Available online at www.sciencedirect.com
ScienceDirect
Thinking Skills and Creativity 2 (2007) 107–117
Thinking Skills and Creativity
http://elsevier.com/locate/tsc

Exploring processes of collaborative creativity—The role of emotions in children's joint creative writing

Eva Vass

University of Otago College of Education, University of Otago, New Zealand

Received 2 February 2007; received in revised form 15 May 2007
Available online 7 July 2007

Abstract

This paper reports a study on children's classroom-based collaborative creative writing. Based on socio-cultural theory, the central aim of the research was to contribute to current understanding of young children's creativity, and describe ways in which peer collaboration can resource, stimulate and enhance classroom-based creative writing. The study drew on longitudinal observations of ongoing classroom activities in year 3 and year 4 classrooms, working with 24 children (12 pairs) aged 7–9 in England. The pairs' collaborative creative writing sessions were observed and recorded using video and audio equipment in the literacy classroom and in the ICT suite with 2–4 recordings per pair. A functional model was developed to analyse cognitive processes associated with creative text composition (engagement and reflection) via the in-depth study of collaborative discourse. Based on the analysis of paired talk, the study has identified discourse patterns and collaborative strategies which facilitate sharedness and thus support joint creative writing activities. A key finding was the centrality of emotions in the observed creative writing sessions. This paper discusses the role of emotion-driven thinking in phases of shared engagement. The study has implications for creativity research and pedagogy, revealing the special features of shared creative thinking. It also contributes to the current methodological debate about how best to analyse collaborative discourse, highlighting the need to explore the generalisability and domain specificity of existing characterisations of productive groupwork.

Keywords: Creative writing; Collaborative creativity; Emotions and learning; Socio-cultural theory

1. Introduction

1.1. Nurturing children's creativity: mentors and peers

The socio-cultural perspective describes psychological development as situated in and mediated by the socio-cultural context. In a similar vein, creativity can be seen as a situated and mediated human act, arising "from the interaction between the 'intelligence' of individuals, the domain or areas of human endeavour, disciplines, crafts or pursuits, and the field, such as people, institutions, award mechanisms and 'knowledgeable others' " (Loveless, 2002, p.10). This approach questions the existence of a universal measure of creativity and instead purports its relative value, with strong implications for research and pedagogy. In particular, it highlights the need to consider the role of teachers (or the educational institution as such) as gatekeepers determining acceptable or valuable forms of creativity. Although the pivotal position of the teacher as the catalyst as well as the main assessor of classroom-based creativity is undeniable,

E-mail address: vasseva_bp@yahoo.com.

1871-1871/$ – see front matter © 2007 Elsevier Ltd. All rights reserved.
doi:10.1016/j.tsc.2007.06.001

the main focus of the study was on children's interactions with each other. The emphasis was on children's collaborative work which is set in the classroom, but carried out as the independent phase of the literacy session (DfEE, 1998).

A wealth of research in the socio-cultural tradition has been carried out to investigate the role of peers in children's learning and development. However, research on collaboration has primarily been concerned with understanding the nature of effective pair work in the domain of science (especially physics and maths), with relatively little attention on other fields. In particular, research on collaborative creative writing is scarce. Similarly, there is relatively limited work exploring the role of peer collaboration in literacy development in the preschool and early primary school years (Pellegrini, Galda, & Flor, 1997; Pellegrini, Galda, Bartini, & Charak, 1998). The few studies comparing individual and collaborative writing revealed that compositions written by pairs were more advanced than individually written ones, and the benefits of collaboration carried over into subsequent individual creative writing (e.g., Hartup, 1996). Other work on children's joint writing has examined the role of relationships (Jones, 1998) or the writing medium (Jones & Pellegrini, 1996) in mediating the collaborative activity. On the whole, there seem to be significant qualitative differences between collaborative and solitary text composition. However, with a few exceptions (e.g., Pellegrini et al., 1997, 1998), these studies measure the productivity of the writing activities in terms of the quality of the written product. In accord with current socio-cultural work on peer collaboration, the study reported here shifted the focus to the analysis of the processes of paired writing, through the examination of children's paired discourse.

1.2. The analysis of collaborative discourse

Studies by Mercer and colleagues (Mercer & Wegerif, 1999) have provided ample evidence that the quality of children's talk has a strong impact on the quality of learning. Mercer and colleagues developed a typology of productive talk, arguing that exploratory talk – the constructive and critical negotiation of views – leads to the highest cognitive gains in paired learning contexts. An alternative and highly influential model describing productive forms of talk is presented by the line of research on transactive discussion (Azmitia & Montgomery, 1993). The framework was originally used to define productive talk in problem solving contexts, describing transactive discourse as reasoned argument. Later it has been modified (Kruger, 1992) and applied to collaborative music composition (Miell & MacDonald, 2000). In the modified description, transacts are utterances children use to refine, extend or elaborate on ideas that they or their partners introduced in the activity previously.

However, discourse may be used differently to resource collaborative creativity and paired problem solving. Since the two frameworks above were primarily geared towards the study of effective ways of talking together and thinking together in problem solving tasks, they may not be fully appropriate for the study of paired creative writing. For example, neither framework informs us about the role of affective aspects, though research indicates the salience of emotional engagement in creative fields. The aim of the current research was to address this issue and design an analytic tool specifically for the study of collaborative creative writing discourse.

1.3. Emotion and cognition

Bruner (1986) reminds us that the separation and classification of cognition and emotion can be traced back to the theological debates around faith and reason, seen as two forms of knowing, in classical Greece. Due to the overemphasis on reason and logical thinking, the role of emotions – or the emotional "mode of organising experience" (Bruner, 1986, p. 110) – has largely been disregarded in mainstream psychological or neuroscientific research on cognition (Phelps, 2005). Western developmental theories conceptualise emotion as a lesser function with characteristically harmful effects on rational thinking, which is reflected in the consequent disregard or even conscious elimination of emotions from the study of cognitive functioning or cognitive development (Donaldson, 1996).

However, recent years have seen the revaluing of emotion. Current work in neuroscience challenges the traditional modular view or the brain, and reveals that the neural systems of emotion interact extensively with those underlying cognitive processes (Phelps, 2005). Also, in educational and developmental psychology, more recent conceptualisations of cognitive functioning (e.g., Bruner, 1986; Donaldson, 1996) challenge the primacy of logical thinking. For instance, Donaldson (1996) identifies two equally important modes of thinking: the value-sensing mode is primarily affect-driven, whereas intellect driven thinking is based on logic and rational thinking. Donaldson argues that the two modes are two extreme points on a continuum. She claims that cognitive functioning in most contexts builds on a combination of the two modes, although one or the other may dominate in particular tasks. Similarly, current conceptualisations

of creativity call for the combined consideration of the cognitive, affective, social and spiritual aspects of the human experience (Craft & Wegerif, 2006). This paper investigates the role of emotions in thought processes associated with creative writing. (Other themes explored in the research include the role of close relationships in mediating shared creativity, and the ways in which the contextual features of learning situations – such as the task design, the writing medium or instructions – shape processes of joint creative text composition.)

1.4. Creative writing and emotion

A classic cognitive model by Flower and Hayes (1980) defines the process of writing as complex problem solving, the three components of which are planning (the generation and organisation of information needed for the task and goal-setting), translation (the turning of the plans and thoughts into text appropriate for the goals of the task), and reviewing (the editing and evaluation of the text or the goals). This model has been highly influential in writing instruction (Czerniewska, 1992). However, it leaves very little room for the consideration of interpersonal and affective aspects.

In contrast, Sharples argues that the fundamental difference between writing and problem solving is that the former is an open-ended design process, without a fixed goal and without clearly specified and ordered stages leading to one single solution (1999, 1996). He asserts that writing is comparable to creative design and, as such, can be defined as a fusion of synthetic (or productive) and analytic phases. It incorporates two interlinking and interdependent processes, engagement – the generation of creative ideas; the emotional engagement with the material – and reflection – the conscious break of the chain of association; reviewing, contemplation and planning (Sharples, 1999). This model builds on Bereiter and Scardamalia's (1987) coinage of knowledge telling – the creation of ideas through association, which can take the form of stream of consciousness or daydreaming or free association – and knowledge transforming – the exploration and transformation of conceptual spaces and reflection upon the writing process in order to monitor the text production and satisfy the constraints.

However, scholars of creativity place the emphasis on different processes. Boden (1990) attributes creativity to deliberate explorations and transformations in the mind. In contrast, Gelernter (1994) argues that knowledge telling – or, in his formulation, low focus thinking – is the foundation of creativity, by which unique analogies are formulated as emotion surfaces and binds thoughts in the dream-like associative process. Sharples (1996) joins these two arguments, and posits that the two types of thinking are both crucial to the writing process. They are combined by the mind's conscious effort to recreate an emotional experience, which prompts the composition of the written text.

Embedded in Sharples' re-conceptualisation of writing as creative design is the assumption that all writing, regardless of the genre or purpose, builds on creativity. This reformulation reflects the shift in writing instruction from the creative writing movement of the 1960s towards an approach which recognises the value of different genres or language functions (e.g., transactive, poetic or expressive) (Pinsent, 1998). Although acknowledging that any sort of writing task may provide opportunities for creative thinking, the research reported here was specifically concerned with children's creative composition of fiction and poetry. Contributing to the debate regarding the nature of the creative process, it investigated the use of emotion-driven thought in creative writing.

2. Methodology

The research involved naturalistic observations of ongoing classroom activities over a period of 1 year, working with children aged 7–9 in middle schools in England. It followed ongoing writing projects as planned by the teachers, focusing on what The National Literacy Strategy: Framework for Teaching (DfEE, 1998) defines as Fiction and Poetry to be taught to this age-group (e.g., for year 4: stories, poetry, radio advertisements, TV jingles and songs). Selected pairs' shared work was observed and recorded using video and audio equipment in the literacy classroom and in the ICT suite (2–4 occasions per pair). There were 7 boy- and 5 girl-pairs. The collaborative partners were of matching ability, as documented in the students' end-of-term literacy tests. The pairs were selected to reflect the ability-range in the observed classes. Issues of ethics and consent were dealt with in line with school practices.

2.1. Functional analysis

The study was informed by discourse analysis in social psychology (as described by Harré (1997) and Billig (1997)) and educational research building on the analysis of talk and collaborative activity in the classroom (Barnes, 1976).

During the initial phases of analysis I examined the transcripts and identified episodes in the dialogue supporting different writing-related phases. The following table shows the initial categories, building on Sharples' model of writing as creative design (1999, 1996) (Table 1).

The model was not intended to study individual turns. Rather, the unit of analysis was extended to longer sequences, in which utterances were marked as centring around one or the other phase. Thus, in each transcript, a string of episodes was identified, each of which was linked to a particular phase within the creative writing process. Next, building on the in-depth analysis of all episodes centring on each phase, I formulated a description of discourse patterns characteristic of these. On the basis of this analysis, the following descriptors of the five central cognitive processes or functions were developed.

Creative content generation

This phase serves the development of creative ideas through association, followed by the translation of these ideas into text. It often involves the retrieval of emotional experiences from the memory, which are used to stimulate the process of creative text composition. In joint content generation episodes discourse was used to pool ideas for the text, to engage in joint brainstorming and to extend joint ideas [Child A: "S-A, S-A-I. I, What do we do for I? Ice-creams melting ((pause))" Child A&B: "In the sand."]. Discourse expressing emotions – musing, acting out and humour – was also given the content generation function when it served the joint development of creative ideas.

Planning of content

Planning involves goal-setting regarding the text (theme, content, form or style). (Note that episodes focusing on the planning of procedure, collaborative strategies or working styles were assigned the process-oriented function.) Planning takes place at macro level (general planning typically at the beginning of the writing session) and at microlevel (specific planning throughout the writing session, regarding the next line or idea). Thus, planning requires the application of rules to the composition on the whole (macro planning), or to one particular part of the composition (microplanning). Episodes reflecting the joint planning of the composition were given this function [Child A: "We do sailing." Child B: "Yeah, we do sailing."].

Reviewing the generated content

This phase involves re-reading and contemplation; the evaluation of the generated content and subsequent modification or redrafting if necessary. It requires the halting of the process of content generation. Discourse reflecting joint reviewing was given this function [Child A: "Remember, you are not supposed to end with -ork, you are supposed to end with another sound." Child B: "I said the pork was so FAT, F-A-T!"].

Transcription of generated content

In this phase the writer focuses on the spelling and formatting of the generated material while transcribing the text, or following the transcription. The function of joint transcribing was used to describe discourse centring

Table 1
Processes of text composition

Main focus	Processes linked to writing
Text-oriented thinking	Content generation
	Reflection
	Planning
	Reviewing (re-reading, contemplation, evaluation, modification)
	Transcription
Process-oriented thinking	

around transcription, spelling, punctuation and formatting [Child A: "What does it say? I don't understand your writing."].

Process-oriented thinking

Four out of the five phases had text-oriented functions. The fifth phase was defined as serving a process-oriented function. This function does not centre around the text, but on the ways in which it needs to be developed. The function of shared process-oriented thinking was used to label discussion about the step-by-step procedure, management issues, role division, sharing, strategies for collaboration, or the use of technical equipment [Child A: ((looking at their printed draft)) "Let's use this to help us."].

As part of the analytic process, key episodes were selected for each phase or function. These were both typical and powerful as examples: typical in the sense that they described the ongoing writing situation and discourse patterns, and were not isolated instances of discursive phenomena, and powerful in the sense that they demonstrated particular discourse patterns clearly, and presented a straightforward example.

The typology developed for the analysis of writing discourse was used to study how children carry out the joint planning of text, how they generate ideas together, and how they engage in the joint reviewing (e.g., evaluation and modification) of their work.

2.2. Validity

In order to minimise subjective misunderstandings – such as the over-interpretation or misrepresentation of data – I engaged in a continuous discussion with research colleagues regarding the selection and interpretation of episodes. I also built on field notes and informal interviews with participants and teachers during the interpretative process. In what follows, I will use the model to demonstrate the centrality of emotions in joint content generation.

3. Findings: the role of emotions in content generation

The observed dialogues offer clear evidence of emotion-driven thinking which inspired and channelled the creative flow of ideas. The study identified musing, acting out, humour and singing as discursive features with emotive content which supported content generation.

3.1. Musing

Musing was a frequently used strategy by children to express or explore emotions during the writing process. Musing helped the recreation of the emotional experience associated with the developed image. In the following example, the partners are writing an acrostics-poem, where the first letters of each line are spelt out SAILING, the theme of the composition.

Sequence 1–Carina and Jenni, poem-writing, literacy

1	C:	Right. We do sailing. There. How do you spell S. What can we do for S?
2	J:	Sharks, swimming ((pause)) ssss-
3	C&J:	((overlapping, almost together)) Swish-swash ((pause))
4	J:	((happy, musing tone)) Swish-swash.
5	C:	No, ((playful intonation, hands move to imitate the movement of a shark))
6		Sharks, swimming, swish-swash!
7	J:	((happy, musing tone)) Swish-swash!
8	C:	((overlapping, playful intonation)) Swashy. ((pause))
9	J:	((interrupting)) Right. What shall we, I tell you something. Right. ((playful
10		intonation)) Sharks ((pause))
11	C:	((musing tone)) eating ((contemplating silence))

12	J:	((with excitement)) Sh- I KNOW! Sharks
13	J&C:	((together)) Eating.
14	C:	((with excitement)) Scales of FISH! Yeah!
15	J:	((overlapping)) Yeah. Shall we put exclamation mark?
16	C:	Yeah!

This episode reflects collective thinking, where ideas are not just shared, but jointly generated. The sequence consists of utterances which either build on ideas uncritically – without challenging or evaluating them – or reject them without any reasons offered. The exchanges are short, and there are interruptions and overlaps. Discourse with such features appears to be useful to share new ideas, to link feelings and images and to start off a collective stream of consciousness (knowledge telling).

The tone of the dialogue, and the exuberance of emotions highlight the centrality of affective aspects in the process of knowledge telling. The children display excitement (e.g., lines 12 and 14), they act out the images (lines 5–6), and frequently mull over the lines they made up (lines 4, 7 and 11). Mulling over – or musing – was a frequent feature of the observed content generation episodes. The children's intonation reflected thoughtfulness and contemplation, as if they were slowing down and feeling the lines by repeating them.

In this episode, the partners' strong emotions with regard to the scene they have created are apparent. These emotions both serve to fuel their imagination, and to link the created images. Furthermore, the partners' acceptance of the crafted line is an emotion-based acceptance: no explicit reasoning is offered, only Carina's excited, immediate Yeah's mark the end of the process. The next section will elaborate on acting out, another affect-driven discourse feature used for joint creative content generation.

3.2. Acting out

Similarly to musing, acting out appeared to play a vital part in children's joint content generation. The next sequence is from a story planning session. During this session the teacher first asked the pupils to come up with a list of adjectives that could be used to describe the emotions of the main character of their story (as defined in the story plan developed in the previous session) and think about how the character would be behaving. In this sequence the observed children are generating ideas regarding the behaviour of their main character, a boy whose dog has just died. At one point, Simon starts acting as if he was the boy and Mark joins in. They jointly recreate the emotional state of loss, drawing on and sharing their personal experiences.

Sequence 2–Mark and Simon, story planning, literacy

1	M:	Come on, then! Shall we just write (She is just pushing herself about) and
2		throws the pillows down.
3	S:	No, it's a boy, Mark. It's not a girl.
4	M:	( )
5	S:	No, he is smashing the pillow against the metal bars-
6	M:	((interruption and slight overlap)) Do you know, when you-
7	S:	((interruption and slight overlap)) Feeling really miserable, and sad-
8	M:	((interruption and slight overlap)) You know, when you are really upset, you
9		go up to your bedroom, right, and you-
10	S:	((interruption and slight overlap)) Punch something.
11	M:	No,
12	S:	((acting out, theatrical gestures and tone)) It's not fair!
13	M:	Yeah.
14	S:	((fist hitting table)) I am feeling really miserable! I hate my life, I wish I
15		never- ((Mark is giggling)) And you get really horrible and upset, and then
16		you go down and say, 'Sorry, it's too late-'
17	M:	And then you go, It's unfair, I hate life-
18	S:	((interrupting)) And it just slips out and you don't actually mean it.

First Simon describes the boy's initial reaction to the loss of his pet dog, both at a physical (line 5) and a mental (line 7) level. Interlinking with his ideas, and almost simultaneously developed, are Mark's thoughts. He starts his turns

with "Do you know, when you are really upset" (lines 6 and 8), inviting his partner to identify with the boy-character. Simon joins in and they start to act the boy's feelings out (lines 12, 14–16 and 17). They both use emphatic intonation and body language to highlight the emotional state (e.g., in lines 12 and 14).[1]

Acting out makes the feelings of the character accessible for the boys and facilitates the development of a shared understanding. In this particular instance they explore together what it feels to lose something, and what emotional displays it may involve. (In their individual write-up of the story plan they will later write *He goes up to his bedroom and throws his pillow around and He goes up to his bedroom and gets in a strop and says It's not fair, I hate my life*.)

The sharing of such intimate experiences bonds them as partners, but it is also indicative of a well-developed relationship which allows the disclosure of feelings. This episode demonstrates how the shared re-creation of emotional experiences enhances creativity, supporting my previous argument about creativity emerging from re-living earlier experiences. The episode illustrates how emotions serve both as the generator and moderator of creative thought. However, acting-out sequences can be ambiguous. For a casual observer, who cannot follow the interaction as it develops, such sequences may reflect off-task chatter. This poses a considerable problem for educators, who may assume that the children who engage in task-related acting out are not doing their work.

3.3. Humour

Next it will be shown that humour and playful language are a central ingredient of playful, imaginative thinking. Keeping within the norms may lead to conventional, predictable ideas, whereas breaking them may result in novel but nonsensical ones (Sharples, 1996). Creativity lies between the conventional and the nonsensical and requires a careful balance between breaking the rules and working within boundaries. Humour may be a strategy to test the boundaries. In the following episode a boy-pair are choosing the characters for their story.

Sequence 3–Robbie and Zak, story planning, literacy

1	Z:	Choose the characters.
2	R:	Robbie Williams ((giggle))
3	Z:	No, come on!
4	R:	Billie Piper. ((giggle))
5	Z:	Nooooo! Choose different characters, dude. Any characters. Animals.
6	R:	Yeah. ((Zak starts to write)) Monkeys. Hyenas. David Beckham.
7	Z:	Well, David Beckham is a bit of an animal, ain't he?

The giggles and the jocular, playful manner can easily deceive the outsider, who could mistake the above sequence as off-task mucking about. However, the boys simply combine working on the task with playful banter and actually use verbal humour to make sense of the task together (for example, what it means to chose characters or what should the central criterion be). Jokingly, Robbie suggests pop singers as characters. In response, Zak tries to channel Robbie in the right direction, indicating that they need more prototypical characters for their story, such as animals. Nevertheless, the boys make creative use of the ideas that were originally presented as a joke. Later on, they will use animal characters to symbolise human characters, for example a duck will represent the king in their story. Thus, humour can actually foster creativity, where the seemingly off-task jokes feed into on-task content generation, creating a playful atmosphere.

On the other hand, as the next example reveals, highly imaginative thinking reflected in humourous, playful ideas can go beyond the purposes of the task. There appears to be a very fine line between off-task playfulness and task-oriented uses of verbal humour, making the distinction between the two especially problematic. The two boys in the next episode are rewriting an existing poem entitled 'Hands'. They are working on the line 'At nights hands are as stiff as concrete', an image reflecting the hands' idleness at night.

[1] Note that the acting up sequence was not performed for the camera: there was no indication of this in the dialogue or in the non-verbal interaction (e.g. addressing, looking or pointing at the camera). This is not to say though that the children were not aware of the equipment.

Sequence 4–David and Chris, poem-writing, literacy

1	C:	As hard as rock, as stiff as rock, because rock isn't very (hard) is it? Well,
2		it's not exactly (spodgy), is it?
3	D:	Wibbly-wobbly as a worm. ((following with wavy gestures))
4	C:	((waves with hands too)) Squidgy. Jelly beans. Yes, jelly babies.
5	D:	Blo-bl-blo-blo-blo blo-blo-blo-blo-blo ((this is followed with gestures of
6		waves, using his pencil, bouncing it up and down as if on waves)).
7	C:	No. Instead of Jelly baby. DAVID!!!!

In the first line, Chris offers an alternative for 'As stiff as concrete', and provides some justification as well. The boys show other-orientation and creative engagement with each other's ideas, influencing the other and allowing themselves to be influenced. There is acting out and musing: in lines 3 and 5 Dave uses gestures to show the wobbliness of worms. However, they seem to get off track and start to generate similes and metaphors that do not serve the purposes of the developing text ("wibbly-wobbly as a worm" in line 3 and "squidgy (as) jelly beans" in line 4).

The boys come up with highly imaginative metaphors, but do not make use of them in their work. Subsequent (and previous) attempts to rephrase this line show that their imagination and humour does not resource the composition they are working on, their playfulness is not deployed constructively. Thus, the sequence does not serve the intellectual goals of the task. The difficulty of differentiating on-task and off-task playfulness poses a significant challenge, touching upon the dilemma and professional judgement of setting appropriate boundaries or constraints for the students to work within, and yet offering them the challenge of *adventurous control* (Jeffrey, 2003).

3.4. Singing

Finally, singing can also enhance creative processes through emotional involvement. Indeed, some peers engaged in lots of singing and humming. For instance, in the example below two boys are designing the setting of their story. (They have decided that the setting will be Venice, four golden horses and next to the statue of Jo-Jo.[2]) While transcribing the line they agreed upon, one of them starts to hum the tune of an ABBA song – 'Money, money, money' – cleverly modified to include their own ideas (lines 2–3 and 5–6). His partner joins in, singing the next line of the song (line 4).

Sequence 5–Robbie and Zak, story planning, literacy

1	Z:	((writing)) Horses ((pause))
2	R:	((reading)) Four golden horses ((starting to sing the ABBA-tune)) money, money,
3		money, four golden horses,
4	Z:	((joining in, singing)) In the rich men's world.
5	R:	((overlapping, singing) Men's world. ((giggling, then singing again)) Four
6		golden horses, four golden horses, in the rich man's world. ((he continues to hum
7		the rest of the tune))
8	Z:	Now, that's alright now. ((reading the instructions)) Choose the characters.

The boys' singing shows their emotional engagement with what they are doing, and reveals that they are working in a playful, experimental atmosphere. The fact that Zak joins in indicates sharedness of playful thinking. This singing episode can be regarded as a type of musing, which facilitates the development of new ideas through emotional engagement. However, it may also be taken as an example of reflection by which the evaluative phase is supported. In this sense, the episode may serve to aid the evaluation of the idea, which is concluded with Zak's remark "Now, that's alright now" (line 8), starting a new cycle of content generation.

The analysis presented here demonstrates the centrality of discursive features indicating emotional engagement and reveals the important role of emotion-based thinking (low focus thinking or knowledge telling) in creative content generation. Although beyond the scope of this paper, the research also showed the role of emotions in reflective phases, indicating that emotion-driven thinking was not restricted to creative content generation. Rather, it was found to be a general feature of both phases involved in creative text composition.

[2] This story was inspired by a book by Michael Morpurgo, *Jo-Jo the Melon donkey*.

4. Discussion

The analysis of discourse data revealed the unique nature and complexity of creative writing. It requires the use of language to reflect upon, explore and express one's own emotional experiences in a unique, imaginative but meaningful way. In collaborative creative writing contexts, productive talk can be defined as the successful sharing, joint exploration and expression of emotional experiences; communication in which the partners come up with and reflect upon shared creative ideas which would not have emerged from their individual work. As the findings of this study demonstrate, paired talk may function as the source of mutual inspiration and the platform of collective, imaginative brainstorming.

Following on from this discussion, one could conclude that it is the centrality of emotions which distinguishes creative writing (or creative design in general) from scientific problem solving and hypothesis-testing. Instead, I argue that the two types of activities are positioned at two different points on the emotion–intellect continuum. This does not mean that creative writing relies solely on emotion-driven thinking, or that scientific problem solving is purely intellect-driven. Rather, it implies the two types of tasks may differ in their emphasis on emotion-driven and intellect-driven thinking.

Indeed, joint scientific problem solving may benefit from shared associative brainstorming – or, as Bruner (1986) defines it, hypothesis creation – which leads to unique connections and unexpected solutions. This interpretation underlines the necessity to reconsider the undervalued status of the affective aspects of cognition in general. It also demonstrates the need to move from models over-emphasising the role of intellect-driven thinking (the explicit expression of logical arguments) towards more complex models of productive and creative peer collaboration.

However, the dilemma of generalisability versus task-specificity applies to the broad field of creativity itself. A topical issue in creativity research concerns whether creative thinking is domain specific or interdisciplinary in nature. Recent work has shown the complexity of this question, identifying both commonalities of creative thinking across different domains as well as the domain-specific forms of expression of creative thinking (Craft, 2005). Future research is needed to unpack this issue further and explore similarities and differences in creative thinking across different subject domains. In particular, we need to study the use of intellect-driven and emotion-driven thought in different creative fields, such as literary as opposed to mathematical creativity.

Finally, the study has implications for classroom management and discipline, highlighting the significance of emotion-based discourse in supporting shared creative writing. Although acting out, humour, musing or singing seem to enhance collaborative creativity, they do not conform to the behavioural norms typically expected from children doing groupwork at school. The implication is that such playfulness needs to be recognised and embraced as necessary for creative purposes, despite of the reluctance to do so in educational settings. Indeed, educators may need to problematise their own 'behavioural' expectations of students and find ways in which peer talk can be used to mobilise emotion-based thinking and thus foster classroom-based creativity.

Yet, the apparent ambiguity of the playful dialogues, and the difficulty of differentiating off-task from on-task playfulness demonstrate the complexity of this issue. As the study shows, imaginative thinking for its own sake may lead to unique, original ideas. These, however, are not creative in the strict sense, as they will not satisfy the constraints of the creative task. This interpretation is in line with Sharples' distinction between novelty and creativity, where both involve the testing of boundaries, but the latter is also aimed at maintaining general appropriateness. This issue is vital in the discussion of classroom-based creativity, where the constraints may either be inherent (e.g., genre), imposed by the teacher or linked to the educational context. It is reasonable to assume that children benefit from simple and accessible constraints, which may be easier to recognise, comprehend and adhere to. This makes the process of switching between phases of content generation and reflection easier, and shared reflective phases more successful. Thus, careful scaffolding by the teacher is essential, in order to make the constraints transparent and accessible.

As Tim Smit contends, "Every good teacher is a catalyst to creativity, a liberator. Every bad teacher creates cages" (in Craft, 2005, p. xiv). Indeed, fostering children's creativity is a careful balancing act between teacher control and student autonomy and between the encouragement of emotional engagement and playful thinking and conscientious, mindful reflection.

Appendix A. Transcript symbols

Transcript symbols (adapted from Silverman (1998) and Schegloff (2000))

Symbol	Example	Explanation
(( ))	M: Ok, my go. We'll go down one. Let me think	Double parentheses contain author's descriptions rather than transcriptions
	A: ((pointing at the screen)) Oh, it says that that's wrong!	
(word)	J: Ermmm big and small C: No, big (corks)!	Parenthesised words are possible hearings
( )	A: I wanted to () ship, ship, ship	Empty parentheses indicate the transcriber's inability to hear what was said
	M: I think	
WORD	J: Sharks	Capitals, except at the beginnings of lines, are used for words/syllables uttered with emphasis
	C: ((musing tone)) eating J: ((with excitement)) Sh- I KNOW!	
–	M: I, I, I was going to say, s- A: ((interrupting)) Sailing away	A hyphen indicates an incomplete word or utterance

References

Azmitia, M., & Montgomery, R. (1993). Friendship, transactive dialogues, and the development of scientific reasoning. *Social Development*, *2*(3), 202–221.

Barnes, D. (1976). *From Communication to Curriculum*. Harmondsworth: Penguin Books.

Bereiter, C., & Scardamalia, M. (1987). *The Psychology of Written Composition*. Hillsdale, NJ; London: Lawrence Erlbaum Associates.

Billig, M. (1997). Rhetorical and discursive analysis: How families talk about the royal family. In N. Hayes (Ed.), *Doing Qualitative Analysis in Psychology* (pp. 39–54). Hove: Psychology Press.

Boden, M. A. (1990). *The Creative Mind: Myths and Mechanisms*. London: Weidenfield & Nicholson.

Bruner, J. S. (1986). *Actual Minds, Possible Worlds*. Cambridge, MA: Harvard University Press.

Craft, A. (2005). *Creativity in Schools: Tensions and Dilemmas*. London: Routledge.

Craft, A., & Wegerif, R. (2006). Founding editors' editorial—thinking skills and creativity. *Thinking Skills and Creativity*, *1*(1), 1–2.

Czerniewska, P. (1992). *Learning about Writing*. Oxford: Blackwell.

DfEE. (1998). *The National Literacy Strategy*. London: DfEE.

Donaldson, M. (1996). Humanly possible: education and the scope of the mind. In D. R. Olson & N. Torrance (Eds.), *The Handbook of Education and Human Development—New Models of Learning and Schooling* (pp. 324–344). Oxford: Blackwell.

Flower, L. S., & Hayes, J. R. (1980). The dynamics of composing: Making plans, juggling constraints. In L. W. Gregg & E. R. Steinberg (Eds.), *Cognitive Processes in Writing* (pp. 31–50). Hillsdale, NJ: Lawrence Erlbaum.

Gelernter, D. (1994). *The Muse in the Machine: Computers and Creative Thought*. London: Fourth Estate.

Harré, R. (1997). An outline of the main methods for social psychology. In N. Hayes (Ed.), *Doing Qualitative Analysis in Psychology* (pp. 17–37). Hove: Psychology Press.

Hartup, W. W. (1996). Cooperation, close relationships, and cognitive development. In W. M. Bukowski, A. F. Newcomb, & W. W. Hartup (Eds.), *The Company They Keep—Friendship in Childhood and Adolescence* (pp. 213–237). Cambridge: Cambridge University Press.

Jeffrey, B. (2003) Creative learning and student perspectives. Place (Published: The Open University. http://opencreativity.open.ac.uk).

Jones, I. (1998). Peer relationships and writing development: A microgenetic analysis. *British Journal of Educational Psychology*, *68*, 229–241.

Jones, I., & Pellegrini, A. D. (1996). The effects of social relationships writing media and microgenetic development on first-grade students' written narratives. *American Educational Research Journal*, *33*(3), 691–718.

Kruger, A. C. (1992). The effect of peer and adult-child transactive discussions on moral reasoning. *Merrill-Palmer Quarterly*, *38*(2), 191–211.

Loveless, A. M. (2002). *Literature Review in Creativity, new Technologies and Learning*. NESTA Futurelab Series, Report 4. Retrieved April 20, 2005 from http://www.nestafuturelab.org/research/reviews/cr01.htm.

Mercer, N. (1995). *The Guided Construction of Knowledge*. Clevedon, Avon: Multilingual Matters.

Mercer, N., & Wegerif, R. (1999). Is 'exploratory talk' productive talk? In K. Littleton & P. Light (Eds.), *Learning with Computers: Analysing Productive Interaction*. London: Routledge.

Miell, D., & MacDonald, R. (2000). Children's Creative Collaborations: The Importance of Friendship when Working Together on a Musical Composition. *Social Development*, *9*(3), 348–369.

Pellegrini, A. D., Galda, L., Bartini, M., & Charak, D. (1998). Oral language and literacy learning in context: the role of social relationships. *Merrill-Palmer Quarterly*, *44*(1), 38–54.

Pellegrini, A. D., Galda, L., & Flor, D. (1997). Relationships, individual differences, and children's use of literate language. *British Journal of Educational Psychology*, *67*, 139–152.

Phelps, E. A. (2005). The interaction of emotion and cognition insights from studies of the human Amygdala. In L. F. Barrett, P. M. Niedenthal, & P. Winkielman (Eds.), *Emotion and Consciousness*. London: Guilford Press.

Pinsent, P. (1998). From copying to creation: the teaching of writing before the 1980s. In J. Graham & A. Kelly (Eds.), *Writing under Control: Teaching Writing in the Primary School* (pp. 1–6). London: D. Fulton Publishers.

Schegloff, E. A. (2000). Overlapping talk and the organisation of turn-taking for conversation. *Language and Society*, *29*, 1–63.

Silverman, D. (1998). Analysing conversation. In C. Seale (Ed.), *Researching Society and Culture* (pp. 261–274). London: Sage Publications.

Sharples, M. (1999). *How We Write—Writing as Creative Design*. London: Routledge.

Sharples, M. (1996). An account of writing as creative design. In C. M. Levy & S. Ransdell (Eds.), *The Science of Writing—Theories, Methods, Individual Differences and Applications* (pp. 9–28). Mahwah, NJ: Lawrence Erlbaum Associates.