

A previous retrospective case-controlled study (Churches, Hall and Higgins, 2017) used the Evidence-Based Practice Questionnaire (EBPQ) (Upton and Upton, 2006; 2014) to explore the effect of completing a teacher-led randomised controlled trial (RCT) on teacher practice. This demonstrated that teachers who completed a teacher-led RCT (Churches and Dommett, 2017) had higher levels of evidence-based practice compared to teachers who were just involved in the delivery of a large-scale RCT programme. The present study sought to identify if there were similar effects on teachers' self-reported practice as a result of designing, implementing and reporting neuroscience-informed teacher-led RCTs.

THE RESEARCH DESIGN

Replicating a previous analysis and adopting a single-blind retrospective case-controlled approach allowed for the testing of three hypotheses (paralleling the three EBPQ question areas). Completion of a neuroscience-informed teacher-led RCT:

- increases the frequency of self-reported evidence-based behaviours
- enhances beliefs and attitudes about evidence-based practice
- heightens teachers' perceptions of their skills in areas seen as important to evidence-based practice, in the parallel fields of medicine and healthcare.

METHODS

Participants and sample size

- 15 teachers who led the design and delivery of trials, as part of the Education Development Trust / Wellcome Trust Neuroscience-Informed Teacher-led RCT Programme (3 males; 12 females).
- Data from 15 other anonymised teachers who were part of the control group in a previous study.

Procedures

Neuroscience-informed teacher-led RCT participants were case-matched against the most similar teacher in the previous study control group (Churches, Hall and Higgins, 2017). Teachers were case-matched, controlling for: age; gender; years in teaching; school phase; and level of leadership responsibility. Participants were kept blind to the fact that they would be case-matched against a control group of teachers from a previous study.

Materials (and apparatus)

Adapted version of the EBPQ (Upton & Upton, 2006; Upton, Upton & Scurlock-Evans, 2014). Online survey programme.

LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

The sample size for the study was small and therefore the results need to be considered with caution. In addition, as in the previous study, no randomisation took place. This could have introduced a degree of participant bias. Future opportunities to integrate the approach into a full RCT should be sought.

RESULTS

EBPQ Question 1 – Frequency of behaviour values for the control group and intervention group (neuroscience-informed teacher-led RCT participants)

	1 Control		2 Intervention		W	p	r [†]
	M	(SD)	M	(SD)			
Formulated a clearly answerable question as the beginning of the process towards filling this gap	4.40	(0.91)	5.40	(1.24)	2.06	.020*	0.42
Tracked down the relevant evidence once you have formulated the question	5.33	(0.90)	5.40	(1.56)	0.35	.362	0.03
Critically appraised, against set criteria, any literature you have discovered	4.26	(1.39)	4.60	(2.10)	0.58	.282	0.09
Integrated the evidence you have found with your expertise	4.60	(1.12)	5.33	(1.51)	1.89	.030*	0.33
Evaluated the outcomes of your practice	5.20	(0.68)	6.00	(1.07)	2.27	.012*	0.26
Shared this information with colleagues	5.13	(1.25)	5.73	(1.10)	0.93	.175	0.25

EBPQ Question 2 – Relative agreement values for the control group and intervention group (neuroscience-informed teacher-led RCT participants)

Left dipole	Right dipole	1 Control		2 Intervention		W	p	r [†]
		M	(SD)	M	(SD)			
My workload is too great for me to keep up to date with all the new evidence	New evidence is so important that I make the time in my work schedule	4.80	(1.42)	5.27	(1.49)	0.48	.216	0.16
I resent having my teaching practice questioned	I welcome questions on my practice	5.33	(1.68)	5.40	(1.50)	0.25	.401	0.21
Evidence-based practice is a waste of time	Evidence-based practice is fundamental to professional practice	6.07	(1.28)	6.27	(0.80)	0.56	.288	0.09
I stick to tried and trusted methods rather than changing to anything new	My practice has changed because of evidence I have found	5.60	(1.21)	6.27	(1.10)	1.83	.033*	0.29

EBPQ Question 3 – Self-reported skills values for the control group and intervention group (neuroscience-informed teacher-led RCT participants)

	1 Control		2 Intervention		W	p	r [†]
	M	(SD)	M	(SD)			
Research skills	4.73	(0.88)	5.47	(1.25)	1.69	.046*	0.32
IT skills	5.33	(0.90)	5.33	(1.18)	0.05	.480	<0.001
Monitoring and reviewing of practice skills	5.36	(1.15)	5.40	(1.35)	0.31	.377	0.05
Converting your information needs into a research question	5.13	(0.92)	5.40	(1.55)	0.47	.319	0.11
Awareness of major information types and sources	5.20	(0.94)	5.27	(1.58)	0.12	.453	0.02
Ability to identify gaps in your professional practice	5.47	(0.83)	5.47	(1.19)	0.03	.486	<0.001
Knowledge of how to retrieve evidence	5.07	(1.10)	5.13	(1.64)	0.22	.412	0.02
Ability to analyse critically evidence against set standards	5.27	(1.16)	5.13	(1.55)	-0.36	.361	-0.05
Ability to determine how valid (close to the truth) the material is	4.93	(1.22)	5.13	(1.55)	0.31	.378	0.07
Ability to determine how useful (applicable in the classroom) the material is	5.27	(1.28)	6.11	(0.99)	2.13	.016*	0.36
Ability to apply information to individual cases	5.48	(1.32)	5.73	(0.96)	1.92	.027*	0.38
Sharing of ideas and information with colleagues	4.67	(1.59)	5.73	(1.16)	2.00	.023*	0.36
Dissemination of new ideas about teaching to colleagues	4.93	(0.60)	5.73	(1.28)	1.77	.040*	0.34
Ability to review your own practice	5.40	(1.29)	6.48	(0.74)	2.55	.005*	0.45

* = significant with alpha .05 † = converted from Dz

CONCLUSIONS

Completing a neuroscience-informed teacher-led RCT had positive effects across all EBPQ question areas. 10 aspects of practice were significantly enhanced. Teacher-led RCTs continue to appear to be not only an important means of improving teacher scientific literacy (and of testing interventions in real classrooms), but also a means of improving teacher evidence-based practice. For a full discussion of the project and pupil attainment results, see Churches et al. (2018, *in press*).

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