ORIGINAL ARTICLE

Evidence-Based Reform in Education: Responses to Critics

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Abstract: In the past two decades, evidence-based reform in education has been gaining momentum worldwide. China is no exception. Though many Chinese scholars have acknowledged the importance of evidence-based reform in education, some remain skeptical. In this paper, we address the three major concerns about evidence-based reform in education and offer some clarifications on the issues raised by critics.

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IN the past two decades, evidence-based reform in education has been gaining momentum worldwide. China is no exception. Chinese researchers have gradually adopted evidence-based methods to study various educational topics such as teachers' emotional labor (Yin, 2017), educational games' impact on student achievement (Duan, 2017), the effect of mobile learning on student achievement (Wang, Dong & Wu, 2017), flipped classrooms (Wang & Hu, 2018), Chinese teaching program interventions (Wang & Gu, 2003) and many others. Experimental research has also been employed to study educational themes including teachers' performance-based salary (Chang, et. al, 2018), teachers' classroom emotions' impact on teaching effectiveness (Qiu, 2014), mobile learning's effect on cross-cultural communicative capability (Wang & Xiu, 2014), educational videos' impact on self-learning effects (Wang, Hao & Lu, 2014) and so forth. The evidence-based movement has also led to establishing a yearly forum in Shanghai on evidence-based reform in education (Wang & Gu, 2015).

An increasing number of Chinese scholars have worked on evidence-based educational research over the years (e.g. Ren, 2014; Yin, 2017; Yuan, 2017). For instance, Prof. Zhenguo Yuan, the current Vice Director of Chinese Society of Education and the Director of Faculty of Education of East China Normal University, wrote a special column entitled "Chinese Education Needs Evidence-based Research" (Yuan, 2017). In the article, Yuan presented OECD's PISA as an example to remove doubts pertaining to the quality of China's basic education by recognizing the importance of PISA as an evidence-based, tangible yardstick to compare educational performance across countries, thus providing persuasive proofs of educational quality. Yuan called for education sector-wide attention to evidence-based research for providing more solid evidence for educational reforms in China.

Though many Chinese scholars have acknowledged the importance of evidence-based reform in education, some remain skeptical. In this paper, we would like to address the three major concerns about evidence-based reform in education.

1. *Evidence-based reform places too much emphasis on the importance of experimental research, which narrows the scope of education research and brings adverse effects on education diversification. Considering the complexity of educational issues, it is difficult for evidence-based research to reveal deep and diverse causal relationships with only experimental research.*

Response: Advocates of evidence-based reform do not favor experiments for every type of research question. There are many research questions better suited to correlational or descriptive methods. Non-experimental research is of great value in theory building and in exploring important variables worthy of inclusion in experiments. For example, the Success for All programs, one of the largest school reform models in the United States, owes a great deal of correlational and descriptive process-product studies when the program first started (Slavin, Madden, Chambers, & Haxby, 2009). However, when the research or practical question is, "How can we improve achievement (or other

outcomes)?" experiments are by far the best methods. In such studies, the question is whether the new program produces better outcomes than what schools do ordinarily, and that is exactly what experiments test. Experimental design, especially randomized controlled trials, is viewed as the "gold standard" in that it eliminates systematic bias and makes judgments about appropriate levels of probability to reject the null hypothesis that there is no difference between the experimental and control groups (Clegg, 2005). As educational reforms essentially comprise individual projects and programs, those with rigorous and strong evidence of effectiveness ought to be given more weight over those only based on principles, and well-evaluated replicable programs ought to be heavily invested in considering the current age of accountability (Slavin, 2005). Today most experiments testing innovative programs use mixed methods, also using observations or questionnaires (Chatterji, 2002; Kozelski, 2017).

2. *Evidence-based reform in education relies on evidence from experimental or quantitative studies. Why can't we use high-quality qualitative research, case study evidence, and even experience as evidence for education improvement? Without qualitative evidence, evidence-based research is tantamount to rejecting a large number of research results. Is this arrogance and prejudice? However, if such results are acceptable, there seems to be no essential difference between evidence-based research and other types of research. How do we resolve this paradox?*

Response: No one is arguing that non-quantitative research should be ignored. A qualitative study or a case study can produce insight or knowledge, but it cannot produce definitely information indicating whether one program is more effective than another, on average. One merit of qualitative studies in promoting educational reform lies in that they point to areas where specific sub-populations' particular needs are not reflected in broader generalizations led to by quantitative studies, which means a single type of generalization is insufficient to represent the reality (Given, 2006). In this sense, qualitative studies can be complimentary to quantitative research in evidence-based reform by revealing layers of evidence that quantitative research does not reach. Shavelson and Towne urged that "randomized field trials be supplemented with other methods, including in-depth qualitative approaches that can illuminate important nuances of practices" (Kozleski, 2017). In other words, qualitative studies more than often address "why" questions, while quantitative studies are intended to address questions related to "how much/many" (Given, 2006). These are both important questions.

3. *In developing countries such as China, experimental research is still lacking. In this case, does the evidence research in developing countries have the same significance as that of developed countries? How should we advance evidence-based research in countries that lack empirical research? What are the more effective and feasible paths?*

Response: It would be ideal to have experiments carried out in China, of course, in both urban and rural settings. However, while the number of studies is building up, it is useful to view experiments from other countries as suggestions for what may be effective in China, with appropriate caution and good sense. For example, foreign studies in settings similar to Chinese ones may be more useful than ones in very different settings.

In the past two decades, we have witnessed widespread application of evidence-based research and experimental studies in Asian settings, including contexts whose settings are similar to the Chinese mainland, such as Singapore, Hong Kong, Taiwan, and Vietnam. The topics explored using experimental research in these settings include mobile learning (Sun, et al., 2016), effectiveness of teaching interventions (Fung, 2014), cooperative learning (Tran, 2014), and information communication and technology (Reyes, 2015). As these issues grow in popularity, the studies in these settings may provide implications for China.

While innovation has become a ubiquitous buzzword, effective evaluations of innovative programs and practices is limited (Yuan, 2017). Evidence-based reform has great potential to enhance the quality of programs students receive and to fuel much interest and investment in development, research, and dissemination of effective approaches. However, evidence-based policies will prevail only if the evidence itself is rigorous and meaningful.

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