

Narrative in young children's digital art-making

Abstract

Digital technologies have material and social properties that have the potential to create new opportunities for children's expressive arts practices. The presence and development of oral narratives in young children's visual art-making on paper has been noted in previous research, but little is known about the narratives children create when they engage in digital art-making. How do young children construct narratives during digital art-making? How do the features of these narratives relate to the social and material properties of the digital resources they are using? How can looking at these narratives inform and enrich our understanding of children's art-making in general? Drawing on a social semiotic perspective, these questions are explored through an in-depth analysis of narrative in three examples of 4-5 year olds' digital art-making. On the basis of the analysis, features of oral narrative in young children's digital art-making are suggested and these are linked to potentially influential properties of the digital resources. Being aware of these features and properties offers a starting point for thinking about what digital resources can offer in the context of young children's art-making. The findings also prompt us to be aware of the diverse potentials that exist in children's art-making practices regardless of the resources being used.

Introduction

Research on digital technologies and early learning has tended to focus on literacy, numeracy and information gathering rather than the role of digital resources in young children's expressive arts practices (Burnett, 2010; Lankshear & Knobel, 2006; Resnick, 2006). As a result, we know relatively little about how the constraints and opportunities associated with digital resources shape children's art-making and the processes involved. This paper seeks a more in-depth understanding of how young children construct oral narratives during digital visual art-making and how this is influenced by the resources they use. Given the centrality of narrative in children's emotional and social development (Bruner, 1990, 1997; Mar & Oatley, 2008), as well as its recognised role in emergent and early literacy (Whitehurst & Lonigan, 2001; Nicholls, 2013), it is important to examine how oral narratives unfold or are enacted by children when different art-making resources are available. It is particularly important to explore young children's narratives in art-making via digital resources because of the growing prevalence of digital technologies in the life of the young child (McPake et al., 2013).

Previous research has highlighted the centrality of artistic expression in young children's learning and the multiple purposes that it fulfills (Malin, 2013; Malchiodi, 1998; Kolbe, 2005; Vecchi, 2010). The prevalence and importance of oral narrative in children's art-making has been noted by various researchers in contextualized accounts of art-making that draw attention to the extent to which young children choose to represent elements in flux and narrate changes in their

art-making as they visually unfold (Anning, 2003; Coates, 2002; Frisch, 2006; Thompson, 1999). Furthermore, art-making occurs as part of a 'multimodal ensemble' of activity (Kress, 1997; Jewitt & Kress, 2003; Goodwin, 2000) involving singing, role play, dance and movement, which all contribute towards the development of narrative (Wright, 2012). Although young children's oral narratives are often observed and reported on in the context of their art-making activities, this is typically done for art-making that occurs via pencils or paint on paper and does not involve digital resources. While rigid distinctions between 'digital' and 'non-digital' cannot capture the complexity of everyday interactions (O'Mara & Laidlaw, 2011; Burnett et al., 2014), by examining how different resources, and in particular digital resources, shape children's art-making, this paper offers a better understanding of the diverse potentials that exist in children's art-making practices, regardless of the resources being used.

A social semiotic perspective can help us to explore the potential influence of digital resources on young children's narrative art-making. It places a focus on both material and social facets of the resources being used to make meaning, as well as the activities that unfold through interaction with these resources. Together, the specific 'actions and artefacts we use to communicate' (van Leeuwen, 2005, p. 3) are conceptualized as comprising a set of 'semiotic resources' (ibid) that enable a distinct meaning-making experience. Digital art-making therefore involves a distinct set of 'semiotic resources' from art-making on paper or via modelling, since the actions and artefacts involved in the meaning-making experience are different. In the case of digital art-making, the

semiotic resources at work include the material tools involved (the hardware, the interface, the arrangement of the device in physical space etc.), as well as the embodied experiences through which these tools are used in meaning-making (Jewitt, 2013; Price & Jewitt, 2013). In using the concept of semiotic resources to engage with children's digital art-making, the focus is on not simply the environment created by the computer, but on all of the processes, actions and materialities that constitute engagement with this environment when children use it to make art. The semiotic resources of digital art-making are therefore a physical-digital network of material and immaterial components (Burnett et al., 2014). To trace the influence of digital resources on oral narratives in art-making, a social semiotic approach suggests that we should focus on the materialities of the resources and what these enable and encourage – their 'theoretical semiotic potential' (van Leeuwen, 2005, p. 4) - as well as examining how these resources are subject to cultural investment, becoming 'fully and finely articulated' (Jewitt & Kress, 2003, p. 2) or 'semiotized' (Bjorkvall & Engblom, 2010) through social interactions. In addition, a social semiotic perspective suggests that semiotic resources are understood by observing how meaning is made through them, rather than merely examining what is created (Vannini, 2007). Adopting a social semiotic approach in the research presented here therefore led to a dual focus on the material and social properties of the digital resources the children were using; and these properties were accessed through observations of the resources in use.

To summarise, this paper explores how children's oral narratives unfold in the context of 4-5 year olds' digital art-making. To achieve this, a social semiotic approach was taken in the analysis of episodes of young children's digital art-making from two Reception classes in the UK. The paper first provides some background on the role of digital technologies in young children's learning and creativity, and the relationship between oral narrative and visual art-making as suggested by previous research. Following an introduction to the study design, the three episodes of digital art-making that are the specific focus of the analysis presented here are discussed in turn. A more general discussion draws together the findings from these individual analyses, identifying features of the narratives that occur in these episodes of digital art-making and suggesting how these features may have been shaped by the semiotic resources involved in the activity. These findings are used to highlight the diverse ways in which children can approach art-making and how these can disrupt established perspectives on children's art-making including the popular notion of 'self-expression', which suggests an outward manifestation of inner ideas and feelings (c.f. Dyson, 2010; MacRae, 2011; Wilson & Wilson, 1977). While this diversity may be foregrounded in the context of digital resources, it is not specific to them, and it can be used to reflect on the approaches taken towards children's art-making in general, regardless of the resources involved.

Digital technologies in early learning and creativity

Digital technologies are increasingly prevalent in the lives of young children (Formby, 2014; Palaiologu, 2014). The range of digital technologies that children use when at home has been noted in longitudinal research (McPake et al., 2013). Through their engagement with computers, mobile phones, MP3 players, and other technological toys and games, children are rapidly building their familiarity and competence with digital resources. On the other hand, researchers have noted some difficulties and delays in the integration of digital technologies into the early years classroom (Aubrey & Dahl, 2008; McTavish, 2009). This has often been attributed to a lack of teacher confidence in facilitating the use of digital resources in creative ways among young children in the classroom (Lynch & Redpath, 2012; Lindahl & Folkesson, 2012; Plowman, Stephen & MCPake, 2010).

When digital technologies are found in early years learning environments, they tend to be studied in relation to their potential to support literacy, numeracy and information gathering activities, rather than how they might support expressive arts practices (Lankshear & Knobel, 2006; Resnick, 2006; Burnett, 2010; Formby, 2014). In the Early Years Foundation Stage framework used by early years practitioners in the UK, learning about technology is seen as part of a specific learning area entitled 'Understanding the world'. The document suggests that children in the early years should learn to recognize a range of technology and to select particular pieces of technology in order to complete certain tasks. While this does not preclude a relationship between digital technologies and expressive arts, there is no curricular link made between them. Despite this,

researchers have noted some interesting cases of digital resources being used in highly creative ways in the early years classroom. For example, observations of digital photography and journaling in the early years classroom have suggested that these resources can prompt new forms of exploration and reflection on social experiences at school, as well as contributing to new relationship dynamics between adults and children (Schiller & Tillet, 2004; Carter Ching et al, 2006).

Oral narratives in young children's visual art-making

Visual art in early childhood is recognised as fulfilling a range of individual and social purposes including, according to Malin (2013): storytelling, representing the 'self', experimenting with materials, exploring the imagination, enjoying aesthetic and physical pleasures, and relating to others. While some researchers have foregrounded the role of art-making in identity formation and self-expression (e.g. Malchiodi, 1998; Kellman, 1999; McLennan, 2010), others have questioned interpretations of early childhood art that assume the existence of an internal and uncorrupted 'self' that is revealed through the art-making process (e.g. Hawkins, 2002; Thompson, 2003). This paper contributes to this debate by presenting examples of children's art-making that can be considered in terms of the diverse 'child agendas' (Dyson, 2010) at work, that is, the different approaches children are taking towards art-making and the purposes the art-making is fulfilling. The properties of the digital resources used foreground some aspects of children's art-making which may otherwise be overlooked.

Contextualised accounts of children's art-making have drawn attention to the potential for oral narratives to play a central role in the art-making experience. The theoretical link between narrative and art-making has been strengthened through claims that both practices play a fundamental role in enabling children to communicate their experiences and perceptions of the world, and in doing so, to make sense of themselves and their everyday existence (Ahn & Filipenko, 2007). A similar approach has guided research on children's use of digital photography (e.g. Carter Ching et al., 2006) and digital multimodal story-making (e.g. Kucirkova et al., 2013).

While many researchers have observed and documented the role of narrative in young children's art-making, there has been little systematic inquiry into the nature of these narratives. As part of this, it is not clear how the semiotic resources used in art-making, and their physical and social properties, influence the ways narrative unfolds. In order to explore these questions about oral narrative in the context of art-making, it is necessary to borrow the analytical tools of narrative research more generally. For example, past categorisations of the plots and characters that children use in their stories (e.g. Fey et al., 2004; Nicolopoulou, 2008) enable a closer comparative look at the features of narratives when different resources are used in the art-making in which the narrative is situated. A particularly important tool is the classic categorization of children's spontaneous narratives developed by Preece (1987). Preece's taxonomy suggests 14 categories of narrative, including personal anecdotes, original fantasies and retellings. These categories, though not applied rigidly in

the research presented here, offered a starting point for identifying features of narratives created by children during their digital art-making and the subsequent links made between these features of narrative and the properties of the semiotic resources used.

Study Design

A social semiotic approach involves a dual focus on how semiotic resources are used to make meaning, as well as the semiotic resources themselves (van Leeuwen, 2005; Vannini, 2007). By focusing on processes of meaning-making, the researcher seeks to understand how resources are 'semiotized', that is, how they become semiotic resources involved in the creation and communication of meaning (Bjorkvall & Engblom, 2010). When exploring how digital resources are used for children's art-making, a focus on 'semiotization' is possible by observing the processes and interactions of digital art-making as they unfold. This is similar to the focus placed on observing the interactions that surround children's drawing, as advocated by Cox (2005) and Frisch (2006). They suggest that understanding children's art-making depends on observing the situation in which a child is making art, as well as the individual child's preoccupations and interests. The research presented in this paper builds on these approaches by exploring digital art-making as a process and interaction. The examples presented in the paper all involve the exploration of children's art-making by engaging in their 'talk around the text' (Lillis, 2008, p. 355) and considering the visual texts in relation to this talk.

The examples of digital art-making that are the focus of this paper are drawn from a larger study that aimed to compare children's paper and digital art-making. As part of this study, 18 children aged 4-5 years were observed for 20-25 minutes creating digital artwork. The children were from three state-funded schools in an urban area of South East England that all follow the early years foundation stage (EYFS) statutory framework, which suggests a range of learning goals in communication, physical activity and personal development. Of the 18 children who participated in digital art-making, three spontaneously engaged in the creation of oral narratives during the session. This paper therefore focuses on these three children and the narratives they created during digital art-making. The first of these participants, Jack, attended School 1 – a Catholic primary school with a reception year. The second and third participants, Gertrude and Yusuf, attended School 2 - a school dedicated to foundation stage provision and offering places to children living nearby.

All children participating in the study used a mixture of paper-based and digital resources in different episodes of art-making. They were observed by the principal researcher who made field notes for each participant, and collected audio recordings as well as the finished products of art-making. Jack, Gertrude and Yusuf all engaged in digital art-making for between 20-25 minutes. To do this, they used the researcher's laptop and mouse, and software called *tuxpaint* (Figure 1), which according to its makers is designed for use by 3-8 year olds. The software *tuxpaint* was chosen for both practical and theoretical reasons (Author, 2013). Practically, it was readily accessible and freely downloadable,

which meant that practitioners and children would have access to the software after the study if they wished. Theoretically, the features of *tuxpaint* map onto potentially interesting material properties of the digital art-making experience. The software comprises a combination of tools that in their presentation mimic those available via paper resources (e.g. the 'paintbrush' tool, the 'stamp' tool) while simultaneously offering the ready-made images and rapid application that some researchers have suggested characterize the practices of 'digital remix' (Lankshear & Knobel, 2006; Knobel & Lankshear, 2008; Lamb, 2007).

The children were removed by the researcher individually from their classroom and taken to a quieter place that was nearby – in School 1, this was the library, and in School 2, this was a playroom adjacent to the classroom. In order to ensure that all children felt comfortable with the resources, children were guided through an interactive demonstration of *tuxpaint* following a set procedure: choosing a background colour, using the 'paint' tool (including painting with different colours), using the 'stamp' tool, writing using the keyboard and erasing the picture. All of the children were engaged during this interactive demonstration, and they all took the lead in producing visual material on screen. Each child was then asked if they wanted to make something by themselves. Conversations between the researcher and the child were free-flow, and the interaction was recorded with an audio recorder that was placed beside the computer on the table.

Figure 1. A screenshot of *tuxpaint* in use [INSERT HERE]

The first stage of the analysis involved transcribing the audio recordings for each participant and checking and enriching these with reference to the fieldnotes written by the principal researcher during or immediately after each session. Then, analysis focused on identifying the episodes of digital art-making during which oral narrative was present. While definitions of narrative are diverse and complex (Rudrum, 2005), the description of narrative as ‘the representation of at least one event’ (Prince, 1999, p. 43) was adopted for the purpose of identifying oral narratives. If an example of oral narrative in art-making, as demonstrated through the transcript, appeared to represent ‘at least one event’, it was considered to be an example of oral narrative in the context of art-making. The representation of an event was in turn determined through particular clues in the child’s speech including: the suggestion of ongoing activity (e.g. ‘it is moving’); the suggestion of imminent change (e.g. ‘it is going to move’); and the referencing of past, present or future time states (e.g. ‘it has moved’; ‘it will move’).

Applying these criteria, three examples of digital art-making were identified and these were subjected to a more in-depth analysis of the narrative present. Notes were made on plot with reference to the 14-category narratological taxonomy of Preece (1987; see Table 1). This taxonomy was not applied rigidly but the categories were used to develop an understanding of the ‘features of narrative’ in each example that was analysed. In a social semiotic perspective, meaning-making is shaped by the resources that are being used. In line with this, the analysis presented here also aimed to link the features of narrative that had been

identified to influential properties of the digital resources that the children were using. This was done by exploring the properties of the digital resources as they were foregrounded in the art-making of Jack, Gertrude and Yusuf. In the findings section below, for each example of digital art-making, the features of narrative are reported along with potentially influential properties of the digital resources the children used.

Table 1. Preece's taxonomy of children's narratives

[INSERT HERE]

Findings

For each example of digital art-making presented below, notes were made regarding the features of the oral narrative created and how this was shaped by the properties of the digital resources used. These notes form the basis of the examples presented below. For each example, some of the features of the oral narrative created are presented, including whether the narrative included 'real', fictional and/or fantasy characters and events, and how the oral narrative unfolded in relation to the visual activity occurring on screen. These features are then linked to foregrounded properties of the semiotic resources involved in the digital art-making, for example, the pace of the activity, or the inclusion of digital ready-made images. In the discussion section, extrapolating from these examples, wider suggestions are made about the potential ways in which oral narrative can unfold during digital art-making. It is argued that these possibilities,

while foregrounded by material and social properties of the digital resources, are not specific to digital art-making. Thus, by exploring children's narratives in digital art-making, we can enrich and challenge our understanding of children's art-making more generally. In particular, the prevalent notion of children's art-making as a means for expressing internally formed ideas and interests (that is, 'self-expression') is called into question by the features of narrative that are foregrounded in the context of digital art-making.

Jack (figure 2)

Jack's digital art-making was based primarily around experimentation with the different tools available in *tuxpaint*. Through this experimentation, he arrived at a narrative about cars in a car park that become trapped behind a net. Starting with the 'stamp' tool, which enables the application of ready-made images, he found an image of a red car that particularly appealed to him. He applied the image to the screen multiple times, and as he did so he explained to the researcher: 'See these ones are in the car park'. Once he had filled the screen with the repeated image of the car, he changed the tool he was using to the 'paintbrush'. While moving the 'paintbrush' around the screen quickly, over the car images, he said that the cars were 'trapped behind a net'. Jack's narrative, which according to Preece's taxonomy constitutes an 'original fiction', followed on from the visual events that were unfolding on screen. The car park and the net included in the narrative developed as a result of experimentation with the 'stamp' and

'paintbrush' tool. Through these resources, visual activity rapidly unfolded on screen and Jack's narrative was a response to this activity.

Figure 2. Jack's digital art-making [INSERT HERE]

Are there properties of the digital resources that encourage narrative to follow visual activity, rather than the other way around? One property that was particularly foregrounded in Jack's digital art-making was the rapidity with which visual material was added to the screen. In particular, the 'stamp' tool in *tuxpaint* allowed Jack to apply images and subsequent copies of the same image with the single click of the button. This meant that the screen was filled with a plethora of visual information only seconds after the art-making episode began. This was not uncommon among the children who participated in the wider study from which this data was taken: the multiple application of the same image was visible in the finished products of more than half of the 18 participants who engaged in digital art-making. The rapid application of ready-made images in digital art-making may mean that narrative is used by children as a way to justify the rapid unfolding of visual activity on screen. This challenges traditional approaches to children's art that conceptualise art-making and narrative as expressive of internal constructs that exist prior to the art-making episode (e.g. Malchiodi, 1998; Ahn & Filipenko, 2007; Kellman, 1999; c.f. Hawkins, 2002; Knight, 2013). Although the example of art-making presented here occurred using digital resources, this aspect of the experience is not necessarily specific to digital art-making. As previous research has shown, children's art-making on paper may also include the rapid unfolding of visual activity followed by a narrative designed to justify the activity (see

Anning, 2002; Malin, 2013). However, this sequence of art-making may be foregrounded in the context of digital resources as a result of their distinct 'theoretical semiotic potential' (van Leeuwen, 2005; Kress, 2010), that is, the material properties that afford particular types of meaning-making. In this case, the digital resources comprise material properties that enable the rapid application of ready-made material. Exploring examples of digital art-making can therefore encourage us to consider alternatives to traditional notions of children's art-making as representational of pre-existing intentions and interests.

Gertrude (figure 3)

Gertrude began by trying to manipulate the 'paintbrush' tool via the mouse in order to draw herself. Carefully, she chose colours for her hair, smile, eyes and dress. She found the mouse difficult to control and she expressed dissatisfaction with the image that she created while using the 'paintbrush' tool; she explained: 'I'm trying to do a picture of me but the eyes went a bit wrong'. After this, Gertrude decided to explore some of the other tools available in tuxpaint. She selected the 'stamp' tool and scrolled through the available images. She engaged in an active selection of images, whereby she applied a range of images to the screen one by one, and when they didn't appeal to her, she carefully removed them using the 'eraser' tool. After a few minutes, she found the image of a toy duck and stamped eight copies of this image onto the screen in quick succession, saying: 'I'm at the duck pond, that's why I'm doing lots of ducks'. As with Jack, Gertrude's narrative developed as a result of the visual events that

were occurring on screen. The positioning of the character 'at the duck pond' was a clear response to the multiple application of the duck image. Through this art-making episode, Gertrude created an oral narrative involving a 'real' character (herself) in the fantasy setting of a duck pond, as inspired by the images available through the art-making software.

Figure 3. Gertrude's digital art-making

[INSERT HERE]

The presence and prevalence of ready-made digital materials in *tuxpaint* was influential in the development of oral narrative in Gertrude's art-making. As with Jack, the rapidity with which this material could be applied was important, but equally important was the content of these images. The image of the toy duck was central in the development of Gertrude's narrative. Considering the nature of such digital images and where they come from is essential in understanding how digital resources shape creative processes. In this example, it is important to note that the image of the toy duck that Gertrude included was photographic but did not seem to relate to her personal, everyday life. It was an example of general content (i.e. not specific to the art-maker) that Gertrude used and adapted for the purposes of her art-making. Is this likely to have occurred in the context of paper-based art-making? Many interpretations of children's paper-based art-making emphasise the expression of 'real-life' experiences (Frisch, 2006; Kolbe, 2005) and this may lead us to interpret specific drawings (e.g. a duck pond) as representational of a child's everyday realities and/or interests. On the other hand, much of what children produce when drawing on paper is

recognized to be heavily schematic (Malchiodi, 1998; Cox, 2005), and this challenges the idea that representations made by children during paper-based art-making are highly personal. The example of Gertrude's digital art-making encourages us to ask questions of the role of ready-made content in young children's art-making, whether with digital or non-digital resources, and the extent to which representations in art relate to personal experiences (Thompson, 2003). In particular, it reminds us that while the content of digital art often includes ready-made images that are not specific to any one child, this is also potentially true of paper-based art-making as a result of the prevalence of schemata in children's drawing. An acceptance however, that children's art-making involves ready-made imagery does not preclude the potential for children to use art-making as a way to explore themes and topics that have emotional and social significance to them (Thompson, 2003; Lamb, 2007).

Yusuf (figure 4)

Figure 4. Yusuf's digital art-making [INSERT HERE]

Yusuf was different to Jack and Gertrude (and most other participants in the wider study) in the way that he used *tuxpaint*. He had little interest in the tools that engaged most of their attention and did not spend any time using the 'stamp' tool. His art was created solely through the manipulation of a fine-tipped 'paintbrush' tool. He used this tool to apply three colours to the screen, each of which represented something particular in the narrative he created. He depicted

the 'original fantasy' a house in blue, monsters attacking the house in red ('this is the house and these are the monsters), and the attack itself in black ('They're going to break the house down'). Yusuf demonstrated single-minded determination in the representation of his narrative of monsters attacking a house. It was clear from his first engagement with digital art-making that he had a preconceived idea of what he wanted to represent through the resources he was given and this was maintained throughout the episode. Unlike with Jack and Gertrude, Yusuf's narrative did not develop as a response to the visual events that were unfolding on screen. Instead, his narrative appeared to exist prior to the art-making experience, which was used to illustrate it rather than create it.

The example of Yusuf's art-making highlights the possibility that digital resources can be used to express ideas and concerns that a child possesses prior to the art-making episode, as highlighted in some previous studies (e.g. Malchiodi, 1998; Kolbe, 2005; Malin, 2013). It emphasizes the extent to which the particular tools available in software like *tuxpaint* can shape children's art-making and the narratives that develop within this. For example, the 'paintbrush' tool that Yusuf chose to use is slower than the 'stamp' tool, which was used by Jack and Gertrude to enable the rapid application of ready-made visual material. So while digital art-making facilities may have material properties that often foreground the rapid application and removal of visual material, this is only 'semiotized' (Bjorkval & Engblom, 2010) through the design choices that children make in their art-making about which tools to use (Mavers, 2007). Children have an option to make art in different ways using digital resources, even when using the same

software, and oral narratives will unfold differently depending on how children decide to 'semiotize' the resources that are available to them. The example of Yusuf's digital art-making highlights the diversity of children's 'child agendas' (Dyson, 2010) in art-making and the different purposes the practices of art-making can fulfil even when the same material resources are used (Malin, 2013). That children's art-making can unfold in a range of different ways is equally true when both digital and non-digital resources are used. The examples of digital art-making presented in this paper emphasise this diversity and lead us to reflect on the various parameters of children's art-making that can shift from one episode to another. These include: visual pace, narrative sequence and the role of preconceived ideas in art-making as opposed to interests that unfold in the 'here and now' of art-making (Knight, 2013).

Discussion

Analysing examples of narrative in digital art-making suggests some interesting features of oral narrative in children's art-making that are foregrounded when digital resources are used. By reflecting on these features, our understanding of narrative in children's art-making, regardless of the resources used, is enriched and challenged. In particular, digital art-making can help to make us more aware of the diverse ways that children use narrative in their art and how these can trouble notions of art-making as 'self-expression' and representational of everyday and personal experiences. The examples of digital art-making in this paper show that oral narratives can follow visual activity as it unfolds, rather than

precede it. This may be particularly apparent in the context of digital art-making as a result of the rapidity that characterizes many of children's interactions with digital environments. It is important to note however, that children's paper-based art-making may often be equally high-paced (Anning, 2002; Malin, 2013) and there is clearly the potential for narrative to follow from visual activity that unfolds on paper, just as there is on screen.

Digital art-making also foregrounds the potential role of ready-made images in children's art. In two of the examples presented in this paper, the quick and multiple application of ready-made images was central to the development of the child's oral narrative. As well as the rapidity with which they are applied, the content of these images shapes the types of narrative that are created during digital art-making. Since these images are not personalized representations, it may be that they are more likely to inspire 'as if' scenarios rather than being used by children to represent everyday realities or recently experienced phenomena. Rather than suggesting that this is specific to digital art-making, this paper argues that examining examples of digital art-making makes us more aware of the possibility for all art-making to involve ready-made content that is 'remixed' in order to make meanings that are of personal interest to the child (see Lankshear & Knobel, 2006; Lamb, 2007; Iveshkevich & Shoppell, 2012). Taking this idea further, it could be asked whether the schemata that is prevalent in children's drawings may constitute another type of ready-made content that children engage with during art-making and make meaningful through 'remix' or 'mash-up' (Lamb, 2007). Thus, considering ready-made images in digital art-making can

lead us to think differently about children's art-making and whether we have underestimated the role of the 'ready-made' in non-digital art forms like drawing, painting and sculpting (c.f. McLennan, 2010).

With these findings in mind, exploring digital art-making can offer much to our understanding of children's arts practices more generally. Digital art-making highlights particular features of the art-making experience, such as pace and ready-made content, that need to be more fully considered when exploring the narratives that children create during art-making, regardless of the material resources used. While there may be 'gains and losses' (Kress, 2005) to consider when narratives are constructed via one set of semiotic resources rather than another, this paper suggests that children's engagement with all art-making resources is characterized by diversity in terms of the pace and sequence of activity, and the sources of inspiration for the art-making. The potentials of narrative in art-making to follow rather than precede visual activity and to be inspired by the 'remix' of ready-made content present an exciting challenge to popular notions of children's art as expressive of an internal 'self' and preconceived ideas and interests (e.g. Malchiodi, 1998; Ahn & Filipenko, 2007; c.f. Hawkins, 2002).

The role of digital technologies in early childhood art is an area that would benefit greatly from further research. While this research took a contextualized approach to children's digital art-making by considering children's talk as they created their art, future research would be enriched by adopting methods of data collection and analysis that capture the entire 'multimodal ensemble' (Goodwin, 2000;

Kress, 2010; Jewitt, 2013) of children's digital art-making and to look more closely at the unfolding visual activity of the artefact itself. It would be exciting to consider how various modes of communication, including movement, gaze, gesture, body orientation and speech, are involved in the narratives that children create during art-making. This would be particularly interesting given the commonly observed role of dramatic and nonverbal communication in children's visual meaning-making (Wright, 2012). Future research would also benefit from observing children's engagement with digital art-making in various forms and via various devices, over longer periods of time in a naturalistic context. This is important since digital resources become more 'fully and finely articulated' (Jewitt & Kress, 2003, p. 2) over time, and this shapes the role that they play in children's communication, representation and expression. Such research would also help to highlight the role of adults in the classroom in the construction and use of digital resources for creative purposes.

Conclusions

Little is known about how children construct oral narratives during episodes of digital art-making, how this relates to the properties of digital resources, and whether this can prompt us to think differently about children's art-making in general. An analysis of three children's oral narratives, which were created in the context of digital art-making, demonstrates that such narratives often unfold differently to what is suggested in previous literature on narrative in children's art. In particular, the findings presented here suggest that children's narratives can

develop in response to experimental visual activity that occurs rapidly and contains ready-made images rather than personalized representations. These findings challenge established notions of art-making and narrative as means through which children express the preoccupations and desires of an internal 'self'. Digital resources therefore foreground the potential of narrative and art-making to be a response to the external world involving the 'remix' of ready-made content. By exploring children's digital art-making we can develop our understanding of children's art-making and the diversity it entails regardless of the material resources that are used.

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