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Are teachers gaining from educational trials? A question of evidence-based practice

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Abstract *A review published in 2018 found that the number of randomised controlled trials (RCTs) in educational settings had more than quadrupled over the previous decade. Such trials have long been the domain of medical research. This article looks at one RCT in England carried out in the 2018–19 school year where teachers of GCSE chemistry were trained to deliver revision lessons to students in the weeks leading up to their exams. While key stakeholders primarily focus on the subsequent GCSE results of students who received these bespoke lessons (compared with those who did not), the research outlined here concerns itself solely with the potential benefits for teachers.*

The spike in randomised controlled trials (RCTs) in the last decade in education globally (Connolly, Keenan and Urbanska, 2018) has been no less significant in England. This is largely through the work of the Education Endowment Foundation (EEF) who report that a third of all state schools in England have taken part in their funded RCTs, which amounts to 10% of all the RCTs ever undertaken in education (The Economist, 2018). Teachers are integral to the process of an RCT, given that normal practice in these trials is to maintain what has been termed ‘intact classrooms’, that is, classrooms that do not change dramatically from day to day in terms of teacher, student roll, allotted room, timetable and so on. Intact classrooms, therefore, require teachers to receive training and coaching as end deliverers of educational programmes that have been designed externally. Despite this, such teacher professional development can sometimes be compromised by the size and scale of the trial, unforeseen delays, rigid deadlines, and competing demands for time (Cordingley, Crisp and Crisp, 2018).

One such example had teachers giving feedback on their participation in a trial through questionnaires designed for medical practitioners (Churches, Hall and Higgins, 2018). The doctoral research described here attempts to better understand this landscape and whether teachers benefit from being involved in a trial in terms of improving their evidence-based awareness, knowledge and behaviours. Approximately 200 teachers of year 11 (age 16) GCSE chemistry will be the study’s main respondents. This research continues until early 2020 and, as such, the focus here is limited to a rationale for conducting this research, and a summary of the literature concerning how coaches and peers may offer the best way forward to develop essential practices.

Why teachers?

The Centre for Evidence and Social Innovation (CESI) at Queen’s University Belfast, is one of the biggest centres for education RCTs in Europe. The interest in England relates to the work of the Education Endowment Foundation (EEF) and how schools in England have recently been called ‘laboratories’ for evaluating evidence-based programmes. The focus on teachers during an RCT is based on the researcher’s experiences as a classroom teacher immediately prior to entering full-time study. There is arguably a deficit of research on teachers during RCTs and the interest in recognising this goes beyond schools and universities. The Economist recently reported on the use of evidence by schoolteachers to inform their practice. It posed the following question: ‘Does providing teachers with evidence of what works change their behaviour? And if not, what next?’ (The Economist, 2018). Senior teachers acting as ‘research leads’ in schools, particularly in Teaching Schools (and in EEF ‘Research Schools’) have had more exposure to evidence-based practice and have been the focus of various studies, either as ‘evidence champions’ (Rose et al., 2017), ‘teacher researchers’ (Childs and Menter, 2018) or as ‘research-leads improving students’ education’ (RISE) (Wiggins et al., 2019). However, the three studies, while anecdotally positive for those senior teachers participating, had little data on teachers in general (Childs and Menter, 2018) or great attainment by their students (Rose et al., 2017; Wiggins et al., 2019). Therefore, there is still work to be done on understanding how teachers can become evidence-based practitioners and whether this in turn

impacts on students' grade attainment. The next section outlines the concept of coaching as a potential route for changes in behaviours.

Coaching

The focus on research-leads, often based in Teaching Schools, does not address how best to reach teachers across the country. Furthermore, addressing the issue of what to do for teachers to enhance their evidence-based practices remains an unknown. The method that has shown evidence of promise to improve student attainment is for teachers to be coached; however, this is regarded as prohibitively expensive if done to best-practice standards. Coaching is regarded as one-to-one time that is 'individualized . . . intensive . . . sustained... context specific... focused' (Kraft, Blazar and Hogan, 2018:553). The expense, the authors argue, should not stop coaching from being pursued, but it requires some innovative thinking to minimise cost and maximise efficacy so that it continues to have a positive effect on student attainment. The authors outline how coaching for improving student attainment might best be achieved. There are essentially two types of coaching, 'responsive' and 'directive', with the former being concerned with a teacher's critical thinking and reflection and the latter addressing more robust teacher instruction through direct feedback. This is an important distinction, because the type of training that focuses on student grade attainment arguably requires a more directive approach. Additionally, although coaching is one to one, it was also seen as being part of a wider provision, that is, complementing a group training experience, with instructional content in the shape of resources being combined with a video element where teachers could observe the programme in question (although this was found to be less effective than traditional resources). Interestingly, although previous research had stated that coaching and training required a minimum of 14 contact hours, Kraft, Blazar and Hogan (2018) found that, if the quality is high, there is no set minimum number of hours. The uniqueness of this finding is a result of the surge in RCTs in education. These authors would not have been able to make such claims 10 years ago. Kraft, Blazar and Hogan's research is the first meta-analysis of the causal effect of continuing professional development (CPD), with a coaching focus, on instruction linked to student attainment; it was a study comprising 60 RCTs exclusively in North America, and primarily USA-based. Another potential variant of coaching that meets the cost-effective requirement is the utilisation of same-school teacher peers drawn from the same subject specialism and year group and this is outlined in the next section.

Peer-group manipulations

The research on coaching raises the important issue of cost and recommends that solutions to minimise the expense should be the focus of researchers and practitioners. One potential solution is from the economics of education and is related to nudge theory: peer-group manipulations. This is the pairing of 'high-achieving teachers' with 'low-achieving teachers' together with a requirement or instructive element (Damgaard and Skyt Nielsen, 2018). A similar piece of research from a small-scale trial found positive and significant effects for within-school, within year-group, within-subject teacher pairings on student attainment in the low-achieving teachers' classes (Papay et al., 2016). It follows that if teachers with advanced evidence-based practice were identified and explicitly paired with novices, this may offer a cost-effective way forward. While the evidence-based practice self-assessment tool for schools is freely available through the Chartered College of Teaching, a possible description of a 'high-achieving teacher' in evidence-based practice may meet some of the impressions shown in Table 1.

Table 1 lists some impressions that researchers have had regarding the teaching profession and their evidence-informed practice potential (while reviewing or implementing evidence-based programmes). This list is largely anecdotal and, as such, each research report and its date of publication has been included to highlight the subjective and discrete nature of each. However, it did generate some discussion in a workshop at the 2019 ASE Annual Conference in Birmingham and relates strongly to the idea of coaching and peer-group manipulations.

PhD research

At this point, we turn to the purpose of the research being conducted with approximately 200 teachers of year 11 (age 16) chemistry in England who delivered an evidence-based programme in April and May 2019. Teachers' evidence-based awareness, knowledge and behaviours were assessed prior to the training, after final lesson delivery, and will be assessed again 6 months post-trial, encompassing a maximum time period of 18 months. In addition, interviews will be conducted with selected teachers. The purpose of this mixed-methods research is to examine whether the existence of the trial is intrinsically able (or not) to positively impact those teachers' evidence-based practices. In the same way as research has traditionally focused on senior teachers/research leads, coaches and peers, this research focuses on classroom teachers and relates to potential benefits for 'teachers in a trial' of having

Table 1. Impressions of teachers more open to evidence-informed practice or research

	Impressions	Reference
1	...working in a 'requiring improvement' or 'inadequate' school	(Nelson, et al. 2017; Perotta, 2017)
2	...working in any school regardless of rating if the school is committed to improving and changing	(Stoll & Fink, 1996)
3	...self-effacing about their knowledge-base	(Cordingley, Crisp & Crisp, 2018)
4	...have a senior leadership team committed to evidence use	(Brown, 2017)
5	...trust not only other teachers, but also university researchers (and government ministers)	(Hargreaves, 1998)
6	...open to being assisted/guided/advised by professional researchers	(Gorard, See and Siddiqui.,2017)
7	...have been exposed to evidence-based practice in initial teacher education (ITE)	(Gorard, See and Siddiqui.,2017)
8	...have access to, and access, conduits between book chapters or academic research papers and classroom practices i.e., EEF Teaching & Learning Toolkit	(Hargreaves, 1998: 16; Gorard, et al., (2017); See, et al. (2016); Nelson and O'Beirne (2014)
9	...received extensive, highly structured training and coaching, resources and given time to deliver evidence-based programmes as intended	(Stahmer, et al. 2015)
10	...doing further study in the form of a master's or doctorate	(Hendrick, 2016)
11	...rational	(Stoll, 2000)
12	...at an advanced stage in subject content knowledge	(Kraft, Blazar & Hogan, 2018)
13	...from a psychology background	(Kushner et al., 2001; Churches, Hall & Higgins, 2018)
14	...do not strictly align to a constructivist approach	Hattie & Yates (2014)
15	...not trained through theory alone e.g. Piaget, Bernstein, Skinner	(Hargreaves, 1999; (Goodall, et al., 2005)

received training and elements of coaching for delivery of the educational programme. This in turn may generate improved awareness, knowledge and behaviours in relation to evidence-based practice and subsequently capacity building in the form of evidence-based practice coaches or peers within school, year group and subject. If teachers' evidence awareness, knowledge and practices are improved by being part of a trial, this has important ramifications for funders, implementers, evaluators and participating schools. More importantly, it could offer teachers a tangible benefit in addition to any possible positive effect on student attainment. However, the research may also show that the trial did not see any increase in

awareness, knowledge or behaviours in evidence-based practice. Ultimately, the main focus of RCTs will be on students and on student grade attainment. RCTs cannot however function without the training and coaching of teachers and if trials are having wider gains for the teachers beyond one particular programme it might partly help answer the question posed by *The Economist*: 'Does providing teachers with evidence of what works change their behaviour? And if not, what next?'

Conclusion

Teachers in a third of schools across England will have had experience of an RCT in some shape or form. How this will have impacted upon them and their professional development is very much an unknown. There are many questions yet to be answered on evidence-based practice within the teaching profession, not least whether it does improve attainment and, if so, how best to equip teachers given the raft of other demands on their time. Studies are beginning to point towards coaches and peers as being effective in terms of raising student attainment. Other research into research-led cascade models has yet to provide evidence of a tangible way forward. This article has highlighted the potential for teacher participation as deliverer in an RCT as a third way. The findings of the doctoral research are due to be published in mid-2020 in a doctoral thesis. An article will be submitted to *School Science Review* at that time for consideration.

This doctoral research followed the RCT of the SMART Spaces educational programme. The evaluation report will be published in 2020.

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