universidad Complutense (Spain)

Abstract. Teaching a diverse classroom is a challenging task. Educators are faced daily with the difficult task of making many decisions about how to educate each of their students. To do this, they mainly rely on their experience and that of their colleagues, their values, and thoughts. Although they are inherent and important in the profession of teaching, sometimes these resources may not suffice to make the best decisions, particularly when teachers are continuously bombarded with numerous fads and poorly grounded ideas about education. In this context, research-informed practice emerges as a promising approach. It involves integrating the professional expertise of teachers with the best evidence of researchers to make better decisions and improve education. However, for this approach to be successfully implemented, the gap between researchers and practitioners must first be bridged. The possible solutions to this challenge involve acting in three contexts: research production, research communication and research use. Specific measures in each of these contexts are described.

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During the past decade, the commercial program Brain Gym®[1], also known as "educational kinesiology", grew in popularity among several countries around the world. After many years of investment of time and resources by hundreds of schools, the whistle was blown on the lack of a research-supported theoretical foundation for this program (Hyatt, 2007; Goldacre, 2006). Educators who adopted Brain Gym®, as well as those who still embrace the theory of learning styles, or the theory of left- and right brain learners, among others, most likely do so with the commendable aim of offering a better education to all their students. Although well-intended, these decisions sometimes might do more harm than good (Chalmers, 2003).

Teachers around the world are continuously exposed to diverse claims by publishers and advocates for different approaches (Sharples, 2013). At the same time, they have to make countless and diverse rapid-fire decisions every day in their classroom (for instance, what font type adopt to teach reading or how to group students to optimize learning). To this aim, they mainly draw on their own values, thoughts and experience, and those of their colleagues and professionals; but they rarely make use of scientific research (Nelson & Campbell, 2017). Why? Is it possible or even desirable that research play a role in educational practice? If so, what should that contribution look like? What barriers are hindering progress in this matter? What can be do? In the following paragraphs I will try to answer these questions.

From Evidence-Based Education to Research-Informed Practice

The idea of improving connections between research and practice is not new (Levin, 2013). In fact, there have been diverse positions around the potential contribution that research might do to the daily work of educators. On the one hand, some experts have raised concerns about whether research will ever be in a position to inform teachers about how to improve education (Cain, 2015). On the other hand, other authors have stated that the alternative to evidence is just unfounded opinion (Coe, 1999). Around these conflicting positions, there have been some attempts to conceptualize the different roles research might play in education (Cain & Allan, 2017; Godfrey, 2017).

The top-down evidence-to-practice approach views research findings, especially those obtained from randomized controlled trials, as the only ones with sufficient quality to inform teachers about what works

Correspondence concerning this article should be addressed to Marta Ferrero. Departamento de Investigación y Psicología en Educación de la Universidad Complutense. Rector Royo Villanova, s/n, Ciudad Universitaria. 28040 Madrid.

E-mail: ferreromarta@gmail.com

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[1]*Official Brain Gym® Web Site* (2018). Retrieved from https://breakthroughsinternational.org/programs/the-brain-gym-program/

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in the classroom (Hammersley, 2005). Under this approach, frequently linked to the term "evidence-based education", research is aimed at producing prescriptions about what works (Biesta, 2007) and educators are essentially technicians who apply what research dictates. In the words of Godfrey (2017), under this approach "academics provide the evidence and practitioners work out how to implement or use it" (p. 437). Some experts have pointed out that this model is based on false premises because it assumes that research provides unmistakable links between causes and effects (Godfrey, 2017) or that scientific findings are infallible (Hammersley, 2001, 2005) and unalterable over time (Biesta, 2007, 2010). Moreover, it is argued that this approach might lead to undesirable consequences. For instance, the complexities of the education system can be simplified; policy makers may just fund "evidence-based" ideas; and researchers might be forced to focus on "what works" in the classroom, seriously narrowing the rationale of educational research and reducing the funds for studies that are not aimed at answering this question (Godfrey, 2017; Hammersley, 2005).

Faced with the "what works" model for evidence to practice, an increasing number of authors are advocating for an alternative approach in which teachers have a more critical and active role during decision making and theories are not employed as prescriptions but as another source of information along with the experiential knowledge and judgment of practitioners themselves (Godfrey, 2017; Hammersley, 2005). The term most frequently employed to refer to this approach is "research-informed practice".

What is or should be Research-informed Practice?

Research-informed practice entails integrating the professional expertise of teachers with the best evidence provided by research to make more precise decisions and improve the quality of teaching (Sharples, 2013). It should not be about prescribing teachers what to do through a set of recipes or tips (Goldacre, 2013; Wiliam et al., 2004). In fact, given the complexity of daily practice in the classroom, some authors consider this idea impossible to achieve (Wiliam et al., 2004). Instead, this approach lies in making informed judgments not only in the light of needs, resources, priorities, preferences of practitioners but also on the basis of research evidence (Chalmers, 2005). Ideally, along with situated understanding and critical reflection, educational research should provide teaches with technical knowledge and new theoretical frameworks that can enhance reflection and help teachers to discriminate between good sense and commonsense (Winch et al., 2015).

Although there is some debate about what counts as evidence (National Research Council, 2002), practitioners and policy makers should hopefully guide their efforts to be informed specially towards systematic reviews and meta-analysis of primary research, which emphasize the cumulative character of science and attempt to minimize the effects of biases and chance (Chalmers, 2003), not as an educational panacea but as a valuable instrument. As long as teachers are equipped with detailed information about what kind of methods, resources, or programs are more effective under what circumstances, their professional skill and judgment will most likely improve (Levin, 2010), and so will their professional independence to take their own decisions in the face of external interferences (Goldacre, 2013).

Efforts made over time to synthesize the main research findings in the field of education have allowed the identification of a significant number of effective practices. For reasons of space, I will focus on some of the practices which have returned better results across different samples and subjects. For instance, retrieval practice (or testing), which consists of challenging students to retrieve some piece of information from memory, plays a critical role in consolidating learning (Rohrer & Pashler, 2010; Weinstein, et al., 2018). In addition, providing students with opportunities to independently practice what is learned in the classroom allows them to become fluent and automatic in that skill (Rosenshine, 2012). If this practice is spaced across time, with rest periods between learning sessions, both acquisition and retention of learning will be enhanced (Bjork, 1999; Hattie, 2009). Similarly, providing students with effective feedback on their performance can enhance the processing of information to be learnt. In this vein, a correct form of giving feedback involves a twofold approach: students have to receive clear information on correct responses and this information has to be connected to their prior knowledge, among other things (EFF, 2018; Hattie, 2009; Marzano, 1998). Finally, another well-grounded practice is teaching learners meta-cognitive and self-regulate strategies, such as activating prior knowledge or self-evaluating progress and final performance. Such an active role of students over the cognitive processes involved in their own learning can significantly contribute to improving performance (EFF; 2018; Hattie, 2009).

Which Barriers does Research-Informed Practice Face?

To advance towards a research-informed practice, the cooperation of the actors involved seems obvious. However, the gap between researchers and practitioners is well-documented (Broekkamp & van Hout-Wolters, 2007). On the one hand, although practitioners are interested in the contribution research can make to inform their work (Cordingley, 2008; Penuel et al., 2016), they rarely consult scientific literature (Cain, 2016; Williams

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& Coles, 2007). Why is this the case? It might be due to their lack of training and time on search, access, read, and interpret original research (Hammersley-Fletcher et al., 2015; Levin, 2013; LaPointe-McEwan et al., 2017). Simultaneously, although scientific studies in education have grown over the years, there are still few concise and practical results from research that teachers can directly apply to enhance learning (Broekkamp & van Hout-Wolters, 2007; Cook & Cook, 2004). On the other hand, researchers may lack skills, interest, or incentives from their workplaces to adapt their work to or collaborate with non-academics (Campbell & Levin, 2012). In addition, the different languages employed by researchers and practitioners can seriously compromise mutual understanding (Borg, 2010; Goswami, 2006; Procter, 2015). A combination of these elements might partially explain the negative attitudes towards research findings among some educators (Burkhardt & Schoenfeld, 2003; Gore & Gitlin, 2004), who considered that other sources of information, such as the experience of other colleagues, are more trustworthy and practical than research results (Cook & Schirmer, 2003; Landrum et al., 2002).

Faced with these barriers, some authors have pointed out to the need of an appropriate knowledge movilization (KMb) from researchers to practitioners and vice versa in order to strengthen the relation among them (Levin, 2013; Nelson & O'Beirne, 2014; Sharples, 2013). Under this scenario, researchers would ideally be, to some extent, inspired and challenged by daily concerns and questions of in-service teachers. And, at the same time, educators would be engaged with and informed by research. The question that remains is how this KMb must be performed to be successful, that is, which are the key ingredients to create a fertile common ground for both researchers and practitioners.

Ways to Move towards Research-Informed Practice

For a long time, there existed the belief that the use of research was a unidirectional process in which researchers would accumulate knowledge and this would be easily adopted by policy makers and practitioners (Levin, 2013). However, we now know that research dissemination is not enough (Campbell et al., 2017; Coe et al., 2000; Levin, 2011). In fact, there is abundant evidence about the complexity that endorses a regular use of research to improve education (Davies, 2004; Nelson et al., 2017; Taylor, 2013). In this context, KMb implies an interactive process of co-creating knowledge between researchers, decision-makers and teachers to improve the education system (Campbell et al., 2017; Cooper, 2014) which, in turn, requires social and behavioral change by all sides (Campbell & Levin, 2012; Nelson & O'Beirne, 2014). For this purpose, different authors have highlighted the need to invest effort in at least three contexts that interact with each other: Research production, research transformation and communication, and research use or implementation (Gough et al., 2011; Levin, 2004, 2013; Nelson & O'Bernie, 2014; Sharples, 2013), all shaped by political and social context (Levin, 2011).

The production of research on educational interventions has increased over the years (Cook & Schirmer, 2003; Jones, 2009; Levin, 2011). Similarly, a growing number of organizations are promoting evidence synthesis to communicate these advances to education professionals (for instance, What Works Clearinghouse in the US, the Education Endowment Foundation in the UK, or Bofill Foundation in Spain). In spite of these steps, more high-quality studies are needed to offer robust evidence about effective interventions (Levin, 2013). In addition, there is a need to create an organization which centralizes and systematizes all the efforts to produce solid evidence to inform decisions in education (Nelson & O'Bernie, 2014).

Effective communication and implementation are just as important as knowledge production. In this sense, the elaboration of practical and accessible guidelines about how to implement evidence in schools is a promising way forward. These guidelines should include detailed information about several aspects, such as detailed description of context and intervention, management considerations, costs, or training requirements (Cordingley, 2008; Nelson & O'Bernie, 2014). Closely linked, the promotion of intermediaries, or mediators, to bridge the gap between researchers and practitioners has also been frequently emphasized (Campbell & Levin, 2012; Cooper et al., 2009; Sin, 2008). This role has traditionally been performed by a variety of bodies, such as media, charitable organizations, government agencies, research centers, professional organizations, or private companies (Sharples, 2013), and consists basically on interpreting, packaging, and distributing research evidence for policy makers and practitioners (Tseng et al., 2007). Despite their potential benefits, in the case of institutions fully or partially funded by the private sector, it would be advisable to pay attention to potential conflicts of interest that may compromise their role as mediators (Honig, 2004).

Although research in evidence implementation is still scarce (Nelson & O'Beirne, 2014; Nelson & Campbell, 2017), there are several promising proposals to foster the use of evidence-based practices in schools, such as: Research-engaged schools, which investigate key issues in education, use enquiry, promote learning communities, and turn data and experience into knowledge for decision making (Sharp et al., 2006); teaching schools, in which practitioners and researchers work together on the design of innovative education, professional

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development, and/or research (Broekkamp & van Hout-Wolters, 2007); teaching school alliances, aimed at developing capability and capacity in evidence-based teaching through different initiatives, such as research journal clubs or teach meets with higher educational institutions, research networks, or dissemination events (Hammersley-Fletcher et al., 2015); or conferences and on-line conversations with academics to connect teachers to research, like ResearchED[2] movement. Ultimately, the aim is to build a culture of research use among practitioners, so that evidence is fully embedded in decision-making. Considering the current gap between researchers and practitioners (teachers and frontline professionals), it is not surprising that many of the initiatives enlisted imply the creation of meeting spaces where both groups could actively collaborate with each other. Alongside this, it would be also desirable to enrich both initial preparation in universities and continuous professional development with training on research-related skills (Cook & Cook, 2004).

Conclusion

Every day, hundreds of teachers face the challenging task of providing education to their hugely varied students. In this endeavor, tacit knowledge, reflection on their own practice, and values about education are not only inherent but also essential to their profession. However, these elements may not be enough to guarantee the use of effective instructional techniques for all the students, from first to last (Chalmers, 2003, 2005). This is particularly relevant if we consider that schools are continuously bombarded with many fads with little or no supporting evidence and widespread myths that pave the way to the adoption of unfounded methods (Dekker et al., 2012; Ferrero et al., 2016), such as the above mentioned Brain Gym. One way to prevent professionals from these threats while increasing their autonomy is incorporating research in educational administration and school decision making.

The way towards research-informed practice is a daunting challenge for teachers and schools, for policy makers, and for researchers and universities. In the case of practitioners, it implies a change in professional culture, so that both teachers and policy makers turn also to scientific findings to underpin educational practice (Coe, 1999; Godfrey, 2017). In the case of academics, it involves approaching real interests and needs of teachers (Cordingley, 2008). The promotion of different measures to encourage collaboration between teachers and researchers, such as the creation of common spaces to share and discuss research or the boosting of intermediaries, can play an important role to this end. In turn, the leadership of administrations, universities, and schools in valuing and supporting the use of research though the provision of incentives and resources might be essential (Campbell & Levin, 2012).

The factors that explain why a method or tool produces good learning outcomes are very diverse (for instance, socio-economic status of family, or motivation level and previous knowledge of students), so that a small change in some of them might alter notably its effectiveness (Coe, 1999). However, this does not mean that the results accumulated so far from research are not in position to inform educational community on some important issues. The academic success of many individuals, especially learning-disabled students, relies largely on the use of educational techniques that have been systematically proven to be effective (Cook & Cook, 2004). For this reason alone, just because education is an undeniable right for any child, it is worthwhile for researchers and practitioners to do their best to bridge the gap that separates them and thus contribute to a better education for all.

[2]https://researched.org.uk/sessions/tom-bennett/

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