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Computing reform: the exodus of ICT teachers

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ABSTRACT

The 2010s saw significant reform in ICT and computing education. ICT was written off as an irrelevant vocational subject, and effectively "scrapped." Introduced in its place was the national curriculum computing programmes of study (Computing), with an emphasis on computer science. This blanket reform meant that secondary school "ICT" subject teachers were immediately required to teach "Computing." This study's findings demonstrate that ICT teachers felt unsupported throughout the reform process. Teachers have been unable to reconcile the identity of "Teacher of Computing" with their professional situations and have left teaching. This loss of teachers should be viewed as an "educational loss" of expertise and diversity in the computing classroom. It is recommended that teachers are given support to allow a reconnection with their previous "successful" professional identities. Good teachers should not be lost because of the rushed implementation of national reforms.

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Introduction

This study examines stories of teachers who experienced reform first-hand, in the context of England's ICT and Computer Science (CS) curriculum reform of the 2010s. This period saw significant and impactful changes to school subjects of "ICT" and "Computing" in England. In 2012, Michael Gove (then Secretary of State for Education) outlined proposals for widespread ICT education reform, explaining "boring" ICT lessons would be scrapped, and schools would be delivering "rigorous" CS qualifications. Gove's reforms led to the disapplication of "ICT" as a school subject, followed by the introduction of "Computing."

In this paper, we discuss the vital "lost" voices of teachers who experienced education reform first-hand and what this meant for them in terms of remaining in teaching or leaving the profession. These voices must be discussed in the context of computing education reform in England, but also in the context of

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wider education reform. The teacher's voice is critical but often overlooked. We must ensure retention of diverse and experienced teachers in the profession.

Policy reform and impact on teachers

Several studies (Day & Gu, 2010; Finger & Houguet, 2009; Gillies, 2011; Kelchtermans, 2017; van Veen et al., 2005; Guenther, 2021; Kneen et al., 2023) show that for successful reform implementation, the teacher role, professional identity, motivation and commitment to change are key. However, "teachers' sense of professional and personal identity is almost completely ignored in reform strategies and educational innovation policy." (van Veen et al., 2005, p. 918). Furthermore, policy reform presents intrinsic and extrinsic challenges for teachers, in terms of teachers not feeling supported and reporting concerns over lack of training and lack of confidence (Kelchtermans, 2017; van Veen et al., 2005; Guenther, 2021; Finger & Houguet, 2009). This situation has contributed to the largely unsuccessful implementation of initially well-intentioned and well-received initiatives around changes to education in England. The role of policy makers is often seen to be at odds with the interests of teachers; reform is defended by "prominent, high-profile agents of change" (Gillies, 2011) with little consideration for teachers who implement policy "at the chalkface."

Studies conducted in the UK and internationally have considered school policy reforms and their impact. For example, Day and Gu's (2010) large-scale, longitudinal study in England highlighted teacher identities shaped by school context and policy. Kelchtermans (2017) synthesised existing research by drawing on studies from Belgium, the UK, the USA and Australia to recognise pressures of policy and teacher attrition/retention issues. van Veen et al.'s (2005) Netherlands-based case-study recognised that teachers' professional and personal identity is being ignored in reform strategies. Guenther's (2021) small-scale US-based study claimed that reforms erode teachers' agency and that attention to teachers' identity is crucial for successful reform. Kneen et al.'s (2023) small-scale study looked at reform implementation in the Welsh curriculum, arguing that reform requires changing institutional conditions so teachers can act as authentic agents. Consideration of the above-mentioned studies suggests the need for further exploration of how teachers are impacted by policy reform, in terms of challenges encountered, and the impact on professional identity. Through further research, it is hoped that future reform implementation will be managed better. We understand CS reform in England and worldwide has had a significant impact on teachers, a study of this context focusing on the voices of teachers, who have undergone curriculum reform, will add to the body of literature by providing an in-depth understanding of how teachers' professional identities and careers are affected.

Computer science reform and impact on teachers

Studies by Sentance and Csizmadia (2017); Thompson et al. (2013); The Royal Society (2025); Sentance et al. (2022), recognise the significance of CS and the global movement to implement CS in school-education, through curriculum reform by respective governments. However, their findings show that rapid ad-hoc reforms have presented numerous challenges for teachers. For example, Thompson et al.'s (2013) New Zealand-based study of CS curriculum implementation (a survey with 91 teachers) found that teachers lacked computing knowledge and experienced limited training and a lack of support. The Royal Society's (2025) UK-based study using mixed-method meta-synthesis and policy review found a rapid shift from ICT to CS left many teachers underprepared and lacking confidence in subject-knowledge and pedagogy. Sentance et al.'s (2022) study adopting a large-scale survey of approx. 500 self-selecting UK computing-teachers reported challenges in subject knowledge, pedagogical confidence, sense of isolation or lack of secure identity for computing-teachers; similarly, Sentance and Csizmadia's (2017) UK study, which conducted a large-scale survey, found teachers facing challenges related to CS subject-knowledge, pedagogy and lack of support. However, what is interesting is that Sentance and Csizmadia's (2017) approx. 300 study participants were selected from the Computing at Schools (CAS) organisation, well-versed and able, but still facing challenges.

Overall, extrinsic and intrinsic issues such as subject knowledge and pedagogy are evident across these studies. Studies have mainly been large-scale surveys, or systematic reviews (Thompson et al., 2013; Sentance & Csizmadia, 2017; Sentance et al., 2022; The Royal Society, 2025), helpful in understanding that successful reform is dependent on teachers' support, training and community. There is a need to explore how CS reform changes affected the "typical" teacher. What we mean by "typical" teacher is those teaching ICT at the time before and during the reform, but not part of special interest groups such as CAS. Hence, it is important to capture typical teachers' experiences within the context of England's CS reform and gain an in-depth understanding of this context through their voices.

England's CS reform and impact on teachers

The movement to promote the cause of computing and CS in the UK began in 2008. The push for a "new" computing curriculum in England was initiated by a grass-roots organisation of academics, industrialists and teachers known as Computing Next Generation (CNG), now called Computing at School (CAS) (Woollard, 2018). Founders, members and supporters of CAS promoted the cause of CS in schools through campaigns and policy lobbying (Brown et al., 2013). The national curriculum "Computing programme of study" (DfE, 2013) was introduced in 2013, and blanket reform occurred.

The Royal Society's (2017) report "After the reboot: computing education in UK schools" can be used as a starting point. It offers insight into the impact of recent computing reform on teachers, mainly in terms of surface-level statistics and headline figures; only 44% of secondary school teachers reported feeling confident delivering the new computing curriculum (The Royal Society, 2017). The report (The Royal Society, 2017) highlights issues of teacher shortage but does not examine the number of ICT teachers leaving the profession since the reform, or reasons for doing so. The focus is: "To ensure there is a strong supply of computing teachers *entering* the profession" (emphasis added). Attracting new teachers is a separate issue from ensuring current teachers are supported and continue in the profession. The report involved a small (The Royal Society, 2017, p. 604), self-selecting group, who were exposed to the survey via their membership of associated networks and online subject specialist groups (The Royal Society, 2017, p. 19). Bearing in mind the largely uncritical nature and possible vested interests of groups (such as CAS, Raspberry Pi, Microsoft, Google, OCR, and AQA) associated with the report, it is important to further research claims made.

Overall issues identified around teaching computing include a lack of CS subject-knowledge; a lack of confidence; a lack of continuing professional development (CPD) opportunities and a severe shortage of qualified teachers (The Royal Society 2012, 2017, 2025; Sentance & Csizmadia, 2017; Thompson et al., 2013; Barnes & Kennewell, 2017; Brown et al., 2013; Brown et al., 2014).

Importantly, ICT teachers have been overlooked in the ongoing discourse around computing education. Here, ICT teachers are defined as teachers specifically recruited as teachers of ICT in the 2000s and early 2010s, who hold a secondary (11–18) PGCE (Postgraduate Certificate in Education) and QTS (Qualified Teacher Status). Writing with this definition in mind, ICT teachers pre-2012 were qualified, successful, and well-respected classroom practitioners.

There are two distinct groups of ICT teachers who have reacted to curriculum change in the following ways:

(1) Secondary school ICT qualified teachers who have stayed in secondary education and have continued to teach computing to some extent. The accounts of these teachers are important and have been discussed in recent literature (see Sentance & Csizmadia, 2017).
(2) Secondary school ICT qualified teachers who have left the profession or switched roles post-2012. Their stories remain unaccounted, they remain voiceless.

It is crucial to consider both groups' stories and the underlying reasons for teachers' decisions. ICT teachers' stories (particularly those in the second group) have been overlooked. Without teachers, "delivery" of a computing curriculum simply cannot take place; the "Computing programme of study" (DfE, 2013), however

"good" it is, becomes worthless. This is substantiated by the Royal Society (2025) report, which identified a widening of the gender and equity gap; insufficient funding for professional development, and most importantly, a shortage of qualified CS teachers (with vacancies filled by non-specialists).

Study aim

The aim of this study is to investigate teachers' perspectives. It is important to understand how policy change in education is experienced and the wider educational implications of reform. Day and Gu (2010, p. 51) assert that "critical incidents" (such as policy reform) influence teachers' "sense of commitment and resilience". This, in turn, leads to further difficulties around recruitment and retention and failure to retain "good" teachers (Kelchtermans, 2017).

Study question

The resultant question is:

How did ICT teachers experience the introduction and implementation of the computing curriculum? What are their perspectives and stories?

Sub-questions arising are as follows:

- What has been the impact of computing policy reform on teachers' identity perceptions?
- How have teachers' identity perceptions impacted their professional practice and career decisions?
- What has been the educational impact of teachers' career decisions on the computing education landscape?

Methodology

This study is framed in the interpretivist/constructivist paradigm; the aim being to investigate personal stories, meanings and interpretations within the wider social and political context of a politically and economically motivated curriculum reform. The study adopted a qualitative approach, using semi-structured interviews as a mode for data collection with a small group of participants, to capture their voices and obtain an in-depth understanding of the impact of the CS reform on their identities and experiences. This approach was considered suitable to address the study's aims and questions.

Research description

Sampling methods

The sample group for this study consisted of five individuals, all of whom had completed PGCE ICT between 2006 and 2012. The sample was purposive, i.e.,

teachers who had trained to teach ICT. This sample allowed data to be gathered from individuals not accounted for in often-commissioned, self-selecting research.

Participants

The participants were female and of similar ages (mid to late thirties). They are also all from black and minority ethnic backgrounds (Table 1).

> Computing in the UK is a male-dominated subject, and a male-dominated career … gender is the most significant diversity issue within the subject … there are also equity issues for other groups. (The Royal Society, 2017, p. 38)

Data collection

Semi-structured interview questions were used, allowing the conversation to be steered by the interviewee where appropriate. Questions were designed to elicit "narrative" responses from participants. The questions were subdivided into categories designed to look at stories at key points: before reform, during reform, and after reform. The categories are influenced by Kelchtermans' (2005, pp. 1000–1001) assertion that teachers' self-understanding is shaped by self-image, job motivation, future perspective, self-esteem, and task perception.

Table 1. Study participants (names anonymised).

Name	Gender	Age	Ethnic background	Undergraduate degree qualification	Year of qualification (Secondary ICT PGCE)	Current professional situation
Sasha	Female	39	Black British – Jamaican	Media Arts	2005	Supply teacher – Some Computing, also Mathematics and Graphics.
Amran	Female	37	Black British – Somali	Multimedia technology design	2008	"ICT teacher" in a large secondary comprehensive school. Changing role. Will become "EAL coordinator" in the same school.
Louise	Female	38	Mixed – White and Black Caribbean	Multimedia computing with animation	2009	"Digital Inclusion Officer" for a local council. No longer working in education.
Huma	Female	37	Asian British – Iranian	Business and IT	2010	Privately tutoring Mathematics.
Nadiya	Female	36	Asian British – Bangladeshi	Business and business information technology. MA – IT consultancy	2012	"Computing coordinator" in a primary school. Returning to teaching secondary computing (KS3 only).

Data analysis

The interview transcripts were analysed using thematic analysis (Creswell, 2012). Initially, overarching themes were ordered into three chronological categories. The chronological progression of themes demonstrated how identity perceptions, feelings of confidence and pressure, and outside influences "ebbed and flowed" throughout, leading to teachers stepping away from teaching computing or teaching "easier" aspects and avoiding examination classes. The three categories were as follows: "Teaching ICT," "Initial curriculum reform (2012–2013)," and "The story since."

It is under these overarching themes that the interview transcripts were revisited, and coding was conducted – examining feelings, identities, confidence, etc. The intention of coding the data was to identify themes which would map the teachers' shared patterns of behaviour and thinking (Creswell 2012, ibid., p. 473) in relation to computing reform. This led to the identification of further sub-themes, which are presented and discussed later in the paper.

Ethical considerations

Recognising the concept of reflexivity was key; "reflexivity recognises that researchers are inescapably part of the social world that they are researching" (Cohen et al., 2011, p. 225). In recognising reflexivity, positionality was acknowledged and understood as a potential influence (Cohen et al., 2011, p. 225). The formal ethical approval process at Brunel University London was followed.

Participants' interviews

Sasha's Interview

Background and ICT teaching

Sasha has an undergraduate degree in Media Arts and identifies as creative, explaining she "enjoys the creative side" of technology. She qualified to teach secondary ICT in 2005. From early on, she was responsible for GCSE and A-level ICT classes and considered herself to be a successful teacher. Her career progression was steady, and she became "Head of ICT" in a large secondary comprehensive school.

Experience of the computing curriculum reform

Sasha found out about the curriculum reform at a meeting for local ICT teachers, remarking on the scant information provided. She described introducing basic computing topics; however, the Senior Leadership Team (SLT) quickly requested "Computer Science" GCSE and A-level qualifications replace ICT.

Sasha described the pressure of additional workload in terms of planning and marking, and she also felt isolated as the only teacher of computing in the school.

> I was the single teacher that taught computing GCSE, there were no other teachers.

Sasha was not supported in attending training to "up-skill," and was of the view that such sessions wouldn't be sufficient to teach a full GCSE curriculum. She describes paying a borough consultant.

> If it wasn't for her, those kids would have failed on the programming side.

A key theme in Sasha's description is a fear of letting down the pupils.

A step down?

Sasha's story as a head of ICT concludes with a convergence of pressures and conflicting demands.

> I'm not staying for this, I'm not going to do something and fail.

Sasha resigned from her post as head of department. She is working as a supply teacher, teaching Mathematics, Graphics and minimal Computing. She is considering her future in the profession, and looking towards the more "creative" subject of Graphics as her "get-out";

> I will push and try and get more involved with the graphics … If not, I'm going to try and get out of education because it's too much stress.

Amran's Interview

Background and ICT teaching

Amran completed PGCE ICT in 2008. Her initial degree was "Multimedia Technology Design." She completed teacher education in ICT because of her interest in creative technologies, alongside a desire to "make a difference" in young people's lives. She has worked in a West London comprehensive school as an ICT teacher for the past ten years.

Experience of the computing curriculum reform

Amran believes that teaching "computing" is not for her, resisting "push" from colleagues or leadership in that direction. She has continued to teach only ICT and has not taught any computing. She recounts the requirements of policy reform being managed carefully by her head of department, thus "softening" the impact on teachers, and lessening the urgency for a change to existing ICT qualifications.

Amran describes her school as "very challenging … a lot of students achieve much lower than the national average." Amran (and her colleagues) held the

view that introducing computer science qualifications quickly would have been a mistake, as

> Most of our students at that time, computing wasn't suitable for them.

This perception of the "academic" nature of computer science and probable negative impact on results in league tables led Amran's head of department to keep existing ICT qualifications in place, a decision which Amran supported, enabling her to continue teaching "traditional" ICT.

Amran's unwillingness to take on computer science comes from a place of compassion for the students in her care. She views students as having trust in her authority, knowledge and support; this is a role she feels she will not be able to fulfil if she is "faking" knowledge of computing.

> I feel like if you're going to teach something you need to have the passion, the drive, the skills, the motivation you know … I don't think it's fair on the students to try and do something halfhearted and my heart is not in it … so I just felt like, I can't be false like that.

A change of direction

Amran's story concludes at the point where opportunities to teach ICT have run out, and a full computing curriculum has now been phased in at her school. She describes a sense of inevitability regarding her decision to no longer teach ICT, as she has always been sure that she would not be able or willing to teach computing;

> I've always been honest and said, "when you guys insist in me doing computer science full time, I'm moving on. So now, this is the point of no return!

Amran will no longer be teaching ICT and will take on a new role as English as an Additional Language (EAL) coordinator.

Louise's Interview

Background and ICT teaching

Louise qualified to teach secondary ICT in 2008. She has a degree in "Multimedia Computing and Animation" and has taught ICT and some computing in West London and Surrey comprehensive schools. She identifies as "creative" and was motivated to teach because of a passion for sharing the creative potential of technology with young people. At her most recent school, she started as an ICT teacher, and was promoted to "Head of House," with pastoral leadership responsibility (alongside an ICT teaching timetable). She enjoyed teaching ICT, and felt secure in her subject knowledge but also commented that

> [The "old" ICT curriculum] was rigid and prescribed, which I think took the fun out of it a little bit.

Experience of the computing curriculum reform

Louise was initially enthusiastic; she self-identifies as "creative" and was confident in her ability to take on the challenge of learning and teaching new

skills. She viewed the change to the curriculum as a chance to incorporate creative game-making and other "exciting" topics. However, Louise felt there was a lack of information; she is not a member of CAS or any other "interest" groups, so was not in receipt of any direct information through "official" avenues. She recounts worry around job security being discussed informally.

> There was some talk … will they get rid of ICT teachers completely?

Preparing for GCSE Computer Science took a great deal of time; the accompanying accountability pressures were extremely stressful alongside a demanding pastoral leadership role. Louise found differentiating for a wide range of abilities in computing challenging, and experienced a lack of support from senior leaders.

> They don't value it the same as they do English or other core subjects, so you don't get as much support in those lessons and you don't get as much time to prepare those lessons.

Ultimately, Louise became frustrated by the lack of opportunity for the computing curriculum to develop to its full potential.

> I think you could do amazing lessons and I think we could have loads of fantastic engineers coming out of this country but unfortunately you don't get that time, that quality preparation time, or to mark either.

The feelings of frustration, stress, workload, and pressure Louise experienced eventually became unmanageable and led to the decision to leave teaching. Louise's powerful statement sums up the feelings of intense pressure and stress.

> It got to the point where I didn't feel I could do either of my jobs properly. I couldn't be a head of house effectively, although I was doing a good job, I myself was struggling as a result of that because I had no time in the evenings, no time at weekends, holidays would be just working and then feeling guilty for not working and then stressing about going back to work … I didn't have any part of my life anymore that I felt successful.

A new career – digital inclusion

Louise has no plans to return to teaching. She feels happy and fulfilled in her job working as a "Digital Inclusion Officer" for a local authority.

> I get to use my IT skills and help people … I think really that's kind of why I went into teaching, I wanted kids to be interested in IT, I wanted them to have fun with it and unfortunately I don't think IT or computing lessons do that.

Huma's Interview

Background and ICT teaching

Huma has an undergraduate degree in "Business and IT." She completed her ICT PGCE in 2010, followed by a postgraduate qualification (MTeach). She describes

teaching ICT as an enjoyable challenge. Her self-perception was that she was a knowledgeable, successful teacher of ICT.

Experience of the computing curriculum reform

Huma was at a professional disadvantage at the time of reform; in 2012, she was on maternity leave. This put her in the vulnerable position of having no first-hand information or support.

> I was on maternity leave … it was a scary point for me. I was worried that they were saying that they were going to get rid of ICT teachers and they just want to recruit teachers who can teach programming.

She described finding out about the reform via a link to an ICT teachers' protest petition sent to her by a colleague, which added to her worry. On returning to work, she continued to teach ICT but felt "out of the loop" regarding computing. She endeavoured to catch up by using online resources and attending a short programming course (at her request). However, Huma felt that she didn't have information, support, or training to become confident or successful and described a fear of failure. Of note is her assertion that teachers' CS "knowledge" is valued by schools over any "teaching" ability or experience;

> I think for me, yes, subject knowledge is very important but skills for being able to teach the kids, it's actually much more important. Subject knowledge is something that comes later, you can learn a new thing to deliver it but if you don't actually have the skills to be able to teach and transfer that subject knowledge even if you have the knowledge, you are not a good teacher.

In Huma's school, voluntary redundancies were offered due to financial difficulties; at this point, feelings of insecurity and the undermining of teaching skills led Huma to take redundancy.

A new career – tutoring

Huma now works privately tutoring Mathematics and describes her current working life as successful, flexible, and less stressful. She has no plans to teach ICT or computing again.

Nadiya's Interview

Background and ICT teaching

Nadiya's case study is particularly interesting as partway through her PGCE year (in January 2012), the disapplication of ICT was announced, thus discrediting her ICT teaching qualification before she had completed it. Before training to teach ICT, Nadiya completed an undergraduate degree in "Business and Business IT," she also has a Master's degree in IT consultancy.

Experience of the computing curriculum reform

Nadiya experienced the computing reform as a PGCE student. Her description of the situation was of a lack of guidance from tutors at university, who appeared to be unsure of the extent of the changes.

> We were told that when we finished the course that we would need to know a little bit of maybe, computing, but not so much.

Her first job was "Teacher of ICT" in a large comprehensive school. Here, she was required to teach computing at key stage three. Nadiya describes the strong department as key to her development and understanding of computing, explaining.

> I worked with colleagues who had lots of useful lesson plans and I spent time during my PPA to discuss their stuff … so I had, not training, but just PPA sessions with colleagues who were very supportive and that was how I gained my confidence in computing.

Nadiya felt unable to teach computing above key stage three and moved jobs, becoming "computing coordinator" at a primary school. Although she has a Master's qualification in IT consultancy, she identifies as not having the "background" to teach computer science.

> It seems it's quite hard – GCSE computing. I wouldn't say I'm fond of computing at that level, but up to Key Stage 3 it's quite fun.

Nadiya is enthusiastic about computing, and is keen to point out the "creative," and "fun" potential computing lessons have. Her feeling is that if teachers want to be good computing teachers as opposed to ICT teachers, the onus is on them to do the extra work.

> It's all about training ourselves, we have to be self-taught otherwise we won't actually get it.

She acknowledges, however, that the amount of work required to "upskill" to teach GCSE and A-level computing is more than she is willing to take on;

> I'm not interested in learning all the languages and going into key stage 4 to be honest … I don't think it's to do with confidence, I think it's more to do with me being lazy!

Teaching computing

Nadiya is moving away from primary school computing and back to secondary. She will be starting a new job as a secondary computing teacher. She will be teaching key stage three only.

> A little bit of computing is not bad, but to go full on at higher key stage four or five, I think I'm getting too old to learn all that stuff! I can't be bothered to be quite honest!

Themes and discussion

In summary, the main themes and some sub-themes identified through the interview analysis include:

A. Teaching ICT – Common themes identified, before the 2012/13 reforms:
- Teacher identities.
- Teacher enthusiasm and creativity.
- Teacher ICT/CS confidence and subject knowledge.
- Challenges of a prescriptive curriculum.

B. Initial curriculum reform (2012–2013) – Themes emerging as the computing curriculum was introduced:
- Initial enthusiasm for the curriculum reform and professional challenges.
- Lack of information and support.
- Little or no training offered to existing teachers.

C. The story since – themes were identified in the period from 2013 to the present:
- Limited CPD sessions are not adequate to enable teachers to "upskill."
- Lack of understanding/lack of support from school leadership.
- Rushed and ill-considered reform.
- Feelings of "failing" the children.
- A lack of ICT/CS confidence.
- ICT teachers leaving the profession or changing career paths within education.
- Teaching computing but intentionally avoiding GCSE and A-level.

Some of these are discussed below:

Unheard voices?

It is important to recognise that teachers who took part in this study are not representative of "typical" computing education research. To illustrate this point, the following extract describes the participant selection for a recent significant report. The sample described is unlikely to be representative of the wider ICT teacher population.

> The survey was promoted through various networks such as the Royal Society's associate schools and colleges, Computing At School, and online subject-specialist groups. Other organisations such as Raspberry Pi, Primary Science Quality Mark, Teach Primary, Technocamps (Wales), C2k (Northern Ireland), Education Scotland, OCR and AQA also assisted with the promotion of the survey. (The Royal Society, 2017, p. 19)

Teachers' desire to engage with the bodies mentioned above indicates a bias towards computing. This is not to discredit the report, but to call into question how representative of the wider ICT teacher population it is.

In this study, only two of the five teachers (Sasha and Nadiya) are CAS members. Amran, Louise, and Huma are not members of CAS or other interest groups, and in Huma's case, had not heard of Computing At School. Therefore, the study claims that the voices heard in this study have, to date, been (possibly conveniently?) overlooked. Whereas we know from previous studies by Sentance & Csizmadia (2017) that all participants were CS teachers, this skews the voices to one particular group of teachers.

"Computing interest group" members are the minority of ICT teachers, but the minority with the loudest voices. The voices heard in current discourse appear to be those of self-proclaimed, confident, "geek-badge-of-honour," teachers. The teachers who took part in this study are not a part of this demographic; until asked for their contribution, they felt as though their opinions were not important. This is largely due to the dominant "CAS-centric" discourse drowning them out. For example, Brown et al. (2014, pp. 9–17) champion a "Network of Excellence" with ambitious claims of training and expertise being available to all teachers, but have not been a reality for the participants of this study (and potentially many others).

The commonly held assumption is that ICT teachers are non-specialists unable to deliver an interesting or motivating ICT curriculum, let alone CS qualifications. Although teachers interviewed possessed relevant qualifications, they didn't feel they had the necessary attributes to make the switch. They were (and are) suitably qualified; they just needed support. In these teachers, we have lost a valuable asset; in the midst of a severe computing teacher shortage, these teachers (and many like them) felt excluded from the computing "community" narrative to the point where they feel they can no longer make a valuable contribution.

> The shortage of computing teachers is extremely worrying and the recruitment of new teachers into the profession is not meeting demand. Governments need to do much more to address the shortages if pupils are to gain the computing skills required. (The Royal Society, 2017, p. 65)

Consideration of teachers with similar backgrounds to those who participated in this survey as part of the "solution" to this problem is advised. It may be too late, as many teachers have already stepped away from ICT and computing. These teachers no longer identify as "computing" teachers, often feeling a strong "anti-computing" identity;

> It's not my specialism … I'm not one of those people who can just start coding. It doesn't come naturally to me. – Sasha

(Sasha has over ten years successful teaching experience, including systems design, database architecture, and web design).

Teaching "identities"

"The key role of teachers' sense of professional and personal identity is almost completely ignored in reform strategies and educational innovation policy" (van Veen et al., 2005, p. 918). Teachers' self-perceptions had a huge impact in the context of computing reform. Perceptions of identity in this study were shaped by personal beliefs and background, but also by the nature of the reform's introduction – exclusionary of those not engaged with the computing discourse in education. Guenther's (2021) study substantiates that consideration of teachers' identity is crucial for any reform success.

ICT confidence

Throughout the initial to mid stages of their careers, participants described feelings of confidence and security in their subject knowledge. The teachers self-identified as competent teachers of ICT, citing their undergraduate and PGCE education, along with the apparent "ease" of learning new ICT skills as the foundation for their expertise.

> I wasn't under pressure, in terms of subject knowledge … it was never anything completely out of your realm, you know, your understanding. – Sasha

"I'm not a coder"

The 2012 Computing Programmes of Study (DfE) do not include any reference to "coding." The hyperbole around coding, particularly from the media, and edtech companies selling "coding" solutions has added to feelings of inadequacy and confusion amongst existing teachers. Many teachers have internalised the idea that they need to be able to "code" to industry standard. Teachers in this study do not identify as "coders" and find the prospect daunting;

> I'm not one of those people who can just start coding. It doesn't come naturally to me. – Sasha.

This is in line with other studies which show teachers are struggling with computing knowledge, pedagogical confidence and feelings of professional inadequacy (Sentance et al., 2022; Royal Society, 2025; Finger & Houget, 2009).

Creativity

Largely, teachers interviewed identified as "creative."

> ICT I really enjoyed, it was creative … kids could make things, they could create things … I really enjoyed teaching the design type courses. – Amran.

The creativity of CS is a message that is becoming more popular, alongside efforts to present computing as accessible. Often these arguments cite the ideas underpinning Wing's (2008) "Computational Thinking" theories, which outline a "creative" approach to Computer Science. The message of "creative" CS comes too late for teachers who have developed fixed "non-computer science" identities.

"Doing the kids a disservice"

> Many teachers enter the profession with a sense of vocation and with a passion to give their best to the learning, growth and achievement of their pupils. For some, these become eroded with the passage of time, changing external and internal working conditions and contexts and unanticipated personal events. (Day and Gu, 2010, pp. 38-39).

Perceptions of not being good enough at CS had a clear impact on teachers' self-perceptions in terms of being "good" (or not) at teaching overall. In all cases, the intrinsic motivation for becoming a teacher was to make a positive difference.

> I got scared. I was like, "oh my god, I don't want to be messing with a child's future by marking their coursework wrong" … my main worry was just I can't do this, without further training or further knowledge because I just don't want to mess up the kid's life. – Huma

> It was …. really tough … I didn't feel I was doing the kids a service either because I knew my lessons weren't as good as they should be. So there's also that guilt there as well. – Louise

> You feel inadequate, like you're doing the kids a disservice because you can't guide them, it's not your specialism … I didn't .. go to the results day because I was thinking these kids are going to fail – Sasha

> I don't want to put the children in a position where they feel like, "you know what, my teacher wasn't an expert, that's why I didn't get the right grade. – Amran

The dearth of information and support rapidly led to a situation in which teachers felt inadequate and left their posts. Children are now left without computer science options and inexperienced teachers – a vicious cycle. This lack of qualified CS teachers is reflected in The Royal Society's (2025) "System Upgrade" report.

Information, training, and speed of reform

Training and speed of reform are key to its success (or failure), and insufficient support has led to ICT teachers seriously questioning their ability to navigate the new computing landscape.

> [The] government suddenly brought this into place, they are not providing enough information to the teachers, and [teachers] haven't got a clue where they are going. The teachers are so scared … they didn't provide anything to make this a smooth

> transition for the teachers to feel comfortable to take it on and tackle it … there was a lot of confusion and people really got muddled what the expectations were. – Huma

With little or no information and training, reform measures were rapidly pushed through due to external pressures of league table positions. It is little wonder that teachers felt unable to cope with the intense level of pressure and challenge. These feelings of lack support and training, ad hoc nature of rapid reform changes are substantiated in studies by Day and Gu, (2010); Guenther, (2021); Kneen et al., (2023).

Lack of support within school settings

Participants felt that there was a lack of support and understanding within their own school settings. Performativity pressures and a lack of understanding from Senior Leadership Teams (SLTs) added to perceptions of pressure and stressful working conditions.

> A lot of it is there's no understanding from SLT in most cases, that you can't become a computer science teacher by going on one or two CPDs … you can't just pick something up from a box, and go "yeah, you know what, yesterday I was an ICT teacher, today I'm going to be a computer science teacher – Amran

Professional challenge

The teachers described "challenge" and "learning new things" as key motivational factors in their ICT teaching identities (before computing reform). It is interesting to note the introduction of computing was at first viewed as an enjoyable challenge, likened to learning new ICT skills.

> I think I thought that it was quite exciting because there was a possibility for change and I saw it as maybe we could rejig what we'd already been doing and make it a bit more interesting. – Louise

The participants described an initial enthusiasm for the reforms and for their potential to make lessons more interesting. This enthusiasm had the potential to be harnessed and supported; teachers could have redefined their identities.

As it was, the level of challenge quickly became unmanageable. This led to individuals internalising the externally imposed norms, resulting in feelings of failure and ultimately, decisions about their future in the profession (Kelchtermans, 2017, van Veen et al., 2005, Kneen et al. 2023).

Making a change: leaving teaching or changing direction

It seems a great shame that of the five teachers in this study, only two (Sasha and Nadiya) remain teaching (some limited) computing.

Of the five participants;

– one is teaching Computing at Key Stage 3 only,
– one is teaching some Computing, and looking to change subject specialism,
– two have left teaching, and
– one has changed career (within education) to become an "EAL coordinator."

These were experienced, early to mid-career ICT teachers, all of whom had the potential to teach Computing. Kelchtermans (2017, p. 965) describes teachers' choices to leave the profession (in this case due to reform) as an "educational loss," and it is clear to see this is illustrated here, in very real terms.

> I felt "right, this is not for me", schools are just looking for people who have computer science knowledge, it's not a place for me anymore. – Huma

Conclusions

This study has been an examination of ICT teachers' experiences of computing education reform. The pivotal 2013 change to national policy, i.e., the "Computing programmes of study" (DfE, 2013), had significant and impactful repercussions throughout ICT and computing education.

This study examined the stories of well-qualified, experienced "ICT" practitioners whose voices have been ignored as they are not "typical" computing stakeholders. A common theme identified was enthusiasm for ICT, particularly regarding "creativity." This enthusiasm (and ability) had the potential to be carried over to the subject of computing. The small group of teachers interviewed for this study have now been lost to the profession or has decided to take a "step down." Amid a recruitment and retention "crisis," this is a huge loss of diversity and experience.

Research findings

How did ICT teachers experience the introduction and implementation of the computing curriculum?

Themes identified included the undermining of teachers' existing skills and experience; a lack of information, support and training; and an "othering" of this group – feeling like outsiders in a "computer science" world. Little has been done to support teachers and make them feel part of the computing education "movement"; not helped by rushed reform alongside public discreditation of professional status by Michael Gove in his 2012 speech (Gove, 2012). This is in line with the findings from studies by Sentance et al. (2022) and The Royal Society (2025).

Teachers felt pushed and pressurised to the point that feelings of failure became internalised. The key theme of not being "good enough" at computing

appeared many times. With information, support, training and funding, it would have been possible to capitalise upon initial enthusiasm for computing. This would have instigated a shift in self-perception, allowing the identity of "computing teacher" to become accessible. As it was, the obstacles encountered became disproportionate to the task, leading to significant professional decisions; either leaving the profession or taking a "step back" to avoid self-perceived "failure." This resonates with the assertions made by Kelchtermans (2017), Van Veen et al. (2005), Guenther (2021) and Kneen et al. (2023).

What has been the impact of the computing policy reform on teachers' identity perceptions?

ICT teachers do not identify as "computing teachers." Teachers have not been allowed to "recalibrate" their teaching identities and feel uncomfortable taking on the identity of "computing teacher." Teachers thought they would be "fake" if they attempted to present themselves as such. This is similar to Kneen et al.'s (2023) study of teacher identity, and their argument that teachers should be enabled to act as authentic agents, not passive implementers of reform.

How have teachers' identity perceptions impacted their professional practice and career decisions?

Teachers who no longer identify as experts in their subject area have left the profession. Others have taken an alternative path, "stepping down" through diversification into alternative subject areas or teaching lower year groups. We find this study has allowed us to explore teachers' voices who have been impacted in such a way that they have left the profession; this type of study has not been evident or captured by other studies – the exploration of computing teachers' "voice" of those who have now been lost to the profession is unique to this study.

What has been the educational impact of teachers' career decisions on the computing education landscape?

Teachers' decisions to leave or step down should be viewed as an "educational loss." We have lost valuable experience, expertise and diversity in computing classrooms. The computing curriculum cannot be delivered at all without (sufficient) teachers and cannot be delivered "well" unless "good" teachers stay in the profession. "Computing for all" is a lost cause if those leading computing lessons are not representative of student populations.

Limitations

The main limitation of this study is that the findings cannot be generalised, as the sample size was small. A larger-scale investigation could inform national

policy decisions. It is also worth noting that all participants are from an urban area (West London). It would be useful to hear stories of teachers from other areas of the country.

Recommendations

Recommendations for policy and practice based on the findings of this research include:

- ICT teachers are successful, experienced practitioners with an enthusiasm for technology and creativity. Many have computing experience or qualifications. Do not dismiss their passion and capability to deliver the computing curriculum.
- An organised network of support for all teachers is needed – not just for those who "opt-in" to computing interest groups.
- Senior leadership teams in schools must be aware that teaching CS requires an increased level of support and training.
- A training programme to bring back qualified and experienced ICT teachers.
- To ensure diversity and inclusion (i.e., female and BAME ethnic minority), include all teachers in computing training, information, and support programmes; do not make these programmes self-selecting, opt-in, interest group, "hobbyist" activities.
- Consult teachers at early stages of the reform process; "after the event" is too late.
- Give time and space for new policies to "bed-in" over a longer transition period, allowing all parties to adjust.
- Do not devalue old qualifications; consider implications for those teaching or studying an existing qualification. Make clear the retained value of existing qualifications.

Concluding remarks

This study examined a largely ignored question around the impact of computing curriculum reform on teachers' experiences and identities, and the educational significance of subsequent career decisions. Initial arguments in favour of reform, although open to criticism, were well-intentioned and largely supported by teachers. However, practicalities of reform were rushed and ill-considered, leading to stress, confusion and loss of confidence for many. The stories told here depict a situation in which ICT teachers were unsupported, and as a result, have struggled to resolve their identities as computing teachers. We are experiencing a recruitment and retention crisis, alongside a lack of diversity in computing education; it is a great shame that we have

failed to notice our experienced, knowledgeable, and diverse workforce quietly leaving the profession.

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No potential conflict of interest was reported by the author(s).

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