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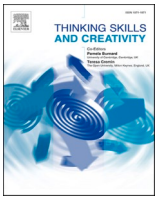

Growing and fixing: Comparing the creative mindsets of teachers and artist practitioners

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ABSTRACT

Research indicates that teachers holding fixed creative mindsets limits the potential for students to develop creative thinking skills due to judgments teachers make about their students' creative potentials (Paek and Sumners 2017). Set against the context of the importance of creativity for economic development (OECD, 2022) and personal wellbeing (Carson, 2019; Forgeard, 2019), this paper explores UK primary school teachers' creative mindsets by comparing them with the creative mindsets of Artist Practitioners. A two-phase explanatory sequential mixed methods research design is used. In Phase 1, 50 participants completed the Creative Mindset Scales (Karwowski 2014) to explore the creative mindsets held by the two groups; in Phase 2, 6 participants (3 from each group) undertook semi structured interviews to help explain trends from Phase 1. An integrative analysis found that primary teachers held more polarised beliefs of fixed and growth creative mindsets than Artist Practitioners. We hypothesise that this is due generic growth mindsets being mandated in UK primary schools and being adopted without deeper understanding by primary school teachers. In order to facilitate students developing creative thinking skills, the paper recommends that teacher-centred professional development is needed to develop whole school communities of creative practice where conceptualisations of creativity are actively explored.

1. Introduction

The Organisation for Economic Cooperation and Development's (OECD) emphasis upon education providing young people with creative skills as a key dimension of their Learning Compass 2030 (OECD, 2022) is a direct response to the demands of the global labour market. This aligns with calls from partnerships between industry and education in non-profit organisations like P21 (BattelleforKids, 2019) to reform educational policy to ensure that young people are equipped with the 21st century skills required by employers. This economic drive for development of cross-disciplinary creative thinking skills can be seen as symptomatic of wider neoliberal ideology where educational values are "monetised" and where outcomes are "monitored and assessed using external yardsticks" (Tett & Hamilton, 2021, p.2). Taking a progressive of education, there is a range of research from across Europe that demonstrates how the development of creative thinking skills can foster positive mental wellbeing in students (Carson, 2019; Forgeard, 2019), ultimately promoting school engagement and preventing early school leaving (Chemi & Du, 2018).

The OECD 2019 publication of rubrics to be used by teachers to assess young people's creative thinking skills to a certain extent acknowledges the importance of teacher professional development in relation to promoting creativity for young people. Linked to this,

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research from a range of countries into teacher professional development for promoting creativity emphasises the key role that Artist Practitioners can play adopted (Rosler, 2014; Wells and Sandretto, 2016). Artists working in education are elsewhere termed 'Artist Educators' or 'Artists in Education', but in this paper we use the term Artist Practitioner to describe facilitators who have a specialism in practising one of the full range of visual and expressive artists. Artist Practitioners are external to schools, often employed by third sector charities or government local authorities, and work with teachers and young people in schools usually on a short-term basis. Whilst bringing to the school their arts-based expertise, the Artist Practitioners work can be linked to all curriculum areas and, therefore, can contribute to developing students' broader creative thinking skills.

The collaboration between teachers and Artist Practitioners is seen as being most effective for teacher development when a space for dialogue is opened up, allowing teachers to critically reflect upon their own practices and the ways in which their beliefs shape their attitudes towards creativity and the development of creative thinking skills for their students (Kind et al., 2007; Sinclair et al., 2015). This dimension to teacher professional development therefore indicates a need to undertake research which explores the fundamental similarities and differences in the ways in which teachers and Artist Practitioners conceptualise creativity.

Much of the recent research into teachers' beliefs on creativity has used Karwowski's (2014) creative mindsets scales. The creative mindset scales identify the extent to which respondents have a fixed creative mindset, where creativity is considered an innate talent, and the extent to which they have a growth mindset, where creativity is considered malleable and to be developed. As Paek and Sumners' application of the Creative Mindset Scales in the US shows, teachers holding a fixed mindset can "inhibit teachers' positive perceptions of students' potential" and, in turn, prevent students who are not deemed creative from developing their creative thinking skills (2017, p.305).

Our research takes place in the UK, where there already exists research into creativity and teachers' beliefs in early years settings (Russ & Doernberg, 2019; Beghetto, 2019). Where there has been no research into creative mindsets in the UK is with primary school teachers, who teach 5 to 11 year olds, and Artist Practitioners working in primary schools. By comparing the creative mindsets of primary school teachers with Artist Practitioners though the Creative Mindset Scale and subsequent semi-structured interviews, we seek to provide a useful starting point for articulating an approach to teacher professional development for teaching creative thinking skills to 5 to 11 year olds in the UK and beyond. By exploring the mindsets of these two groups, there is an opportunity to identify commonalities in beliefs that could be used as a basis for collaboration as well as key differences to be explored and reflected upon as part of the collaborative approach. Such collaborations, we argue, will help schools to develop a nurturing school culture of creative mindsets which can benefit all students.

2. Literature review

2.1. UK policy context

In UK education policy, creativity has long been conflated with the arts. This is demonstrated in Wyse and Ferrari's (2015) content analysis of curriculum policy across the EU, where "creativity" was found to be less prevalent in the UK curriculum for primary schools than in secondary schools, where arts subjects were given more emphasis. Taysum and Ayanlaja (2020) also identify a neoliberal political ideology as the driver for curriculum narrowing in primary education, with reading, writing and maths prioritised over creative skills. This curriculum narrowing has been further exacerbated by the pandemic and the restricted delivery of creative education by Artist Practitioners in schools (Ofsted, 2020).

Creativity is considered by some UK policy makers as a learning objective in its own right and there is a different policy focus in different UK countries. Since Wyse and Ferrari's (2015) analysis, the Welsh government's (2022) curriculum policy has reformed to focus on both the arts subjects and teaching for creativity. Whilst teaching for creativity has prominence in England's Early Years Foundation Stage (DfE, 2017, p.10), with "imagination and creativity" an "Early Learning Goal" and "creating and thinking critically" a named characteristic of effective teaching and learning, teaching for creativity is wholly absent from the England, Scotland and Northern Ireland's primary curriculum.

In response to this deficit, cultural policy makers in the UK have sought to redress the balance. The Durham Commission (2019) emphasises that creativity should extend beyond the arts, recognizing its value across subjects and Arts Council England (2021) have pledged to champion teaching for creativity in schools after identifying inequalities in cultural and creative opportunities. The Cultural Learning Alliance (2019) suggest teachers need to make time for creative education, arguing for integrating arts, and by extension creativity, into the curriculum. In line with our thinking as outlined above, the Durham Commission (2019) also recommends a collaborative and ongoing approach to professional development for teachers and Artist Practitioners working in schools (p.23).

With the exception of Wales, therefore, cultural bodies are in direct conflict with government policy makers regarding the primary school and the status of creativity. As it stands, curriculum policy for primary schools currently marginalises creativity, both in terms of arts subjects and teaching for creativity.

Although we have Artist Practitioners as a participant group, it should be clarified that our purpose is to explore broader conceptualisations of creativity without explicitly conflating creativity with the creative arts. Whilst we acknowledged, therefore, that Artist Practitioners as a participant group would draw upon their experiences of their creative art practice in answering questions in responding to questions, the questions themselves were broader in inviting participants to think about creativity in relation to their respective practices. As a result, we believe this paper contributes to wider research about developing students creative thinking skills.

2.2. Creative mindsets in education

Karwowski's research (2014) sees creativity as a psychological phenomenon. In line with this, Karwowski (2014) developed the creative mindsets scale to measure the beliefs that people hold about creativity, namely whether they see creativity as fixed and innate or malleable and to be developed. Karwowski's initial research found a weak negative correlation between these scales and established that these are individual beliefs that can be held simultaneously (2014, p.64). The research also showed that individuals with a growth creative mindset were more likely to have positive associations with creative self-efficacy and creative personal identity (2014, p.65).

In designing the scales, Karwowski (2014) drew parallels with Big-C/Little-C theory of creativity. Big-C, known as masterful creativity, is linked to a fixed creative mindset, whilst Little-C, known as everyday creativity, is more aligned to a growth creative mindset. Creative mindsets can also be synthesised with the more expanded Four C model of Creativity (Kaufman & Beghetto, 2009). Here, Mini-C acknowledges the personal creativity associated with learning through insight and interpretation, while Pro-C acknowledges professional level proficiency in a creative domain, exceeding the Little-C definition without achieving the status of Big-C, where creativity is eminent and has a large impact on culture and society. Mini-C creativity is described as instrumental in education, referring to the cognitive creativity supporting the construction of knowledge (Beghetto & Kaufman, 2007), in addition to the more recognizable Little-C creativity, involving more active and agentic engagement (Craft, 2001). Mini-C and Little-C fall within the growth creative mindset definition, whilst Pro-C, with its focus on professional expertise, is challenging to place within the mindset's framework. It could, for example, be argued that teachers holding growth creative mindsets and whose practices embed Mini-C and Little-C creativities could also help to nurture young people towards Pro-C creativity, thus bringing Pro-C within the realms of growth creative mindset.

This potential link between growth potential mindsets and Pro-C creativity becomes more significant in light of the research which demonstrates how teacher conceptualizations of creativity impact both positively and negatively upon student potential. Fundamentally, a teacher with implicit creative beliefs will hold expectations about their students' creativity, which influences the way they behave in encouraging or facilitating creativity and places limits on those students who are not deemed creative (Runco, 2014). Paek and Sumners (2017) studied the effect of creative mindsets on the teaching of creativity in a teacher population in the USA. Similar to Runco (2014), they found that "a fixed creative mindset may inhibit teachers' positive perceptions of students' potential" (p.305). When a teacher has a fixed creative mindset which views creativity as innate in some students and absent in other students, beliefs about students' creative potential are reduced. This is shown to impact both upon the students, who are afforded limited space and support for developing creative thinking skills, and the teachers themselves, who feel that they do not need to teach for creativity. What Paek and Sumner's (2017) study also demonstrates is how these limiting effects were mitigated against when a teacher simultaneously held fixed and growth creative mindsets. In these instances, students were afforded more lassitude to develop creative thinking skills and teachers more readily embraced teaching for creativity. Similar results are shown in research by Gajda (2016), where a relationship is established between how teachers encourage creativity and students' level of engagement and self-expression. As with Paek and Sumners (2107), where teachers hold a wholly fixed creative mindset about creativity, they often negatively affect students' engagement.

An interpretivist study by Katz-Buonincontro et al. (2020) found different epistemic beliefs about the creative potential of students across a teaching population. Whilst some teachers held growth creative mindsets, others held fixed creative mindsets and, in line with Karwowski's (2014) concept of simultaneity, some held plural beliefs that creativity is both innate to and learnable by their students. In their participant interviews, Katz-Buonincontro et al. (2020) engaged in nuanced discussions with teachers where complex conceptualisations of creativity were related to a wide range of factors including family influence, genetics, social background, teacher facilitation and creative opportunities. When considered in relation to creative mindsets, Katz-Buonincontro et al.'s (2020) study suggests a wide range of complex variables and reasoning informing the implicit beliefs of teachers. This is because teaching as a profession intersects with personal interests and alternative professional realms of experience which shape implicit beliefs. Recognizing these intersections and their role in the formation of the teacher identity are key to understanding the rationale for implicit beliefs and, therefore, informing approaches to teacher professional development for promoting creative skills in young people.

2.3. Professional landscapes of practice

Due to the lack of a theoretical model specific to the identities of Artist Practitioners in education, Clarke's (2009) model of education is adopted to conceptualise the roles of both teachers and Artist Practitioners. Clarke (2009) outlined 'identity work' of teachers as having four axes: substance; authority sources; self-practices; and endpoint of teacher identity (p.190). Substance is defined as the relationship between the internal self, other facets of identity and teacher identity. Authority sources include imposed, cultivated, or learned beliefs or values relating to surrounding discourses of power and politics. Self-practices can include professional development, personal learning and reflection. Endpoint considers the ideological purpose behind being a teacher.

It is presumed that differences exist between the cultures and conditions surrounding teachers and Artist Practitioners. Exploring the creative mindsets of teachers and Artist Practitioners, we feel, may reveal beliefs specific to aspects of professional identity work. These differences can be conceptualised using Wenger-Trayner and Wenger-Trayner's (2014) metaphor "landscapes of practice". For Wenger-Trayner and Wenger-Trayner (2014, p.19), a professional's identity is the "constitutive texture" resulting from their participation in a "landscape of practice". The "landscape" is experienced in three ways: it is "flat", as it is experienced by groups as normal; it is "political", because despite the lived experience of flatness, there is always power and hierarchy at play; and it is "diverse", as its texture also involves the participation of different professional identities (e.g. teachers and Artist Practitioners) all experiencing the landscape differently (Wenger-Trayner & Wenger-Trayner, 2014, p. 19).

The political nature of landscape of practice and the experience of flatness by groups means that boundaries are constructed between groups which serve to keep diverse practices apart. In relation to professional development, Wenger-Trayner and Wenger--Trayner's (2014) key idea is that learning occurs through crossing boundaries so that hyrbidisation of practice can occur. This differs from identity-work (Clarke, 2009) by acknowledging the potential significance of interaction between diverse professional groups in terms of development. Whilst Artist Practitioners and teachers maintain differing professional occupations and are largely accountable to different authorities, they connect within the school environment through curriculum teaching and the associated outcomes. Furthermore, the potential for boundary crossing between these groups is increased as some Artist Practitioners hold teaching qualifications and some teachers have a creative background. In line with this potential for an intersection between teachers and Artist Practitioners, Lam (2020) describes Artist Practitioners as "artist academic hybrids who operate at the interface between academic and art worlds" (p.837) and Thornton (2011, p.51) refers to the Artist Practitioner as an "artist teacher" who holds a "combination" of teachers' and artists' beliefs.

As indicated earlier, in terms of teacher professional development, the potential for boundary crossing is enhanced where teachers and artist practitioners work in dialogue with one another over a longer period of time (Kind et al., 2007; Sinclair et al., 2015; Durham Commission, 2019). This is turn allows for a community of creative practice to take hold, with teachers and Artist Practitioners bringing their implicit creative mindset beliefs to the surface and learning from one other in order to question these beliefs and change practices.

2.4. Research aims

In light of the lack of research comparing the creative mindsets of primary school teachers and Artist Practitioners in the UK, we aim to explore the creative mindsets of both groups as well as the factors that influence them. Our two key research aims are:

1 To understand how primary teachers and arts practitioners conceptualise creativity in terms of fixity and malleability;
2 To identify whether creative conceptualisations and beliefs differ based on professional identity, and, if so, how.

By exploring these two aims, our further aim is to extrapolate from our findings some key implications for the effective professional development of primary school teachers, indicating how school leaders can begin to develop school cultures of creative growth to nurture the creative thinking skills of all students.

3. Methods and materials

3.1. Research design

Our paper is part of a project undertaken by Author 1 which aimed to provide a broader insight into the beliefs of teachers and Artist Practitioners working in primary education. Author 1 used an Explanatory Sequential Mixed Methods Research (ESMMR) design in which quantitative data were collected and analysed through a survey (Phase 1), followed by qualitative data through semi-structured interviews (Phase 2) (Creswell & Plano Clark, 2018).

The Phase 1 survey took place over 8 weeks. There were 75 survey respondents, 50 of whom completed the survey in full (see Table 1). The sample was filtered to include those who completed the survey in full and this comprised of 27 teachers and 23 Artist Practitioners, all of whom taught or delivered in UK primary schools. It should be noted that there was a high response rate from teachers who had received some form of 'creative training' (59%). This indicates the possibility that many of the teachers may have already been sharing aspects of landscapes of practice with the Artist Practitioners.

Phase 2 semi-structured interviews (see Table 2) took place with a purposive sample of 6 participants (3 teachers; 3 Artist Practitioners) over 4 weeks. Participants were selected to ensure inclusion across sub-groups, including artform speciality, career stage and age. This included artist-teachers; artists with teaching qualifications or teachers with creativity/arts training or responsibility, and

Table 1
Participant demographic information.

Individual Variables Participants	Teachers No and%	Arts Practitioners No and%
	27 (54%)	23 (46%)
Artist-Teacher Identity Indicator		
Teacher with Creative training	16 (59.25%)	
Teacher with Creative/arts responsibility	20 (74.07%)	
AP with Formal Teacher Training (e.g. PGCE)		12 (52.17%)
Arts Practitioner Artistic Discipline		
Performing Arts (dance, drama, physical theatre)		8 (34.7%)
Visual Arts (painting, drawing, sculpture)		5 (21.7%)
Street Arts, Circus and Puppetry		4 (17.39%)
Music and Singing		3 (13.04%)
Other		3 (13.04%)

Table 2
Participant demographic information (purposive sample).

Individual Variables	Teachers	Arts Practitioners
Participants		
	3	3
Artist-Teacher Identity Indicators		
Teacher with Creative training	2	
Teacher with Creative/arts responsibility	2	
AP with Formal Teacher Training (e.g., PGCE)		2
Arts Practitioner Artistic Discipline		
Performing Arts (dance, drama, physical theatre)		1
Visual Arts (painting, drawing, sculpture)		0
Street Arts, Circus and Puppetry		1
Music and Singing		1
Other		0

Artist Practitioners from a range of disciplines. The sampling rationale was to gather in-depth data from different landscapes of practice. However, 4 of the 6 interviewees (2 teachers and 2 Artist Practitioners) could be viewed as already crossing landscapes of practice by having received creative training and holding teaching qualifications respectively.

Author 1 recruited participants through social media and email networks for Phase 1. A Participant Information Page fronted the survey, detailing anonymity, confidentiality, right to withdraw, use of data and risk. Participants were informed of the two-Phase research structure, that they could complete the Phase 1 survey anonymously or provide optional contact details to be considered for the Phase 2 purposive sample, and that contact information would be treated as confidential. Respondents also completed an informed consent agreement indicating understanding of the participant information, that they had been given the opportunity to ask questions, and they were happy to proceed as a voluntary participant. Prior to Phase 2 interviews, Author 1 provided participants with a second Participant Information Sheet and Informed Consent agreement with information specific to video recording and use of data.

3.2. Phase 1

In Phase 1, Author 1 asked participants to complete the creative mindsets scale (Karwowski, 2014). This consists of ten questions in two sub-scales; five questions measuring fixed creative mindset; and five questions measuring growth creative mindset. Participants completed all questions using the 5-point Likert scale rated '1: definitely no' to '5: definitely yes'.

Phase 1 analysis was deductive, with the data being quantified and analysed using descriptive and inferential statistics. The 5 questions loading onto the Fixed Creative Mindset and Growth Creative Mindset scales were checked for internal consistency using Cronbach's alpha.

The Likert items were transformed into a single mean variable, excluding cases with missing responses. Boxplots displaying the median, range and interquartile ranges were visually inspected for strength and consistency of mindsets in each sub-group. As ordinal data was collected, non-parametric statistical analysis was the most suitable (Black, 2005). The Mann Whitney U test was used to compare the mean fixed creative mindset and mean growth creative mindset of the teachers Artist Practitioners. Subsequently, the Spearman Rho test was used to analyse the correlation between the fixed and growth creative mindset in order to identify any data patterns specific to identity.

3.3. Phase 2

Author 1 conducted Phase 2 interviews based on questions arising from the analysis of Phase 1 data. The quantitative data that required explanation was related to statistically significant or non-significant results, demographic specific results and unexpected or unclear responses (Creswell & Plano Clarke, 2018). Subsequently, Author 1 designed and allocated questions by professional occupation based on group similarities or differences.

Author 1 employed a standardised open-ended interview schedule, in which the participants were asked set questions. This increased comparability within answers, and reduced interviewer effects (Cohen et al., 2018). Author 1 added pre-scripted probing questions to encourage elaboration. As teachers and Artist Practitioners sit in differing landscapes of practice, the probing questions were designed to facilitate discussions in the common landscape, while the initial questions were open to the breadth of their experience. Care was taken not to highlight differences in beliefs between the sub-groups in interviews to minimise potential inter-group tensions. Often interviewee responses diverged to answer other questions, which meant the interview schedule was necessarily semi-structured.

Author 1 then edited interview data transcriptions in Microsoft STREAM for anonymity, using thematic analysis and a two-stage coding system. Parent codes were created based on the research aims and the quantitative measurement tools. Sub-codes were created as the data was analysed. Author 1 completed coding in the NVivo software package. This meant each item could be coded to one or more sub-codes and mapped for relationships. Each sub-code was tied directly to a comment or phase in the interview transcript to ensure openness in data interpretation. In total there were 10 parent codes and 107 sub-codes. Relationships between the codes were then identified in order to arrive at three themes which were synthesised with the analysis of data from Phase 1. These themes are: Dual

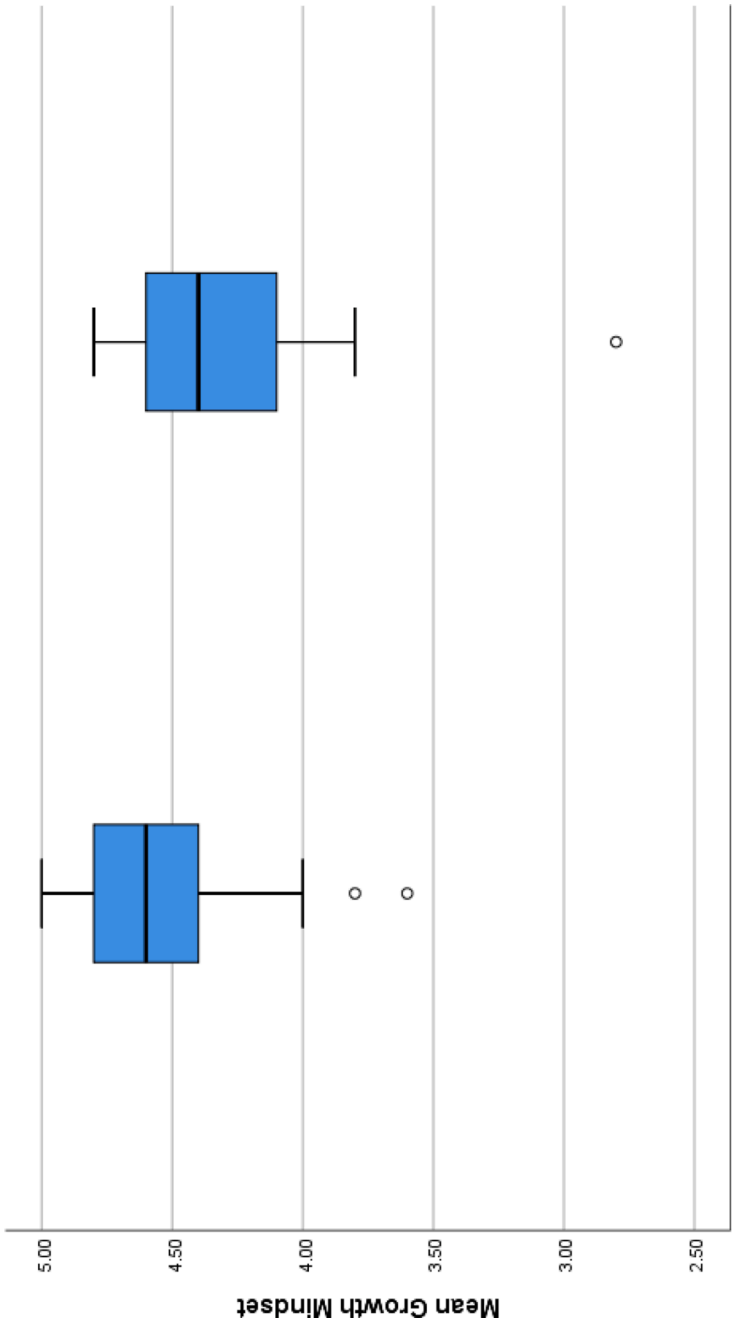

Fig. 1. Growth creative mindset boxplot (range, interquartile range, median and outliers).

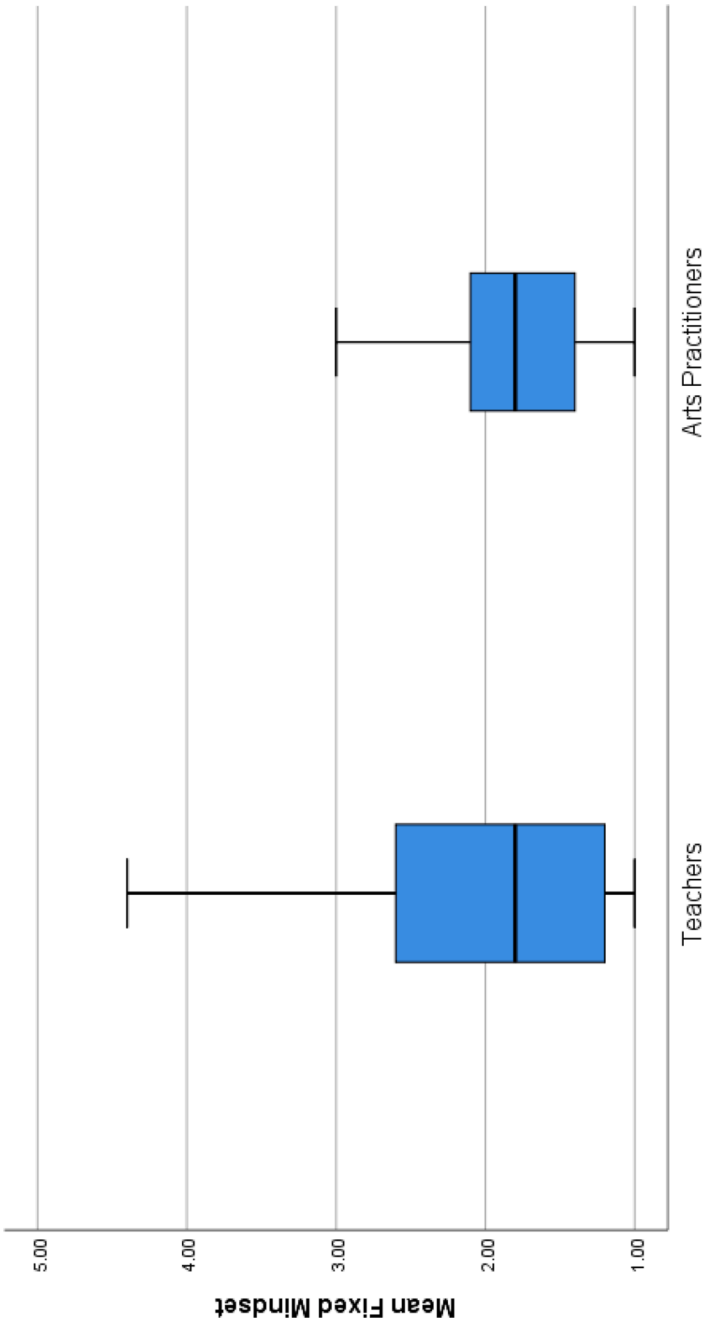

Fig. 2. Fixed creative mindset boxplot (range, interquartile range, median and outliers).

Mindsets of Teachers and Artist Practitioners; Authority Sources and Teachers' Perceptions of Bias with Growth Creative Mindset Findings; Teacher Challenges to Mindsets.

4. Results

4.1. Phase 1 results

Fig. 1 shows the distribution of responses to the growth creative mindset subscale. For the teacher group, responses (excluding outliers) ranged between 'probably yes' (4.00) and 'definitely yes' (5.00). For the Artist Practitioner group, all responses were positive, ranging between 'possibly' and 'probably yes' at a value of 3.8, to between 'probably yes' and 'definitely yes' with a value of 4.8. The interquartile ranges and medians of both groups sat between 'probably yes' and 'definitely yes'. These results indicate that both groups hold growth creative mindsets and believe that creativity is malleable and can be developed. At the same time, there were outliers in the teacher data with values of 3.60 and 3.80. These were not extreme, falling between 'possibly' and 'probably yes'. However, in the Artist Practitioner group one outlier fell negatively on the sub-scale with a value of 2.8, lying between 'probably no' and 'possibly', which could either be a false response or a significantly different viewpoint.

Fig. 2 shows the distribution of data in the fixed creative mindset sub scale. For Artist Practitioners, 100% of responses fell between 'possibly' (3.00) and 'definitely not' (1.00) with the median (1.80) falling between the 'probably not' and 'definitely not' values. The range of responses in the teacher group was wider, from 'definitely not' (1.00) to an upper value of 4.40 falling between 'probably yes' and 'definitely yes' on the scale. This indicates a wider range of beliefs about the fixed and innate nature of creativity and supports Karwowski's (2014) findings about holding simultaneous growth and fixed creative mindsets. This wider range of beliefs was somewhat reflected in the interquartile of the teacher group, as the value spread was wider. However, when compared to the Artist Practitioner group, it can be observed that both interquartile ranges fall in between the same scale values of 'possibly' and 'definitely not'. Additionally, the median value of both groups was 1.80, sitting between the 'definitely not' and 'probably not' values. This indicates that both groups tended to disagree with the idea that creativity is a fixed talent. However, it is noteworthy that a proportion of responses indicated a more neutral belief about the fixed nature of creativity in comparison to the stronger beliefs indicated in the growth creative mindset responses.

Despite visual differences in the data, the non-parametric Mann-Whitney U test (Figs. 3 and 4) revealed no statistically significant difference between groups at the $p = 0.05$ level in growth creative mindset ($U = 232$, $p = 0.120$) and fixed creative mindset ($U = 263$, $p = 0.781$). This indicates a higher than 5% likelihood any observed differences could be attributed to random chance in the sample. Therefore, the null hypothesis is accepted, and the distribution of Mean Growth Creative Mindset and Fixed Creative Mindset is the same across the teachers and Artist Practitioners.

The Spearman Rho test was conducted by sub-group to examine any potential correlation between growth and fixed creative mindsets and determine the strength and direction of any relationship (Pallant, 2020). In the teacher group (Fig. 5), there was a non-statistically significant, negative, moderate correlation ($p = 0.121$, rho= -0.325) demonstrating that as growth creative mindset increases, a fixed creative mindset decreases. This indicates that beliefs in this group are polarised. If teachers hold a strong growth creative mindset, they are likely to hold a low fixed creative mindset. In other words, if a teacher strongly believe that creativity is malleable, they are more likely to disagree that creativity is a fixed talent.

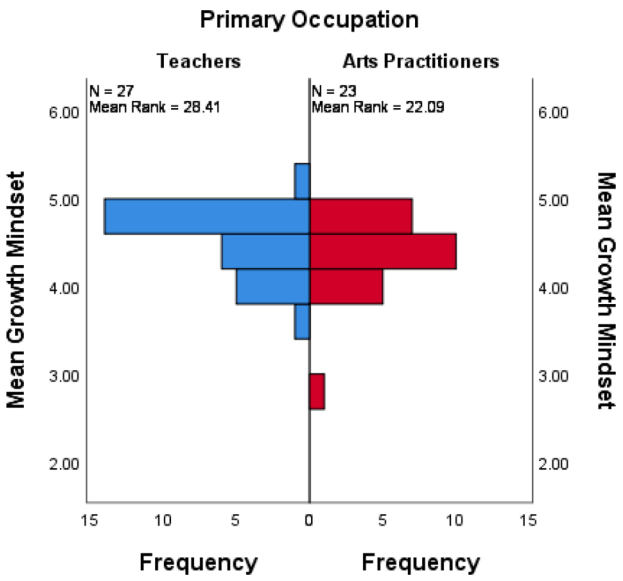

Fig. 3. GCM independent-samples Mann-Whitney U test.

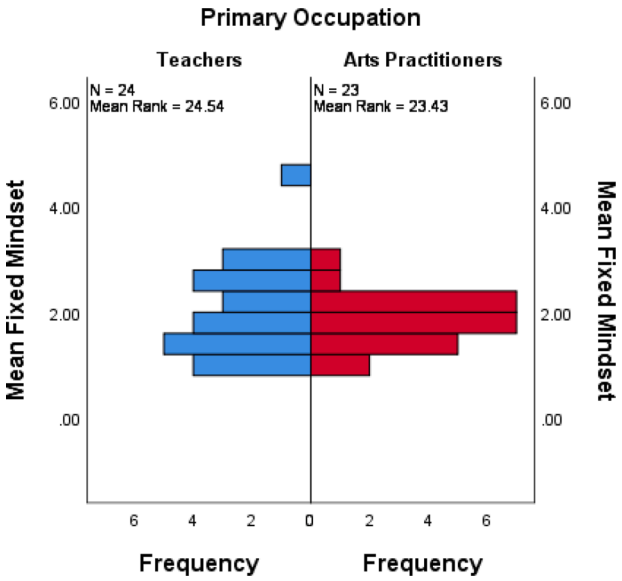

Fig. 4. FCM independent-samples Mann-Whitney U test.

In contrast, the Artist Practitioner group (Fig. 6) displayed a statistically significant strong positive correlation ($p = 0.001$, rho=0.631). As the strength of the growth creative mindset increased towards the 'definitely yes' (5.00), the fixed creative mindset also increased, moving away from 'definitely not' (1.00) towards the neutral value of 'possibly' (3.00). Therefore, when an Artist Practitioner has a strong Growth Creative Mindset, their Fixed Creative Mindset is less polarised and more neutral. This indicates an openness to alternative creative conceptualizations for Artist Practitioners and perspective on creativity distinct to their landscape of practice.

The differences between the Spearman Rho tests for the individual occupations are significant. While the Mann-Whitney U test concluded that there was no statistically significant difference between groups, the Spearman Rho test reveals a critical difference in the relationship between the variables by professional occupation. While both groups generally hold similar beliefs about the fixed and malleable nature of creativity, there is a difference in the way these beliefs coexist dependent on occupation.

4.2. Phase 2 results

Phase 2 provided rich explanatory data for the quantitative data. These themes discussed here are: Dual Mindsets of Teachers and Artist Practitioners; Authority Sources and Teachers' Perceptions of Bias with Growth Creative Mindset Findings; Teacher Challenges to Mindsets.

4.3. Dual mindsets of teachers and artist practitioners

Based on Phase 1 results, we expected complex conceptualizations of creativity in the Artist Practitioner group. However, perhaps because of the ways in 4 out of 6 of these participants were potentially already crossing landscapes of practice, all participants in Phase 2, including teachers, evidenced complex dual mindsets in the ways in which they discussed students' creativity. This school Art Leader and teacher, for example, articulated her belief that creativity is both innate and fixed as well as malleable and subject to growth:

> "I think it's a little bit of both, like just like we teach handwriting and reading and those kind of skills, artistic techniques and skills can be taught, but I do feel that everybody has likes and dislikes, so maybe a love of art is innate and particularly, like my mum's creative and my aunt is creative so if you're from a family that enjoys making and creating, then inevitably that's going to drip feed down to the children's approach to art."

The complex conceptualisation of creativity is evident in the way the teacher moves from a growth creative mindset ("artistic skills can be taught") to a fixed creative mindset ("maybe a love of art of innate") to an acknowledgement of the influence of the home environment (growth creative mindset). Interestingly, this complexity was also articulated by the teacher who was new to the profession and did not hold an artist-teacher identity:

> "*I think some people… do have a bit of a natural, not necessarily ability, but kind of like a tendency towards creativity. Now, whether that's like an inherited thing or environment? For example, I grew up in a very non-musical family. So music is something I've always struggled with, but I imagine if you grow up in a musical environment then it's something that you learn that might then appear innate because you're just absorbed within that environment.*"

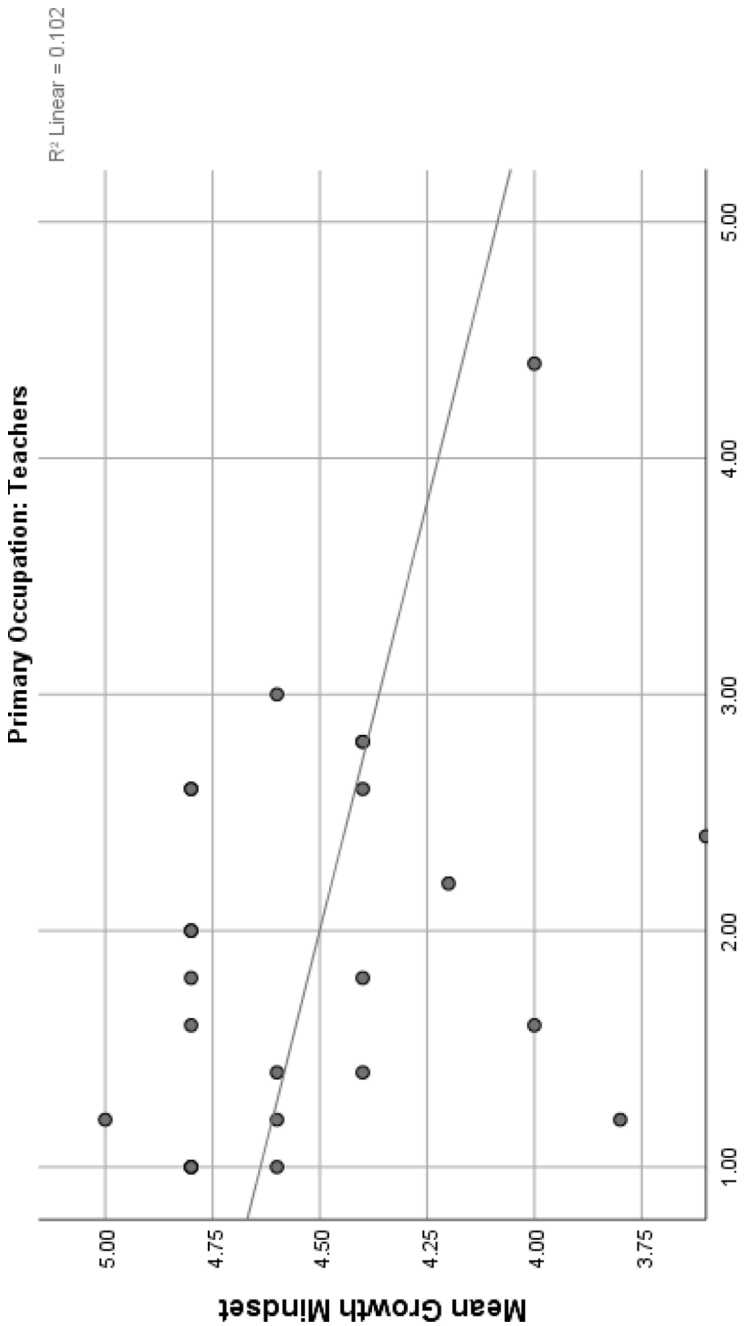

Fig. 5. Simple scatter with fit line of GCM by FCM in teachers.

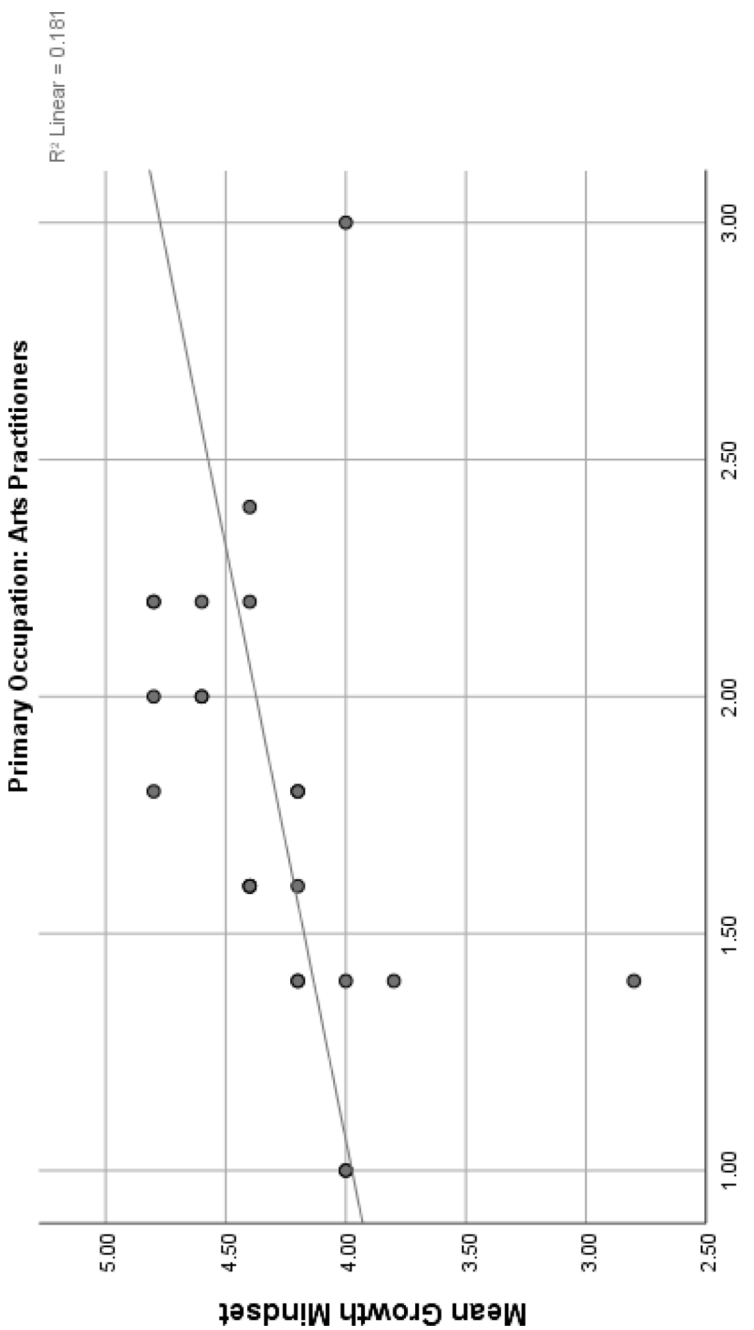

Fig. 6. Simple scatter with fit line of GCM by FCM in art parctitioners.

Here the complex conceptualisation of creativity is evident in the questioning of the primacy of both mindsets ("whether that's like an inherited thing or environment?") and the emphasis placed upon the influence of the home environment. Indeed, familial support and encouragement and its impact upon children's "confidence" in relation to creativity was discussed as a key aspect of the growth creative mindset by all participants.

Whilst the Spearman Rho test conducted with Phase 1 data demonstrated how teachers were likely to be polarised in their creative mindsets, holding high growth creative mindsets and low fixed creative mindsets, in the interviews both groups held dual mindsets with complex thought process relating to child development underpinning their thinking.

4.4. Authority sources and teachers' perceptions of bias with growth creative mindset findings

Within the interviews, we noticed how all teachers were surprised by the teacher results relating to growth creative mindsets, questioning the reliability of these findings. This was based on their personal experience of growth creative mindsets in schools. The teacher who was new to teaching, for example, commented:

> *"I say my experience is that a lot of teachers talk about growth mindset. And I think they have quite a like a surface level understanding and I would include myself in that as well… Also, there's a lot of like, unconscious bias that overrides the actions of teachers. So they might say, 'Oh yeah, like kids can do anything you know you just have to teach them it, and they need to learn it and develop it, and anyone can do anything'. But then the next thing they're saying, 'Oh well, our kids can't do that'."*

The other two teachers explained how schools have "growth mindset policies" but that teachers are fixated on less creative subjects, and that whilst teachers do receive training on general Growth Mindset, this is rarely seen it put into practice in their schools. All the three teachers felt, therefore, there was the potential for bias in the teacher group Phase 1 data and that teachers may have advocated growth creative mindsets due to its prevalence in schools but without the depth of understanding that is gained though the actual practice of teaching for creativity.

4.5. Teacher challenges to creative mindsets

All three teachers identified occupation specific challenges to maintaining their own growth creative mindset and nurturing the growth creative mindsets of their students in primary education. Two specific challenges identified by teachers included teacher self-efficacy in teaching creativity, and curriculum priorities. Holding a fixed creative mindset has proven to affect teachers' confidence in teaching creativity due to the view of their students' creative potential (Paek & Sumners, 2017), but this was not evidenced in the interviews. One teacher identified "fear" of teaching creative subjects as a challenge in the profession, and another talked about "lack of confidence" related to self-identity and self-efficacy in creative teaching:

> *"In terms of my school, it was mostly like teachers' lack of confidence and feeling that they needed to be a creative person in order to teach a good art lesson. Where really, it's not about that. It's encouraging children to feel that they are creative, or that they have creative possibility, and just nurturing that in whatever direction it wants to go."*

This shows that teachers holding growth creative mindsets is not sufficient to nurture the growth creative mindsets and creative skills of their students. Instead, cultural change through professional development is needed through in order to build teacher confidence (Karwowski et al., 2019) and create a permissive and supportive whole school approach to teaching for creativity and developing students' creative thinking skills.

5. Discussion

Given that previous research in the US (Paek & Sumners, 2017) has shown the detrimental effects of teachers holding fixed creative mindsets on student creativity, our Phase 1 data which shows UK primary school teachers and Artist Practitioners both holding growth creative mindsets is heartening. However, the tendency for primary school teachers with strong growth creative mindsets to be more likely to reject fixed creative mindsets when compared with Artist Practitioners (see Fig. 5), indicates how teachers hold polarised and simplified conceptualisations of creativity. It could be argued that this view held by primary school teachers could, in turn, be detrimental to their students when teaching for creativity.

The interviews were useful in providing another potential explanation to this key difference between the groups. As made explicit by one primary school teacher, the polarisation of creative mindsets evident in the Phase 1 teacher group data could be due to "unconscious bias". In line with Clarke's (2009) conceptualisation of teacher identity, it is possible that primary school teachers' perceptions of creative mindsets have been influenced by "authority sources" at leadership level, where generic growth mindsets models often form part of a whole school ethos in UK schools. The fact that teacher groups were less likely to hold dual mindsets and complex conceptualisations of creativity when compared with Artist Practitioners indicates that teachers' consequent adoption of a growth creative mindset may not stem from a deep and critical understanding of creativity.

At the same time, in line with Katz-Buonincontro et al. (2020), the interviews demonstrate how teachers were able to talk about the complexities of creativity. The conversations undertaken with both groups included examples of shades of growth and fixed creative mindsets, with the impact that experiences at home and school can have upon a child's confidence emphasised as key factors.

The teacher interviews also revealed a lack in confidence in teaching for creativity. This, aligned with Phase 1 data which demonstrated teachers simplified views of creativity, highlights the need for quality professional development in schools. This could

include teachers working alongside Artist Practitioners to promote a school culture of growth creative mindsets which is embodied rather than adopted.

It is also worth thinking about why the Artist Practitioner creative mindsets were different from the teachers in the Phase 1 data. As demonstrated in Fig. 6, as Artist Practitioners' growth creative mindsets become stronger, their fixed creative mindset weakens from 'strongly disagree' to 'possibly'. This could be because Artist Practitioners' identities exist within a landscape which is more interlaced with their creative abilities. Therefore, a highly creative person might hold a strong growth creative mindset, but also be more open to the belief that they were born with an innate creative talent due to their personal life experiences, self-practices and identity work overtime (Clarke, 2009). Again, this would be something that be useful for Artist Practitioners to reflect upon in collaboration with teachers, particularly as they think about teaching for creativity and helping students develop their creative skills.

6. Conclusion

Given the findings above, it is argued that in order to develop young people's creativity skills for economic development (OECD, 2022; OECD, 2019; BattelleforKids, 2019) and personal wellbeing (Carson, 2019; Forgeard, 2019; Chemi & Du, 2018), the starting from an educational perspective must be teacher professional development. The polarised creative conceptualisations held by the primary school teachers in Phase 1 of this study indicate how professional development at all levels needs to ensure preservice teachers, early career teachers and more experienced teachers can find a safe space where they can reflect upon their own implicit beliefs and the relationship between these beliefs and their practices (Kind et al., 2007; Sinclair et al., 2015). This requires a culture shift in professional development away from mandated programmes and towards more teacher-centred, collaborative approaches that develop whole school cultures of growth creative mindsets. In England, for example, this would require a big policy shift as the government (DfE, 2021) currently mandates prescribed, instructional coaching for all teacher throughout their first two years of service.

In relation to teaching for creativity, collaborating and entering into dialogue with Artist Practitioners may help teachers cross boundaries and develop practices in altered landscapes (Wenger-Trayner & Wenger-Trayner, 2014). Not only would this enable all students to experience teaching for creativity, it would foster creativity and creative thinking skills in all students, allowing those with particular talents in certain disciplines to move from Mini-C and Little-C creativities to Pro-C creativity (Kaufman & Beghetto, 2009) and become individuals who contribute to and transform society.

The generalizability of the findings of our study come with limitations. Our research was intended to provide an overview of the beliefs of Artist Practitioners and teachers working in primary education and therefore there are limitations due to the smaller sample size. Whilst the participation of artist-teachers is acknowledged in the research, making up a high proportion of respondents, their impact upon the Phase 1 findings is unknown. This could be explored by differentiating between sub-groups of teachers who have a creative background and those who do not. Further studies could also be conducted on smaller sub-groups of Artist Practitioners to understand whether specialist disciplines have differing conceptualizations of creative practice. This would provide an exploration of the ways in which the practice of a specific artform shapes their professional identity in specific landscapes of practice. Additionally, given the different policy contexts within the four nations of the UK, analysing the Phase 1 data in relation to country of practice would have been beneficial.

Future research into the creative mindsets of teachers and Artist Practitioners should also focus on the impact of teacher-centred, dialogic professional development on practice over time. In particular, it would be interesting to explore how collaboration between teachers and Artist Practitioners impacts upon a teachers' identity and self-practices in relation to facilitating young people's creative thinking skills. Equally, it would be interesting to explore why Artist Practitioners tend to have dual mindsets and how their self-practices might influence teachers to cross boundaries of practice.

Finally, in our proposed approach model to professional development, it would be interesting to engage both teachers and Artist Practitioners in dialogues which challenge the very concept of creative mindsets. Whilst we realise the inherent contradiction of this suggestion in a paper about creative mindsets, the ways that both groups spoke about school and home environment as key to students' creative development indicates an understanding of creativity as shaped societal structures. From this perspective, the concept of creative mindsets pathologises the individual, making them feel responsible for their lack of creativity and, in turn, obscuring the societal inequalities that provide some groups with more creative "affordances" than others (Glăveanu, 2013). Teachers critically reflecting upon creativity in a school system that unthinkingly adopts generic growth mindset models is crucial to ensuring all students experience teaching for creativity and are able to develop critical thinking skills.

Author statement

This work is part of research project undertaken by Lucy Fleet (Author 1) with Tom Dobson (Author 2) as academic supervisor. The conceptualisation of the project was, therefore, led by Author 1. Author 2 then led the redrafting of Author 1′s thesis for publication as a research journal article.

Data availability

Data will be made available on request.

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