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ABSTRACT

Historically, the significance of visual art in early childhood education and the link to children's cognitive development has been lacked consideration in the literature. The early years are widely acknowledged as critical in contributing to children's development and providing an opportunity to establish strong foundations for lifelong learning. Using a qualitative, small-scale case study approach, this paper seeks to contribute to this discourse through an exploration of the relationship between a group of young children's schematic behaviours and their explorations with visual art in a nursery setting. Documentation of the children's schematic threads within observations revealed the ways in which children followed their schemas by autonomously engaging with open-ended art materials. In addition, semi-structured interviews were conducted with children's keyworkers in order to seek their knowledge, beliefs and perceptions of schema theory, supporting a consideration of the impact on practice and pedagogy. The findings presented here conclude that the children exhibited clear evidence of schematic behaviour patterns when utilising artistic materials. The practitioners in the setting, though in the possession of a good level of theoretical understanding in relation to schemas, were unsure as to how to develop practical opportunities to scaffold, support and extend children's development in visual art contexts.

Introduction

The proliferation of a top-down approach to early childhood education is arguably an immediate crisis facing the sector in England (TACTYC, 2017; NUT, 2016). Whilst dealing chiefly with recommendations for the reception year of primary schooling, the Bold Beginnings Report (OFSTED, 2017) contends that children in the reception year of state primary schools would benefit from an increased focus on Maths and English. In response to the report, TACTYC (2017) cautioned that an increased focus on young children engaging with formal learning at an earlier age could have implications on the whole sector (TACTYC, 2017).

The narrowing of the curriculum for early childhood inevitably results in a pressure to increasingly focus on academic subjects (Pascal et al., 2017; Ofsted, 2017). This focus on formal subjects such as reading, writing and mathematics, results in less time devoted to other curriculum areas. In addition, the increasing tendency toward policy which privileges a formalised approach to early childhood education and care (ECEC), has at times worked counter to the professionalism upon which the success of the early years workforce depends (Traunter, 2017).

It is against this socio-political backdrop which this paper is situated. In exploring the

relationship between children's schematic behaviour and their explorations with art materials, this research attempts to bridge the gap in contemporary literature between the consideration of schematic development in ECEC and visual art education (McClure, et al., 2017).

As much of the literature related to arts in education conflates music, drama, dance and art as a group of subjects, it is helpful to isolate art as a singular subject by using visual art as a term (Eisner, 2002). The term visual art has been chosen to denote any artistic effort or exploration resulting in a visual form, as outlined in the Oxford English Dictionary definition of art as a noun.

This paper seeks to provide meaningful insight into the potential of utilising children's early learning experiences in a visual art context to support and extend children's developing schemas.

Schema theory

Whilst not the original architect of schema theory, Jean Piaget placed the concept of schema at the heart of a theory of children's cognitive development. Piaget's asserted that schemas exist as the building blocks of knowledge within a stage model of cognitive development. The influential work of Piaget (1951) presented the theory that all human learning takes place through repetitive action with materials and objects situated in the immediate surroundings (Piaget 1951; Arnold, 2010).

Piaget theorised that it is the accumulated knowledge taken from these repeated behaviours which, once established, develops into concepts (Bruce, 2011).

However, Piaget's theory posits cognitive development as inherently sequential and biologically fixed, with schematic processes functioning and developing through developmental stages and children being active constructors of their knowledge throughout (Louis and Featherstone, 2013). These stages progress from what is called the sensori-motor phase, whereby children's schemas are explored through the senses and movement, through to more symbolic, abstract schematic representations as children develop more sophisticated modes of thinking (Bruce, 2011). The sequential aspects of Piaget's theory have invoked criticism for their inattention to the influence of social and cultural factors on children's learning and development, elements research has since evidenced to be significant (Goswami, 2015; Barrouillet, 2015).

Chris Athey (2007) further developed schema theory in order to highlight its relevance to parents and educators. It is perhaps Athey's expanded version of schema theory which has been most formative to current understanding of schemas and their practical application in ECEC (Siraj-Blatchford and Brock, 2016). As part of Athey's research with the Froebelian Institute, building on the work of both Piaget and Vygotsky, she developed her own definition of schemas as patterns of repeated action which support children's development of initial categories (Athey, 2007). In many ways, Athey's research advocated for the work of Piaget, aligning with Piaget's description of a stage-level theory (Athey, 2007). However, Athey was able to widen the Piagetian definition of schemas from behaviours which are exhibited singularly by young children to a cognitive process which extends into adult life and to theorise that it is possible for a child to be investigating a cluster of schemas simultaneously (Athey, 2007; Deguara and Nutbrown, 2018). Furthermore, whilst Piaget's schema theory suggested that schemas were static and immovable structures, Athey's theory allowed more open interpretations (McVee et. al, 2005).

At the Pen Green Children's Centre, schemas continue to be a key feature of practitioner pedagogy and a crucial lens through which to explore children's learning and development in partnership with parents (Arnold, 2015). A study based in Penn Green explored evidence taken from observations of 3 children over a period of 4 years. Findings demonstrated that children's exploration of schemas extend beyond observable actions such as throwing, covering, ordering etc., and into their spoken and expressive language (Arnold, 2019). An acknowledged limitation of this study related to lack of data regarding the role of professionals in scaffolding this aspect of children's schematic development, suggesting that the propensity of early childhood educators to respond to schematic behaviour outside of action is an important feature which would benefit from additional investigation (Arnold, 2019).

A further small-scale research project by Atherton and Nutbrown (2018) involved observations of 7 children under 3. This study concluded that utilising observations of schemas in ECEC practice, supported professional adults to focus on children's interests by noticing patterns in their behaviour (Atherton and Nutbrown, 2016).

Whilst both studies were limited in generalisability due to small sample sizes, the longevity of the time spent in the field (18 months and 4 years respectively) meant the data was richly detailed. Conclusions by both studies indicated a necessity for more research exploring the understanding and pedagogy of practitioners regarding the schematic behaviour of children.

The link between visual art and schema theory

The benefits of providing space, time and support for artistic exploration in early childhood are manifold. The enhancement of cognitive, emotional and physical development through interactions with arts-based activity has been recognised by various pedagogical researchers and theorists (Eisner, 2002; Wright, 2010; Vecchi, 2010; Wood and Hall, 2011). Ultimately, the area of development most likely to benefit from art-making depends on one's understanding of the motivations behind artistic impulses. These understandings have been categorised through the literature as: an impulse to create a spontaneous representation, expression of our relationships and experiences (Wright, 2010) or as a physical impulse, whereby mark-making provides a record of movements which create a means of communication, through what can be considered another strand of language (Brooks, 2009).

Evidence from the Froebel Schema project (Athey, 2007) indicated 46% of the observations of schematic behaviour comprised of children's drawings, paintings, sculptures or constructions. A more recent small-scale research project observed 3 two-year old children over a 14-week period, concluding that there was evidence to suggest that the children frequently used mark-making to reinforce their schematic understandings (Brierley, 2017). This study established implications for professional practice, stating that drawing and painting should be given more consideration within curriculum policy in England (Brierley, 2017). However, data pertaining to the understanding of the professional adults surrounding the children was not included, meaning we do not know the extent to which the children were supported in this aspect of their learning. The focus on two-year olds in this study provides limited understanding of the link between schemas and mark-making throughout the early years, suggesting a need for further research focussing on older children. In addition, the emphasis on mark-making neglects the significance of other mediums which Athey (2007) suggested are used by children in symbolic functioning such as sculpture and model-making.

Methodology

This research sought to explore the schematic behaviour exhibited by a group of four children all aged three years old while engaged in spontaneous, playful artistic exploration. The research further investigated how early childhood practitioners applied their understanding of schematic theory in order to support the confidence and subsequent development of the children within their care. The research adopted a qualitative approach which sought to gather naturalistic data which occurred spontaneously in a child led environment. All observations took place in the art studio of a nursery setting which had been purposefully designed to reflect a child- led approach, inspired by pedagogies used in Reggio Emilia schools.

The sample consisted of two girls and two boys from four differing ethnic backgrounds, all spoke and understood English as their first language. Participants were selected through a convenience sampling approach, as only those children who attended the setting on a full-time basis were invited to participate. All children in the setting who met the sampling requirements and who, along with their parent or guardian, consented to participation, were included in the study.

Two key workers were additionally invited to take part in semi-structured interviews, both participants were female and of Pakistani and Mauritian origin respectively.

Participant 1 was in the 28 to 30 age bracket and participant 2 in the 40 – 42 age bracket. Adult participants were selected on the basis of their position as the children's key workers.

Parental, practioners and organisational consent were secured by collecting signed documentation which detailed the research purpose and process. The children offered informed consent, and continued assent. Staged opportunities to withdraw were offered to the children at any time they felt uncomfortable with the observations, it was understood that this may be communicated verbally or nonverbally by the children.

Observation was selected as the most appropriate research method to follow the investigation into children's artistic practice and practitioner's ability to support and extend the learning and development they encountered. As Thompson (2014) points out, observation is potentially the most appropriate research method for studying children's art making due to the detailed information that becomes available when researchers witness a drawing being made and the contextual influences that materialise from the final product (Thompson, 231, in Spodek and Saracho, 2014).

Each observation spanned a duration of two hours, twice a week for four weeks, using a combination of observation methods including narrative, target child and time sample methods. Detailed field notes would later become research protocols (Hatch, 2006). The researchers opted to supplement observations and field notes with photographs and examples of the children's artwork to create an accompanying story or narrative for each observation (Podmore and Luff, 2012).

Semi structured interviews were conducted with the children's key workers to gain insight into the knowledge and understanding of schemas held by those working closely with the children The research aimed to collect rich, naturalistic data which focussed of how schemas are enacted and supported in the setting. Semi-structured interviews facilitated the collection of what is often termed thick data (Nolan et, al.

2013), data that provides insights into individuals' everyday lives. Using interviews as a complementary method to observation is a technique recognised as significant in the

academic exploration of multiple perspectives, thereby enhancing the primary data taken from direct observation (Siraj-Blatchford et, al. 2010).

The researchers sought an analytical approach that would support the holistic perspective underpinning this research, one that would provide a way to create meaning which was reflective of all aspects of the participant's contributions (Chowdhury, 2014). Sorting, coding and analysis was undertaken at several levels to form constructs. Initially labels were low inference and descriptive, staying close to the data. The first level of analysis was undertaken through highlighting, making notes and concept mapping to determine the respondents' responses, behaviours and interests. Hand coding was utilised for this purpose. This facilitated greater familiarisation with the data and enabled the formation of codes and themes.

Analysis of the results identified key themes in the data, these were used to analyse results with a focus on maintaining an interpretive position throughout.

Analysis of Observational data Children's Schematic Threads

A key objective for the observations was the identification of schematic behaviour exhibited by the children in the art studio and how these were responded to by the practitioners. Children who participated in the study were observed in order to understand the interplay between children's schemas and their creative art-making experiences. Themes identified allowed the research to gain insight into how the children used artistic materials and processes to enact and explore their schemas.

Athey (2007) presented a comprehensive description of differing types of schema and schematic behaviour in her study of early childhood development. This typology, along with a compliment of contemporary sources of literature considering children's schematic behaviour was utilised as a reference point for the classification of differing schematic behaviour and activity in the observations.

Ava

When exploring materials and processes in the art area, Ava was observed to present behaviour conversant with an enclosure/envelopment schema. Athey (2007) described children enacting envelopment schemas as, respectively 'scribbling over', wrapping objects and 'covering over' (Athey, 2007; 152). Ava was observed exploring her envelopment schema in a variety of different contexts and mediums.

Ava's behaviour when covering and enclosing the artwork could be construed as reflecting an emotional desire to hide her work. However, Athey (2007) argued that such behaviour is likely to be driven by the cognitive impulse to develop an understanding of the phenomena or idea under investigation (Athey, 2007). Ava displayed particular interest in sticks, using different mediums to cover and enclose the object until she eventually created three distinct layers, demonstrating concentration and perseverance in her efforts (Figure 1).

Figure 1

Ava's determined and active pursuit of her interest through her selection of objects and materials in the environment supported her explorations and also evidenced her dominant schema (Atherton and Nutbrown, 2016). Atherton and Nutbrown (2016) describe such behaviour as suggestive of the child's 'form of thinking', arguing that children are especially sensitive to particular stimuli in their environment which allows them to pursue their explorations (Atherton and Nutbrown, 2016; 73). Ava's interest, perseverance and engagement in the activity supports the argument by McLennan (2010), that it is the process involved with creative activity which is meaningful to young children above the resultant product (McLennan, 2010).

Ben

As in the observations of Ava, Ben displayed particular patterns of behaviour which dominated his interactions with the art materials. Ben was principally interested in using circular and rotational movements in his mark-making. He was additionally interested in exploring with glue and winding with string and wool, all suggestive of a rotational schema (Athey, 2007). However, Ben also exhibited behaviour which indicated a desire to enclose. This potential containment or envelopment schema was particularly evident when Ben was persistent in winding the wool and fabric around the table leg (Figure 2) (Atherton and Nutbrown, 2016).

Figure 2

Ben revisited this activity on numerous occasions, this was consistent with observations made by practitioners prior to the onset of the study which described Ben's preoccupation with emptying and refilling the soap bottles (Athey, 2007). It is arguable that Ben was exploring a cluster of schemas, with the rotational schema dominating at the time of data collection (Arnold, 2015).

Caleb

Observations of Caleb proved difficult in that it was hard to discern and define one category of schema as dominant. The first observation of Caleb involved his exploration with a pipette

and water. During his investigations, Caleb watched the coloured water leave the pipette and drip onto the surface of the body of water, as described in the extract below:

> 'he then used the pipette to draw some of the yellow coloured water from one of the containers and held it close to his eyes before squeezing to release the water again, all the while watching closely to observe the liquid travelling by dripping and squirting down to the water tray'.

Athey (2007), suggested that in the process of exploring a trajectory schema, children will often exhibit signs of being preoccupied with triggering movement in an object or material, or otherwise investigating methods of transporting articles from one place to another. This is also characteristic of behaviour pertaining to trajectory schemas, as described by Deguara and Nutbrown (2017), who suggest that children may be motivated by a desire to increase their knowledge and understanding of speed, space and distance. Caleb's focussed repetition of the experiment with the pipette and his enthusiasm for the results was demonstrated by repeated attempts to draw the attention of those around him to what he was doing.

Further observations revealed behaviours which suggested that Caleb was also exploring envelopment or enclosure schemas (Athey, 2007). This was exemplified in the following extract from an observation in which Caleb used crayons and paint to make marks on paper.

> 'he was working to make marks with the brush before using a scrubbing motion to cover over them again. This process was repeated several times with the paint gradually increasing in surface area until it almost filled the entire page'.

In the third observation Caleb experimented with recycled materials, inserting different materials inside a plastic bottle, he sought to enclose further by concealing the bottle inside yet another container:

> 'He was able to find the matching lid for his container and seal it shut. He then searched for and selected a large cardboard tube which was large enough to hold the smaller bottle and slid his container inside'.

Comparisons can be drawn between Caleb's actions here and the behaviours discussed in the observations of Ava. Both Ava and Caleb were seeking to use materials and objects in the environment to develop understanding of concealing, experimenting with the notion of inside/outside through exploration of the containers and materials. Caleb's graphic representations using the medium of paint and his experiments with the recycled materials were symptomatic of a pattern of behaviour. Nutbrown (2011) argues that identifying patterns in behaviour or interests of children can help practitioners to identify dominant schemas. Both Ava and Caleb exhibited behaviour patterns consistent with both envelopment and trajectory schemas and so could be argued to be experimenting with a cluster of schemas.

Daisy

Daisy presented with specific behaviour which indicated a clear predominance of one schema. Throughout all three of the observations Daisy was preoccupied by a desire to connect objects. This was particularly evident in her experiments with the clay and tools:

> 'She helped herself to a piece of clay and a long clay sculpting tool and stuck the tool into the clay. She pressed and pushed the dough around the end of the implement to make it stand up in the clay. She then pulled the tool out again before pushing it back in and repeating the joining process. She repeated this process several times'.

Daisy's interest in joining one object to another was also distinguishable in her exploration of the string and the stick, illustrated in the following example:

> 'When she was satisfied that she had effectively attached the string to the stick, she chose to drag the stick around the room by trailing it behind her on the floor until it disconnected so that she could repeat the process over again. Lily appeared not to be frustrated by the disconnecting of the stick, indeed, this appeared to be her aim as she took pleasure in reattaching the stick'.

Following Daisy's schematic thread (Deguara and Nutbrown, 2018) the researcher identified that Daisy was exhibiting behaviours associated with a connection schema (Arnold, 2015). Daisy's painting demonstrated sweeping marks with a brush to connect a variety of circles she had made on acetate, creating a web of marks.

Matthews (2010) argued that such representations are fulfilling the 'action representation' (Matthews, 2010; 24) strand of schematic development, in that children are using their marks to represent 'movement in time and space' (Matthews, 2010; 24).

One of the conclusions drawn from the data collected for this project is that children are not always seeking to create a representation through their schematic interaction with art materials. Instead, children are using artistic materials to speak a visual language, a phenomena Vecchi refers to as 'aestheticism' (Vecchi, 2010; 6),

Practitioner Knowledge, perspectives and experiences of schemas

In addition to observations, semi-structured interviews were conducted with the children's keyworkers, hereon referred to as practitioner 1 and 2.

In relation to specific training undertaken by the practitioners related to children's schemas, practitioner 1 had accessed no training opportunities, whilst practitioner 2 had accessed training both as part of a degree programme of study and as part of professional training programme organised by the local authority. It is acknowledged that practitioners who are informed and knowledgeable about child development are able to use their knowledge as a 'navigational tool' (Bruce, 2012; 12) to develop focussed in-depth observations of children. The value of observations is acknowledged throughout the literature related to provision for young children's artistic (Pelo, 2016) and schematic development (Athey, 2007). This is congruent with the philosophies of practice in Reggio Emilia schools, in which a 'pedagogy of listening' (Vecchi, 2010; 16) is a fundamental tool for the practitioners and the children. This is an approach which is credited as being capable of 'resolving the problem of individual professional quality' (Vecchi, 2010; 37) and developing a pedagogy which places heavy emphasis on genuinely listening to children, valuing their insights and supporting them in the construction and pursuit of their own learning (Vecchi, 2010). Practitioners in this study expressed sound understandings of these principles in their interview responses, as illustrated by Participant 1 who explained:

> ''If you provide more opportunities, they can move forward with another schema and maybe even put two things together!''

In this extract from the transcript, Practitioner 1 is evidencing her understanding of supporting schematic learning, by observing and planning based on her observations and supporting new understandings. These practices are argued by Atherton and Nutbrown (2016) to be intrinsic in supporting schematic development. They argue that settings where practice is informed by children's ideas, actions, discussions and a responsive environment

supports children to thrive and feel free to pursue their own interests and schemas (Atherton and Nutbrown, 2016). Deguara and Nutbrown (2018) concur, arguing that the ideal environment for schematic development is one in which children are free to engage with their own 'schematic threads', according to their personal interactions with the environment.

Judgments based on observations, however, do rely on practitioners' possession of an adequate level of knowledge, understanding and experience. Interview responses from participant 1 and 2 indicated an adequate range of knowledge related to schemas, the kinds of behaviour associated with schematic development and approaches which could be employed in order to meet children's schematic needs.

As illustrated in the response from participant 1 who stated:

> ''It's like a repeated behaviour, or it is erm, basically their thought processing and how they like to do things is through, yeah, schemas''.

And participant 2 who suggested:

> ''It could be lining things up by their height or length. Or if it's transporting, it could be transporting from one end of the garden to the other. Or it could be water, seeing the water flow down from one place to the other. Or even, stacking things as well, so it could be building, building things up to make something''.

However, there existed a lack of awareness in the participants' answers regarding how these schematic behaviours might be reflected in the planning and assessment process for creative or artistic moments, as exemplified in the following extract from the interview with participant 2 who stated:

> ''I think it's more, like inter-staff communication cause if I see something and I don't tell you, then it's hard for you to plan something for them''

McClure, (2015) argues that the phenomenon of inter-staff miscommunication is 'endemic' in its significance across the education sector. Furthermore, early childhood educators are often encouraged through their training to see children's creative art-based activity as a separate, discipline-based area of the curriculum, rather than a holistic and integral element of children's developmental journey (Twigg and Garvis, 2010). Practitioners in this study exhibited limited pedagogical knowledge related to planning to support children's schemas in an artistic context, as illustrated in the following statement from participant 1 who stated:

> ''For the children it can be like, today I'm interested in this and then tomorrow I'm interested in what my friend is doing, so all this can be interpreted in different ways''

Twigg and Garvis's (2010) research into arts-based teaching pedagogies, concurs with these findings and advocates for a 'holistic approach to improving early childhood teacher education in the arts' (Twigg and Garvis, 2010; 201)

It is significant that both practitioners during interview were able to recall instances where they had witnessed children enacting their schemas through artistic means. Notably, both participants identified rotation schemas present in children's drawings as examples of schematic behaviour in visual art contexts. Rotational schemas are the most commonly recognised schemas exhibited in early childhood, with slightly older children demonstrating higher functioning by employing rotational schema in their drawing and mark making (Beswick et, al., 2013). Drawing as a visual art medium that practitioners easily identify as a creative activity. The practitioners were however limited in their ability to provide further examples of schematic behaviour in a creative context beyond mark making.

Knowledge of a wider range of schematic behaviours and how these may manifest in a range of visual art contexts may therefore support practitioners to observe children's development and plan more effectively for future learning. Siraj-Blatchford and Brock (2016), argue that the solution may be contingent to practitioners identifying 'sensitive periods' whereby careful observation reveals the moments in children's free-play they are most likely to exhibit schematic patterns (Siraj- Blatchford and Brock, 2016; 7). By utilising inspiring resources and environments alongside careful scaffolding and modelling, practitioners can support children's schematic development during these sensitive periods (Siraj-Blatchford and Brock, 2016). Systemic approaches such as these may prove beneficial to the improvement of practical understanding and the implementation of schema theory by early childhood practitioners.

Whilst the keyworkers interviewed here were included in the observations detailed above, there were no recorded interactions between them and the children during observations. Furthermore, on two occasions one of the keyworkers utilised the time the children were in the art area to record earlier observations, meaning interactions with the children were severely limited. Communication with the children during the observations focussed almost entirely on health and safety matters (directing children to the toilet; overseeing rotation of children at the snack table). This lack of interaction with children as they explored their schemas runs contrary to practitioner's apparent ability to identify examples of incidences where they observed children displaying schemas when using art materials. However, as both keyworkers offered mark-making as an example of schematic representation in a visual art context, it is conceivable that their knowledge was limited to this medium rather than a wider range of materials (clay, string, recycled materials). Alternatively, the keyworkers' apparent inattention to children's schematic behaviours could be evidence of a lack of pedagogical understanding related to incorporating knowledge of schemas into professional practice, suggesting disconnect between the practitioners' understanding and professional practice.

Conclusion

This paper contributes to the literature by identifying a relationship between children's schematic development and their art-making, providing insight into how early childhood practitioners can use this understanding to improve practice. By observing children's interactions in a creative environment, the study has been able to demonstrate that when children are given the freedom, space and opportunity to be involved in inherently playful artistic activity, they are able to respond to the opportunities to fully explore their schematic ideas.

Observations of the children were analysed to identify different schemas according to the work of Athey (2007), which linked differing types of behavioural patterns in early childhood play and exploration with categories of schemas. Detailed analysis of the data revealed that some children were occupied following a singular schema, whilst others demonstrated multiple modes of schematic behaviour on differing occasions.

Analysis of the data derived from observations revealed that the children were engaged, focussed and stimulated when pursuing their schematic interests.

Furthermore, children demonstrated creative confidence in their ability to select and adapt materials to maintain and advance their particular schematic interests. One finding from this research, therefore, is the significance of the environment as the third teacher, nurturing and supporting children to become independent authors of their own learning.

However, the pedagogical implications of this study are problematic. Practitioners were able to articulate the theoretical and practical justification for the utilisation of schemas in the planning and observation process. Indeed, one practitioner during interview did suggest that including observation of children's schemas could contribute effectively to the planning process. However, during observations, practitioners failed to support or extend the learning in practice. The literature associated with schema theory and its contribution to early child development, suggests that practitioners need deep understanding of the meaningfulness of children's schemas, and the processes involved with creative play and art making (Wood and Hall, 2011). It is further recommended that observation of schematic behaviour by knowledgeable, well trained adults should be used to understand, support and plan for future learning encounters (Atherton and Nutbrown, 2015; Brierley, 2014; Brierley and Nutbrown, 2017). For this reason, a fundamental recommendation of this paper is the establishment of effective training processes which would support and encourage knowledge, understanding and confidence of practitioners. In doing so, key elements of effective practice could be identified and shared, developing a community of practice amongst the practitioners and contributing to their pedagogical understanding of schematic learning of the young children in the setting.

As has been discussed earlier in the paper, children's schematic explorations with visual art media are commonly understood to serve a cognitive as opposed to aesthetic purposes (Athey, 2007; Brierley, 2017). However, this paper raises a possibility of an alternative reading which suggests that, in developing schematic threads using art materials, children are expanding their knowledge and understanding of aesthetic form (Wright, 2010; Tutchell, 2014). Such considerations are beyond the remit of this paper, however future research into this area would be of value to the literature.

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