Received: 28 July 2022 | Revised: 23 November 2022 | Accepted: 28 November 2022

DOI: 10.1111/medu.14994

RESEARCH ARTICLE

CHANGE MANAGEMENT

Scratching beneath the surface: How organisational culture influences curricular reform

Adarsh P. Shah[1] | Kim A. Walker[1] | Lorraine Hawick[1] | Kenneth G. Walker[2] | Jennifer Cleland[3]

[1]Centre for Healthcare Education Research and Innovation (CHERI), University of Aberdeen, Aberdeen, UK

[2]NHS Education for Scotland, Centre for Health Science, Inverness, UK

[3]Lee Kong Chian School of Medicine, Nanyang Technological University Singapore, Singapore

Correspondence
Professor Jennifer Cleland, Lee Kong Chian School of Medicine, Nanyang Technological University, HQ Building, Novena Campus, 11 Mandalay Road, Singapore.
Email: jennifer.cleland@ntu.edu.sg

Funding information
This work was supported by the Royal College of Surgeons of Edinburgh [Grant number RG-15026].

Abstract

Introduction: Curricular reform is often proposed as the means to improve medical education and training. However, reform itself may not lead to noticeable change, possibly because the influence of organisational culture on change is given insufficient attention. We used a national reform of early-years surgical training as a natural opportunity to examine the interplay between organisational culture and change in surgical education. Our specific research question was: in what ways did organisational culture influence the implementation of Improving Surgical Training (IST)?

Methods: This is a qualitative study underpinned by social constructivism. Interviews were conducted with core surgical trainees ($n = 46$) and their supervising consultants ($n = 25$) across Scotland in 2020–2021. Data coding and analysis were initially inductive. The themes indicated the importance of many cultural factors as barriers or enablers to IST implementation. We therefore carried out a deductive, secondary data analysis using Johnson's (1988) cultural web model to identify and examine the different elements of organisational culture and their impact on IST.

Results: The cultural web enabled a detailed understanding of how organisational culture influenced IST implementation as per Johnson's six elements—Rituals and Routines (e.g. departmental rotas), Stories (e.g. historical training norms and culture), Symbols (e.g. feedback mechanisms, visibility and value placed on education), Power Structures (e.g. who has the power in local contexts), Organisational Structures (e.g. relationships and accountability) and the Control System (e.g. consultant job plans and service targets)—and how these interact. However, it did not shed light on the influence of exogenous events on change.

Conclusion: Our data reveal cultural reasons why this curricular reform met with varying degrees of success across different hospital sites, reinforcing that curricular reform is not simply about putting recommendations into practice. Many different aspects of context must be considered when planning and evaluating change in medical education and training.

1 | INTRODUCTION

Curricular reform is often proposed as the means to address issues with medical education and training. However, previous studies have suggested that curricular reform, even with the best of intentions, may not lead to noticeable change.[1–4] Indeed, Whitehead and colleagues[1] use the metaphor of a carousel to illustrate that the returning themes of curricular reform circle around repeatedly. Getting off this carousel fundamentally requires changing from one way of doing things to another.

As with most organisational change, curriculum reform tends to be driven by leaders who propose to change the vision, structure or procedures of a curriculum and then persuade others to implement their recommendations.[5–8] However, such top-down change efforts often fail to meet their intended purposes and instead result in disturbance, resistance to change from individuals and groups, and unintended consequences.[9–11] This is no different in medical education, where attempts to reform curricula have been previously described as challenging and disruptive.[12]

Reforming a curriculum involves changing organisational processes, systems and structures, none of which is easy to change. However, even more challenging is changing culture: the management literature is clear that organisational culture—'the taken-for-granted assumptions and behaviours of an organisation's members'[13 (p171)]—is a significant, indeed the greatest barrier, to change implementation.[14–16] That organisational culture influences change processes has been demonstrated in business,[17,18] higher education,[19] and healthcare and medical education.[20–26]

In short, to understand curriculum reform requires an understanding of organisational culture. However, although empirical studies evaluating change/curricular reform in medical education often invoke culture to explain their observations,[27–29] these studies have been criticised for insufficiently acknowledging faculty traditions and values.[9] Others suggest that medical education scholars have overlooked theory-informed approaches to demystify the word 'culture'.[28] A gap in the medical education literature thus exists for the use of theory-driven approaches to understand how organisational culture shapes change.[30] This understanding is necessary to ensure aspects of culture, which may limit change are identified and addressed.[31,32]

The roll out of a curricular reform of early-years surgical training in the UK (called 'Improving Surgical Training (IST)')[33] was a natural opportunity to examine cultural barriers to, and enablers of change implementation in surgical education and training. IST had met with success at national level according to crude outcome measures as examination pass rates, intention to continue training in surgery and fill rates of onward programmes.[34,35] However, evaluation data showed variations in implementation between hospitals, and in trainees' and trainers' perceptions of the success of IST. Given these variations, and previous findings that deep-seated values and practices can exert powerful resistance to external influence in surgery,[36–39] we considered that the influence of culture on change was worthy of consideration. Thus, our specific research question was: in what ways did organisational culture influence the implementation of IST throughout Scotland?

2 | METHODS

We adopted a qualitative approach given our interest was understanding rather than measuring.[40] Our study was underpinned by social constructivism, acknowledging that reality is socially constructed and thus culture and context are important in the process of knowledge construction and accumulation.[41] We used individual interviews to explore participants' experiences of a curricular reform, including their views of cultural barriers to, and enablers of reform.

2.1 | Context

Our context was UK surgical training (residency), specifically the first 2 years of postgraduate surgical training, which follows the 2-year generic Foundation Programme, which in turn follows medical school. This initial stage of surgical training, known as Core Surgical Training (CST), aims to give trainees a broad exposure across different surgical specialties.

In 2013 the Shape of Training report recommended changes to postgraduate medical education to address problems including the imbalance between service provision and training, the lack of time for training and the lack of flexibility during the training process.[42–44] These problems were particularly notable in CST. Core surgical trainees (usually referred to as CT1 or CT2s, equivalent to residency years 1 and 2) had long reported dissatisfaction with their education and training experiences[45–48] because of shift working and heavy clinical service workloads, which limited surgical experience,[43,49,50] and led to a lower sense of 'belonging' within teams and relatively poor relationships with their trainers.[51,52] 'Improving Surgical Training (IST)' was proposed to redress these tensions and to improve the quality of training experience.[33] IST's recommendations focused on reducing trainees' service commitments and increasing the time dedicated to training during the working week, enabling Consultant Surgeons with educational/clinical supervision roles (henceforth trainers) to dedicate more time to deliver training, increasing the length of rotations to enhance trainee-trainer relationships, more focused training opportunities (e.g. simulation) and involving health professionals within the wider surgical team to deliver patient care thereby freeing trainees to seek training.

Our specific context was Scotland, UK, where IST was implemented across all CST posts from August 2018. Compared with the other UK sites, in Scotland particular priority had been put on resourcing Educational Supervisors' additional time, and on providing an extensive programme of simulation-based training throughout CST.[53]

2.2 | Participants

There is an annual intake of 45–55 core surgical trainees (CTs) across Scotland, assigned into two programmes, East and West of Scotland, each of which is led by a Training Programme Director. CST is delivered across 14 territorial Health Boards, in a wide variety of hospital

settings: regional tertiary units, district general hospitals and rural hospitals. The programmes consist of 4-to-6-month rotations and during every rotation each trainee is assigned one educational supervisor and several nominated clinical supervisors.

On receiving project approval and appropriate institutional consents (see later), CTs and trainers from across Scotland were invited to participate in the study. The two Training Programme Directors emailed invitations to prospective participants on our behalf, between April to August 2020 (trainees and trainers) and February to May 2021 (trainers only). We also asked members of the research team and participants for assistance in identifying potential participants (snowball sampling[54]). Two email reminders about the study were sent during both participant recruitment rounds. Interested participants were asked to contact the main researcher directly by email and were then provided with more information about the study.

2.3 | Data collection

We developed a semi-structured interview schedule[55] informed by the literature[17,28] and by discussions both within the team and more widely with those involved in organising and delivering IST in Scotland. Interview questions were designed to explore participants' individual experiences of supervision and training following IST implementation. Questions also probed participants' views of barriers and enablers to organisational engagement with IST.

The interview schedule ensured consistency, but interviews were iterative and continued until the participant felt that they had shared their experiences sufficiently. Open questions guided discussion as far as possible, supplemented by probes where required. Data were collected during the Covid-19 pandemic and so interviews were conducted virtually by AS using the Microsoft Teams platform.

2.4 | Data analysis

Interviews were digitally audio-recorded for later transcription. Participants were anonymised during the transcription process. Transcripts were entered into the qualitative data analysis software NVivo v12.0 (QRS International Pty Ltd, Doncaster, Victoria, Australia) to facilitate data management and coding. We initially conducted a thematic analysis to identify themes and sub-themes.[56] After team discussions of preliminary codes and resolution of any coding disagreements, coding occurred iteratively and inductively, focusing throughout on the research question. After this, following further team discussion and drawing on JC's knowledge of management theories and literature, we extended beyond simple thematic analysis to critically analyse organisational culture using Johnson's cultural web theory.[13] This model offered a visual approach to expose the manifestations of organisational culture and how these might have influenced the implementation of IST.[57–61]

Johnson's cultural web model is built on three premises. First, that organisational culture is 'the taken-for-granted assumptions and behaviours of an organisation's members'.[13(p171)] This 'taken-for-grantedness' makes articulating organisational culture difficult, and the cultural web model helps elucidate and visualise the culture of an organisation.[62]The second premise is that the six elements, or artefacts, of the cultural web model—routines and rituals, stories, symbols, power structures, control systems and organisational structures—and how they relate, need to be understood to comprehend the central cultural paradigm (see Fig. 1). It is noteworthy that the paradigm in the cultural web theory refers to the 'big picture' of the assumptions that are not necessarily explicit and not considered problematic and thus is very different from the meaning of paradigm in scientific research. The third premise is how individuals or groups experienced historic events such as change within an organisation, plays a key role in determining current behaviours and future strategies. For example, events such as mergers and acquisitions or devolutions impact current beliefs and behaviours, which in turn determine responses to future environmental changes.

2.5 | Reflexivity

Qualitative research is dependent on the relationship between the researcher and the research process.[41,63] We considered our positions and relationships with the data continually and critically in view of our different inter-disciplinary backgrounds (psychology, pharmacology, nursing and surgery), different levels of knowledge and experience of delivering and managing surgical education, training and research. For example, as a surgical trainee from another UK country who took time out of training to do a PhD, AS was both an insider and an outsider; external to Scotland's healthcare system but an insider by being a surgical trainee with knowledge of training within the NHS.

2.6 | Ethics

The host University's Research Governance team and the host NHS provider's Quality Improvement and Assurance Team classified this study as a National Evaluation Audit (project number 4945), thus exempting it from ethical approval. However, we followed core ethical principles: obtaining written, informed consent from potential research participants that their (anonymised) responses could be used for research purposes, that participation was voluntary and that participants had the right to withdraw at any time.

3 | RESULTS

Forty-six trainees and 25 trainers responded to the email invitations. Table 1 reports participant characteristics. Representation from all 13 Health Boards in Scotland with core surgical training posts was achieved. Participants represented all surgical specialties except neurosurgery and had rotated through 27 different hospitals during their core surgical training. The mean duration of interviews with trainees

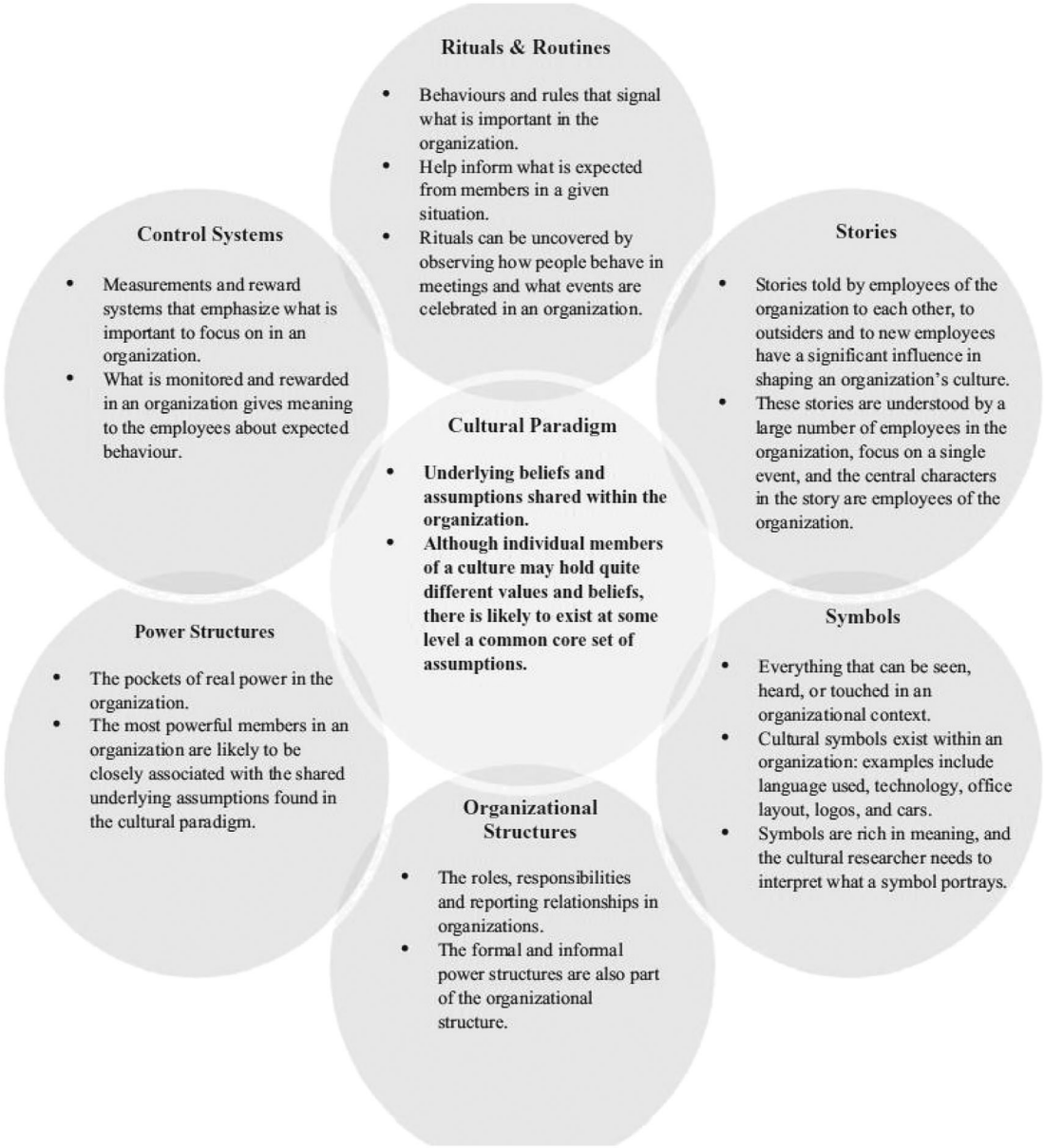

FIGURE 1 Johnson's cultural web demonstrating the interplay between the six cultural elements and the cultural paradigm (reproduced with permission from Doherty and Stephens,[57] adapted from Johnson[95])

TABLE 1 Participants characteristics by location, gender and training grade

		Trainees	Trainers
Training programme	East	26	14
	West	20	11
Gender	Male	23	19
	Female	23	6
Training grade	CT1	28	
	CT2	18	

was 54 mins (range: 26–111 min) and with trainers was 41 min (range: 18–60 min). Trainers' experience of educational and clinical supervision ranged from 2–25 years.

Participants have been anonymised and identified as trainee (CT) or trainer (TR). We report verbatim quotes. An ellipsis (…) indicates text that has been cut out where less relevant, and square brackets indicate any non-verbatim explanatory text. Quotations are included to aid confirmation of findings and to help the reader follow the logic of the story. We use the six elements of Johnson's cultural web (Fig. 1) to organise the data. We bring these together in the

discussion, where we consider how the six elements interacted and the cultural paradigm of core surgical training.

3.1 | Rituals and routines

Rituals and routines guide what is expected to happen in a situation, ways of being and doing established over time, often referred to as 'the way we do things around here'. Surgical trainees are rostered to shifts, and it was clear that the shift rota determined IST training opportunities. For example, when on the emergency rota, CTs reported being primarily tasked with seeing acute admissions (the 'take') such that 'going to theatre is almost seen as a reward for good behaviour … not you're here to learn how to be a surgeon' (CT03). Similarly, with elective duties, the routine in some places dictated that CTs complete the ward round prior to attending their allocated activity: '… you might have been scheduled to be in an elective operating list but then the ward round needed done …' (CT27).

In response to IST recommendations (e.g. maximisation of training time during daytime hours), some departments changed their ways of working, either adapting existing rotas to maximise training opportunities or introducing supernumerary roles. An example of the first of these was dividing the emergency rota into two so that CTs could either be responsible for acute surgical admissions (developing clinical skills) or for the emergency theatre (thus learning operative skills). The creation of supernumerary roles freed trainees from service, and empowered them to seek training opportunities more freely:

> '… there was some structure to the week in that I was assigned which theatre or clinic to go to … but because I was supernumerary, I had that luxury from the department to kind of design my own and achieve my own goals' (CT26).

Training experiences between departments that adopted new rotas contrasted with those where rotas remained unchanged:

> 'I was pretty much operating there on a daily basis, while here you would consider yourself lucky if you had one and half day a week. So, I think my surgical skills went down instead of up' (CT10).

Where rotas remain unchanged despite IST, 'it didn't seem that anything was truly translating to IST in the switch from core training. It just seemed to be the same' (CT07). In short, it seemed that rotas could either support or block IST-related change, depending on the specific context.

3.2 | Stories

Stories of past events help identify what is perceived as important[64] and are often the way in which expectations of ways of doing things, norms and values are transferred, learnt and passed on. Stories were most apparent in respect of trainer stories of their own education. For example, narratives about how it has always been the case that senior residents have preferential treatment over CTs in respect of access to training opportunities were common, indicating to trainees this was the way things were, and would continue to be.

> 'I brought it up with the educational supervisor and he says, "well, that's just the way it is. If you're more senior, you trump the rest. That's what I've done in my training, and that's what you're going to do later on in your training"' (CT10).

Stories also indicated that trainers believed training opportunities 'should not be handed on a plate' (TR09), that trainees needed to be self-directed and intrinsically motivated to seize opportunities and to see learning opportunities as inherent in every 'service' task.[65,66] These stories and attitudes seemed to be an influence of trainers' own experiences as trainees under the traditional apprenticeship training model. The persistence of these stories and the ways of working they perpetuated appeared to be a barrier to change:

> 'I have raised concerns about not really having any access to elective opportunities in this job … you're just kind of brushed off and told, "ah yes, I'm aware of that." There's a lot of awareness and not a lot of action …' (CT44).

Historical attitudes towards core trainees were slow to change: 'historically the people that are core trainees, we're the ward monkeys, and that's what we're seen as …' (CT03).

3.3 | Symbols

This element relates to words, objects, conditions and acts that have meaning in ways that influence organisational beliefs and values, and relationships within organisations.

One obvious symbol was the acts associated with training. Often, the first symbol was the act of induction to the workplace at the start of the rotation: whether this was formal, informal, planned or ad hoc, welcoming or not. For example, some trainers made contact with their trainee prior to their arrival, an act that was welcomed by trainees: 'it feels like you're starting the induction process early and you can start sharing information' (TR20).

The next symbol was an object, specifically the regular documentation required within the trainee's e-portfolio of their progress against the learning agreement and curricular competencies. Although one of the aims of IST was more frequent reviews of progression within the trainee-trainer dyad, the pressures of service delivery on trainers impacted on the quality of observation/supervision and feedback:

> 'Most of the consultants were quite happy just to fill out anything. Some consultants put more effort in and said, "Ok, these are the things you should go and read". Others were just happy to say, "that was good. You can write it up and then I'll read through it and if it seems reasonable, I'll sign it off for you"' (CT18).

Another symbol, or signal, was the visibility of education within the department's internal governance systems. For example, only a few surgical departments regularly held monthly education and progression meetings. Where these did occur, CTs benefited from multi-consultant feedback on performance and trainers kept abreast with departmental training-related issues. On the other hand, where education did not have its own meeting and/or was only tabled on the monthly business meeting agendas if problems occurred (e.g. staff shortages impacting training), participants reported that any concerns they had about training were 'listened to on a surface level and dismissed … kind of falling on deaf ears really' (CT44).

Finally, why a consultant took on an educational supervisor role, which was interpreted by trainees as a sign of how education was valued. There existed 'a very broad spectrum of how interested or engaged or aware of what [the] training programme is, or what the role is' (TR22) amongst trainers. Although differences in trainer engagement might on the surface seem to be an individual issue, it also appeared to be related to systems issues, specifically individual consultants having to 'shoulder the burden' of training in small departments:

> '… the educational supervisor I have has been doing that educational supervisor thing for a long time already … my feeling is it's not he does it because he likes it, or he really wants to do it. He does it because nobody else could be bothered to do it …' (CT10).

In summary, system structures (symbols) had a key role in respect of how education and training were perceived to be valued. The visibility, or recognition of training locally was instrumental in the process of reform/change. Low visibility was a signal of low priority.

3.4 | Power structures

Power structure refers to the groups or individuals with the most influence, who determine the actions and behaviours expected of those with less power and who may be expected to be most closely aligned with the core assumptions of the organisational culture.[64] In the healthcare institutions that deliver surgical training, the most obvious power lies with the trainers, some of whom used IST as leverage to maximise the potential for good training experiences and delivery of safe clinical care by obtaining extra funding to fill rota gaps with CT-equivalent doctors:

> '… the barrier to getting more CDFs [Clinical Development Fellows] was finance. But when you got a pilot saying the goal posts changed to how much on-call they need to do, and having that set out in black and white meant we could go to management and say can we employ some CDFs to bolster the rota to allow this to happen?' (TR16).

Those who strongly advocated for protection of IST's training principles despite service pressures enriched the credibility of IST amongst CTs and made the CTs feel valued:

> '… my educational supervisor … he's very, very protective of your training time … one of the more senior consultants wants us [core trainees] to be on-call all the time to take the pressure off the registrars … And my supervisor, in that meeting was very, very vocal. He was saying, "no, that's not allowed. That does not meet their training needs"' (CT12).

However, other people also had power within surgical training. For example, as discussed earlier (*Rituals and routines*), the rota was critical to training experiences. Rota management was often the responsibility of a non-medical rota coordinator. These individuals were perceived as focused on service delivery, not education, and populated rotas accordingly. This left CTs having to negotiate, for example, elective operative opportunities by swapping lists with fellow CTs or by making prior agreements with the rota master. In large departments, typically tertiary units, the co-existence of multiple surgical specialties and training hierarchies (see *Stories*) meant CTs were often used as 'rota fodder' (CT37) to plug gaps at short notice or to meet service needs. In this way, the rota coordinator had power that could enable or inhibit local implementation of IST. Some departments recognised this issue and rectified it by nominating a trainer to oversee fair allocation of the department's clinical activities.

3.5 | Organisational structures

Organisational structure refers to formal structures, roles and relationships, which reflect power relationships between people who carry out different roles (i.e. lines of accountability and responsibility).[64] The potential for change was influenced by relationships between hospital management and surgical trainers. For example, at every hospital, the Directors of Medical Education (who are typically senior consultants) agreed to support IST. But, on the ground, clinical service managers lacked understanding of IST and were perceived to still focus solely on meeting service needs and targets:

> 'It's been a bit of a battle with management … Management seemed to be under the opinion they could just flog the trainees into doing extra work … after a couple of weeks, they [trainees] realised that actually their training was more important rather than the service and the cash' (TR21),

In comparison, trainers tried to balance education and case throughput by maximising the training potential within each list:

> '… I know that the organisation would be much happier me sitting here doing a bunch of hernias with a surgical first assistant and battering through it … But if you ask at consultant level, we would all be saying, I would much rather have one less hernia on my list, or one less scope on my list, and be able to train on it' (TR16).

One of IST's aims was increased, regular contact between CTs and their allocated supervisors. Factors relating to organisational structures enabled this. For example, training and working in smaller teams offered continuity:

> '… because it was team based … you do the on call with them [the team], you do CEPOD [emergency theatre] week with them, you go to all their clinics, you look after all their patients … I think that makes a huge difference'. (CT32)

and rich operative exposure under one-to-one direct supervision:

> 'you're doing more stuff with nobody else except the consultant…' (CT12).

IST advocated the extended surgical team (EST) as a positive organisational structure in respect of CT training opportunities. Participants in organisations with EST reported benefits in respect of interprofessional and workplace-based learning from supervision and training delivered by members of the EST. In certain specialties, however, the opposite happened; extended surgical team members were perceived to take away operative opportunities suitable for CTs:

> '… if I go to cardiac theatre at the same time as the trainee SNP [surgical nurse practitioner] goes, I get demoted below the trainee SNP because she's going to be there to work forever, and needs to learn how to take a vein, whereas I'm leaving in 2 months. So, I get demoted …' (CT43).

3.6 | Control systems

Control systems refers to the formal and informal ways of monitoring and supporting individuals within the organisation. These control systems emphasise what is valued and send signal as to what behaviour and attitudes are expected.[64]

Control systems such as consultant surgeons' job plans and training governance structures seemed to act as both barriers and enablers of change implementation. Some trainers used the system to negotiate with hospital management and manoeuvre more supervision time:

> '… it was easier to say, if we don't meet these criteria, we'll lose a trainee. If we lose a trainee, then the rota becomes even worse, and you'd be spending all this money on locums and all of this sort of stuff … So, they found funding'. (TR16).

However, despite agreement at higher levels of management, most trainers' job plans remained unaltered when IST was introduced. This seemed to be reflective of historical norms (see *Stories* earlier); trainers had 'never really worked to a job plan' (TR25), instead usually carving time for supervision out of busy clinical activities. Furthermore, many trainers believed there was no point in negotiating for additional supervision time because managers had a poor understanding of what supervision entailed.

> 'Managers don't really understand job planning with supervision, to get it recognised, the amount of work you know, sitting down with the trainees, filling out their paperwork, and actually just sitting down and talking to them, how much that actually involves' (TR21).

4 | DISCUSSION

We used Johnson's cultural web[13] as an analytical framework to evaluate the implementation of a national curricular reform of surgical education and training, which evaluation data suggested had been experienced differently in different places.

In terms of our specific research question, identifying the ways in which organisational culture influenced the implementation of Improving Surgical Training (IST) in Scotland, we found that where there was no or minimal change in routines, structures and systems (e.g. where there were no changes to consultants' job plans to free up time for training), then nothing really changed, and the historical context prevailed. Where changes in these cultural elements did occur—sometimes because trainers used IST as a negotiation tool within their hospital—there was some evidence of change. There was a sense that IST recommendations were more readily embraced in smaller surgical departments. These seemed to have more of a culture of interactions and connections than larger units, which likely to contribute to more effective change.[67]

We found that trainers' current and past experiences of supervision and training influenced their assumptions and expectations of core surgical training/trainees (stories). Different localities/hospitals had subtly different set-ups, service configurations and priorities (organisational structures), which influenced their readiness to deviate from historic practices and beliefs to implement change. We identified specific barriers and enablers to the enactment of IST, including the nature of the rota and its' management (rituals and routines, organisational structures) and the attitudes and beliefs of an institutions' trainers and allied health professionals (stories and symbols). Tensions

between trainers and managers were also described in our data (control systems).

We tentatively suggest that several forces may explain the arguably limited change we observed. First, IST was developed by the Royal College of Surgeons of England, one of four UK Colleges responsible for setting the surgical curriculum and providing support to workplace-based surgical education. However, surgical education is delivered in Health Boards and hospitals, the organisations who employ the trainers (consultants) and trainees. IST was thus driven externally. External drivers can be powerful drivers of change,[68,69] but only where there is a shared understanding of the need for change and a commitment from those expected to deliver change.[70] IST may not have been a sufficient driver for change in some settings because the priority of those organisations in which surgeons are trained (i.e. hospitals) is service delivery not training.[71,72] Similarly, while hospital management and administration were crucial to the success of IST, their focus was service, and they had little incentive for or investment in change.[73–75] These age-old tensions are by no means unique to surgery or Scotland.[71,72,76]

Related to this, external context, the wider environment, is a major influence on change success.[77] IST was implemented in 2018, and appreciating that change takes time, our data collection took place as planned in 2020–2021. However, data collection then clashed with the Covid-19 pandemic, when surgical service delivery was heavily disrupted,[78,79] service-training tensions[80,81] magnified and specific aspects of IST—namely, the planned programme of simulation-based training events for CTs—disabled temporarily. Given that external stimuli or events impact on change,[82] we suggest that the organisations involved in surgical training were so focused on managing Covid-19 disruptions that they had no capacity for anything else, let alone change planned before the pandemic and for 'steady state' conditions. Managing Covid-19 was the focus of all attention and action.[83]

`Third, surgical training involves many different organisations—the hospitals in which training is delivered, the over-arching bodies such as NHS Education for Scotland who are responsible for quality assurance of training, and the Surgical Royal Colleges.[84] All these different organisations have their own cultures, or contexts, which may have directly facilitated or shaped IST implementation, explaining why it's success seemed to be different in different places (i.e. where the 'combination' of cultures and cultural elements differed). (On the other hand, the counter argument to this is that surgical training has its own over-arching culture,[15,16] and culture does not need to be embedded in a single, physical organisation,[26] although specific settings might bring their own barriers and enablers (as was indicated in our data).)

The new questions are to what extent changes made during the pandemic have been maintained and embedded in practice and whether surgical training can—or indeed should—step back to pre-pandemic times, and resume IST-driven change.

All data collection approaches have strengths and weaknesses.[55] During the pandemic, virtual interviews were the only way to obtain responses from trainers and trainees across many different contexts. We encountered difficulty with recruiting trainers initially, hence our second round of invitations to take part in the study. We believe this was due to the COVID-19 pandemic, so we waited until after (what was) the second wave of the pandemic before sending out second invitations to trainers only.

Recruiting managers as participants would have afforded their perspective on enacting curricular reforms within their organisation. However, healthcare managers, other than Directors of Medical Education, were not involved in the IST proposal discussions and implementation stages of the curricular reform (This, of course, may have contributed to the issues reported, as discussed earlier).

As with any voluntary study, there would have been an element of participant self-selection. However, as eventually we saw the same ideas coming up repeated and no new themes (thematic saturation or data sufficiency[85]), we stopped data collection and feel confident that our data reflects common experiences.

The initial inductive data analysis indicated the importance of culture so we read the management literature widely and considered many different theories before settling on cultural web theory because, in our view and as a descriptive model of change (rather than a processual one[86]), it offered the most fitting framework to make sense of the data. However, the cultural web only shows visible aspects of organisational culture: we may not have identified and uncovered other, less visible assumptions, running the potential risk of misunderstanding culture.[87] Indeed, there has been wider discussion in the change management literature about the fact that most models of change do not fully explore or display all factors that influence the success of organisational change[88,89] and the use of a single model or few models is not sufficient to cover various change situations.[90,91] Also, while the cultural web framework provides a framework for articulating different aspects of organisational culture, it does not offer any explicit mechanisms for examining how its six elements interrelate or overlap.

While our aim was not to implement change, but rather to examine change enactment, combining several change models may have provided a fuller explanation of the change processes associated with IST. Combining cultural web theory with one which examines the interactions between internal factors and exogenous events may have been particularly helpful.

Finally, any one theory only illuminates one aspect of data.[92] Another lens may have emphasised different aspects of the problem, such as the nature of the relationships between managers and clinicians, and how this might have impacted on change[93] or an assessment of individual organisations (e.g. different hospitals) readiness for change.[94]

5 | CONCLUSION

> '… so, I think a lot of it is not about finding the right training style; it's just about how do you make what that individual place is like better. Like how do you make the bosses interested? How do you make the rota better? How do you make people take you seriously?' (CT16).

Seen through the lens of Johnson's cultural web, our data illuminate the workings of a curricular reform that met with varying degrees of success across different hospital sites. This reinforces that curricular reform is not simply about putting recommendations into practice. Context must be taken into account when planning and evaluating change.

ACKNOWLEDGEMENTS

We would like to thank Graham Haddock, Satheesh Yalamarthi and Mark Vella for their assistance with participant recruitment, and all the surgical trainees and trainers who took part in the study.

CONFLICT OF INTEREST

None.

ETHICS STATEMENT

The study protocol was submitted to both the University of Aberdeen School of Medicine's Research Governance team and the NHS Grampian's Quality Improvement and Assurance Team. The study was classified as a National Evaluation Audit (project number 4945), thus exempting it from the full ethical review process.

AUTHOR CONTRIBUTIONS

This study is part of AD's doctoral research. The study design was conceived by JC, KJW, KAW and AS. AS carried out data collection and analysis under supervision from JC, KJW, KAW and LH. AD prepared the first draft of this manuscript under JC's guidance, and JC revised the manuscript before submission. All authors approved the final manuscript before submission.

ORCID

Adarsh P. Shah https://orcid.org/0000-0002-7004-1751
Kim A. Walker https://orcid.org/0000-0001-8873-2270
Lorraine Hawick https://orcid.org/0000-0002-2169-1192
Kenneth G. Walker https://orcid.org/0000-0002-4017-6516
Jennifer Cleland https://orcid.org/0000-0003-1433-9323

REFERENCES

1. Whitehead CR, Hodges BD, Austin Z. Captive on a carousel: discourses of "new" in medical education 1910-2010. *Adv Health Sci Educ*. 2013;18(4):755-768. doi:10.1007/s10459-012-9414-8
2. Hawick L, Cleland J, Kitto S. Getting off the carousel: exploring the wicked problem of curriculum reform. *Perspect Med Educ*. 2017;6(5):337-343. doi:10.1007/s40037-017-0371-z
3. Hawick L, Kitto S, Cleland J. Curriculum reform: the more things change, the more they stay the same? *Perspect Med Educ*. 2016;5(1):5-7. doi:10.1007/s40037-016-0252-x
4. Bloom SW. Reform without change? look beyond the curriculum. *Am J Public Health*. 1995;85(7):907-908. doi:10.2105/AJPH.85.7.907
5. Bank L, Jippes M, van Rossum TR, den Rooyen C, Scherpbier AJJA, Scheele F. How clinical teaching teams deal with educational change: "we just do it.". *BMC Med Educ*. 2019;19(1):1-8. doi:10.1186/s12909-019-1815-4
6. Scheele F, Teunissen P, van Luijk S, et al. Introducing competency-based postgraduate medical education in the Netherlands. *Med Teach*. 2008;30(3):248-253. doi:10.1080/01421590801993022
7. Calman KC, Temple JG, Naysmith R, Cairncross RG, Bennett SJ. Reforming higher specialist training in the United Kingdom—a step along the continuum of medical education. *Med Educ*. 1999;33(1):28-33. doi:10.1046/j.1365-2923.1999.00356.x
8. Sachdeva AK, Bell RHJ, Britt LD, Tarpley JL, Blair PG, Tarpley MJ. National efforts to reform residency education in surgery. *Acad Med*. 2007;82(12):1200-1210. doi:10.1097/ACM.0b013e318159e052
9. Lillevang G, Bugge L, Beck H, Joost-Rethans J, Ringsted C. Evaluation of a national process of reforming curricula in postgraduate medical education. *Med Teach*. 2009;31(6):e260-e266. doi:10.1080/01421590802637966
10. Velthuis F, Dekker H, Coppoolse R, Helmich E, Jaarsma D. Educators' experiences with governance in curriculum change processes; a qualitative study using rich pictures. *Adv Health Sci Educ Theory Pract*. 2021;26(3):1027-1043. doi:10.1007/s10459-021-10034-1
11. Maaz A, Hitzblech T, Arends P, et al. Moving a mountain: practical insights into mastering a major curriculum reform at a large European medical university. *Med Teach*. 2018;40(5):453-460. doi:10.1080/0142159X.2018.1440077
12. Velthuis F, Varpio L, Helmich E, Dekker H, Jaarsma ADC. Navigating the complexities of undergraduate medical curriculum change: change leaders' perspectives. *Acad Med*. 2018;93(10):1503-1510. doi:10.1097/ACM.0000000000002165
13. Johnson G, Whittington R, Scholes K, Angwin D, Regner P. History and culture. In: *Exploring strategy*. 11th ed. Pearson; 2017:162-190.
14. Barnber V, Trowler P, Saunders M. *Enhancing learning, teaching, assessment and curriculum in higher education: Theory, cases, practices*. McGraw-Hill; 2009.
15. Baughan P. Culture and culture change in a higher education context: what works and what doesn't? *Learn City J*. 2012;2(1):19-28.
16. Ashkanasy N, Wilderon C, Peterson M. Introduction to the Handbook of Organizational Culture and Climate. In: Ashkanasy N, Wilderom C, Peterson M, eds. *The handbook of organizational culture and climate*. 2nd ed. SAGE Publications Inc; 2010:3-10.
17. Jippes M, Driessen EW, Broers NJ, Majoor GD, Gijselaers WH, van der Vleuten CPM. Culture matters in successful curriculum change: an international study of the influence of national and organizational culture tested with multilevel structural equation modeling. *Acad Med*. 2015;90(7):921-929. doi:10.1097/ACM.0000000000000687
18. Chapman B, Sisodia R. *Everybody matters: The extraordinary Power of caring for your people like family*. 1sted. Penguin; 2015.
19. Kezar A, Eckel PD. The effect of institutional culture on change strategies in higher education. *J Higher Educ*. 2002;73(4):435-460. doi:10.1080/00221546.2002.11777159
20. Cottingham AH, Suchman AL, Litzelman DK, et al. Enhancing the informal curriculum of a medical school: a case study in organizational culture change. *J Gen Intern Med*. 2008;23(6):715-722. doi:10.1007/s11606-008-0543-y
21. Taplay K, Jack SM, Baxter P, Eva K, Martin L. Organizational culture shapes the adoption and incorporation of simulation into nursing curricula: a grounded theory study. *Nurs Res Pract*. 2014;2014:197591. doi:10.1155/2014/197591
22. Rider EA, Gilligan MC, Osterberg LG, et al. Healthcare at the crossroads: the need to shape an organizational culture of humanistic teaching and practice. *J Gen Intern Med*. 2018;33(7):1092-1099. doi:10.1007/s11606-018-4470-2
23. Stoddard HA, Brownfield ED. Culture transformation by stealth: leveraging incremental change to revamp the curriculum. *Med Teach*. 2020;42(12):1350-1353. doi:10.1080/0142159X.2020.1805421
24. Schneidereith TA, Leighton K, Foisy-Doll C. Operationalizing a simulation program: practical information for leadership. *Nurs Forum (Auckl)*. 2020;55(4):569-574. doi:10.1111/nuf.12463
25. Vize R. Ockenden report exposes failures in leadership, teamwork, and listening to patients. *BMJ*. 2022;376:o860. doi:10.1136/bmj.o860

26. Chatman JA, Jehn KA. Assessing the relationship between industry characteristics and organizational culture: how different can you be? *Acad Manage J*. 1994;37(3):522-553. doi:10.5465/256699
27. Bartlett T, Hewertson E, Vassallo M. Culture change and mandating quality improvement. *Clin Teach*. 2019;16(1):30-35. doi:10.1111/tct.12758
28. Watling CJ, Ajjawi R, Bearman M. Approaching culture in medical education: three perspectives. *Med Educ*. 2020;54(4):289-295. doi:10.1111/medu.14037
29. Glasbey JC, Harries RL, Beamish AJ, et al. Early years postgraduate surgical training programmes in the UK are failing to meet national quality standards: an analysis from the ASiT/BOTA lost tribe prospective cohort study of 2,569 surgical trainees. *Int J Surg*. August 2017; 2018(52):376-382. doi:10.1016/j.ijsu.2017.09.074
30. Watling CJ. On identity, agency, and (sub)culture. *Med Educ*. 2022; (February);22-24(6):592-594. doi:10.1111/medu.14788
31. Kitto SC, Gruen RL, Smith JA. Imagining a continuing interprofessional education program (CIPE) within surgical training. *J Contin Educ Health Prof*. 2009;29(3):185-189. doi:10.1002/chp.20034
32. Checkland K, Harrison S, Marshall M. Is the metaphor of "barriers to change" useful in understanding implementation? Evidence from general medical practice. *J Health Serv Res Policy*. 2007;12(2):95-100. doi:10.1258/135581907780279657
33. Royal College of Surgeons of England. Improving surgical training: Proposal for a pilot surgical training programme. Published online 2015:70.
34. Shah AP, Haddock G. Improving Surgical Training (IST): The Scottish Update. In: *Associations of surgeons in training (ASiT) 2022*; 2022.
35. NES NE for S. Recruitment statistics. 2019 Recruitment Data. Published 2019. Accessed November 23, 2022. https://www.scotmt.scot.nhs.uk/recruitment/recruitment-statistics.aspx
36. Davies HTO, Nutley SM, Mannion R. Organisational culture and quality of health care. *Qual Health Care*. 2000;9(2):111-119. doi:10.1136/qhc.9.2.111
37. Lane IF. Change in higher education: understanding and responding to individual and organizational resistance. *J Vet Med Educ*. 2007; 34(2):85-92. doi:10.3138/jvme.34.2.85
38. Alexanian JA, Kitto S, Rak KJ, Reeves S. Beyond the team: understanding Interprofessional work in two north American ICUs. *Crit Care Med*. 2015;43(9):1880-1886. doi:10.1097/CCM.0000000000001136
39. Bearman M, Mahoney P, Tai J, Castanelli D, Watling C. Invoking culture in medical education research: a critical review and metaphor analysis. *Med Educ*. 2021;55(8):903-911. doi:10.1111/medu.14464
40. Cleland JA. Exploring versus measuring: considering the fundamental differences between qualitative and quantitative research. In: Cleland JA, Durning SJ, eds. *Researching medical education*. 2nd ed. Wiley; 2023:3-14.
41. McMillan W. Theory in healthcare education research: the importance of worldview. In: Cleland J, Durning SJ, eds. *Researching medical education*. First. John Wiley & Sons, Ltd; 2015:15-23.
42. Greenaway D. Shape of Training: Securing the future of excellent patient care. *General Medical Council* Published online 2013:1–57. https://www.gmc-uk.org/Shape_of_training_FINAL_Report.pdf_53977887.pdf
43. Vig S, Allum B. The future of core surgical training. *Bull R Coll Surg Engl*. 2017;99(1):20-22. doi:10.1308/rcsbull.2017.20
44. Allum W. Improving surgical training. *Surgery (United Kingdom)*. 2020; 38(10):596-600. doi:10.1016/j.mpsur.2020.07.015
45. General Medical Council. National training survey report 2014. National training surveys reports. Published 2014. Accessed April 4, 2022. https://www.gmc-uk.org/about/what-we-do-and-why/data-and-research/national-training-surveys-reports
46. General Medical Council. National Training Survey 2016: Key Findings; 2016. http://www.gmc-uk.org/National_training_survey_2016___key_findings_68462938.pdf
47. General Medical Council. Training Environments 2017: Key Findings from the National Training Surveys; 2017.
48. General Medical Council. Training Environments 2018: Key Findings from the National Training Surveys; 2018. https://www.gmc-uk.org/-/media/documents/training-environments-2018_pdf-76667101.pdf
49. Thomas C, Griffiths G, Abdelrahman T, Santos C, Lewis W. Does UK surgical training provide enough experience to meet today's training requirements? *BMJ*. 2015;350:h2503. doi:10.1136/bmj.h2503
50. Temple J. Resident duty hours around the globe: where are we now? *BMC Med Educ*. 2014;14(Suppl 1):S8-S8. doi:10.1186/1472-6920-14-S1-S8
51. Price S, Lusznat R. Do trainees feel that they belong to a team? *Clin Teach*. 2018;15(3):240-244. doi:10.1111/tct.12664
52. Tsouroufli M, Payne H. Consultant medical trainers, modernising medical careers (MMC) and the European time directive (EWTD): tensions and challenges in a changing medical education context. *BMC Med Educ*. 2008;8(Mmc):1-7. doi:10.1186/1472-6920-8-31
53. Walker KG, Shah A. Simulation for early years surgical training. *Surgery (Oxford)*. 2021;39(12):771-777. doi:10.1016/j.mpsur.2021.09.006
54. Parker C, Scott S, Geddes A. Snowball Sampling. In: Atkinson P, ed. *SAGE research methods foundations*. SAGE Publications Ltd; 2019.
55. DiCicco-Bloom B, Crabtree BF. The qualitative research interview. *Med Educ*. 2006;40(4):314-321. doi:10.1111/j.1365-2929.2006.02418.x
56. Ritchie J, Lewis J. *Qualitative research practice. A guide for social science students and researchers*. 2nd ed. SAGE; 2013.
57. Doherty O, Stephens S. The cultural web, higher education and work-based learning. *Ind High Educ*. 2020;34(5):330-341. doi:10.1177/0950422219879614
58. Mossop L, Dennick R, Hammond R, Robbé I. Analysing the hidden curriculum: use of a cultural web. *Med Educ*. 2013;47(2):134-143. doi:10.1111/medu.12072
59. Morris JP. Is this the culture of academies? Utilising the cultural web to investigate the organisational culture of an academy case study. *Educ Manag Admin Leader*. 2020;48(1):164-185. doi:10.1177/1741143218788580
60. Morris J. Method in the madness: towards developing a matrix for comparison of conceptual models of organizational culture. In: ; 2014.
61. Sun S. Organizational culture and its themes. *Int J Bus Manag*. 2008; 3(12):137-141. doi:10.5539/ijbm.v3n12p137
62. Johnson G, Scholes K. *Exploring corporate strategy*. 5th ed. Prentice Hall; 1999.
63. Lincoln Y, Guba E. *Naturalistic enquiry*. SAGE; 1985.
64. Johnson G, Scholes K, Whittington R. *Exploring strategy: Text and cases*. 9th ed. Financial Times/Prentice Hall; 2011.
65. Kesselheim JC, Cassel CK. Service: an essential component of graduate medical education. *New Engl J Med*. 2013;368(6):500-501. doi:10.1056/NEJMp1214850
66. Eppich WJ, Dornan T, Rethans JJ, Teunissen PW. "Learning the lingo": a grounded theory study of telephone talk in clinical education. *Acad Med*. 2019;94(7):1033-1039. doi:10.1097/ACM.0000000000002713
67. Bland CJ, Starnaman S, Wersal L, Moorhead-Rosenberg L, Zonia S, Henry R. Curricular change in medical schools: how to succeed. *Acad Med*. 2000;75(6):575-594. doi:10.1097/00001888-200006000-00006
68. Pettigrew AM, Woodman RW, Cameron KS. Studying organizational change and development: challenges for future research. *Acad Manag J*. 2001;44(4):697-713. doi:10.2307/3069411
69. Turner SF, Rindova V. A balancing act: how organizations pursue consistency in routine functioning in the face of ongoing change. *Org Sci*. 2012;23(1):24-46. doi:10.1287/orsc.1110.0653
70. Hargreaves A. Inclusive and exclusive educational change: emotional responses of teachers and implications for leadership. *School Leadersh Manag*. 2004;24(3):287-309. doi:10.1080/1363243042000266936

71. Peirce JC. The paradox of physicians and administrators in health care organizations. *Health Care Manage Rev*. 2000;25(1):7-28. doi:10.1097/00004010-200001000-00002
72. Reay T, Hinings CR. Managing the rivalry of competing institutional logics. *Org Stud*. 2009;30(6):629-652. doi:10.1177/0170840609104803
73. Gabutti I, Colizzi C, Sanna T. Assessing organizational readiness to change through a framework applied to hospitals. *Publ Org Rev*. Published online April. 2022;1-22. doi:10.1007/s11115-022-00628-7
74. Combe M. Change Readiness: Focusing Change Management Where It Counts.; 2014.
75. Institute PM. Manging change in organizations: a practice guide; 2013.
76. Cleland J, Durning SJ. Education and service: how theories can help in understanding tensions. *Med Educ*. 2019;53(1):42-55. doi:10.1111/medu.13738
77. Johns G. The essential impact of context on organizational behavior. *Acad Manag Rev*. 2006;31(2):386-408. doi:10.5465/amr.2006.20208687
78. Shah AP, Walker KA, Hawick L, Walker KG, Cleland J. "It's making me think outside the box at times": a qualitative study of dynamic capabilities in surgical training. *Adv Health Sci Educ*. Published online 2022;1-20. doi:10.1007/s10459-022-10170-2
79. Lund J, Sadler P, McLarty E. The effect of COVID-19 on surgical training. *Surgery (Oxf)*. 2021;39(12):829-833. doi:10.1016/j.mpsur.2021.09.003
80. Cleland J, Roberts R, Kitto S, Strand P, Johnston P. Using paradox theory to understand responses to tensions between service and training in general surgery. *Med Educ*. 2018;52(3):288-301. doi:10.1111/medu.13475
81. Marriott JC, Purdie H, Millen A, Beard JD. The lost opportunities for surgical training in the NHS. *Bull R Coll Surg Engl*. 2011;93(6):202-206. doi:10.1308/147363511X575714
82. Lozano R, Barreiro-Gen M. Disrupting the brave new world: COVID-19 effects on organisations' sustainability efforts. *J Org Change Manag*. 2021;34(3):613-628. doi:10.1108/JOCM-09-2020-0276
83. Dutton JE, Jackson SE. Categorizing strategic issues: links to organizational action. *Acad Manag Rev*. 1987;12(1):76-90. doi:10.2307/257995
84. Cleland J, Walker KG, Gale M, Nicol LG. Simulation-based education: understanding the socio-cultural complexity of a surgical training 'boot camp'. *Med Educ*. 2016;50(8):829-841. doi:10.1111/medu.13064
85. Vasileiou K, Barnett J, Thorpe S, Young T. Characterising and justifying sample size sufficiency in interview-based studies: systematic analysis of qualitative health research over a 15-year period. *BMC Med Res Methodol*. 2018;18(1):148. doi:10.1186/s12874-018-0594-7
86. Parry W, Kirsch C, Carey P, Shaw D. Empirical development of a model of performance drivers in organizational change projects. *J Change Manag*. 2014;14(1):99-125. doi:10.1080/14697017.2012.745894
87. Schein E. *Organizational culture and leadership*. Jossey-Bass; 2010.
88. Burnes B. Introduction: why does change fail, and what can we do about it? *J Change Manag*. 2011;11(4):445-450. doi:10.1080/14697017.2011.630507
89. Jones J, Firth J, Hannibal C, Ogunseyin M. Factors contributing to organizational change success or failure: a qualitative meta-analysis of 200 reflective cases. In: Hamlin RAE, Jones J, eds. *Evidence-based initiatives for organizational change and development*. IGI Global; 2018:155-178.
90. Burnes B, Jackson P. Success and failure in organizational change: an exploration of the role of values. *J Change Manag*. 2011;11(2):133-162. doi:10.1080/14697017.2010.524655
91. Mosadeghrad A, Ansarian M. Why do organizational change programs fail? *Int J Strategic Change Manag*. 2014;5(3):189-217.
92. Bordage G. Conceptual frameworks to illuminate and magnify. *Med Educ*. 2009;43(4):312-319. doi:10.1111/j.1365-2923.2009.03295.x
93. Halford S, Leonard P. Place, space and time: contextualizing workplace subjectivities. *Org Stud*. 2006;27(5):657-676. doi:10.1177/0170840605059453
94. Bank L, Jippes M, Leppink J, et al. Are they ready? Organizational readiness for change among clinical teaching teams. *Adv Med Educ Pract*. 2017;8:807-815. doi:10.2147/AMEP.S146021
95. Johnson G. Rethinking incrementalism. *Strat Manag J*. 1988;9(1):75-91. doi:10.1002/smj.4250090107

How to cite this article: Shah AP, Walker KA, Hawick L, Walker KG, Cleland J. Scratching beneath the surface: How organisational culture influences curricular reform. *Med Educ*. 2023;57(7):668-678. doi:10.1111/medu.14994