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Sinéad Vaughan 

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Exploring teachers' experiences of action research

Sinéad Vaughan* – *UCL Institute of Education, UK*

Abstract

Through exploring the author's experiences of working with five teachers who undertook an action research project for their master's dissertations, this article establishes that it is possible for critical participatory action research to address issues around the perceived de-professionalization of teachers, and challenge the exploitative nature of education within English state schools. Semi-structured interviews with five teachers showed that this was an empowering experience, which provided a number of benefits, including an increased sense of professionalism, and that they would recommend action research to other teachers. Their experiences and insights have been used to discuss options for implementing action research more widely, identifying potential challenges and suggesting possible solutions. Based on both sets of experiences, I suggest that it would be valuable for action research to be implemented more widely within the English education system, as a method of addressing teachers' frustrations around accountability and performativity.

Keywords: critical participatory action research, performativity, accountability, teacher retention, de-professionalization, exploitative

Introduction

This article explores the question, 'To what extent can action research mitigate the perceived de-professionalization of teachers and challenge the exploitative nature of education?' I examine this question through reflection on my experiences of working with teachers who have undertaken action research projects, and through semi-structured interviews with teachers who used action research for their master's dissertations. Based on both sets of experiences, I explore whether implementing action research more widely within the English education system would be a valuable opportunity for addressing teachers' perceived lack of autonomy and feelings of helplessness related to accountability and performativity.

One method for identifying the strength of teachers' unhappiness is to explore teacher recruitment and retention rates, with Kelly and Northrup (2015) asserting that there is a strong, if basic, relationship between teachers' career satisfaction and attrition rates. Within English state schools, there is a perception that issues around teacher recruitment and teacher retention are close to, or have already reached, crisis point (Coughlan, 2018; National Education Union, 2019; Worth, 2018). According to recent government statistics, only 43 per cent of the required physics teachers and 64 per cent of the required mathematics teachers were recruited in 2019, with an overall recruitment shortfall of 15 per cent of secondary and 4 per cent of primary school teachers (DfE, 2019a). In addition, nearly 10 per cent of full-time equivalent

qualified teachers left the profession between December 2017 and November 2018, and 2016 figures show that approximately a third of newly qualified teachers leave the profession within five years (Foster, 2019). Given that student numbers are forecast to rise, with a projected increase of 15 per cent in numbers of secondary school students between 2018 and 2024 (Foster, 2019), this lack of teachers, and the need for a potential solution, becomes even more critical.

While there are a variety of factors affecting recruitment and retention, it is more straightforward to establish teachers' reasons for leaving the profession. The most commonly cited reason for leaving was workload (Foster, 2019), leading to unmanageable levels of stress and a negative impact on teachers' well-being. However, Perryman and Calvert (2020) claimed that it was the nature of the workload, rather than the quantity, that significantly affected teachers' decisions, with accountability demands and performativity measures given as the two most critical causes. Their results echo findings from the Department for Education (DfE, 2018), which established that in addition to workload, there were a number of other contributory factors, many of which revolve around teachers' feelings that they are not given the professional recognition and autonomy they deserve.

The article starts by exploring the current state of education in English state schools in greater detail, demonstrating that both teachers and students are suffering through the exploitative nature of education. This is followed by an introduction to action research, and a brief overview of my experiences of working with teachers who used action research for their master's dissertations. I address methodological choices, and then examine the answers that these teachers gave during semi-structured interviews to consider the benefits and challenges of implementing action research as a professional development tool more widely throughout the English education system.

Factors affecting teachers' job satisfaction in English state schools

This section explores issues affecting teacher retention, including school and teacher performance indicators, establishes that school leadership and management has significant influence over individual teachers' job satisfaction, and acknowledges students' experiences of education. Perryman and Calvert (2020) sent surveys to 3,956 teachers who graduated between 2011 and 2015 to discover their initial motivation for entering teaching and reasons for considering leaving, or having left, receiving 1,200 useable responses. Their findings showed that the most commonly given reasons for leaving were 'To improve work life balance' (75 per cent) and 'Workload' (71 per cent). For those considering leaving, the factors driving their decisions were 'Workload' (83 per cent) and 'To improve work life balance' (76 per cent). However, comments from both groups revealed that it was not the amount of work, but the nature of activities and the accountability regime that overwhelmed them. Teachers spoke of unrealistic levels of detailed planning, completing unnecessary paperwork, pressures of targets, and a lack of fun and creativity. Similarly, the DfE (2018) found that the reasons teachers gave for leaving included: accountability and scrutiny measures that suggest teachers cannot be trusted; an enforcement of inflexible teaching policies that take no notice of teachers' professional judgement, making teachers feel demoralized; and government policies, including high-stakes tests, a data-driven ethos, and curriculum and exam changes. Teachers felt that these factors detracted from their reasons for entering the profession, such as motivating and inspiring young

people, engaging them with a subject, and making a positive difference to young people's lives (DfE, 2018).

The overarching terms used to define these factors are performativity and accountability (Perryman and Calvert, 2020). Performativity can be seen as a tool for controlling teachers, by judging and comparing their performance, and either rewarding or sanctioning them (Ball, 2003). Various measures are used to achieve this. Metrics used to assess English state schools, and by implication teachers, include national assessments taking place in Key Stages (KS) 1, 2, 4 and 5. The KS2, 4 and 5 results for each school are analysed to determine the average attainment and progress for a student in that school, in comparison to national averages. These statistics are then used to create publicly available league tables (gov.uk, 2020) that parents can use to help them choose a school. As school funding is based on the number of students, league tables create additional pressures on teachers. Schools are also inspected by the Office for Standards in Education, Children's Services and Skills (Ofsted) (gov.uk, 2020) and rated 'Outstanding', 'Good', 'Requires improvement' or 'Inadequate'. A school judged as 'Requiring improvement' may be monitored by Ofsted and will be re-inspected (Ofsted, 2019). A school judged as 'Inadequate' may be forced to become an academy, and for existing academies, the academy chain could lose funding, or the school could be reallocated to a different chain. It is clear to see that these judgements also increase pressures on teachers, and that the outcomes have the potential to significantly affect their working conditions.

In addition, teachers are appraised every year in accordance with the School Teachers' Appraisal Regulations (legislation.gov.uk, 2012). These require teachers' performances to be assessed against general teaching standards, and individual objectives related to improving their students' education. In 2013, performance-related pay was introduced, with head teachers and school leaders determining factors used for considering pay reviews (DfE, 2013b), again increasing pressure on teachers. Appraisal requirements and performance-related pay have resulted in significant variations in the demands placed on teachers in different schools, affecting both school turnover and attrition, as Sims and Jerrim (2020) found. They took the 2018 Teaching and Learning International Survey (TALIS) data for English schools and linked it to data from the School Workforce Census (SWC), which provides information about all state-funded schools in England, to investigate variations in working conditions, and to determine the effects of working conditions on job satisfaction, turnover and retention. Using data from 2,009 primary school teachers and 2,376 lower secondary school teachers (KS3), their findings showed that, as suggested in Ladd (2011) and Kraft *et al.* (2016), school leadership significantly affected job satisfaction, turnover and attrition. Teachers in schools where leadership teams created supportive cultures and gave teachers the autonomy necessary to do their job reported higher levels of job satisfaction, and they were less likely to leave their job, or the profession. This shows that individual school leaders can put measures in place to address issues affecting teacher retention.

As teachers spend the majority of their working day with their students, it is also worth considering how students are faring in the current environment. The English national curriculum (DfE, 2013a) has been reformed to provide a more rigorous education, based on higher standards. National Curriculum Assessments, more commonly known as SATs, for children in KS1 and KS2 have been made harder, and a higher level of achievement is expected (Roberts, 2017). A multiplication tables check (MTC), which requires all students to know their multiplication tables up to 12 x 12 is being introduced in Year 4, with the first tests happening in June 2020 (STA, 2019).

GCSE examinations have been reformed (Ofqual, 2018a), increasing the difficulty level and restricting assessment almost entirely to written examinations at the end of Year 11, with a new grading scale providing greater differentiation between the top grades, and reduced resit opportunities for English and mathematics. A-level examinations have been reformed (Ofqual, 2018b), with many changes mirroring GCSE changes, and AS-level results no longer contributing to the A level. Other post-16 qualifications are also in the process of being reformed (DfE, 2019b). It is clear that throughout the education system, demands on students and exam pressures have increased. Teachers across all key stages comment that they have experienced the impact of exams on students' mental health (Ward, 2016; Lough, 2019; Weale and Holmes, 2018) and there are suggestions that exam stress also affects teachers (Education Support, 2018).

While it is not individual teachers' responsibility to resolve these issues, there are suggestions that increasing self-efficacy can reduce stress (Bandura, 1994). As workload has been established as a significant problem, any proposed solutions need to be mindful of increasing this. It is impossible to effect change without some impact on workload, but I suggest critical participatory action research, which focuses on teachers' practice, can be used to alleviate some of the issues identified above. The next section provides an overview of action research, followed by an exploration of my experiences of introducing master's students to action research.

Introduction to action research

It is broadly agreed that action research was originally conceived by Lewin (1946) for his social research, which focused on improving intergroup relationships between different community groups within the United States. He believed that for social practice typical theoretical research was not sufficient, claiming instead that the most appropriate type of research was 'action-research' (Lewin, 1946: 35). He described 'action-research' as research that compared the effects of different forms of social action, consisting of a series of spirals that each entailed 'a circle of planning, action, and fact-finding about the result of the action' (ibid.: 38). Within the United Kingdom, one of the earliest and most well-known proponents was Stenhouse (1975), whose focus lay in curriculum development and social change. He led the Humanities Curriculum Project (HCP), which provided support and materials for teachers to facilitate inquiry-based lessons on topics viewed as important areas of human interest, such as war, education and relationships with the family and between the sexes (Stenhouse, 1968). Taking the view that only a teacher can know what has been successful in their classroom, Stenhouse placed the teacher at the centre of this project, asking teachers to provide feedback on materials and approaches, enabling them as teacher-researchers, and laying the foundations for action research.

Action research can be described as participatory when the participants of the practice are also those carrying out the research (Kemmis *et al.*, 2014). In their definition of participatory action research, Kemmis and McTaggart (2005) identified various different approaches, all of which involved learning through action, and resulted in personal or professional development. The approaches followed a cyclical process of planning a change, implementing and evaluating the change, then reflecting on the process and finally starting a new cycle. Kemmis (2009: 467) stated that action research is 'a practice-changing practice', and further described three modes of action research: (1) technical action research, which focuses on the researcher improving the outcomes of their practice, and views others involved in the process as the objects of the researcher's actions, rather than equal participants; (2) practical action research,

which again is driven by the researcher, but this time takes others' opinions into consideration, creating a reciprocal relationship between the two parties; and (3) critical action research, described as people working collectively to change their social reality, by thinking, acting and relating to others differently, and creating a more socially just and responsible reality.

For this article, it is most helpful to focus on critical participatory action research, as I suggest this is closest to the approach used by the teachers I interviewed, and the most useful on which to base future development, as it has clear links to teacher agency and autonomy. According to Kemmis *et al.* (2014), critical participatory action research focuses on the concept of critical self-reflection undertaken by researcher-participants, encouraging them to explore their practice, their understanding of their practice, and whether the conditions under which they practice are appropriate. These researcher-participants have a deep interest in studying their practice and significant insider knowledge, which are ideal for enabling them to transform their practice so that it is more balanced and viable, and better able to take account of the opinions of differing groups of individuals. Taking this view of action research leads to critiques of the use of action research as a methodology, with Carr (2006) claiming that employing action research as a methodology reduces the tradition of inquiry in praxis, although there are those who disagree, with Somekh (2006) describing eight methodological principles to support her assertions that action research is a methodology. Overall, critical participatory action research goes beyond simply accepting current practice, focusing on opening up space for discussion and interrogating practice (Kemmis *et al.*, 2014).

Introducing master's students to action research

I currently lead a master's module that focuses on using action research to explore and change practice. It is a compulsory research methods module for the majority of the students, taken by educational professionals working in various fields, in addition to teachers. The module covers the key aspects of a range of research methodologies, is taught online over one term, and assessed via a written assignment. Most of these students then choose to use action research for their dissertation, possibly because they see action research as a constructive way to address issues they have identified within their practice. My experiences of leading this module suggest that students frequently find the module demanding. They are nearly all working, and balancing module, professional and domestic commitments can be difficult. For some, this is their first engagement with master's-level work, and those with little prior experience of research find that there is a significant amount of information to process and understand. On reaching the dissertation stage, the challenge of translating theory into practice presents new problems. I suggest that during the dissertation, supervisors can be seen to fulfil the role of a 'critical friend', a terminology frequently used within action research to describe a person who can 'react to your work as you go' (Miles and Huberman, 1994: 14), providing support and different perspectives, and protecting the researcher against their bias.

Methodology

To investigate the question 'To what extent can action research mitigate the perceived de-professionalization of teachers and challenge the exploitative nature of education?', I believed it was helpful to explore the experiences of the master's students who were also teachers, who from now on will be referred to as teacher-students. I was interested in their insights, as their experiences directly connected to my overarching

question. Therefore, I created a list of all my former and current dissertation students who used action research for their dissertation and were also teachers. This gave seven potential teacher-student participants – five former and two current students. I emailed them, explaining that I would like to interview them about their experiences of action research to gather data for an article, providing details about the focus of my article, the aim of the special issue and the journal of publication. I asked them if they would be happy to participate, emphasizing that there was no requirement to do so, and that they would not be at any disadvantage if they chose not to. I got replies from five teacher-students – three former and two current students – and everyone who replied was included in the research. Their background and choice of project are described in the next section.

I used semi-structured interviews, as although I had a clear idea about some information I wanted to collect, I was also interested in hearing from the teacher-students, and wanted to give them the freedom to talk about issues of importance to them (Denscombe, 2014). I allowed them to choose how they wanted to be interviewed, offering face-to-face, telephone, video conferencing and online interviews via email. Three chose to be interviewed by telephone, and two said that they would prefer email. For those interviewed via telephone, I made written notes during the interview. One of the teacher-students who chose email sent comprehensive answers to my questions, whereas I had a dialogue with the other, exchanging several emails. All were assured that I would preserve their anonymity, and to help ensure this, the names used are pseudonyms.

The questions I asked included:

- (1) Do you feel that undertaking an action research project improved your practice?
- (2) How did your experience of being in charge of your own professional development affect you?
- (3) Would you recommend action research to other teachers?
- (4) What are your views on implementing action research more widely throughout the educational system?

I asked the first question to assess whether participants felt they had explored and changed their practice, which is the focus of action research, and also to discover whether they felt there had been any benefits for their practice. Although I used the word 'improve', the answer could be either 'yes' or 'no', and I felt this phrasing resulted in a clearer starting point. The focus of the second question was to assess whether they valued the experience of directing their professional development, as teachers lacking autonomy is a recurrent theme in the literature. The third and fourth questions attempted to assess whether the teacher-students thought the benefits of action research outweighed the challenges, and whether they thought it would be practical or desirable to implement it more widely, bearing in mind the influence that leadership teams have (Sims and Jerrim, 2020). I organized the analysis of the data by question, and used thematic analysis to identify themes that arose, relating the data to my observations and drawing out the implications.

When considering ethical issues, in addition to informed consent and anonymity, it was important to address the fact that I could be viewed as having a position of power over current students, and they may have felt pressured to participate as I was their supervisor and first marker for their dissertation. In mitigation, in addition to making the voluntary nature of participating clear, I did not approach them until after I had provided feedback on the final draft of their dissertation, limiting my opportunity to affect their progress. All dissertations are routinely second marked, so even if I attempted to fail someone or give a lower mark than deserved, there are already

processes in place to prevent this. In addition, I am not in a position of power over any of my colleagues, so I would be unable to affect their marking decisions.

The teacher-students' action research projects

This section provides an overview of the projects undertaken by the teacher-students. Although they had free choice over their projects, it is interesting to note that all of the projects focused on either mathematics or English. Admittedly, two teacher-students were mathematics teachers, but that the others chose to focus on these topics suggests that they may have been motivated by the fact that these subjects are privileged within the curriculum, making significant contributions to schools' positions in league tables (gov.uk, 2020). Table 1 provides information about the teachers, the focus of their projects and the research community.

Emily was concerned that the new MTC (STA, 2019) could result in teachers focusing on rapid recall of multiplication facts at the expense of conceptual understanding of multiplication. James explored different approaches to improving students' reading ability, inspired by the National Literacy Trust's concerns about children leaving school without attaining minimum reading standards (Save the Children, 2014) and adult illiteracy (National Literacy Trust, 2020). Sophie and Sara focused on their pedagogy, conscious that the skills they were trying to promote would be required by students throughout their mathematics education, particularly in light of the recent exam changes (DfE, 2013a; Ofqual, 2018a, 2018b). Finally, Alex was keen to collaborate with his department to provide effective professional development, aware that imposing teaching practices on his staff could be damaging (Sims, 2017). I suggest that these projects demonstrate the teacher-students' awareness of the exploitative nature of the education system.

Findings

This section presents the answers that the teacher-students gave during their interviews, organized by question.

Table 1: Project details

Name and role	Overarching drivers	Research area	Research community
Emily Classroom teacher	Policy	Helping pupils achieve fluency in multiplication fact recall without loss of conceptual understanding.	Year 2 pupils
James Deputy head teacher	Pedagogy	Exploring strategies to improve reading ability.	Year 7 students
Sophie Classroom teacher	Pedagogy and policy	Developing children's mathematical resilience through peer collaboration.	Year 3 pupils
Sara Classroom teacher	Pedagogy and policy	The potential for inquiry lessons to develop problem-solving skills in mathematics.	Year 7 students
Alex Head of department	Professional development	Exploring how maths teachers perceive their purpose, with a view to using this information to design more relevant professional development.	Maths teachers

Do you feel that undertaking an action research project improved your practice?

All of the teacher-students felt that undertaking an action research project had improved their practice. Emily believed that she was promoting a better education for the children at the school, as she was more confident that she was teaching for conceptual understanding, which she saw as paramount. James described how he had implemented the findings of his action research project throughout the school, with reading now being a clear focus within the curriculum. Sophie identified that there were unintended benefits for her teaching, in addition to the planned changes she made in her mathematics teaching, as she described:

Secondly, when carrying out my research and collecting data through audio recorded focus groups, I became aware of my tendency to interrupt the children sometimes or reword their ideas in a simpler way. This is something I immediately tried to change and by the time of the second focus group I already noticed a difference as I gave the children more time to talk and more opportunities to articulate their ideas.

Sara described the value of the overall process of going through an idea, then stopping and thinking to check that her ideas really are worthwhile and will have an impact. Finally, although Alex's action research project did not help him in his individual classroom practice, he described how:

It did however force me to use a framework to reflect on my practice and the practice of my staff that I definitely wouldn't have done otherwise. It also made me realize that my job as Head of Department was not to develop the perfect way to teach maths for my team, but to go through iterative developmental steps with my team and provide the conditions in which they were comfortable/felt willing to deeply reflect on and change their classroom practice.

How did your experience of being in charge of your own professional development affect you?

Although the teacher-students already had varying degrees of autonomy over their professional development, they were clear that having control of their professional development was beneficial. Emily described how:

teachers have lost their professional voice and are just jumping through hoops to satisfy rigid accountability requirements. Action research has given me a massive confidence boost, and I'm much more confident career-wise now. The freedom keeps you passionate.

Sophie said:

It has definitely made me feel more inspired. It made me realize that I could make changes in my own classroom while still teaching the same curriculum and lessons as everyone else. It has made me realize that I can make positive changes to my classroom while still meeting other responsibilities I have to the curriculum and that it doesn't necessarily have to be one or the other.

Sara explained that this made her feel that:

My opinion matters. I am a professional.

However, although these answers are all very positive, Sophie also cautioned:

I do believe that there is a limitation to action research as a class teacher and I think that there are some things I would like to explore and research but would not be able to due to the restrictions of where I work and the national curriculum – for example, large changes to the way we teach specific subjects at my school (e.g. all teachers are expected to teach modelled writing and I doubt I would be able to change this).

Would you recommend action research to other teachers?

The teacher-students unanimously agreed that they would recommend action research to other teachers, with reflection on their own practice described as the most useful element of the process:

I would definitely recommend action research to other teachers. I think that the balance of completing the research and writing the report with full-time teaching is challenging but aside from this I found the experience rewarding and empowering. I think it really benefited the children I teach, mainly because it made me reflect even more on my teaching and their learning. (Sophie)

A really useful by-product was the amount of reflection it made me do, and specifically into my influence as a Head of Department – if I was asking teachers open questions about their practice, and our school and the profession, then they are very likely to try and say what they think I want to hear, rather than their true opinion. (Alex)

However, it was also identified that action research would only be effective if it was something to which a teacher was committed:

I would recommend action research. In my experience, teachers see action research as something a 'clever' person would do. I think it depends where you are in your teaching journey, and whether teachers feel they can take ownership and control. (Emily)

I would recommend action research, but teachers have to want to do it. You have to be very invested to do it. (Sara)

What are your views on implementing action research more widely throughout the educational system?

When asked about the advantages and challenges of implementing action research more widely in schools, although the teacher-students all agreed that there are benefits of undertaking action research, they also showed acute awareness of the current constraints of the education system.

Emily expressed concern about whether teachers feel they can take ownership and control of their working environment, describing her experiences with a colleague 'who talks about stressors but wouldn't consider finding something she could do to resolve the issues'. Although she felt that teachers would benefit from an action research input, it would be 'viewed as an extra', and she did not know how many others would 'rise to the challenge'. She also said that if you wanted other teachers to undertake action research, then 'the whole process does need to be made very basic and distilled, with a reduction in terminology used'.

James saw the advantages of allowing teachers to engage with research and having autonomy over their professional development, stating that if action research was used properly, teachers could become investigators and make links and connections. However, he was concerned that too much autonomy, with teachers pursuing many different ideas within a school, could potentially lead to students becoming confused. He would consider introducing action research within his school, but he felt that the process would need to be significantly slimmed down, suggesting that a one-page document, which gave links to further reading for interested teachers, would be his preferred option. Sophie explained:

With regards to the advantages, I think it is extremely useful to have a researcher who knows the participants well and who they hopefully feel comfortable with. I also believe it is a way of researching that allows the researcher to implement what they have found immediately, which is beneficial. The main challenges I would consider would be the time commitment of completing the research while teaching and also the restrictions within the curriculum and school.

Sara cautioned that:

You need to bear in mind the national context if you are doing action research. For it to be worthwhile, it needs to have impact for the school and department. If it is a school priority, then the school need to trust that you are developing yourself.

Summary of findings

Overall, the answers that the teacher-students gave to all the questions demonstrated that they found action research a positive and empowering experience, which benefited both them and their research communities. Their answers to the first question demonstrate that the teacher-students felt they developed a deeper understanding of their practice, through reflective engagement with literature and the process of collecting and analysing data, making them feel more confident, valued and valuable as practitioners. They felt that they were providing stronger foundations for their students' education, based on student needs rather than the demands of examinations, which helped to provide consistency between their beliefs and their practice, reducing inner conflict. In Alex's case, his project gave teachers the space to begin their own development, which he clearly valued within his practice, again providing consistency between his beliefs and practice. I suggest that the answers to this first question also demonstrate that the teachers engaged in critical participatory action research, as they showed deep interest in their practice and demonstrated a high level of critical self-reflection.

The second question confirms that the teacher-students felt confined by accountability and performativity demands and restricted by inflexible teaching policies. Taking charge of their own professional development helped alleviate some of these feelings, but there was acknowledgement that there are limitations to what a single teacher can achieve. Answers to the third question suggest that all the teacher-students found the opportunity to reflect deeply on their own practice was the most valuable outcome, and they said that they would highly recommend action research to other teachers. However, there was recognition that this deep reflection took significant effort and energy, exacerbated by working and studying. The answers to the fourth question reinforce concerns around the de-professionalization of teachers,

with suggestions that teachers have become so disempowered that they no longer consider taking initiative, and schools might not trust teachers to work towards their own development. There was also acknowledgement of the complexity of action research, the difficulty of implementing many simultaneous projects, and the potential need for action research projects to align with school development needs. Although these responses suggest that action research can help mitigate some of the negative effects of the current system, there are also limitations to address. The next section draws on both the teacher-students' experiences and insights, and my experiences of implementing action research projects to discuss options for implementing action research more widely within the education system.

Implications for implementing action research more widely

The teacher-students strongly suggest that they see action research as being beneficial for their own and other teachers' practice, which raises the question of whether it would be advisable to implement it more widely within the sector, in an attempt to address some of the issues around teacher retention. Their choice of project suggests the teacher-students are aware of the exploitative nature of education and of the problems that the current education system causes for students. Concerns that the high-stakes test environment (STA, 2019; Roberts, 2017; Ofqual, 2018a) can lead to a narrowed curriculum and a reduction in students' learning motivation (Lau, 2016), can be seen as contributory factors for three of the projects, with the teacher-students choosing topics they viewed as beneficial for students' overall development. Conceptual understanding is important in mathematics education and can be described as a student's mental representation of a topic, which is not problem-specific and frequently includes connections between topics (Rittle-Johnson *et al.*, 2016), but the MTC can be successfully completed using rote learning. Collaborative learning can increase student support systems, improve cooperation, increase self-esteem, and promote critical thinking, problem-solving skills and motivation (Laal and Ghodsi, 2012). Inquiry-based learning can be seen as a way to make use of children's natural curiosity, encouraging them to ask questions, use evidence to formulate explanations and justify conclusions (Anderson, 2016). Clearly, these are important aspects of education, even if they are not formally assessed. I also suggest the projects address the findings from Perryman and Calvert (2020) that teachers feel they lack the opportunity to be creative in their teaching methods.

I suggest that the choice of projects and the answers given in the interviews also show that the teachers successfully engaged in critical participatory action research. Four of the projects focused on providing a more sustainable and socially just learning environment (Kemmis, 2009), aiming to develop both the students and the teacher-students, and to ensure that the results from high-stakes tests were not prioritized over the students' need for experiencing a broad and balanced curriculum delivered in an innovative and exciting way. There was also clear evidence that all of the teacher-students had actively engaged in a process of 'critical self-reflection' (Kemmis *et al.*, 2014: 6), and showed deep interest and understanding around their practice. Alex's reflections on his project demonstrate that he found this process useful, as he realized that this is what he was trying to create for the teachers in his department. An important point to note is that all of the teacher-students had to write up their project. This aligns with Stenhouse's (2012: 128) opinion that 'Research may be broadly defined as systematic inquiry made public'. The act of writing is a well-established form of

qualitative research (Reece and Speedy, 2014), and without engaging in writing, teachers may miss insights into their problems, proposed solutions and findings. This opinion is echoed by Ginns *et al.* (2001), who describe the importance of writing about action research, claiming that it helps teachers to work through their difficulties and reflect on their teaching practice more critically.

The interviews directly established the teacher-students' experiences of accountability measures and inflexible teaching policies (DfE, 2018), and explained why they thought it would be beneficial to implement action research more widely throughout the education system. Overall, the teacher-students agreed that undertaking action research projects helped them to address issues of performativity and accountability, stated as key factors influencing teachers' decisions to leave the profession (Perryman and Calvert, 2020). Performativity is linked to feelings of de-professionalization, as teachers feel they have to 'perform' to others' standards to prove their worthiness. However, the critical and self-reflective nature of action research gave the teacher-students the chance to decide for themselves what would be best for their students and their practice, instilling feelings, as they described, of 'freedom', 'confidence', 'passion', 'inspiration' and that their 'opinion matters'. I suggest that these descriptions show that the teacher-students were developing their own judgements of themselves as teachers, rather than just relying on what others had said. In addition, the teacher-students felt that in undertaking action research projects, they were being given autonomy to do their jobs, identified by Sims and Jerrim (2020) as an important factor in teacher job satisfaction. The interviews also established that the teacher-students unanimously agreed that other teachers could benefit from action research.

Although the teacher-students responded positively to implementing action research more widely throughout the education system, they did raise a number of issues. Time was a key factor, especially when considered in conjunction with teachers' existing workload. There are two points to consider here. First, the Education Reform Act (1988) made it compulsory for teachers in state schools to undertake five in-service training days every year. Schools can decide how to use these days, so I suggest some time could be used for action research. There is research arguing that many schools do not have a coherent professional development (PD) strategy (Pedder and Opfer, 2011). Hence, considering Sims's (2017) claims that effective professional development is positively associated with job satisfaction and teacher retention, in conjunction with the teacher-students' responses to action research, suggests that this would be a valuable use of PD time. Second, as Perryman and Calvert (2020) highlight, it is the nature of the workload, rather than the quantity, that is important. I suggest that encouraging teachers to spend time engaging with research to help them develop their practice in appropriate ways would be seen by many teachers as more useful than just performing 'box-ticking' activities to meet accountability demands. Certainly, Alex came to the realization that this was the environment he wanted to create for the teachers in his department.

Another issue is that although action research may seem relatively straightforward – identify a problem, find a solution, then implement and evaluate the solution – the reality is that an action research project is significantly more complex. The teacher-students' suggestion that for action research to be implemented more widely, the process needs to be made simpler, may overlook difficulties of combining theory and practice. I suggest that if action research is reduced to algorithmic instruction, teachers may not develop a connected and comprehensive understanding of the nuances of their practice. There is also the possibility of moving towards a technical

approach to action research (Kemmis, 2009), which focuses solely on outcomes and treats others involved in the research – in this case, mainly students – as objects, meaning that the opportunity to create a more socially just reality for those involved would be lost. There is also the challenge of writing to address. As described above, the act of writing and sharing ideas publicly is key within action research, but it requires time and space to reflect. Therefore, I suggest that for action research to have impact, there would need to be a forum for teachers to share ideas and develop practice across the sector. This could also be achieved by encouraging teachers to write for professional journals, which would reinforce their feelings of professionalism.

Overall, these findings demonstrate that critical participatory action research can successfully address issues around accountability and performativity, which have significant impact on teachers' job satisfaction, and hence retention, but they also emphasize that teachers need to be allowed time and space for reflection in order for such projects to have the desired outcomes.

Conclusion

This article set out to explore the question 'To what extent can action research mitigate the perceived de-professionalization of teachers and challenge the exploitative nature of education?' Semi-structured interviews with five teacher-students who undertook action research projects for their master's dissertations supported previous findings about the effects of performativity and accountability leading to feelings of de-professionalization, and confirmed that critical participatory action research could address a number of these. The most significant benefit was the teacher-students' critical self-reflection on their practice, which reinforced their feelings of being valued professionals. In addition, the projects they chose addressed the effects of the exploitative nature of education on students, within the constraints of the current system. Overall, the teacher-students were exceedingly positive about the benefits of action research, and they supported the idea of implementing it more widely within the education system. Although there are a number of issues that would need to be addressed before critical participatory action research could be employed more extensively, I suggest it would be a valuable approach for addressing teachers' frustrations about accountability and performativity.

Notes on the contributor

Sinéad Vaughan is passionate about helping teachers develop their practice and professionalism and has been involved in delivering continuous professional development (CPD) throughout much of her career. She holds two key roles: the first as a module leader for a research-methods master's module, and the second as an education consultant for a government-funded programme, with responsibility for providing CPD. Her research interests are action research, design research and the use of technology in mathematics teaching and learning.

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