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What level of support is required to enable secondary school teachers to effectively teach first aid? A randomized trial

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Abstract

In light of the UK government's decision to make first aid education mandatory in schools, this article adds to the body of evidence to inform the implementation of this decision. Our research aimed to explore whether providing extra support to teachers increased their confidence to teach first aid, and whether this support influenced student learning outcomes. Thirty-five teachers were randomly allocated into two experimental groups and one control group. The first experimental group received support through a video medium, the second through an interactive webinar. The control group was provided with no support beyond the learning materials provided to all participants. Our analysis suggests that while providing support for teachers does not positively affect their confidence to teach first aid in the classroom, this increased support does positively affect the first aid knowledge of students.

Keywords: first aid, first aid education, confidence, first aid skills, willingness, video learning

Introduction

Only 5 per cent of adults in the UK would be able to save a life in a first aid emergency (Smith, 2017) despite early provision of first aid being key to saving lives in emergency situations. This deficit is reflected in secondary school students, of whom only 4 per cent would know how to give first aid assistance in an emergency, and only 20 per cent of secondary school students reported learning any life-saving skills in the classroom (Mulligan, 2013). In light of this, the British Red Cross has campaigned for first aid to be taught in all schools, equipping all young people to be able to save lives. According to the International Federation of the Red Cross (IFRC, 2015), children are an increasingly important target audience, with schools being the ideal place to introduce children to first aid education in order to disseminate learning as widely and as systematically as possible. According to a 2013 poll of secondary school students in the UK, 94 per cent of them would feel more confident to help a friend or family member if they had received first aid training. Additionally, 91 per cent of students would like to learn first aid skills in the classroom (Mulligan, 2013). Such training would save lives. Quoted in *The Guardian*, Sue Killen, Chief Executive of St John Ambulance, reported that 140,000 people die each year in situations where life could have been saved by timely and effective first aid intervention (Boseley, 2012). Moreover, with the NHS and other emergency services coming under increasing strain, the delivery of first aid education would

serve to alleviate pressure on accident and emergency rooms, GPs and other vital NHS services (Mytton, 2017).

The importance of addressing this deficit in first aid skills has increasingly been recognized by policymakers. In the UK, draft government legislation released in July 2018 covered the inclusion of first aid in the national curriculum as a mandatory topic within new statutory health education plans for the personal, social, health and economic (PSHE) curriculum. The proposition included basic first aid skills at both primary and secondary school levels, and cardiopulmonary resuscitation (CPR) and automatic external defibrillator (AED) training at the secondary school level. In January 2019, the Education Secretary, Damian Hinds, affirmed the government's plans for such a policy to be introduced in 2020 (DfE, 2019). This legislation follows years of campaigning by non-governmental organizations and charities in the UK, including the British Red Cross, British Heart Foundation and St John Ambulance, who hailed the decision to legislate as a 'decisive moment' (ibid.). The decision followed a three-month public consultation held between December 2017 and February 2018.

First aid as a mandatory topic for schools is not a new idea. In many countries, such as Brazil, Spain, France, Norway and Denmark, first aid is already mandatory in schools (IFRC, 2015). Indeed, 25 per cent of EU countries and 36 US states have passed legislation, frameworks or curriculum content that advocate for first aid teaching in schools. However, despite its increasing prevalence, the implementation of first aid as a mandatory topic in schools has not always been thorough. Studies conducted eight years after first aid education became mandatory in Danish schools showed that only 28 per cent of teachers reported teaching it, with only an additional 11 per cent planning to teach it (Hansen *et al.*, 2017). This reflects similar reports elsewhere (Hart *et al.*, 2013; Salvatierra *et al.*, 2017).

Barriers to implementation voiced by schools are logistical (Reder and Quan, 2003; Hart *et al.*, 2013). They include costs (Hart *et al.*, 2013; Lafferty *et al.*, 2003; Salvatierra *et al.*, 2017), instructor availability, lack of resources or support (Lockey *et al.*, 2016; Salvatierra *et al.*, 2017) and, importantly, teacher confidence – real or perceived in their ability to effectively teach first aid (Hansen *et al.*, 2017; DJS Research, 2010; Schoolzone, 2018). This body of evidence is reflected in market research commissioned by the British Red Cross that highlights that while a majority of teachers felt first aid should be taught in schools, around half of teachers did not feel confident enough to teach it (DJS Research, 2010).

There is, however, evidence to suggest that teachers are as effective at delivering first aid education as healthcare professionals (Lukas *et al.*, 2016). This removes the need for, and costs associated with, external instructors, and could make finding curriculum time easier. However, it has long been understood that teacher confidence and perceived competence depends primarily on their first aid training and skills (Mpotos *et al.*, 2013).

Working to address this training gap, the British Red Cross developed First Aid Learning for Young People (FALYP), a flagship digital first aid learning programme for students aged 11 to 19 years. It is designed to be taught by teachers without any previous first aid teaching experience or training.

This article aims to explore whether providing teachers with extra support, in addition to existing FALYP resources, increased teachers' confidence to deliver effective first aid tuition and influence perceived barriers surrounding training. It also seeks to understand what influence this extra support has on students' confidence, knowledge and willingness to act in a first aid emergency.

Methodology

Our research utilized an experimental methodology. In order to assess which form of support, if any, would have a greater effect on teacher confidence and student confidence, willingness and knowledge, this research was designed with two experimental cohorts. The first cohort was trained through a video, while the second was trained through an interactive webinar. A control cohort was also used to provide a baseline from which to assess training pathway impact. Participants were secondary school teachers recruited from across the UK. Teacher participation was voluntary. Participants responded to an advertisement in either British Red Cross marketing or marketing by Schoolzone, who were commissioned to recruit teachers for this project. Teachers first registered their interest, before being sent more detailed information through which they could confirm their participation. To be eligible, teachers needed to have not used existing FALYP resources prior to their participation and had to be based in a secondary school with students aged 11–18. An incentive of a £50 voucher was offered to participants, delivered upon completion of all elements of the research project. Teachers were expected to attend training (which was compulsory, if they were randomly allocated to an experimental cohort), deliver a minimum of two hours of content, complete online teacher questionnaires and return student evaluation forms.

Sample

The research aimed for a sample size of 75, giving 25 teachers per cohort. The sample size was determined by the practical restrictions of the project. Over-allocation was used as a contingency for withdrawal. Eligible teachers were asked to commit to teach a minimum of one class, the size of which was not prescribed to avoid restricting any teachers or schools from participating.

Figure 1 shows the recruitment and sampling process, and a breakdown of dropout rates and pathway participation. Recruitment occurred between 1 November 2017 and 11 December 2017. An education market research company was commissioned to support the recruitment process. Advertising was conducted through British Red Cross education marketing and the organization's website. A total of 172 teachers registered interest; 51 of these did not meet the eligibility criteria and so were excluded (schools or email addresses already registered to the FALYP website, $n=44$; duplicate Schoolzone and British Red Cross registration, $n=1$; used British Red Cross resources/educators previously, $n=4$; not a secondary school setting, $n=2$). One teacher allocated to the video cohort taught the session without watching the video and so was moved to the control cohort for analysis.

Out of the 75 teachers that initially formed the three cohorts, 35 teachers completed the project fully, completing all online questionnaires and returning student evaluation forms. A total of 1,548 student forms were returned. Some teachers completed all the questionnaires but did not return student forms ($n=3$). Some teachers returned student forms but did not complete all teacher questionnaires ($n=10$).

There was a good regional spread of teachers completing the project across the UK, with 29 teachers from schools in England, 4 from schools in Scotland and 2 from schools in Northern Ireland. No teachers from schools in Wales completed the project.

Teacher demographic information was collected and is displayed in Table 1. Teachers were asked to identify their main teaching subject. Results showed that participating teachers taught a range of subjects, with science being the most dominant ($n=10$). Nearly half (42 per cent) of teachers had previously been on a first aid at work course. This was similar across all three cohorts; 14 per cent of teachers had never

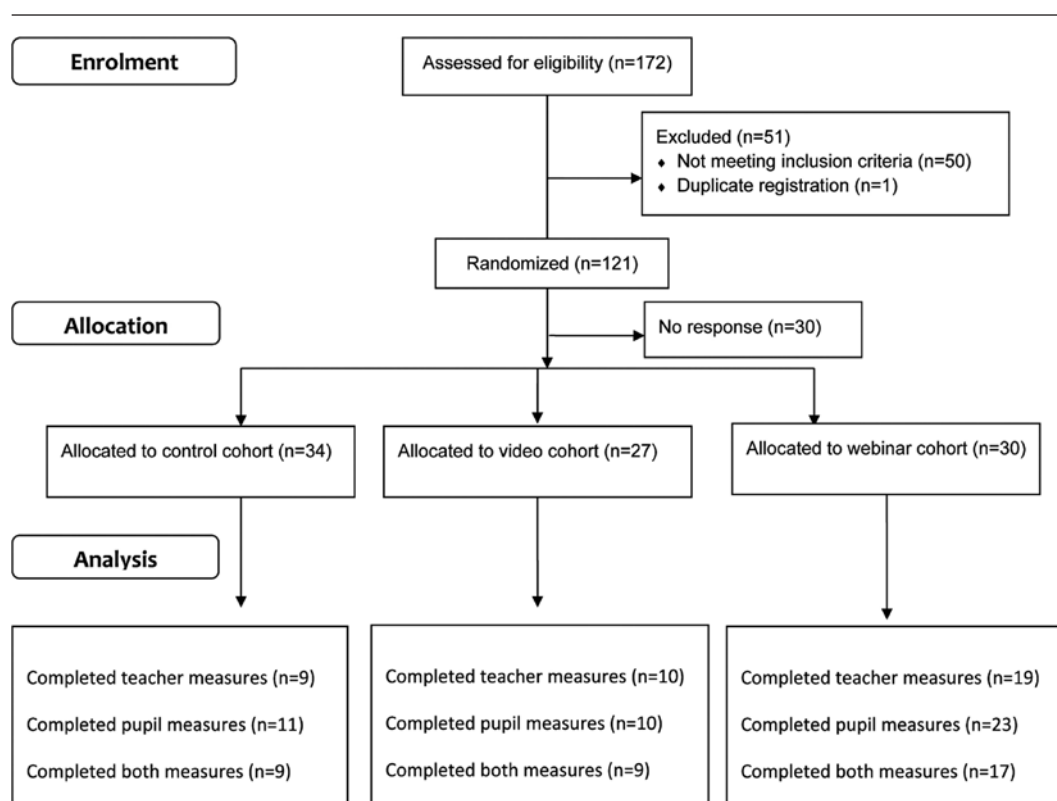


Figure 1: Recruitment and sampling process

received any formal first aid education or training; 37 per cent of teachers had never taught first aid in school; 10 per cent of teachers taught first aid in schools regularly.

Randomization

Participants were allocated to cohorts by the lead researcher. Stratified random allocation was used to allocate 25 teachers to each cohort. The strata identified were those who had disclosed any previous first aid experience and those who had not. This information was gathered through the initial participation registration form: 14 per cent of teachers registered for the project reported that they had previous first aid experience. Therefore 65 of the teachers allocated to cohorts were from the strata that had no previous first aid experience and 10 were from the strata that had previous first aid experience, giving a total sample size of 75.

Allocation was conducted using a random number generator in Microsoft Excel. Once allocated to a cohort, teachers were asked to confirm their participation. The remaining teachers who had registered their interest but had not been selected by the initial randomization process were placed on a reserve list and were contacted at a later date to satisfy the sample size target.

Ethics

Teachers were allocated a code for anonymization, which was used throughout the project. Teachers were made aware of the purpose of the study in their selection correspondence. Informed consent was provided by all teachers in the study. The webinar and video cohorts were informed that their participation involved a compulsory support session delivered through either webinar or video. Information letters were

Table 1: Teacher demographics at baseline (n=59)

	Control cohort	Video cohort	Webinar cohort
Teacher main teaching subject			
ASDAN (Award Scheme Development and Accreditation Network)	0	1	1
Art and Design	1	0	1
Duke of Edinburgh	1	0	0
English/literacy	3	0	1
Geography	0	1	1
Health and social care	0	5	1
History	2	1	2
ICT/technology	2	0	5
Life skills/skills for life	3	0	2
PE/sports science	3	2	0
PSHE/PHE	2	0	1
Personal development	1	2	0
Science	1	4	5
Social studies	1	0	1
Tutor group	1	0	1
First aid training (could tick all applicable)			
Qualified first aider in the workplace (longer than three years)	6	9	7
Qualified first aider in the workplace in the last three years	5	5	5
Informal first aid training, for example, as part of staff development	5	3	4
None	4	1	7
Other	3	3	3
Non-certificated public first aid course from the British Red Cross more than three years ago	3	1	2
Non-certificated first aid course from another provider in the past (longer than three years ago)	2	0	3
Medical training, for example, school nurse	2	2	0
Non-certificated first aid course from the British Red Cross in the last three years	1	0	1
Experience of teaching first aid			
Never taught	8	4	10
Other	2	2	2
Taught on an infrequent basis (for example, one lesson a year for special events)	4	4	8
Taught regularly a series of lessons (for example, a lesson a fortnight over a term)	2	3	1
Taught regularly but as a one off throughout the year (for example, a lesson a year for each year group)	5	3	1

sent to teachers to distribute to the caregivers of the students involved in the project. Contact details for the lead researcher were provided. No personal information from any student was recorded by researchers at any stage of recruitment or testing, so no signed consent was required. Students and/or caregivers were able to withdraw from

the study at any point during the process, as was made clear through the information letters. This approach made subgroup analysis difficult.

Resources to be tested

The FALYP resource used during the research took the form of an online toolkit, with a range of activities for teachers to choose from covering a range of first aid topics. The resource is structured across four modules: starter, confidence building, knowledge building and concluding. The activities within each of these modules are labelled as introductory, developing or advanced, depending on the prior learning required. To enable comparison between cohorts, a research learning pathway was developed. This included core and optional activities, and skills for teachers to cover in the session(s). The two core first aid skills that all teachers were asked to teach were helping someone who is unresponsive and breathing, and helping someone who is bleeding. This allowed teachers to retain an element of choice and flexibility over which other topics to cover that most closely reflected their needs.

Procedure

Participation packages were sent to teachers in January 2018. Packages contained student evaluation forms, caregiver information letters and the research learning pathway. Teachers were instructed to complete their registration through the FALYP website. Once registration was complete, they obtained access to the resources.

The two experimental cohorts received different levels of support. The two levels of support were developed specifically for the research project: a video and a webinar session. The video included an introduction to the resources, alongside advice on how to navigate and use the website. It also included clips from schools with students learning first aid to provide examples of how the resources could be used in practice. The video lasted just over five minutes and was available through Vimeo. Teachers assigned to this cohort were sent a link along with a password to access the video. They were asked to watch the video before delivering any first aid session(s). The video was available for seven weeks, from 18 January 2018 to 9 March 2018.

The online webinar was hosted on Cisco's Webex software. It introduced designated teachers to the resources and how to navigate the website. During the webinar, teachers had the opportunity to discuss as a group how they might use the core resources in the research learning pathway with their students. The webinar also included opportunities for teachers to ask British Red Cross training staff questions about the resources. Two webinars were held, one during school hours (24 January 2018) and one after school (18 January 2018). Teachers needed to be able to join at least one of these via a computer, laptop or phone. Each webinar lasted an hour and a half and was facilitated by British Red Cross education staff. Both webinars were scheduled before teachers had delivered any first aid session(s).

Outcome measurements

The primary outcome measure for this project was teachers' confidence to teach first aid. For the experimental cohorts, this was assessed at three separate time points: before teaching (time point 1), after support (time point 2) and after delivering the sessions (time point 3). The control cohort was measured before (time point 1) and after delivering the sessions (time point 3).

Teachers' confidence was measured in three ways:

- self-rated 0–10 Likert scale for confidence to teach the skill of helping someone who is bleeding, with 0 labelled 'not confident at all' to 10 labelled 'very confident'
- self-rated 0–10 Likert scale for confidence to teach the skill of helping someone who is unresponsive and breathing, with 0 labelled 'not confident at all' to 10 labelled 'very confident'
- self-efficacy questionnaire.

The self-efficacy questionnaire consisted of nine questions. It was an adaptation of the Science Teaching Efficacy Belief Instrument (STEBI) (STELAR, 2019). While there was no way to validate this adapted scale, the STEBI has proven to be valid and reliable in a range of contexts (Enochs and Riggs, 1990; Psillos *et al.*, 2003; Moslemi and Mousavi, 2019). The scale was adapted to suit a first aid context to get an accurate measure of teacher confidence. They measured their agreement to nine statements; this was then translated into a numerical score to register teacher efficacy (Enochs and Riggs, 1990). Teacher data were collected through online questionnaires hosted on www.surveymonkey.com. Teachers were emailed a link to each questionnaire to complete before teaching, after support and after delivering the sessions. Teachers were required to insert their unique anonymous ID code at the start of every online questionnaire, which enabled the three questionnaires to be matched and analysed. After the completion of the project, the survey data were downloaded to an Excel file, ready for analysis.

The secondary outcome measure was used to establish how effective the first aid education was for the students. For this, we measured students' confidence, willingness and knowledge of first aid using student evaluation forms.

The student evaluation forms measured students' confidence and willingness to act in a first aid emergency, followed by two vignettes where core skills were required. One vignette focused on helping someone who is bleeding; the second focused on helping someone who is unresponsive and breathing. Students' confidence and willingness to act in these two specific scenarios were measured, followed by a multiple-choice knowledge question of the most appropriate action to take in each scenario. Teachers were asked to return the forms to the British Red Cross in a pre-paid envelope. These forms were scanned in by the British Red Cross data capture team and sent to the lead researcher for analysis. Qualitative comments were provided as image files.

Non-parametric tests were chosen to analyse the data, as the data collected were ordinal and unlikely to be normally distributed due to the nature of the scale used. Likert scales have a ceiling point (10), and it was expected that this would lead to data with a negative skew, with scores clustered around the higher ratings, as more students increased in their confidence and willingness as a result of the first aid education delivered. Normality tests were conducted on the data to verify this. Calculations were executed using Microsoft Excel and SPSS statistical software. Analysis focused on comparing the three cohorts of teachers, as well as the experimental and control cohorts.

Results

Primary outcome measure – teachers' confidence

Teachers were asked at each time point to respond to the two statements below on a Likert scale of 0–10, with 0 being 'not confident at all' and 10 being 'very confident':

You have been asked to teach your class the first aid skill of helping someone who is bleeding. How confident do you feel that you could do this?

You have been asked to teach your class the first aid skill of helping someone who is unresponsive and bleeding. How confident do you feel that you could do this?

Table 2 provides the median ratings of teachers' responses to these two questions by each cohort at each time point. This shows how, on average, all teachers increased in their confidence to teach both skills. The webinar can be seen to be the most effective at increasing teachers' scores for teaching the skill of helping someone who is bleeding. Despite randomization, there was a difference between cohorts at time point 1 for both questions, and for the skill of helping someone who is unresponsive and breathing, this was statistically significant (p -value=0.01). An alpha level of .05 was used for all statistical tests.

Table 2: Median ratings of teachers' confidence to teach the two core skills

	n	Time point 1	Time point 2	Time point 3	Change from time point 1 to time point 3
Median ratings of teachers' confidence to teach bleeding					
Control cohort	9	6	n/a	9	+3
Video cohort	10	8	9	10	+2
Webinar cohort	19	5	9	9	+4
Median ratings of teachers' confidence to teach unresponsive and breathing					
Control cohort	9	4	n/a	9	+5
Video cohort	10	8.5	10	10	+1.5
Webinar cohort	19	5	8	9	+4

Table 3: Teachers' median self-efficacy scores

	n	Time point 1	Time point 3	Change
Control cohort	9	3.2	3.7	+0.5
Video cohort	10	3.7	4.2	+0.5
Webinar cohort	19	2.6	4.0	+1.4

Teachers were asked to complete a set of self-efficacy questions at time point 1 and time point 3. Teachers' median scores show that the webinar cohort experienced the largest increase in self-efficacy. Moreover, Table 2 and Table 3 show that teachers in the experimental and control cohorts increased in their confidence for the two skills and self-efficacy score. This shows that the act of teaching first aid using the resources alone can still increase teachers' confidence.

Secondary outcome measure – student outcomes

Table 4 shows that the biggest change in median scores was in overall confidence for the students taught by teachers from the video cohort. Of the two scenarios, confidence increased the most for helping someone who is unresponsive and breathing for students taught by teachers from the experimental cohorts. For helping someone

who is bleeding, the biggest change was seen in students taught by teachers from the webinar cohort. Table 4 shows that experimental cohorts experienced an increase in confidence compared to control. There is a significant difference between students taught by teachers from the control and webinar cohorts, and the control and video cohorts ($p < 0.001$). There was no significant difference found between students taught by teachers from the video and webinar cohorts.

Table 4: Median ratings of students' confidence for the two core skills

		Control cohort	Video cohort	Webinar cohort
General confidence	n	592	244	685
	Median time point 1	5	4	5
	n	584	236	658
Confidence to help someone who is bleeding	Median time point 3	8	8	8
	n	573	236	662
	Median time point 1	6	6	6
Confidence to help someone who is unresponsive and breathing	n	571	237	651
	Median time point 3	8	8	9
	n	591	241	681
Confidence to help someone who is unresponsive and breathing	Median time point 1	5	5	5
	n	582	237	657
	Median time point 3	7	8	8

There were also significant differences found between students' confidence for the two scenario-based confidence questions. An analysis using an independent samples Kruskal–Wallis procedure found a significant difference between the three cohorts. Post-hoc pairwise comparison tests found that for both scenarios, there was a significant difference between students taught by teachers in the control and the webinar cohorts. For the unresponsive and breathing scenario, there was a significant difference between students taught by teachers in the control and video cohorts ($p = 0.002$). For both scenarios, there was no significant difference found between students taught by teachers in the video and webinar cohorts (unresponsive and breathing $p > 0.05$, bleeding $p > 0.05$).

Students' median ratings of willingness were higher at baseline than confidence. On average, all students were found to increase in their willingness to act in a first aid emergency. The largest median increases were found for students taught by teachers in the video cohort in both scenarios.

Regarding willingness to act in the unresponsive and breathing scenario, Table 5 shows a significant difference between students taught by teachers in the control and webinar cohorts ($p < 0.001$), but no difference between those taught by teachers in the control and the video, or the webinar and the video cohorts.

Students were asked to answer two multiple choice knowledge questions, one for each scenario. Table 6 outlines the percentage of correct first aid actions for each scenario at each time point (TP).

Table 5: Median ratings of students' willingness for the two core skills

		Control cohort	Video cohort	Webinar cohort
General willingness	n	591	244	685
	Median time point 1	8	8	8
	n	578	236	657
Willingness to help someone who is bleeding	Median time point 3	9	9	9
	n	575	237	665
	Median time point 1	8	7	8
Willingness to help someone who is unresponsive and breathing	n	570	236	654
	Median time point 3	8	9	9
	n	585	240	680
Willingness to help someone who is unresponsive and breathing	Median time point 1	7	7	7
	n	580	235	655
	Median time point 3	9	9	9

Table 6: Students' knowledge scores

	Control cohort			Video cohort			Webinar cohort		
	TP1	TP3	% change	TP1	TP3	% change	TP1	TP3	% change
n	548	561		231	233		650	633	
Unresponsive and breathing correct (%)	63	83	20	77	89	12	73	94	21
n	530	531		213	211		633	611	
Bleeding correct (%)	54	71	17	65	78	13	65	89	24

A total knowledge score was calculated for each student at each time point; this was a combination of the two knowledge questions. For example, if a student got both knowledge questions correct, they scored 2. Normality tests demonstrated that the scores were negatively skewed, and so non-parametric tests were conducted. The independent samples Kruskal–Wallis test found a significant difference between the three cohorts on overall knowledge score. Post-hoc pairwise comparison tests found a significant difference between students taught by teachers in the control and webinar ($p < 0.001$), control and video ($p = 0.005$), and webinar and video cohorts ($p = 0.005$). This shows that students taught by teachers in the webinar cohort achieved significantly higher scores of knowledge of the correct action to take in a first aid emergency, than both the video and control cohort.

Teacher perception of 'support' and 'training'

This research used the phrase 'support' to describe the training teachers were given. This aimed to overcome the confusion that clinical first aid training was provided. In the teacher questionnaires, teachers were asked to rate their agreement with the statement 'Training is a requirement to teaching first aid in schools'. 'Training' was not

defined in the survey. In retrospect, we acknowledge that this might be interpreted differently by different teachers, some correctly assuming it to mean the 'support' that we provided via the webinar and video, and others assuming it to mean a full, clinically focused first aid course for teachers. Both the experimental cohorts increased in their agreement with this statement from time point 1 to time point 3. However, teachers in the control cohort decreased in their agreement with this statement. This suggests that the experience of teaching first aid without any additional support can influence teachers' beliefs about training as a requirement for teaching first aid. Overall, at time point 3 there was still a high percentage of teachers who felt that training was a requirement for teaching first aid, with 84 per cent of teachers either agreeing or strongly agreeing. This shows that, even after having been part of the research project, a high proportion of teachers still believed that training is a requirement for teaching first aid. It is important to consider how resources are positioned to support teachers and enable them to overcome this perceived barrier.

Discussion

Providing additional support for teachers to teach first aid was not found to affect increases in teachers' confidence to teach first aid in comparison to a control cohort. It is important to note that this research had a small sample size, especially when comparing between cohorts. Also, despite the use of randomization, there were some baseline differences between the three cohorts. These two factors limit the generalizability of these findings.

Additional analysis of the teacher self-efficacy questionnaire considered teachers' responses to each statement provided on the questionnaire. There were no prominent patterns in how teachers' agreement changed between time points or between cohorts.

Despite not having a direct influence on teacher confidence, providing additional support to teachers was found to affect student outcomes. On average, those taught by teachers in the experimental cohorts experienced a larger increase in confidence, willingness and knowledge. This difference was statistically significant for all three students' confidence measures, willingness in an unresponsive and breathing scenario and for students' knowledge. This suggests that while teachers may not feel personally more confident, the extra support delivered improved the way they taught first aid. It could be argued that although our primary measure was teacher confidence, the more important one is student attainment in first aid education. Our research demonstrates that students gained more when taught by a teacher who had received more support prior to delivery.

Of the three student outcome measures of confidence, willingness and knowledge, confidence was affected most by the education provided. On average, students' willingness ratings were higher at baseline than confidence. This suggests that initially students are already willing to help. Knowledge was the only student outcome measure that showed any difference between the two levels of support received by teachers. Teachers from the webinar cohort were more effective at increasing students' knowledge of the most appropriate first aid intervention.

It is important to note that the control cohort, which used the resources in their current form without extra support for teachers, were still effective at increasing students' confidence, willingness and knowledge, just not as effective as the experimental cohorts. Teachers' confidence and self-efficacy still increased as a result of the experience of teaching first aid itself, without receiving any additional support. This suggests that

perhaps an approach to remove the perceived barrier to teaching first aid without training or support is simply to encourage teachers to experience teaching it.

Our research also provided insights on the types of resources that appeal to teachers for use in the classroom, as well as the approaches to training and support that are preferable for teachers. Videos were selected by teachers as the most popular teaching resource for this topic. Teachers across all cohorts used a range of the resources available in the toolkit, suggesting that they enjoyed having a choice between a variety of different resources. The research also provided key information about providing teachers with support. In their feedback, teachers reported that the support they received as part of this project was effective and useful. The main challenges surrounded the logistical elements of organizing a webinar session for teachers. Feedback from the teachers also highlighted concerns with the technology and accessing the webinar. If webinars are to be used in future, more contemporary technology might be more successful.

This research used an incentive to encourage teachers to participate. Although this resulted in a 41 per cent completion rate, it was still lower than expected. Teachers did not provide information as to why they did not complete the study; therefore, we can only speculate about the reason for the high attrition rate. It may be that teachers find it difficult to find time for additional, non-mandatory subjects, which would reinforce the need for mandatory implementation alongside encouragement for teachers and school leaders to value first aid education.

The findings from this research suggest that there is some value in providing an additional level of support for teachers, not necessarily for the benefit of the teachers, but to enhance their students' learning experience. For the majority of the student outcomes there was no significant difference between the two levels of support. As a video can be seen to be more operationally feasible and cost effective, this is the format of support that we recommend as a result of this study.

While the small sample size and attrition rate limit the generalizability of these findings, the results of this study suggest that carefully introducing extra teacher support and guidance in first aid could be used to support first aid's successful integration into the secondary school curriculum in 2020. Placing student improvement in knowledge and confidence to act as a primary goal of first aid education might be more achievable by providing extra support for teachers. However, this research project highlighted the importance of careful consideration prior to the implementation of mandatory first aid in schools. The messaging used surrounding mandatory implementation and guidance available for schools needs to be carefully thought out in ways that will assist, not confuse, teachers. Information should include who is best suited to deliver first aid and the level of teacher training, if any, required before teaching (Zinckernagel *et al.*, 2016). A lack of information and guidance has been found by other countries to be a barrier to successful implementation (*ibid.*), and this study has further contributed to that evidence. The government should take into consideration the evidence presented here alongside that from experiences elsewhere in the world to ensure a successful transition to making first aid education mandatory in the secondary school curriculum.

Notes on the contributors

Lucy Ellis is a research and evaluation specialist at the Youth Sport Trust. Previously she has worked for the British Red Cross and the National Foundation for Educational Research. Projects she has worked on span quantitative and qualitative approaches, and her main interest is in working with children and young people.

Ellen Gordon is the Education Research Manager at the British Red Cross. She is responsible for commissioning and conducting empirical and desk-based studies spanning health, education and humanitarianism. She was formerly a primary school teacher with a focus on PSHE.

Mark Forsyth is an evaluation officer at the British Red Cross, focusing on health and education services. He contributes to statistical analysis of service user data, and often supports specific research projects across these disciplines.

Alexander Ward managed research projects at the British Red Cross following a period of qualitative research in Turkey and the Middle East, where he has now returned. His primary focus is on humanitarian projects.

Emily Oliver is Senior Education Manager at the British Red Cross. She works with colleagues across the world from the Red Cross Movement to create international guidelines and to share expertise. Her works focus on creating resilience through effective education and public health. She is also a senior editor of the *International Journal of First Aid Education*.

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