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Creative Pedagogies: a systematic review

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Abstract

This paper is a critical systematic literature review of empirical work on creative pedagogies from 1990-2018. It responds to the increased international attention being afforded creativity and creative pedagogies in research, policy and practice and examines the evidence regarding creative pedagogical practices and the potential impact of these on students' creativity. The methodology encompassed four stages. Firstly, an educational database keyword search was undertaken and 801 papers identified, manual searches added 12 further papers. Secondly, through applying inclusion/exclusion criteria, 89 papers were identified for closer scrutiny; these papers focused on students aged 0-18 years in formal educational settings and were peer-reviewed reports of empirical work. Thirdly, these papers were subjected to in-depth review and rating, this reduced the included selection to 35 papers. Finally these papers were subject to further analysis and synthesis. The findings reveal that seven interrelated features characterise creative pedagogical practice, namely: generating and exploring ideas; encouraging autonomy and agency; playfulness; problem-solving; risk-taking; co-constructing and collaborating; and teacher creativity. The paper also reveals that the evidence for the impact of these pedagogical practices on students' creativity is inconclusive. It highlights the complexities and challenges of documenting creative pedagogies in the years of formal schooling and concludes with key recommendations and implications for research, policy and practice.

Keywords: creativity, creative pedagogies, impact on student creativity.

1 Introduction

The turn of the twenty-first century saw increased interest in creativity in education and creative pedagogies and an accompanying growth internationally in educational research in this area (Banaji, Burn and Buckingham, 2010). Recent research in the broader field has encompassed both conceptual (e.g. Beghetto and Kaufman, 2007; Craft, 2014; Lin, 2011; Megalakai et al., 2012) and empirical work, including studies of teachers' and visiting specialists' classroom practices (e.g. Jeffrey and Woods, 2009; Craft et al., 2014; Galton, 2010; Thomson et al., 2018). Additionally, work has addressed teacher and learner orientations to 'creative teaching' and 'teaching for creativity' (Sefton Green et al., 2011).

Whilst other systematic literature reviews have been carried out within the creativity in education field, including for example creativity and leadership (Thomson, 2010); creative learning environments (Davies et al., 2012); and progression in creativity assessment (Spencer, Lucas and Claxton, 2012); the field is still missing overarching synthesis on creative pedagogies. Although this is not to deny pockets of research which have considered some of the dynamics of creative pedagogy (e.g. Harris and de Bruin, 2018). Various authors have offered definitions and comment on how creative pedagogies might be defined, with Dezuanni and Jetnikoff (2011:265) asserting that creative pedagogies involve 'imaginative and innovative arrangement of curricula and teaching strategies in school classrooms' to develop children's creativity. Here, alongside highlighting applied imagination and accompanying strategies, they are teasing out the relationship between teaching for creativity and creative teaching, a connection discussed seminally by Jeffrey and Craft (2004) who stress the need to avoid creating a binary between these two practices.

Equally, Harris and Lemon (2012: 426) argue that:

...in diverse contexts, including at risk learners, elite schools, community arts interventions, in public pedagogies or national level discourse about twenty-first century learners, creative approaches to learning seems a topic that concerns almost everyone.

Their view that creativity is being afforded increased international importance, is further underscored by the Organisation for Economic Co-operation and Development's (OECD, 2018) position that creativity and creative thinking are key skills for 2030's learners,

and by the forthcoming Programme for International Student Assessment (PISA) test of young people's creative thinking (2021). The PISA tests carry considerable significance for governments worldwide, so the inclusion of creativity is likely to be highly influential in this field of education research and practice. It is therefore used as a comparative framing context within this review. However, despite the international articulation of the significance of creative pedagogies, there is a lack of coherent research into what creative pedagogies are and what they do. There is an urgent need to understand creative pedagogies in order to enable the young to develop their creativity and handle the uncertainties of life; equally teachers need to expand their repertoires of pedagogical practice in order to nurture young learners' creativity. The authors acknowledge that their own pedagogical research perspective, located within the wider tradition of European educational research, is imbued with a relational understanding of pedagogy; learning happens in the pedagogical space between teacher, learner and environment, in line with philosophers such as Biesta (2004). Nonetheless, systematic reviews offer a distinct and valuable contribution, synthesising empirical research and potentially influencing policy and practice (Torgerson 2007).

Joubert's (2001:21) view that 'creative teaching is an art' should be heeded, since, as she notes 'one cannot teach teachers didactically how to be creative; there are no failsafe recipes or routines'. The review therefore uses the term 'pedagogies' rather than 'pedagogy' to acknowledge the plurality of the insights that the research under review will offer; there is no assumption that there is a one-size-fits all creative pedagogy. However, the review, does wish to tackle some of the myths and misconceptions around creative pedagogy, namely that it is artform-related (e.g. Laduca et al, 2017) and individualised (e.g. Cropley, 2001). It draws together what peer-reviewed empirical research in the area has to offer understanding, and in turn policy and practice. In alignment with the genre of systematic reviews and in order to create a 'reliable evidence base' (Davies et al. 2012a:81), explicit and strict criteria were established for inclusion and exclusion, these are detailed later. As usual chapters and grey literature were not included as their peer-reviewed nature cannot be assured. However, this excludes much of the work generated by artist partnership and creativity programmes such as Creative Partnerships in the UK, which were often written as reports and published by the authors on their own practice, or did not meet the review's strict criteria for inclusion. This kind of work is of a different order (neither better or worse) to that included in the review, the implications of its exclusion are considered in the discussion.

The review therefore aims to provide a synthetic analysis of the empirical research base on creative pedagogies in order to ensure that policy and practice are informed by the most rigorous available evidence, and that such evidence is subject to close critical scrutiny. The review also aims to contribute to the shaping of future research. In so doing, it asks two questions:

1. What characterises creative pedagogies in the years of formal schooling?
2. What evidence is there of impact of creative pedagogies on students?

2 Methods

Once the review questions were agreed, a review methodology was designed to include literature search strategy and terms, inclusion/exclusion criteria, and the procedures for in-depth review and rating, and for data extraction and synthesis.

2.1 Literature search strategy

Four electronic databases were searched to identify peer-reviewed literature about creative pedagogies in education; these included the British Educational Index (BEI), Educational Resources Information Centre (ERIC), Education Research Complete and ProQuest. The search was limited to literature published during the last three decades 1990-2018. Search terms were: ‘creative pedagogy’, ‘teaching for creativity’, ‘creative teaching’, ‘teaching creatively’, ‘creative practice’, ‘creativity in the classroom’. The first search was made in 2016, and the second in May 2018.

Combined, these searches identified over a thousand papers (Table 1). When duplicates were removed this reduced to 801. To increase reliability, manual searching was conducted using the bibliographies of relevant articles, in particular three identified meta-reviews (Bramwell et al., 2011; Davies et al., 2012b; McCammon et al., 2010) were mined for further related literature, this resulted in an additional 12 papers. All abstracts and titles were copied to a file.

Table 1: Results for all search terms from both electronic searches

Search Terms	BEI	ERIC	Ed Res C	ProQuest	Total hits
“creative pedagogy”	5	7	6	0	18

Search Terms	BEI	ERIC	Ed Res C	ProQuest	Total hits
“teaching for creativity”	8	16	17	10	51
“creative teaching”	27	94	179	68	368
“teaching creatively”	5	10	56	6	77
“creative practice”	62	63	119	180	424
“creativity in the classroom”	12	47	70	19	148
Totals	119	237	447	283	1086

2.2 Selection criteria

Following the guidance of Gough and Thomas (2016) a clear set of inclusion criteria were developed. These required that the studies focused on creative pedagogy; related to 0-18 year olds in formal educational settings; and were peer reviewed reports of empirical work with some connection to the classroom. Studies were excluded if they were not published in English and were solely focused on teachers’ conceptions of creativity. After initial screening, which involved reading each abstract, applying the inclusion/exclusion criteria and discarding papers which did not encompass attention to the research questions or obviously lacked methodological rigour, 89 papers were identified for further scrutiny. These sources were retrieved, and were read in full by at least two reviewers for the purposes of data extraction and in-depth review and rating.

2.3 In-depth review and rating procedure

Again, following Gough and Thomas (2016), this review and rating procedure involved at least two research team members independently reading and scoring each paper using a recording grid focused on two key measures: the rigour of the methodology employed and the specific contribution of the study to the first question of the review - regarding the characteristics of creative pedagogies. In relation to the former measure, attention was paid to the degree of methodological detail: the identification of research questions, appropriate methods and data analysis. With reference to the relevance of each study to the review, the extent to which creative pedagogy was a driver of the research and the level of detail offered in this regard this were examined. Each paper was rated high, medium or low on these two measures and, following discussion, the researchers negotiated agreed final ratings. Inter-rater differences were minor. No papers rated low for either measure were included. This in-depth analysis reduced the selection from 89 to 35 papers. A review template was then drawn up which

encompassed key information about the papers. The template was completed separately by two researchers and then combined; it included information about the research questions, location, duration, sample, data sources, methods and main findings of each study. These researchers' digests are presented in Table 2. It should be noted that the last column is focused on the studies' key findings in relation to the review question regarding creative pedagogies rather than the studies' own findings per se. It is also important to note that Table 2 does not include definitions of creativity or creative pedagogy as these were often dispersed within the papers and featured multiple references. In line with this systematic review's purpose, the nuances of how authors defined creative pedagogy (and then evidenced it) are teased out in the findings section of the paper; the issue of a lack of definitions of creativity is discussed in the conclusion.

Table 2: Researchers' digest of final 35 papers

Author/s	Research questions or focus	Sample	Methods and duration	Key findings in relation to creative pedagogies
Chappell, (2007) England	Teachers' conceptions of and approaches to creativity in dance.	3 specialist teachers 50 children (7–11 years) 2 schools	Interviews, observations, video, audio, reflective diaries. 1 year	Conceptions and practice framed by key pedagogical spectra: prioritisation of creative source (inside-out or outside-in); degrees of proximity and intervention; task structure spectra (purposeful play to tight apprenticeship).
Cheung, (2012) Hong Kong	RQ1: What do teachers believe are the best ways to facilitate creativity: environment; strategies for creative practice; creative product? RQ2: To what extent do teachers' practices reflect their beliefs?	15 early years teachers 5 preschools	Interviews, observations, video, audio.	RQ1: Most teachers' beliefs about good creative practice align with the research literature. Re environments: activity, climate, resources, time and space. Re teaching strategies: questioning, self-expression and ideas exchange, feedback and stimulation. RQ2: Inconsistencies exist between teachers' beliefs and practices. Re environments: teacher time spent on structured activities, limited or no free play. Re teaching strategies: close-ended questions mainly used; class teaching dominant; direct instructions/ explanations, limited space for ideas expression.
Cheung, (2013) Hong Kong	Use of a Pedagogical Framework for Creative Practices (PFCP)	18 early years teachers 6 preschools	Interviews, observations.	The PFCP included play, problem-finding, time and space, freedom, resources, and a creative process of divergence to convergence. It was perceived to change lesson planning and teaching by enhancing knowledge and skills, infusing creativity and shifting practice to be more child-centred.
Cheung, (2016) Hong Kong	RQ1: How is the PFCP used to promote creativity? RQ2: To what extent do teachers change their teaching pedagogy of creative practice as a result of using the PFCP?	3 early years teachers 3 preschools	Interviews, observations reflective discussions. 6 months	RQ1: PFCP used to promote creativity through motivation, questioning, time and space, independent learning, scaffolding and feedback. RQ2: Changes in perceptions of creativity, in creative practice and teaching strategies.
Corcoran & Sim, (2009) Australia	Using reflective teaching and cooperative learning to support student creativity in visual art.	1 secondary teacher 50 students (16-18 years) 1 school	Interviews, video, artefacts, reflections. 3 years	Cooperative learning and reflection worked effectively at different phases of a creative problem-solving model.
Craft et al., (2012) England	RQ1: How is children's creativity/possibility thinking manifest in child-initiated play? RQ2: What is the role of the practitioner in supporting this?	4 early years practitioners 15 children (4 year olds) 1 children's centre	Interviews, observations, photographs, reflective discussions. 1 month	RQ1: Through stimulating, sustaining and communicating possibilities and children's agentic involvement. RQ2: Provoking possibilities, allowing time and space for responses; being in the moment, intervening, and mentoring in partnership.
Craft et al., (2014) England	RQ1: What characterises pedagogy for creativity in these schools?	Senior leadership teams, teachers 2 primary schools	Observations, interviews. 3-5 months	Pedagogical characteristics: Co-construction; children's control, agency, ownership; and high expectations in skilful creative engagement.
Cremin et al., (2006) England	How teachers foster possibility thinking/creativity and the pedagogical strategies employed.	3early years teachers 1 children's centre 1 infant	Interviews, observations, video, stimulated review, artefacts.	Pedagogical strategies: standing back; profiling learner agency; creating time and space.

Author/s	Research questions or focus	Sample	Methods and duration	Key findings in relation to creative pedagogies
		1 primary school.	1 year	
Cremin et al. (2015) Europe	RQ1: What pedagogical synergies are evidenced in the research literature between inquiry-based science education and creative approaches?? RQ2: Are these manifest in practice and if so in what ways?	72 early years and primary teachers 72 classes (3-8 years) 36 settings/schools 9 countries	Interviews, observations, digital images. 4 months	RQ1: Pedagogical synergies identified: play and exploration, motivation and affect, dialogue and collaboration, problem solving and agency, questioning and curiosity, reflection and reasoning, teacher scaffolding and involvement. RQ2: Synergies evidenced in practice, though less in primary than preschool.
Dababneh et al., (2010) Jordan	RQ1: To what extent do teachers promote creativity according to specified domains? RQ2: Are there significant differences in this according to educational and experience level, and type of teaching?	215 kindergarten teachers	Questionnaire.	RQ1: Teachers have the foundational knowledge to promote creativity through climate, lesson planning, materials, environment and creative 'instructional practices'. RQ2: Experience levels influence teachers' practices in some of the specified domains.
Elton-Chalcraft and Mills, (2015) England	Creative teaching and learning within a Creative and Effective Curriculum module.	9 primary teachers 50 pre-service teachers 120 children (7-11 years) 4 schools	Interviews, observations, questionnaires, essays. 1 week placement	Factors perceived as necessary for creative and effective teaching and learning: children felt 'liberated', ownership of learning; learning was 'fun' and challenging achievement through intrinsic motivation; teacher as facilitator, rapport with students crucial; practical activities and imaginative/problem-solving scenarios; safe environment to take risks and learn through mistakes.
Fleith, (2000) USA	Teachers' and students' perceptions of what stimulates or inhibits creativity.	7 primary teachers 31 students (8-10 years) 2 schools 7 experts	Interviews.	Teacher descriptions of an environment that enhances creativity. Teachers' attitudes: Giving students choices; boosting students' self-confidence; accepting students as they are; not imposing; providing opportunities for students to become aware of their creativity; Strategies: Cooperative or cluster groups, free time, arts centre ;flexible directions; brainstorming Activities: Open-ended, hands-on, creative writing, drawing Educational system: Unstructured time.
Gajda et al., (2017) USA	Understanding the relationship between creativity and learning in the classroom.	10 primary teachers 204 students 5 schools	Observations, audio, measures of student creativity and of academic achievement.	An emotionally supportive and caring environment is key for students' risk taking and developing ideas. Teacher creativity encouraging behaviours were associated with student positive engagement, expression and ideation. More extended exploratory interactions in classrooms with positive associations between creativity and academic achievement. Some creativity encouraging behaviours difficult to sustain across a lesson.
Galton, (2015) England	Exploring differences in the ways teachers in Creative Partnership (CP) and non-CP schools implement the curriculum and interact with students.	3 CP primary schools 2 non-CP primary schools	Interviews, observations, artefacts. 2 days	The CP schools shared three features: teachers and CP practitioners planned and discussed learning together (increasing teacher confidence); a focus on learning processes was noted including thinking skills, emotional literacy communication skills, problem solving, collaboration; when outcomes were assessed, emphasis laid on joint products, e.g. performances and exhibitions rather than individual ones..

Author/s	Research questions or focus	Sample	Methods and duration	Key findings in relation to creative pedagogies
Gardiner, (2017) Australia	RQ: What are the teaching and learning experiences of students and teachers preparing scripts for external assessment?	5 secondary teachers 5 students (17-18 years)	Interviews, observations, log books, written plays.	Pedagogy reflected teachers as facilitators, strategies that focused on knowledge and skill were not prioritised. Point-of need feedback was detailed. There were consequences for student motivation, ownership and engagement.
Gardiner & Anderson, (2018) Australia	RQ: What are the teaching and learning experiences of students and teachers preparing scripts for external assessment?	5 secondary teachers 5 students (17-18 years)	Interviews, observations, log books, written plays.	An idealist view of creativity as a distinct early and individual event in writing was held; this, alongside a binary separation between creation and execution shaped the experience. The teaching of domain knowledge and skills was absent.
Henriksen & Mishra, (2015) USA	RQ: How do exemplary teachers incorporate creativity in their teaching?	8 National Teacher of the Year award finalists.	Interviews.	Common themes include a combination of intellectual risk-taking, real world learning approaches, and cross-disciplinary teaching practices. Teachers integrated their outside interests and personal creativity into practice.
Hui et al., (2015) Hong Kong	The effectiveness of arts-enriched curriculum and drama on students' creative development.	Study 1: 15 kindergartens 813 children (5-6 years) Study 2: Kindergarten, primary and secondary teachers 2846 students (5-16 years)	Study 1: Pre and post-tests. 8 weeks Study 2: Randomised control trial 5 years	Both studies, integrating creative arts in Chinese reading and the infusion of creative drama learning strategies, note the opportunities for students' to engage playfully in informal learning environments /imaginative contexts.
Jeffrey, (2003) England	How teachers who value creative teaching maintain learner commitment and meaningful learning in the light of an insistence upon an increasingly prescriptive pedagogy.	3 primary teachers children (9-11 years) 1 school	Interviews, observations, audio, artefacts. 17 days	Reconstructs previous work on control, innovation, ownership and relevance, to include engaging interest, (through the use of media narratives, humour and role play and problem-posing), and developing a team identity (through encouraging learner collaboration, bring teachers and students closer and a whole class culture).
Jeffrey, (2006) Europe	Creative teaching strategies and creative learning.	1 early years school 7 primary schools 8 secondary schools 1 adult centre 9 countries	Interviews, observations. 9 months	Teaching strategies include: establishment of real and critical events and strategic external co-operations; creative use of space and modelling creativity. Creative learning characteristics include: engage in intellectual enquiry, (around possibility thinking and problems); engaged productivity; and engage in process and product reviews. Teacher strategies and creative learning became meaningful learning experiences through students' personal and social development, and the adoption of social roles as innovators, creators and producers.
Jeffrey & Craft, (2004) England	The relationship between teaching creatively and teaching for creativity	11 early years teachers, support staff, children, parents, visitors. 1 school	Interviews, documents, photographs. 7 weeks	Relationship seen to be integral and evidenced through the lens of previous work: relevance, ownership, control and innovation. It is suggested that that the constitution of creative pedagogies may be more apparent if the focus is on teachers and learners.
Lasky & Yoon, (2011) USA	RQ1: How are teachers thinking about the concept of creativity in engineering design?	4 primary teachers 9 students (10-12 years) 4 after school settings	Interviews, observations. 3 terms	Teachers variously evidenced themes from the literature in relation to three continua: of space making; recognition of student creativity and utility in the world. Two teachers whose ideas and practices were most aligned with research engaged

Author/s	Research questions or focus	Sample	Methods and duration	Key findings in relation to creative pedagogies
	RQ2: How does this translate into students' understanding? RQ3: In what ways do teachers make space for creativity?			students in making objects in response to real-world cross curricula problem-solving.
Levenson, (2013) Israel	RQ: What task features are associated with promoting mathematical creativity? RQ2: What cognitive demands are associated with mathematical creativity? RQ3: What, if any components of the affective domain are associated with tasks that may occasion mathematical creativity?	43 graduate students, studying for a teaching degree or already teachers (primary and secondary)	An assignment. 1 week.	Task features identified include the significance of: divergent process tasks, (there were multiple ways in which answers could be produced); the cognitive challenge of tasks (including non-standard thinking and problem solving); and affective issues (these were often connected to teachers' values and related to possible feelings a task might elicit).
Lilly & Bramwell-Rejskind, (2004) Canada	A creative teacher	1 award winning teacher, (who had taught primary, secondary, university); her partner; 6 students	Interviews, observations, memos, artefacts. 6 months	The dynamics of creative teaching include the processes of preparation, intimate teacher- student connection, and reflective teaching which provide a safe climate for risk taking. This is undertaken in the light of constraints, awareness of self and students during the process, feedback and her values and goals. Creativity in the adult is seen as a precursor to fostering student creativity
Lin, (2010) Taiwan	How drama fosters children's creativity and its relationship with creative pedagogy.	2 primary teachers; 67 children(11-12 years); 2 schools	Interviews, evaluations, reflections. 10 weeks	Teaching strategies noted by students included: playfulness, innovation, flexibility, space, and in-depth learning. Teacher ethos and interactions involved: encouragement, a sense of humour and standing back.
Lin, (2014) Taiwan	RQ1: How desirable is creative pedagogy regarding its practice, teacher ethos, and learning methods? RQ2: How should creative pedagogy be applied in an Asian context? RQ3 How does the researcher, as a reflective practitioner perceive the experience of adopting a different teaching paradigm?	2 teachers; 67 children (11-12 years); 2 schools	Interviews, evaluations, reflections. 10 weeks	In response to local challenges to creative pedagogy, a contextualised model of pedagogic hybridity was developed. This involved dialogue and negotiation, and values exploration. It encompassed, playful, autonomous and serious learning and positioned teachers as facilitators and mentors.
Liu & Lin, (2014) Taiwan	RQ1: What do science teachers believe about scientific creativity in the classroom? RQ2: How can scientific creativity be fostered here?	16 primary teachers	Questionnaire, interviews.	Teachers identified three features of creativity: divergent thinking, autonomy, curiosity and interests. They noted that teaching for creativity in science included: autonomous learning, inquiry-based teaching, and diverse fun activities, where group learning was stressed. They tended to overlook: convergent thinking and connecting ideas, problem-solving/finding, and linking the arts and science.

Author/s	Research questions or focus	Sample	Methods and duration	Key findings in relation to creative pedagogies
	RQ3: How is this associated with inquiry-based teaching and learning?			
McCammon et al.,(2010) Canada, USA Jamaica & Norway	How teachers view teaching for creative achievement and themselves as creative teachers of drama.	100 teachers: half primary/secondary	Survey.	Teachers held generally positive views of their efficacy as teachers of creativity and highlighted the use of student-centred approaches including group work, choice and problem-solving in the context of story-based drama activities, linked to other art forms.
Peng et al., (2013) China	The relationship between classroom goal structures and student creativity during activities.	232 students (average age 12); 124 in intervention classes; 6 classrooms; 2 schools	Pre and post-test. 6 weeks	Mastery classroom goal structure enhanced student fluency, flexibility and creativity. The learning environment in classrooms with an emphasis on mastery goals included teachers' profiling: the purpose of learning mathematics,; students' asking questions; content learning not scores are important; making errors as part of learning.
Reilly et al., (2011) Canada	Synthesis of published research on creative teachers undertaken by a university group.	14 papers; Some, not all, award winning/nominated teachers; primary, secondary and university	13 case studies, 1 survey.	Teachers were student-centred and promoted student interests and inclusivity. They displayed well developed interpersonal awareness and skills and balanced risk with secure structures. Teachers also built communities and environments to foster creative learning by working on personal relationships, (including self- disclosure and positive regard), offering group work, and linking to students' lives beyond school.
Sawyer, (2017) International	Systematic review of studies of art and design pedagogy.	65 papers ; early years to university	Diverse methods according to papers.	Three clusters of themes: pedagogical practices (5 themes); learning outcomes (4 themes); and assessment (2 themes). Pedagogical practice themes include: flexible, open-ended, and improvised studio pedagogy; students active and independent; classrooms are communities of practice; tensions between open-ended assignments and the need for structure; in higher education the pedagogies are of professional creatives.
Schacter et al., (2006) USA	The relationship between creative teaching and students' achievement gains.	48 primary teachers 816 students (8-12 years)	Observations. 9 months	The creative teaching framework used included five features: explicitly teaching creative thinking strategies; providing opportunities for choice and discovery; encouraging intrinsic motivation; establishing a learning environment conducive to creativity; and providing opportunities for imagination and fantasy The majority of teachers do not implement any strategies that foster creativity, those that do, enable substantial student achievement gains in language, reading and mathematics.
Selkrig & Keamy, (2017) Australia	Teachers' understanding of creativity and creative learning in the arts.	23 teachers (working with 6-15 years) 1 school	Questionnaires, discussions, journaling 6 weeks.	Teachers' creative learning underpins pedagogy. Findings relate to different groups including: principals who see the application of creativity as considered and purposeful; specialist teachers who provide challenging safe and collaborative opportunities but perceive students must take risks and work with the process; generalist teachers who see risk taking and expression as part of creativity, individually and collaboratively.

Author/s	Research questions or focus	Sample	Methods and duration	Key findings in relation to creative pedagogies
Simpson Steele, (2016) USA	How teachers grapple with creative strategies for teaching writing.	6 primary teachers	Observation, interviews, portfolio analysis.	Whilst different from their norm, teachers mostly engaged in and valued, not without some consternation, asking questions with no right answers, allowing students to control the direction of their learning, and tolerating a degree of unusual behaviour. They also found creative facilitation with regard to feedback challenging but persisted in response to high levels of student engagement.
Wang & Murota, (2016) China	The possibilities and limitations of peer instruction in teaching technical creativity.	127 students (14-15 years) 1 school	Website design/making work. 5 weeks	Peer discussion, which involved collaboration and cooperation, was effective in improving creative performance of all students with existing creative ideas in the reflective-improvement phase. It was less effective than explicit technical creativity teaching (a teacher centred method), in supporting lower-level students to generate ideas from nothing.

2.4 Characteristics of included studies

The 35 studies were undertaken in the UK (8), USA (6), Hong Kong (4), Taiwan (4), Australia (4), Europe (2), Canada (2) and one each from Israel, Japan and Jordan, two papers focused on studies in various countries (McCammon, 2010; Sawyer, 2017). The papers drew on data from teachers working in early childhood settings (6), primary schools (9), and secondary schools (7) and from mixed settings (11). Two of the papers included pre-service teachers. Across the studies, sample sizes ranged from a single teacher participant to 215 teachers. Many studies did not indicate whether the participants were male or female, although where this was identified the sample was often predominantly female (e.g. McCammon et al., 2010). Eleven studies also collected data from young people, inviting them to offer their views about particular pedagogic practices or in order to assess the impact of the pedagogy on their creativity. Fourteen studies encompassed attention to a subject or discipline, these included: Drama (4), Writing (3), Visual Arts (2), Science (2), and one each for Dance, ICT, and Mathematics. Eight were in secondary education, five in primary and one science study spanned children aged 3-8 years (Cremin et al., 2015). Two studies comprised reviews of other work (Reilly et al., 2011; Sawyer, 2017), the latter, which focused on visual art, drew from papers documenting practice from early years to university education.

The methodological approaches adopted within the studies were predominantly qualitative in nature. Twenty six employed single or multiple-method qualitative strategies, such as interviews, observation, video and audio-recording and photographs. Four studies used quantitative approaches, including experimental design interventions (Peng et al., 2013; Wang and Murota, 2016), a questionnaire (Dababneh et al., 2010), and randomised control trials (Hui et al., 2015). Three studies employed mixed-methods (Gajda et al., 2017; McCammon et al., 2010; Selkrig and Keamy, 2017). The systematic review by Sawyer (2017) drew on 65 papers, 78% of which were qualitative in nature, and all but one of the 14 papers synthesised by Reilly et al. (2011) were case studies. Duration of data collection was not commonly noted, where it was, it varied from two days observation (Galton, 2015) to a randomised control trial undertaken across a five-year period (Hui et al., 2015).

Whilst 35 studies are not enough to make significant comment on the relationship between country of origin, and methodological approach, the connection between these two elements might be said to be symptomatic of the epistemological and ontological heritage of

researchers working in different cultures. For example, studies in the review represent the different psychological traditions of creativity in education research that exist in the US, Hong Kong and Taiwan. These might be contrasted with some of the European studies which represent a more sociological framing. In working to find common thematic ground through the systematic review methodology, these differences can be masked; but this is not to say that they cannot be identified through authors' language, this nuance comprises part of the interpretation of the themes identified.

2.5 Synthetic analysis procedure

In order to conduct the qualitative thematic analysis, the two lead researchers inductively coded half the papers each with regard to identified characteristics of creative pedagogies. These codes were discussed and another reading of all papers by both researchers was undertaken prior to the creation of a combined category list. This involved merging codes that were the same or similar, and justifying whether unique codes should be included, renamed, subsumed or discarded. It resulted in eight categories (some with sub-categories), each with their own list of papers which demonstrated that category as a feature of creative pedagogies. In order to strengthen reliability, the researchers then independently re-read and reviewed half the categories each, engaging in further justification and honing. This process resulted in seven categories as features of creative pedagogies. The process of writing the synthesised analysis drew on strong examples of previously published educational systematic literature reviews (e.g. Watts and Robertson, 2011). This reinforced the categories, and led to the removal of a small number of papers from some categories where further re-reading showed them not to be the best fit.

3 Findings

3.1 What characterises creative pedagogies in the years of formal schooling?

The analytic synthesis of the 35 papers identified seven characteristics of creative pedagogies in the years of formal schooling, namely: generating and exploring ideas; encouraging autonomy and agency; playfulness; problem-solving; risk-taking; co-constructing and collaborating; and teacher creativity. These characteristics are examined in turn. Strict definitions of each are not offered as the terms are differently instantiated in different papers, rather a nuanced discussion of the various ways in which the characteristics are documented,

and their nature as evidenced in each study is included.

3.1.1. Generating and exploring ideas

A focus on the generation and exploration of ideas was noted in 22 of the 35 papers as a key characteristic of creative pedagogical practice. This was often instantiated through a climate of openness encompassing practitioner acceptance of young people's ideas and the provision of opportunities to explore ideas in a stimulating environment. Many papers also noted attendant challenges. Of the 22, six were drawn from early years settings, ten from primary and four from secondary schools, one was a systematic review across settings.

A climate of openness: An open ethos and high degree of acceptance of children's ideas - however unusual or unexpected - were commonly reported. For instance, Gadjia et al. (2017) claim that those teachers in classrooms with a more positive association between creativity and academic achievement, listened intently to students' ideas and explored and elaborated upon these in an emergent and responsive manner, creating a secure climate of approval and exploration. The psychological safety afforded by the environment was asserted as significant by teachers in several studies, (Dababneh et al., 2010; Fleith, 2000; Peng et al., 2013), as this, the practitioners perceived, enabled students to generate divergent ideas without fear of criticism or being wrong. Drawing on a blended approach in order to understand creative learning, Gadjia et al., (2017) also emphasise the significance of an emotionally supportive environment in fostering ideation. Exploring teachers' beliefs about scientific creativity, Lui and Lin (2014) additionally assert that openness to children's ideas and experiences within an accepting climate is seen by practitioners as key to inquiry-based approaches. Furthermore, Schacter et al. (2006) claim that in evaluating aspects of a creative climate, teachers rated tolerance of unusual ideas that did not lead to the 'right answer' more highly than other aspects, although ratings were low overall. In his systematic review, Sawyer (2017) also contends that the open-ended and improvised nature of art and design pedagogy is highly responsive to and welcoming of all students' ideas. However, Simpson Steele (2016) reports that teachers were initially challenged in developing a climate of 'no wrong answers' and although some gradually embraced this, others continued to control the direction of children's written narratives. Additionally, inconsistencies in teachers' beliefs and practices

regarding the acceptance of children's ideas were found in Cheung's (2012) study; teachers were seen to control the ideational agenda in the classroom.

Setting aside time for learners to explore resources in an open environment is claimed to be conducive to the generation of ideas in five early years' studies. Practitioners in two UK studies prioritised time and space for learner-led exploration which they perceived supported the development of children's ideas (Craft et al., 2012; Cremin et al., 2006). In Hong Kong, linking to this UK work, Cheung (2012, 2013, 2016) again asserts the significance of time and space for 'free-thinking'. In seeking to develop creative practice Cheung (2013) designed a pedagogical framework that encompassed attention to 'time, space, freedom, resources and challenges' (2013, p. 136). Analysing its use through observation and interviews, she contends that whilst practitioners did not assign specific periods of time for open exploration, some began to re-value child-centred practices, included problem-solving approaches and sought to speak less in order to increase children's ideational time (Cheung, 2013, 2016).

The generation of ideas through exploratory engagement with the physical environment and resources was reported in several studies with young children. In one, practitioners were observed to provide open access to props and resources (e.g. a wood pile in the outside area, puppets), these, Craft et al. (2012) posit, acted as provocations for the exploration of ideas in child-initiated play. In another study using observation, the provision of household materials and natural resources were claimed to trigger hands-on problem finding and the generation of possible solutions (Cremin et al., 2015).

The 15 practitioners in Cheung's (2012) study cited open access to materials and learning centres as key features of their creative practice, yet observations indicated that they made limited use of these. Additionally, while these teachers' expressed the view that asking open-ended questions and sharing ideas was critical to creativity, this was not evidenced in practice; direct instruction and factual explanations prevailed. Drawing on a survey of 215 practitioners, Dababneh et al. (2010) argue that teachers' creative use of the environment and resources relates to their length of teaching experience. They contend that more experienced teachers flexibly capitalise upon the environment and available resources, and those with less experience tend to teach according to traditional methods with textbooks. In

noting barriers to developing a climate open to ideas, common responses recounted by teachers related to time constraints, structured schedules, curriculum requirements, skills and training (Cheung, 2012; Cremin et al., 2015; Fleith, 2000).

Tensions between openness and structure: Challenges associated with developing opportunities for ideational freedom were reported in several studies. Whilst most of the Taiwanese children in Lin's (2010) research stated they enjoyed the autonomy of dramatic improvisation, some found this difficult and expressed a preference for more direction and boundary framing. They sought security in structure and set tasks, and wanted assurance there were right answers. Their teachers too were unsure of the value of improvisation, perhaps reflecting the cultural complexity of affording space for the exploration of ideas. Not dissimilarly in the UK, Elton-Chalcraft and Mills (2015) reported that some children found responding to imaginative scenarios difficult and the openness unsettling.

Tensions between the freedom inherent in open-ended work and structure were noted too in secondary phase studies of playwriting practices (Gardiner, 2017; Gardiner and Anderson, 2017). The researchers claim that the teachers, perceiving creativity as an individual innate quality, saw their role as establishing an open space for students to work with their own ideas during the creative process. As a consequence, they contend that the teachers refrained from intervening and did not foreground the necessary subject knowledge and skills. As the work increased in difficulty, the researchers assert that student engagement reduced and anxiety levels rose. They posit that when teachers did respond, their directional theory-heavy feedback caused further self-doubt and reduced students' ownership of the task. This tension between the openness of tasks and projects that foster creativity, and the need for structure to support the learning process, is additionally reported as a common theme in Sawyer's (2017) systematic review. He claims many studies reveal that confusion and challenge set in when students are offered open-ended assignments with limited support. Nonetheless, he contends that the majority of art and design studies indicate that students are comfortable with how their teachers balance freedom and structure, and that they value sharing responsibility for their learning with their teachers (Sawyer, 2017).

3.1.2 Encouraging Autonomy and Agency

Encouraging autonomy and agency emerged strongly in 17 papers as key to creative pedagogies. Those papers foregrounding autonomy articulated different kinds of learner independence being facilitated; and those asserting the encouragement of agency detailed a more active exertion of learner power. Of these 17 papers, four researched early years, eight researched primary schools and two researched secondary schools. Two studies were cross-settings and one was a systematic review across settings.

The four early years papers, all stemming from Jeffrey and Craft's writing, most actively focus on encouraging autonomy *and* agency as an element of creative pedagogy. Autonomy and agency are both facilitated, Jeffrey (2006) claims, through offering ownership of learning, but he notes that not all students were able to benefit because of a lack of cultural capital. Additionally, autonomy was seen as strongly connected to flexibility, whilst agency was seen as being facilitated through relevance of learning to children's lives and interests, student control of learning and space for innovation (Jeffrey, 2006 as developed from Woods, 2002). Agency is also researched as one of four headline creative pedagogies by Cremin et al. (2006) who assert, based on observational evidence and analysis, that practitioners' 'standing back' fostered autonomy, by giving children the opportunity to follow their interests, initiate activities and jointly control direction of that activity; teachers achieved this through 'flexing the curriculum' (p.11).

This is built on by Lin (2010) who theoretically forefronts autonomy and agency but finds autonomy, that is learner independence, lacking in the child participants, and does not go on to describe agency within their drama experiences. In a later paper, Lin (2014) laments the overlooking of agency and autonomy in the Taiwanese primary context, and proposes a solution in the form of a professional "third space" (p.52) for dialogue on creative pedagogy which she suggests could negotiate tensions to better facilitate agency.

Autonomy: acting independently: Encouraging autonomy, or students' acting independently, is considered without reference to agency in seven studies. Similarly, to the co-joined /joint/combined/ agency and autonomy category above, ownership of learning is seen as important to this kind of autonomy (here coupled with engagement and creativity) by Elton-Chalcraft and Mills (2015) who also connect learner ownership to feeling liberated.

Autonomy is defined by Liu and Lin (2014) more in terms of willingness to solve problems, be adventurous and/or non-conforming, be patient and/or persistent. The teachers in their science study viewed autonomy as pedagogically achievable through more tangible approaches such as hands-on activities, active learning, asking questions and sharing work to develop learners' independence. Autonomy's connection to problem-solving is also fore-grounded in Corcoran and Sim's (2009) use of Parnes' creative problem-solving model (1967) as a facilitation device in their action research.

In a further slightly different interpretation, learner-centred classrooms are seen as the key to developing autonomy in Sawyer's (2017) category of 'students are active and independent' (p. 106). He argues that this is because teachers believe that students will learn more effectively and take risks if they are independent and active; he also connects this to experimentation and students feeling safe to fail. A more setting-based take on autonomy is proposed by Cheung (2012) who asserts the practitioners in her study believed that encouraging autonomy was part of the environment considered important for creativity.

Choice, related to autonomy, is posited as an element of creative pedagogies in two studies (Schachter et al., 2006; Fleith, 2000). In the former, the relationship between creative teaching and elementary students' achievement gains includes measuring opportunities for activity choice and independence. In the latter, Fleith's (2000) reports that teachers and students believed that choice and focusing on students' strengths and interests were key for creativity. However, Schachter contends that teachers did not implement strategies for choice and Fleith's participants were aware that choice and creativity could be inhibited by a controlling, structured environment. So even though these authors define autonomy as an element of creative pedagogies, it was not evidenced in their studies.

Agency: exerting power: Agency, which is understood here as pro-actively exerting power, is discussed centrally but without reference to autonomy in three studies. For Jeffrey and Craft (2004) this may be because they consider both teacher and learner agency as fundamental to teaching for creativity which for them means a greater focus on the power relationship between teachers and learners. With a similar focus on active power relationships,

encouraging agency is related to the notion of children's control in Craft et al. (2014). This is accompanied by pro-active teacher priorities such as high expectations within a creative curriculum and skilful creative engagement. Work in science education, which perhaps has a dominant sense of knowledge being fit for purpose, claims that agency is encouraged through children pro-actively being offered choice to experiment with materials, test their own ideas and build on observations (Cremin et al., 2015). However, the authors also note that the potential for extending agency was not always recognized and actioned by teachers.

Agency is seen in a more emergent way in three studies. Chappell's (2007) study suggests that it functions at the intersection of creative process and dance knowledge, with the dance teachers working to balance freedom and control to allow students' individual and collective voice to emerge. Simpson Steele's (2016) ethnographic study articulates how teachers gradually allowed students' to direct their own learning, and came to tolerate unusual behaviour within their creative writing pedagogies. McCammon et al.'s (2010) survey claims that many teachers pinpointed student-centred approaches, arguably deploying softer terminology than that of student 'control' noted above. Students were given the opportunity to lead activities (e.g. productions) whilst teachers were noted as being cognisant that different students need different approaches to facilitate their agency.

3.1.3 Playfulness

Seven papers document playfulness as a central element of creative pedagogies, all but one of which are from early years settings or primary school contexts; Hui et al. (2015) draw on a secondary phase study as well as an early years one. In seeking to trigger child-initiated play, practitioners in Craft et al.'s (2014) study used provocations which, the researchers argue, fostered the pre-schoolers imaginative engagement. They detail children's playful responses to the resources, to their own and each other's actions and ideas, and posit that sometimes adults playfully engaged as co-authors too. On other occasions they argue adults stood back in order to encourage children's self-determination. Adult encouragement of children's playful engagement with resources was also reported by Cremin et al. (2015) in the context of science teaching with 3-8 year olds. This pan-European study reports that playful approaches were much less frequently observed with 7-8 year olds, explaining this with reference to practitioners' perceptions that the prescribed curriculum reduced the time

available for this. Although the science teachers in Lui and Lin's (2014) study did not use the term 'playfulness', they asserted the role of exploration, adventurousness and inquiry-based 'diverse fun activities' (p.1562).

In the context of dance teaching, Chappell (2007) contends that practitioners encouraged embodied 'purposeful' play (p. 46). She argues that the practitioners, in seeking to balance the freedom to explore playfully and physically with craft/compositional knowledge, positioned this more structured 'purposeful' play on a mid-way point between spontaneity and freedom, and aims and rules. In researching drama, Lin (2010, 2014) claims playfulness was a key feature of creative practice. However drawing on Chinese cultural norms, teachers expressed doubts about this approach to learning and children too, whilst reportedly identifying dramatic play as enjoyable, considered improvisation unconventional, 'game-like' and 'not serious learning' (2014, p.51). In asserting the highly playful use of language deployed in secondary phase drama, Hui et al., (2015)'s study also highlights the challenges of informal playful learning in Asian societies characterised by formal knowledge-based curricula.

3.1.4 Problem-solving

Around a third of the papers offer evidence of problem-solving approaches as central to creative pedagogies. Of these 13 papers, three drew on data from early years settings, three from primary, two from secondary and five were mixed age phase. Several of these studies highlight teachers using real problems to motivate and engage learners. In one, focused on provoking interest in STEM through after-school engineering design workshops, Lasky and Yoon (2011) assert that teachers with the most developed understanding of creativity involved their students in exploring solutions to real world problems. Viewing creativity as useful in generating novel products of societal value, students responded to larger (e.g. water shortages) and smaller (e.g. foot protection) problems. Henriksen and Mishra (2015) in their study of award winning teachers also contend authentic real world learning was emphasised. Although not all activities involved practical problem-solving, most had relevance to learners' lives, as did the work reported by Lui and Lin (2014) and Jeffrey (2006). In Jeffrey's (2006) research, the teaching, framed within extended projects, involved external partners who, he claims, contextualised the problems and life challenges to be explored. Collaborative

problem-solving with external partners was identified as a feature of creative practice by Galton (2015) also. In both these partnership studies, the creative process, construed in part as a problem finding/solving process, was posited as a core focus alongside hands-on engagement.

Additionally, imaginative problem-solving scenarios were posited as salient in several studies. These provided a context to engage learners in scientific enquiries (Cremin et al., 2015), and more everyday yet fictionally framed problems (Cheung, 2016; Elton-Chalcraft and Mills, 2015). The drama teachers in McCammon et al.'s (2010) research reported using fictional narratives and contemporary social issues as problem-solving contexts and inviting students to improvise their responses. These practitioners, McCammon et al. (2010) assert also valued the production of plays and films as a focus for developing students' problem-solving skills.

Learner engagement in practical solution focused work was frequently reported in studies using problem based approaches. Cremin et al., (2015) posit that practitioners' sensitivity to children's implicit and explicit questions often led to opportunities for hands-on child-initiated problem-finding/solving and that teachers' questions played a key part in extending young learners' explorations. Cheung et al. (2013, 2016) claim that children working in classes using the project's pedagogical framework for creative practice were observed engaging with problems, and that the teachers reported children were intrinsically motivated to solve these. Teachers in other studies also voiced the value of problem-solving for enhancing student engagement (Corcoran and Sim, 2009) and claimed that practical problem-solving experiments were essential to develop divergent thinking (Lui and Lin, 2014). In one study however, Levenson (2013) reported that whilst mathematics teachers who aimed to promote creativity, designed tasks that were problem-focused, not all of them recognised problem-solving as part of their creative practice.

In the majority of the 13 studies, researchers report open-ended problems were found or set, prompting the sharing of ideas and the generation of possible solutions, frequently in groups. However, in response to curriculum constraints in England, Jeffrey (2003) contends that 'closed' or tightly framed problems were being set as single class challenges, and drawing

on settings across Europe, Cremin et al., (2015) also assert that teachers of 7-8 year olds tend to limit children's problem-solving by defining challenges with constrained choices.

3.1.5 Risk-taking

Seven papers offer evidence of teachers encouraging students to take risks as part of their creative pedagogies. Risk-taking and the acceptance of failure, Chappell (2007) argues, are characteristics of the 'purposeful' play end of a spectrum of task structures, where more freedom for learners was afforded. Learning through mistakes and taking risks were posited by Elton-Chalcraft and Mills (2015) as central to the creative process, their student teachers reported recognising this and were observed in the classroom encouraging children to risk-take and develop resilience. Sawyer (2017) also contends that his review findings reveal that art and design teachers encourage experimentation in order to increase the likelihood of young people taking risks as learners, and, drawing on observation and analysis of micro-interactions, Gadjia et al. (2017) assert that the extent of teachers' risk acceptance was positively related to students' self-expression and ideation. Yet Gardiner's (2017) study of playwriting suggests there is more than teachers' risk acceptance at play. He contends that initially students took risks in their free writing and exhibited high levels of engagement, but that this diminished markedly as the task increased in difficulty and no scaffolding was offered to help them respond to the challenge. As a consequence, the students' creative resilience was negatively affected.

Practitioner's own intellectual risk-taking, framed as a disposition to trial new ideas and approaches to teaching and learning, is claimed by Henriksen and Mishra (2015) as being core to creative practice. They posit that the willingness of the award winning teachers in their study to experiment and break conventions was connected to their desire to embrace the creative process and construct open environments in which students could learn from their mistakes. These teachers report modelling risk-taking explicitly in their classrooms. Reilly et al. (2011), drawing on their synthetic review, also claim that teachers often recognise themselves as risk-takers, and posit that their preparedness to take risks is enhanced by their personal and professional engagement in various communities of practice.

3.1.6 Co-constructing and collaborating

Themes of co-construction and collaboration were evidenced in 19 papers. Co-construction in these studies implied active co-development between teachers and learners of curricula or tasks, which reinforced learners' social identities and were grounded in student-focused relationships. Where co-construction itself was not evident, other studies, perhaps showing greater teacher control, articulated the use of group work and collaboration as characteristic of creative pedagogies. Three of these papers were drawn from early years, seven from primary schools and three from secondary schools. One study was cross-setting, one focused on a teacher with cross-age-phase experience, two were with mixed elementary and secondary school teachers; and two were reviews across settings.

Co-constructing teaching and learning in relationship: Co-construction is articulated in Craft et al. (2014) as a form of 'coevolving' teaching and learning through reflection and dialogue. In this study, it meant teachers working with a dynamic child-sensitive co-designed curriculum, in which adults were seen as learning companions not pedagogues in control. Co-authoring is Craft et al.'s (2012) preferred term for co-construction which engaged the Possibility Thinking pedagogy of "standing back and stepping forward" (p.27) to co-author activities with children, remaining mindful of children's narratives. It is worthy of note here that balancing standing back and stepping forward was delicate, showing that co-construction (or co-development of learning and curriculum as Craft et al., 2012 refer to it) can trigger tensions for practitioners.

Social identity is also important to this co-construction element of creative pedagogies because identifying with the co-constructed activities affords a sense of belonging. Jeffrey (2006) claims that this sense of belonging led to increased decision-making for and between learners and a greater sense of inclusion. The import of social identity is also present in nine of Sawyer's (2017) papers which assert that teachers worked actively to bring students into a community of practice characterised by students and teachers relating as peers. The papers articulated various strategies that enabled this, including teachers' modelling creative behaviours, understanding problems from the students' perspective, accepting their ideas and helping to develop them.

Teacher-student relationships are also seen as fundamental to co-constructed creative pedagogy in another set of related studies. Reilly et al.'s (2011) synthesis of findings resonate with the studies noted above which detail teachers attuning to student cultures, being student-centred and promoting learner inclusivity through the use of interpersonal awareness and skills. As above, Reilly et al.'s review also claims that teachers commonly build communities to foster creative learning by working on elements of personal relationships such as self-disclosure and positive regard. Additionally, one teacher's own personality characteristics and self-awareness are posited by Lilly and Bramwell-Rejskind (2004) as central to building and maintaining the communication necessary for collaboration, feedback, rapport and understanding with students (and other teachers) for co-constructed creative pedagogy. 'Making connections' was a process the teacher and students learned together and involved the arguably subtler skills of intuition, intimacy and challenge.

Further relationship dynamics including criticality, rapport and caring are detailed as elements of creative pedagogies in three other studies. Chappell (2007) asserts there is a role for relationship proximity and intervention within balancing student and teacher personal/collective voice and craft/compositional knowledge. The dance teachers in the study collaborated with students from a distance or established relationships which were critically conscious and challenging, moving between these as appropriate to student progress as they choreographed together. Elton-Chalcraft and Mill's (2015) drawing on their study of nine teachers and 50 pre-service teachers contend that teachers' and children's rapport (grounded in trust, humour, and teachers working to facilitate child ownership) is crucial to creative pedagogies. Gajda et al. (2017) also assert that teacher behaviours are key to relationships: caring for students and offering emotional support, with teachers' caring behaviors more frequently demonstrated in classes with a positive correlation between students' creativity and academic achievement. Here, they claim that as part of their caring, teachers gave students' space to share and explore their ideas, rather than the ideas being teacher-directed.

Group work and collaborating: Connected to co-constructing and relationships is group work and collaborating. This is supported by McCammon et al.'s (2010) survey of 100 teachers and Fleith's (2000) study of teachers' and students' perceptions of creativity, both of which assert

that cooperating groups are a feature of creative pedagogies. Group work is even shown as being used in the face of frustration in Reilly et al.'s (2011) synthetic review which details teachers offering group work (and developing it) because it is recognised as a real-life skill and valued alongside individuals' well-being. This Canadian based review also asserts that creative teachers themselves worked in communities (e.g. action research groups), to challenge them to be creative and to facilitate their teaching for creativity.

In some of the science and maths studies, group work is perhaps seen as more appropriate than the more extensive co-construction in other studies, for example Levenson (2013) argues that teachers in his research valued group work for encouraging mathematical creativity. Group work was also commonly observed as a feature of teachers' practice which prompted dialogue and collaboration in science classrooms (Cremin et al., 2015). Similarly, Liu and Lin (2014) assert that group learning was an important element of what they referred to as varied fun activities which they claim contributed to scientific creativity.

Cooperative teaching and learning is another aspect of group work within creative pedagogies noted in two studies. In Dababneh et al., (2010), it was seen by teachers as encouraging students to each have a role, discover knowledge themselves and seek solutions to their group's open-ended problems. A predominantly cooperative learning model was also used in Corcoran and Sim's (2009) action research study to facilitate student creativity. Student interviews indicated that cooperative learning was viewed as most useful in the later 'solution-finding' creative process phase and in developing student confidence, particularly for low-achieving students.

Collaboration is complementary to group work and is discussed in three studies. In Jeffrey's (2002) countering instrumentalism research, he claims that teachers were using collaborative problem solving, building team identities collaboratively, encouraging collaborative question-posing and working collaboratively together on assessments. Lin's (2010) study also notes that pupils saw collaborative learning as a key strategy to develop their creative abilities; and Wang and Murota (2016) used their results to suggest that a hybrid of peer-to-peer interaction and explicit teaching for creativity can facilitate all students' creativity.

3.1.7 Teacher creativity

Teachers' own creativity was a theme in seven papers, with it variously seen as a background presence, a model and source of authenticity, through to it being a strong force. This connects to the relationship highlighted by Jeffrey and Craft (2004) between teaching creatively and teaching for creativity, teacher creativity can be seen to underpin both. Of the seven papers, one was drawn from early years research, two from primary classrooms, three were across age-phases, and one study was of a teacher with cross-setting experience. Of these seven, Selkrig and Keamy (2017) argue for the import of teacher creativity because in their own findings, using Lin's (2011) tripartite creative pedagogy model (creative teaching, creative learning, teaching for creativity), they contend that it is often overlooked.

The notion of teacher creativity as 'quietly' present is articulated by two studies working with the concept of Possibility Thinking. Lin (2010) argues that teacher creativity, evidenced as Possibility Thinking was subtly present although it was in tension with teacher authority within the Taiwanese context, and the idea of teacher creativity was woven into Cremin et al.'s (2006) investigation which documented teachers and learners being co-participative in creative action but often, reported by the authors, in seemingly invisible ways.

Teachers' creativity as a model for students is discussed in Jeffrey's (2006) study which shows teachers being innovative, exhibiting pleasure from creative processes, and investing time in discussion and critique. In a smaller study, Chappell (2007) articulates a similar modelling process, when she details how expert dance teachers were creatively teaching dance and "inputting themselves authentically into the creative processes" (p. 53) alongside their students.

Two studies assert teacher creativity as a powerful force in relation to teachers' confidence and indeed life's work. Lilly & Bramwell-Rejskind (2004) assert that adult creativity was a precursor to fostering student creativity that also boosted teachers' confidence in their teaching abilities. Henriksen and Mishra (2015) argue that expert teachers actively cultivated their own creative mindsets and were highly creative in their personal and professional lives; they 'teach who they are' (p. 45).

3.2 Is there evidence of any documented impact on student creativity?

There is little empirical evidence of the impact of creative pedagogies on students' creativity; only six of the 35 studies pay any attention to this question. These include one researching early years settings; one from the primary phase, three researching the secondary phase and one cross-phase set of studies. As they deploy markedly different methodologies and measures, these are noted more fully than in the previous sections. Findings are indicative, but far from conclusive. However the review focused primarily on creative pedagogies and thus offers a partial view of this wider question.

Exploring the features of creative learning, Gadja et al. (2017) assert that irrespective of whether there was a positive, negative or null relationship between creativity and academic achievement, fostering student creativity was associated with a student's positive engagement, ideation and self-expression. They measured students' creativity using Urban and Jellen's (1996) Test of Creative Thinking–Drawing Production (TCT-DP) and documented engagement through observation and interaction analysis. Hui et al (2015) also drawing on the TCT-DP and the TCAM (Torrance, 1981) as well as other validated instruments, report on two empirical studies, a reading one, in which dance, music and visual arts were used by teachers and artists to enrich learner creativity, and a drama one. These authors claim post-test gains of domain-specific creativity, with improvements in students' figural, verbal and movement creativity.

The presence of a positive relationship between classroom goal structures and young people's creativity during classroom activities is asserted by Peng et al., (2013), who, drawing on a randomised control trial, contend that both mastery and multiple goal structures contribute to increased student fluency, flexibility and originality. Tests of divergent thinking and goal structure scales were used. Focusing on the potency of peer discussion and its impact on students' creative performance, Wang and Marota (2016) compared peer interaction with explicit teacher-centred creativity teaching and assessed students' performance of technical creativity. They claim that when students already had original ideas, peer discussion was effective in improving creative performance. For lower-level students without ideas however, they posit that the teacher-centred method was more supportive of the learners' creative

development.

Having trained and supported practitioners in using a pedagogical framework for creative practice, Cheung (2013) claimed this had consequences for children who, she asserts, generated more creative ideas than their teachers expected. She also contends that the teachers' reported multiple impacts on children's creativity, including for example: increased motivation and independence, persistence, innovation, intrinsic motivation and flexibility, expressiveness, elaboration and critical thinking. However no empirical evidence is offered for these claims. Nor is such evidence presented by Corcoran and Sim (2009), who posit that cooperative learning enhanced students' ownership of their learning which in turn led to an increase in creative ideas and problem-solving.

4 Discussion

4.1 Limitations of the research reviewed

Drawing on the 35 finally included studies, the review identified seven interrelated characteristics of creative pedagogical practice. Despite searching literature from 1990 onwards, only post 2000 studies were considered sufficiently robust for inclusion (defined by the inclusion/exclusion criteria and grading system described in Section 2.3), and 27 of the 35 studies were published during or after 2010. Studies included in the review included some conceptual and methodological limitations.

Whilst the review did not set out to appraise conceptions of creativity, it is nevertheless important to consider these since it is often claimed that the intention of creative pedagogies is to develop students' creativity. Four articles do not define creativity at all, perhaps because their main drivers are creative teaching strategies, teaching creatively or teaching for creativity (Jeffrey, 2003; Jeffrey, 2006; Jeffrey and Craft, 2004; Simpson-Steele, 2016). This is however still of concern as they research teaching for creativity as part of creative practice.

Nearly two-thirds (23) of the papers take a more informative route and offer what might be referred to as a generic literature review of creativity¹, with some citation patterns emerging. Reference is made to 'little c creativity' or to creativity as an 'everyday' activity (13), more psychological theorising on creativity (e.g. referencing creative thinking characteristics) (14), and to the social systems definition of creativity (15). Originality is detailed as an important factor in 19 articles, and the English NACCCE Report (1999) definition is included in ten. However, none of the studies' literature reviews culminate in a working definition of creativity which is then deployed in the research, thus limiting their potential to make claims in this regard. Only eight of the articles use a focused definition of creativity, these are either named (four, e.g. Possibility Thinking) or un-named (four) but compiled of key features.

Equally concerning is the fact that only one of the six studies that make claims regarding the impact of creative pedagogies on student creativity uses a clear definition around which to make this judgement (Gadja et al., 2017); the rest rely on generic literature reviews to frame creativity, making their assertions about the impact on student creativity difficult to verify. In addition, the terminology used to describe creative practice lacks conceptual clarity in many of the papers; terms such as 'group' and 'collaboratively' are used interchangeably and concepts commonly associated with creativity, such as risk-taking and ideation are loosely deployed in concluding discussions, occasionally without a clear warrant for their inclusion.

Turning to the methodological limitations, it is clear that the review database as a whole is reasonably balanced in terms of the educational age phases taught by the practitioner participants. Whilst over a third (14) of the studies examine creative pedagogy in the context of a discipline, the majority take a more generic approach, focusing on practice in the early years for example, or foregrounding creative teaching and learning without reference to curriculum content. This raises the question of the generalisability of the findings in discipline-specific contexts if, as Boden (2001) amongst others argues, creativity is grounded in disciplinary knowledge.

¹ Cheung (2012, 2013, 2016); Corcoran and Sim (2009); Craft et al (2014); Dababneh et al (2010); Elton-Chalcraft and Mills (2015); Fleith, (2000); Galton (2015); Gardiner (2017); Gardiner and Anderson (2018); Henriksen and Mishra (2015); Hui et al (2015); Lasky and Yoon (2011); Levenson (2013); Lin (2014); Liu and Lin (2014); Peng et al (2013); Reilly et al (2013); Sawyer (2017); Schacter et al (2006); Selkrig & Keamy (2017); Wang & Murota (2016).

The database is less even with regard to the studies' countries of origin, which to a certain extent may be due to the 'written in English' inclusion criteria applied for the review. Nearly two thirds of the studies (23) are from Western countries. The largest number of these address the UK context (eight), (although three of these papers are authored/co-authored by one researcher and two by another) and the USA (six). The remaining Western studies range from across Australia, Canada, Europe and Israel. Far fewer emanate from the Far East (nine). This is despite the policy emphasis and mandates at all levels of education (Hui and Lau, 2010) regarding creativity and creative teaching in the countries represented (Taiwan, Hong Kong and Japan), (again three of these papers are authored/co-authored by the same Taiwanese researcher).

Methodologically, most of the included studies are qualitative in nature (26) and employ a range of methods, although perhaps surprisingly, given the focus on pedagogic practice, only 18 studies use naturalistic observation in classrooms as part of the process of data collection. The majority of these (12) are small-scale descriptive studies with a sample size of six or less teachers. In the remaining six studies the number of practitioners observed ranges from 10 - 18 (from low to high participant numbers: Gadjia et al. 2017; Cheung, 2012; Jeffrey, 2006; Cheung, 2013), to 48 (Schacter et al., 2006) and to 72 (Cremin et al., 2015). Several other aspects of the studies present methodological challenges with regard to evaluation, including the absence of explicitly stated research questions and the presence of some studies, (several of which are larger scale), that rely primarily or exclusively on self-reports about teachers' creative practice, or in the case of student teachers', their intended practice (e.g. Dababneh et al., 2010; Elton-Chalcraft and Mills, 2015; McCammon et al., 2010). Whilst these studies were included because they were judged rigorous in relation to appropriate qualitative research criteria of trustworthiness, and they made appropriate claims as to the generalisability of findings, further work might be done to overcome this limitation by using more data sources, such as observation for triangulation purposes.

Sample composition is sometimes highly specific, for example the Teacher of the Year finalists (Henriksen and Mishra, 2015), an award-winning teacher (Lily and Bramwell Rejskind (2004), or the teachers trained and supported to use Cheung's Creative Pedagogical

Framework (Cheung, 2013, 2016). In addition, studies predominantly focus on teachers' views and practice; just 10 studies, (documented in 12 papers), draw on students' views (Corcoran and Sim, 2009; Elton Chalcraft and Mills, 2015; Galton, 2015; Gardiner, 2017; Gardiner and Anderson, 2018; Jeffery, 2003; Jeffrey, 2006; Jeffrey and Craft, 2004; Lasky and Yoon, 2011; Lilly & Bramwell-Rejskind, 2004; Lin, 2010; Lin, 2014). Yet as Jeffery and Craft (2004) argue in order to surface the nature of creative pedagogical practice, attention needs to be paid to both teachers' and learners' perspectives. Furthermore, four of the six studies that evaluated impact on student creativity are not supported by data from learners.

Notwithstanding these conceptual and methodological qualifications, the 35 studies provide a more than adequate body of evidence to respond to the two questions posed by this review and to identify areas where further research is required.

4.2 Contribution of the review to answering the research questions

Overall the evidence base in relation to what characterises creative pedagogies in the years of formal schooling is reasonably strong, with seven characteristics identified. Listed from most to least frequently identified, these are: generating and exploring ideas (22); co-constructing and collaborating (19); encouraging autonomy and agency (17); problem-solving (13); playfulness (7); risk-taking (7); and teacher creativity (7). There is however considerably less, even scant evidence of the impact of creative pedagogies on students' creativity. Although the review set out to examine creative pedagogies, it can be argued that the inherent purpose of such creative practice is to nurture students' creativity. Yet only six of the 35 studies sought to document the influence of the pedagogic practices under scrutiny. Whilst presenting evidence about creative pedagogies and their impact within the confines of a single academic paper is an onerous task, particularly with set word limits, it is recognised that studies of the impacts, influences and effects of creative pedagogies are limited; this is discussed further in the recommendations section.

The creative pedagogies' characteristic most frequently evidenced is generating and exploring ideas. Despite the tensions between openness and structure intrinsic to this characteristic, its weighting implies that ideational exploration and generation is key to creative practice. All studies acknowledge the inter-relation of the different characteristics of

creative pedagogies, and when read holistically, it is clear that making and investigating ideas within a climate of openness is often associated with teacher-student relationships and a learner-centred orientation. 'Generating and exploring ideas' also articulates the finely-tuned balance between offering freedom and affording structure which hints at the necessary flexibility of the practitioner, an attribute which also arises elsewhere. For example, Henriksen and Mishra (2015) assert the need to balance teacher modelling and students' own practice, (involving risktaking for both), as practitioners acknowledged and broke conventions, and students were able to learn from their mistakes.

The second most frequent characteristic, co-constructing and collaborating may be less well recognised by policy makers for whom notions of creativity and attendant pedagogies as individualised tend to persist. As Glăveanu et al. (2015) argue, the paradigmatic views of creativity which underpin models of schooling and society are likely to be reinforced in practice. The shift in the field to more collaboratively characterised understandings, the We-paradigm of creative collaboration (Glăveanu, 2010), originally conceived in the seminal work of John-Steiner (2000) is at least partially evidenced in this review. Only one study (reported in two papers: Gardiner, 2017; Gardiner and Anderson; 2017) shows teachers' perceiving creativity as an individual innate quality, the I-paradigm (Glăveanu, 2010). In 17 studies, collaborative activity and teacher-student relationships are seen as fundamental to the co-construction of creative pedagogy.

Looking across the key characteristics of creative pedagogies, it emerges that some are asserted as particularly pertinent at different points in the creative process. For example, Corcoran and Sim (2009) argue that cooperative learning was most useful in the later 'solution-finding' phase, and Chappell (2007) positioned what she refers to as 'purposeful' play as important at the crux between spontaneity and freedom, and aims and rules within the creative process. This connects to a nascent notion that how pedagogic characteristics are defined differs across age settings. So, for example, play is defined in a more open fashion in early years creative practice, but takes on this more purposeful definition within Chappell's dance study in the late primary phase.

This manifestation of creative pedagogies' characteristics in different ways may also be connected to how creative pedagogies work within the disciplines. An example of this is the prevalence of group work in science and mathematics studies (e.g. Levenson, 2013) compared to a more co-constructed pedagogy in, for example, visual arts (e.g. Sawyer, 2017). Across the discipline-based studies there is evidence of a stronger interplay between subject knowledge and creative pedagogy as students get older with just one discipline-specific study in the early years; four in primary; and seven in secondary. Equally, studies like that of Dababneh et al. (2019) raise questions as to differences between the creative pedagogies of older and younger teachers, with the former mooted to use more creative pedagogies.

Several studies offer insights into the challenge of operationalising creative pedagogies. For example: Cheung (2012), Cremin et al. (2015) and Fleith (2000) reveal barriers exist in the form of time constraints, structured schedules, curriculum requirements, skills and training; Elton-Chalcraft and Mills (2015) report that some children found responding to imaginative scenarios difficult and the openness unsettling; Gardiner (2017) and Gardiner and Anderson (2017) also found student anxiety due to openness and a lack of subject skill; Sawyer (2017) asserted that confusion could set in negatively in an overly open environment; and Reilly et al. (2011) showed that many teachers did not feel supported in their efforts by school or system and lacked confidence in assessing creativity. This connects to the wider contextual challenges as documented by researchers like Ball (2000, 2003), who has long argued that the performativity agenda dominates practice, potentially reducing time for more relational pedagogies which, this review indicates, are a key part of creative practice.

Another concern relates to how authors, at times, predict characteristics of creative pedagogies which will be present but which are not fully embraced or evidenced in study findings. This was noted in relation to Cheung's (2012) study, where teachers were seen to control the ideational agenda despite stating that children's ownership and ideas are key to creative pedagogy; Lin (2010) theoretically forefronts autonomy and agency, but finds autonomy lacking in her participants; Schachter et al. (2006) contend that teachers did not implement strategies for choice that they had anticipated; and Cremin et al. (2015) note that the potential for extending agency was not always recognized and actioned by teachers. Cheung (2012) also reveals a perceived gap between teachers' espoused beliefs and

observation of their pedagogies in practice. It may be that teachers perceive it is appropriate to assert that they value creativity and can name creative strategies, but that in the classroom, as Besancon and Lubart (2008) suggest, they default to a more transmissive pedagogic style.

On a more positive note, there were assertions that when creative pedagogies were particularly potent it led to curriculum shifts. For example, Cremin et al. (2006) posit that teachers' standing back fostered autonomy by giving children the opportunity to follow their interests, creating a more responsive curriculum. Also, in relation to co-construction, Craft et al. (2014) discuss how teaching and learning co-evolved within creative pedagogy which again required a curriculum co-designed with the children.

Stepping back from these intricate discussions of creative pedagogy within the review papers, it is worth considering the findings in relation to existing models and rubrics in the area. Given the central focus of the paper is on presenting the review outcomes, only one key rubric has been selected for comparison due to its contribution to developing the 2021 PISA test of creative thinking. This is the UK based work on creative habits of mind: inquisitive, persistent, imaginative, collaborative and disciplined (Spencer, Claxton and Lucas, 2012; Lucas 2016). Whilst their focus is on creativity not creative pedagogy, there are some interesting comparisons to be made. Connections might exist between the habits of being inquisitive and disciplined and the pedagogies of problem-solving and risk-taking identified here. If the latter are encouraged the former might become a habit. Being imaginative is likely to be supported by practice which encourages students to generate and explore ideas, and the collaborative habit of mind also resonates directly with the review's pedagogical characteristics of co-construction and collaboration. Although perhaps tenuously, the habit of being persistent could be connected to the characteristic of encouraging autonomy and agency as persistence is key to the self-determination that often ensues. Despite these resonances, it is not the intention of this review to offer a new rubric either for creativity or creative pedagogy, but to demonstrate what is understood in relation to creative pedagogy in the peer-reviewed literature, such that this perspective may contribute to debate, policy and practice going forward.

5 Conclusion and Implications

Drawing on studies from 1990-2018, this review reveals that seven interrelated features characterise creative pedagogical practice: generating and exploring ideas; encouraging autonomy and agency; playfulness; problem-solving; risk-taking; co-constructing and collaborating; and teacher creativity. It exposes the complexities and challenges of documenting and developing creative pedagogies in the years of formal schooling. Additionally, the review indicates that the evidence for the impact of these pedagogical practices on students' creativity is limited and inconclusive. Only six of the papers include consideration of this dimension.

Given the forthcoming assessment of creative thinking in the internationally influential and relevant PISA tests, this systematic review of creative pedagogies is both timely and of significance; the findings have clear implications for future research, for practice and policy. In relation to research the lack of definitions of creativity needs addressing; whilst these will differ, researchers should offer clarity about their underpinning conceptualisations. This would be a valuable area for further documentation and research inquiries. There are also inherent challenges in documenting particular characteristics which need to be addressed more carefully in future work, for example in order to track risk-taking (which itself is rarely defined), in-depth knowledge of teachers and students is needed to discern its presence in context. The influence that teachers' age and experience make to the application of creative pedagogies also needs to be taken into consideration in future studies, and more discipline-specific investigations undertaken to discern differences in the manifestation of creative pedagogies. A key priority is for longitudinal research that enables a fulsome focus across the trajectory from creative process to product.

The review also raises questions about cultural difference and the appropriacy of transferring models developed in the UK to study sites in the East. More culturally specific and historically contextualised approaches (Glăveanu, 2015) to creative pedagogy are needed that move well beyond third space examinations of cultural bridging (Lin, 2014). Furthermore, it is evident that ways to acknowledge and articulate the dynamic complexity of creative pedagogies need to be found, perhaps through deploying a more improvisatory lens along the lines of Sawyer's (2011) structured improvisation approach or through the use of new

post-qualitative methodologies (e.g. Taylor and Hughes, 2016). This would address the issue that on occasion one characteristic is used to define another within a paper, thus taking the reader in a definitional circle. Or for the sake of clarity, (driven perhaps by academic constraints and protocols), researchers reify a single feature thus subjugating the interplay of creative pedagogies and denying in-depth understanding of how creativity is nurtured through practices which are more than the sum of their parts. How the pedagogies shape and influence creativity itself also needs addressing with methodologically appropriate studies which are cognisant that the language of impact, influence or effect needs careful consideration dependent on epistemology. In order to achieve this, greater use of observation in mixed quantitative/qualitative methodological studies is essential. Future studies might also draw in first hand experiential accounts from teachers and students, not just offering perceptions, but engaging in co-participatory methods to gain more fine-scale understanding of relationality (e.g. Biesta, 2004).

Whilst recognising the marked contribution that this systematic literature review makes in critically assessing the health of the field and articulating current understanding, it is recognised and acknowledged that systematic reviews set limitations, such that chapters and grey literature are excluded. Although this review has not succumbed to reviewing only quantitative studies, which Hammersley (2001) recognises limits such work, the reification of peer-reviewed journal articles compared to other forms of scholarly output may be particularly problematic in a field such as creative pedagogy. The value and role of practice, and the non-peer-reviewed literature and knowledge that it generates should not be underestimated. As the field progresses, professional wisdom (Craft, 2015) needs to be exercised and value afforded to a wide range of tools to conceptualise creative pedagogies. Narrative reviews with particular foci drawing on chapters for instance would be of value, and the role of local evaluations in serving to engage practitioners and thus influence classroom practice also need to be recognised and utilised as part of the academic literature. It would also be useful to explore the findings of other scholarly outputs of a non-peer reviewed nature in the light of the systematically derived characteristics of creative pedagogies identified in this paper, and to synthesise complementary findings in order to move theoretical understanding and practice forward.

In terms of implications for practice, it is evident that educators too need working definitions of creativity, of its cultural and disciplinary differences, and a richly nuanced understanding of creative pedagogies. If teachers are encouraged to recognise the complexity of such practice, they will be better positioned to deploy their creativity in planning and co-designing the curriculum with their students. In the light of the PISA tests of creative thinking, space urgently needs to be set aside in pre-service and in-service contexts for educators to work collaboratively in order to co-construct their understanding of the dynamic and responsive nature of creative pedagogical practice and how to assess its outcomes. This could be productive, supporting professional artistry and agency, which, the review findings reveal, are necessary to respond to the constraints and pressures experienced when teaching creatively and teaching for creativity. In particular, it is recommended that practitioners join researchers as co-participants, in order to enable a more nuanced examination of the impact of creative pedagogies on student creativity. The extent to which teachers' pedagogic practice can foster creative thinking as defined by the OECD, namely 'the competence to engage productively in an iterative process involving the generation, evaluation and improvement of ideas, that can result in novel and effective solutions' (OECD Directorate for Education and Skills, 2018:6), is likely to emerge as highly salient across the next decades.

In the light of these issues, this systematic review, in meticulously scrutinising the available evidence on creative pedagogies, not only represents a shaping force in the field of research, but is also well positioned to influence policy and practice in the longer term.

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