THE ROLE OF SUSTAINED SHARED THINKING, PLAY AND METACOGNITION IN YOUNG CHILDREN’S LEARNING

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Introduction

Within the educational arena, play is widely recognized as a leading context for the child’s acquisition of communication and collaboration skills and provides an important context for well-being, learning and development. The current Early Years Foundation Stage (EYFS) guidance (DfES, 2012) in England uses the role of play as ‘an effective characteristic of learning’, encouraging adults to use a rich range of experiences and resources through talk, modeling and joint-play activities.

The role of the ‘adult’ within joint activity is of particular interest here. The notion of sustained shared thinking (SST), referring to the sharing of thinking with an adult and to the sustained nature of some of the interactions identified in effective (in terms of child outcomes) preschool settings (Siraj-Blatchford et al., 2002) is an area of current research development. As decades of research have shown, play begins first with solitary play and the child goes on to develop the capability to share, then to co-operate and finally to collaborate in their play (Siraj-Blatchford, 2008).
But solitary play, shared play, co-operative and collaborative play are not discrete
'stages' that the child works through. These experiences also support children in
developing a greater awareness of their own development and learning, through
building on their metacognitive abilities (i.e. processes whereby individuals become
increasingly aware of and are able to control their own cognitive processes).
Thus, recent studies in the area of early childhood education (ECE) have examined
the role of play in supporting children’s development of ‘metacognitive’ and self-regulatory
abilities (Whitebread and Pino-Pasternak, 2010; Robson, 2010). Studies ranging from
experimental to ethnographic investigations have also examined how the field of play
develops, how contextual factors support or impede its development and what its specific
functions are. While much of the research has focused on early transformational abilities
and how they enhance the development of a broad range of skills including literacy
abilities (Pellegrini, 2009), the focus of this chapter is on how young children’s play func-
tions as a ‘leading activity’ (Vygotsky, 1933) and more specifically, how it might work in
the child’s development of metacognitive and self-regulation skills.
Until recently, it was thought that metacognitive skills did not emerge till later
childhood (Veenman et al., 2006). However, more developmentally appropriate meth-
odologies now identify that children as young as 3 years old are able to demonstrate
metacognitive behaviours including elementary forms of planning, orientation and
reflection (Whitebread et al., 2007, 2009) and early individual differences predict
school achievement more robustly than other indicators such as IQ (Veenman et al.,
2004) and reading and maths skills (McClelland et al., 2007).
The term metacognition was initially used by Flavell and by Brown in their early
work in the 1970s to refer to knowledge about cognition and regulation of cognition.
According to Flavell (1976), ‘metacognition refers to one’s knowledge concerning
one’s own cognitive processes and products or anything related to them’ (p. 232).
Flavell (1977) recognized early on that the development of metacognition was a
centrally significant cognitive-developmental hallmark of early childhood. Research
based on Vygotsky’s (1978) model of development showed how children’s learning is
a process of moving from other-regulation (performing a task supported by an adult
or peer) to self-regulation (performing a task on one’s own). Within this dominant
Vygotskian framework, the role of an adult or educator supports children’s learning,
emphasizing the significance of mediation by an adult as ‘sustained shared thinking’
during such interactions. A range of studies have confirmed these theoretical interre-
lationships between metacognitive and self-regulatory performance by using child-
initiated play (Berk et al., 2006) where these higher order processes promote intentional
learning in ECE.
The notion of SST as a pedagogical construct is thus defined as a vehicle for
developing these latter strategies, first identified in a mixed method, educational
effectiveness study (Siraj-Blatchford et al., 2002). Pedagogic progression in the early
years is then identified as an educational response to, and an engagement with, the most
commonly observed, evidence-based developmental trajectories of young children as
they learn through play.
The development of this chapter represents one stage in a continuing effort to
develop a better understanding of SST as a pedagogic practice in ECE. We focus on
the educational potential of shared playful activities within the context of metacognitive abilities.

Sustained shared thinking

To understand sustained shared thinking (SST) it is important to recognize firstly that it emerged as an analytic node or ‘condensation symbol’ in the process of qualitative research. These data were collected in the intensive case study analysis of 12 ‘effective’ preschool drawn from the 141 settings involved in the Effective Provision of Pre-School Education (EPPE) longitudinal study. The term came to be defined as SST because research respondents and observers specifically referred to the ‘sharing of thinking’, and to the particularly sustained nature of some of the interactions identified in effective (in terms of child outcomes) preschool settings: sustained and meaningful to those sharing the interaction from just a few exchanges of conversation to much longer episodes.

What is novel and important about SST is its evidential basis in group settings, and as a useful concept for pedagogy. Arguably, many other researchers have adopted similar terms and have described similar pedagogic practices. In reviewing the literature for this chapter, the strongest theoretical resonances were found with Vygotsky (1978) who described a process where an educator supports children’s learning within their ‘zone of proximal development’. The zone of proximal development (ZPD) is primarily where children are given some support from an adult or experienced peer within the zone of effective learning. Forms of interaction underpin a support structure for the child to build on such as encouragement, simplifying the task, reminding the child of the goal, making suggestions and modeling answers. This temporary structure termed as ‘scaffolding’ enables the child to successfully carry out a particular task, building on their existing skills and understanding. The interaction has to be meaningful to the child and build on her interests.

But interactions of this sort have also been described as ‘distributed cognitions’ (Salomon, 1993), in terms of the pedagogy of ‘guided participation’ (Rogoff et al., 1993), and as ‘scaffolding’ (Wood et al., 1976). Similar examples of participation and interaction also characterize ‘dialogic teaching’ (Alexander, 2004), ‘dialogic enquiry’ (Wells, 1999), ‘interthinking’ (Mercer 2000), and ‘mutualist and dialectical pedagogy’ (Bruner, 1996, p. 57).

The research methods applied in the case studies to identify effective pedagogy in the EPPE project have been described fully elsewhere (Siraj-Blatchford et al., 2006). For the purposes of this chapter, it will be enough to explain that the research provided a qualitative extension to the (then) ten-year longitudinal EPPE study which has followed the progress of over 3,000 children in England.

EPPE controlled for the influence of family and child characteristics and was able to establish the ‘effectiveness’ of each of the preschool settings attended by the children in its sample. The qualitative case studies drew upon these findings to construct a stratified random sample of ‘good’ to ‘excellent’ settings for further in-depth qualitative data collection and analysis. EPPE was also able to provide data on the ‘quality’ of each of the settings as measured by the Early Childhood Environment Rating...
Pedagogy was defined broadly in the qualitative analysis to include all of those processes and provisions that could be considered to initiate or maintain learning processes, and to achieve educational goals. Such a wide definition was considered important so that it would include the common practice of providing resources for exploration and (constructivist) ‘discovery’ learning environments (e.g. sand and water and play). The analytical process was initially ‘grounded’, as the process began with induction, and this was only followed later by stages of deduction and verification using the ECERS scores for quality. All of this initial work was also carried out blind in the sense that the researcher was unaware of the particular learning outcomes achieved by the settings and identified by EPPE.

In the identification of sustained shared thinking, the pedagogic ‘instructional techniques’ were at first coded with a multitude of subcategories that included ‘Questioning’, ‘Demonstrating’, ‘Telling’, and ‘Dialogue’. The reclassification of some of the ‘Dialogue’ as ‘Sustained Shared Thinking’ (SST) with subcategories of ‘Child-initiated SST’ and ‘Adult-initiated SST’ initially took place after data such as the following were revealed:

CONTEXT: Children engaged in water play.

BOY (4:1) (who has been watching various items floating on water), ‘Look at the fir cone. There’s bubbles of air coming out.’

NURSERY OFFICER ‘It’s spinning round.’

BOY (4:1) ‘That’s ’cos it’s got air in it.’

NURSERY OFFICER (picks up the fir cone and shows the CHILDREN how the scales go round the fir cone in a spiral, turning the fir cone round with a winding action), ‘When the air comes out in bubbles it makes the fir cone spin around.’

GIRL (4:9) (uses a plastic tube to blow into the water), ‘Look bubbles.’

NURSERY OFFICER ‘What are you putting into the water to make bubbles? … What’s coming out of the tube?’

GIRL (4:9) ‘Air.’

(Dialogue continued …)

The analytical process was continued further through theoretical sampling informed by an analysis of the EPPE multi-level outcomes data, and the centre quality ratings of the ECERS-R and ECERS-E environmental rating scales. Various positive correlations were found between child outcomes on, for example, Early Number outcomes with the ECERS-R interaction Sub-scale (r=0.26, p<0.005). Setting 421 (referred to above) was found to have achieved ‘excellent’ (95 per cent confidence level) practice in terms of the children’s developmental progress according to their ‘non-verbal’ and ‘number concepts’ assessments. Performance in ‘Language’ was also found to be ‘good’ (above 68 per cent confidence level). Further analysis soon revealed a general pattern of high cognitive outcomes associated with sustained adult–child verbal interaction along with a paucity of such interactions in those settings achieving
The role of sustained shared thinking

less well. SST thus came to be defined as an effective pedagogic interaction, where two or more individuals ‘work together’ in an intellectual way to solve a problem, clarify a concept, evaluate activities, or extend a narrative within meaningful contexts for the child. Thus, SST was subsequently found to occur most commonly in 1:1 adult–child interactions. An example is through questioning with instances of SST from the observations of practitioners:

‘… it is knowing your children, it’s treating them as equal. It’s asking questions of them, knowing that you really want to find out, not just because you want them to give you the right answer. It’s entering into their thoughts …’

(421 interview with head, para 64)

Play and pedagogic progression in the early years

Play is widely recognized as a leading context for the child’s acquisition of communication and collaboration skills and provides an important context for learning and development, as Vygotsky (1933) put it: ‘Only theories maintaining that a child does not have to satisfy the basic requirements of life, but can live in search of pleasure, could possibly suggest that a child’s world is a play world’ (p. 1). But: ‘The child moves forward essentially through play activity. Only in this sense can play be termed a leading activity that determines the child’s development’ (p. 1).

In terms of empirical progression we know that play begins with solitary play and the child goes on to develop the capability to share, then to co-operate, and finally to collaborate in their play. We also know that these developments open up much wider opportunities for learning. However, there are no clear stages of ‘solitary’, ‘shared’, ‘co-operative’ or ‘collaborative’ play that the child works through. Even solitary play serves us well at times throughout our learning lives. In most theoretical accounts describing the ways in which these different forms of play open up the possibility of learning, the notion of emergent development is often implicit. For example, when describing play as a ‘leading activity’ (Leontiev, 1964; Oerter, 1993), it is only being suggested that it should be seen as a driving force in the child’s development of new forms of motivation and action.

Activities that may all be considered examples of SST (Siraj-Blatchford, 2007) are considered by many neo-Vygotskian writers (Karpov, 2005), to mark the transition from learning activities that are characterized by ‘emotional communication with caregivers’ (Lisina, 1986), then to ‘object-centred joint activity’ (Elkonin, 1989) where the child begins object substitutions, and then on to socio-dramatic play (Leontiev, 1964), with finally activities that reflect the child’s desire to learn more formally and embrace formal learning (or schooling) as the dominant learning activity.

Figure 34.1 summarizes these major developmental phases and identify some of the major features of pedagogic progression. The figure follows the example of the English Early Years Foundation Stage (EYFS) Guidance (DfES, 2012) in referring to some of the most significant, overt and immediate learning that takes place throughout each phase as something for practitioners to ‘Look, listen, and note’, and to identify the potential developmental significance of this separately. In place of pedagogy...
<table>
<thead>
<tr>
<th>Playful activity</th>
<th>Sustained shared thinking</th>
<th>Pedagogy</th>
<th>Learning</th>
<th>Developmental potential</th>
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</thead>
<tbody>
<tr>
<td>1. Emotional communication with caregivers</td>
<td>Communications with adults and peers involves the exchange of significant gestures</td>
<td>Adult models and leads (Treating all of the child's actions as 'communicative'). Scaffolding is then progressively reduced. 'Extensions' provided.</td>
<td>Object permanence 'Social smiles' and Gestures, signs and symbols are increasingly recognised by the child as communicative acts.</td>
<td>Towards the development of a conception of the 'self'.</td>
</tr>
<tr>
<td>2. Object-centred joint activity</td>
<td>Pretend role play and object substitution become internalised (as imagination) and as inner speech develops. Sharing play symbols and signs in pretend play with partners</td>
<td>Object substitution and 'pretend' modelled by adults and/or peers. Scaffolding in the provision of props (e.g. dressing up clothes) and environments progressively reduced. Extension by encouraging more abstract symbolisation and open ended questioning.</td>
<td>Reciprocity in sharing peer relations Being an (object) other to oneself Increasingly acknowledging other perspectives</td>
<td>Towards the co-ordination of 'self' to 'others'.</td>
</tr>
<tr>
<td>3. Socio-dramatic play</td>
<td>Collaborative involvement in improvised play with partners.</td>
<td>Modelling by adults and peers. Progressively reduction of scaffolding in the provision of ideas and themes for play. Extend by encouraging play with more capable peers Introduction of games with more sophisticated rules.</td>
<td>Collaborative skills as socio-dramatic play becomes more as partners at first share symbols and then reciprocally negotiate roles Greater resilience.</td>
<td>Towards a theory of mind and metacognition.</td>
</tr>
<tr>
<td>4. Transition to learning activity</td>
<td>Collaboration in increasingly structured activities and games with more complex rules</td>
<td>Encouragement of extended play (over days) to promote self regulation, planning and memory. Progressively reduction of scaffolding in planning. Scaffolding more disciplined collaborations, e.g. carrying out an 'investigation'.</td>
<td>Reflection upon the relationship between 'pretend' signs and 'real' meanings Orientation towards more formal learning and school. Learning to learn.</td>
<td>Towards learning to learn and the development of learning 'dispositions'.</td>
</tr>
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*Figure 34.1* Towards a model of pedagogic progression in play
we apply the more common phrase ‘effective practice’. The first three developmental phases that are identified broadly correspond with Broadhead’s (2001) empirical account of the ‘social play continuum’ levels for ‘Associative Play’, ‘Social Play and Highly Social Play’, and ‘Co-operative Play’. There is no specification of the ages to which these apply and there is no particular problem with these being defined as broad and overlapping phases (as again applied in the EYFS). But arguably these processes do not end with play, or in school, or even in adult life. There is an essential continuity between the playful collaborations of the nursery and the more formal collaborations between peers, and between teachers and pupils in schools, in working partnerships, in the provision of apprenticeship and tutorial relationships and even professional mentors and collaborators at the academic and professional level. In terms of competence, progression goes from mastering the very informal and strongly improvised sustained and shared interactions to more highly structured and much more formal sustained and shared interactions in adult life.

Metacognitive development

The role of others

Researchers agree that social influences are central to metacognitive development. The dominant theoretical contribution is derived from Vygotsky’s (1978) notion that children develop the capacity for self-regulation through interaction with more knowledgeable others. During episodes of true collaboration, the child moves from being ‘other-regulated’ to ‘self-regulated’ (Zimmerman and Schunk, 2001). Work within this approach has emphasized the significance of mediation by an adult who initially assumes responsibility for monitoring progress, setting goals, planning activities, etc.; however, over time, responsibility of these executive processes is given over to the child.

Findings from the Researching Effective Pedagogy in the Early Years (REPEY) study (Siraj-Blatchford et al., 2002) have demonstrated the effective pedagogue orchestrates learning through the following adult–child interactions, for example:

- **Scaffolding** – to extend children’s knowledge and understanding through the use of strategies such as open ended questioning;
- **Extending** – by making a suggestion that helps a child to see other possibilities;
- **Discussing** – which supports the interchange of information or ideas.
- **Modelling** – which includes the demonstration of activities and verbal commentary from the adult.

Such opportunities should be sensitive to the curriculum concept or skill being ‘taught’, which take into account the child’s interests and ZPD (Vygotsky, 1978).

In principle, REPEY (Siraj-Blatchford et al., 2002) established that the most effective (excellent) settings (for enhancing child development) achieved a balance between the opportunities provided for children to benefit from adult-initiated group work and in the provision of freely chosen, yet potentially instructive, play activities.
According to Whitebread et al. (2007), when adults are engaged in activities with children, they may tend to stimulate the children to reflect on and engage with, what they know about their own learning more frequently.

Intervention research has also shown that children are able to benefit from pedagogical techniques to promote metacognitive development. Such instruction, particularly language (both oral and written) includes developing the students’ awareness (encouraging talk about the strategies used and how they affect performance). Pramling (1988) argues that ‘explicit talk’ or ‘metacognitive dialogues’ between adult and child helps children become more consciously aware of their thinking, which ultimately supports their metacognitive development.

The role of peer-assisted learning has been well documented within the self-regulation literature. Evidence of metacognitive development has been found in playful contexts which involved another child or small groups with high levels of collaborative dialogues. Robson (2010) found extensive evidence of metacognitive and self-regulatory behaviours in preschool children’s self-initiated play and shared talk. Opportunities for open-ended group-work, and child-initiated activities which encouraged children to articulate their ideas and explain their reasoning, were found to be significantly effective in stimulating metacognitive and self-regulatory behavior (Whitebread et al, 2007).

The role of self-regulation

A number of studies have investigated ‘the role of the child during play’ and development of self-regulation (Berk et al., 2006). Findings from these studies suggest that some types of play, i.e. social pretend play, can promote private speech (where children are observed to self-commentate) (Diaz and Berk, 1992).

Vygotsky (1962) initially proposed that private speech stems from social speech, which emerges from the guiding nature of children’s parent–child interactions. Within his framework, he argued that higher mental functions develop through this internalization and transformation of mental processes. As adult and child participate in a linguistically mediated joint activity, a child creates a dialogue that can be internalized to form self-regulatory private speech (Fernyhough, 1996). As Fernyhough (2010) explains, words that were previously used by the child to regulate the thought and behaviour of others (or which others have used to regulate the child’s thought and behaviour), become employed in regulating the thought and behaviour of the child.

Research has revealed interesting findings about the context of private speech occurrence in young children. Diaz and Berk’s (1992) study shows that the use of private speech during goal-directed activities is firstly overt and is an important tool to guide attention and regulate behaviour during problem-solving tasks. It later undergoes a developmental transition where it becomes more internalized, fragmented and relevant over time (Winsler and Naglieri, 2003). Within the context of play in young children, studies examining private speech found a positive relationship between the development of self-regulation and make-believe play (Krafft and Berk, 1998). They found that the incidence of private speech was higher during open-ended activities, especially during fantasy play where children were involved in
associative play with peers. In this view, the self-regulatory functions of speech have
their origins in social exchange, and are not simple imitations of the adult’s guiding
speech (Berk and Spuhl, 1995).

The development of play

Let us now consider how SST develops over time in progressively more sophisticated
contexts, as sustained and shared ‘moments of activity’ (Leontiev, 1978). We can begin
by drawing upon George Herbert Mead’s account of the processes that are involved
in children’s early ‘emotional communications with caregivers’ seeing these as gestural
symbols that are at first recognized by babies as communicative acts.

To paraphrase Morris (1962): ‘The “significant gesture”, itself a part of a social
process, internalizes and makes available to the [child] the means which have them-
selves emerged earlier, nonsignificant, stages of gestural communication’ (p. xxii).
‘Significant gestures’ thus provide the means by which a baby is able to at first objec-
tify the behaviour (or role) of the other, and control their own behaviour in response
to these roles. It is also in this process that the child first develops a conscious aware-
ness of the ‘self’. The interactive contexts for these very early learning experiences
usually involve the parent or primary carer playing ‘peek-a-boo’ or other baby games
that involve taking turns. But the development of higher mental functions only
‘emerges’ following a multiplicity of these relatively simple interactions.

The pedagogy that might be considered implicit in these interactions follows a
sequence where the adult at first repeatedly models a particular action or gesture (an
early example may be a big smile following eye contact), or the adult provides a
reward when the child responds and then as the child begins to initiate the game
themselves, progressively reducing the scaffolding (in this case the adult initiation and
rewards). The guided assumption here is that children at first cannot perform the lead-
ing activity independently without adult interaction. However, gradually children
become full partners, during these interactions, where ‘playful activity’ between parent
and child operates within the child’s zone of proximal development. Progressively, as
the child continues to communicate with adults and other children, the meanings
that they are constructing are mediated by all their previous historical moments of
significant activity.

At this point conceptual knowledge and understanding of the ‘other’, and of the
‘self’, develop further and learning ‘dispositions’ become more significant (e.g. prob-
ably most clearly identified in studies of gender preference). The development of
these sophisticated levels of abstraction (and meta-consciousness), commonly referred
to as a theory of mind (ToM), also facilitates the development of metacognitive skills.
The metacognition that is so important in learning-to-learn also develops as the child
finds it necessary to describe, explain and justify their thinking about different aspects
of the world to others.

Thus, from an early age, young children learn to separate objects and actions from
their meaning in the real world and give them new meanings. This provides the basis
for early representational thinking and in more advanced forms of representational
thinking these ‘props’ are no longer required, so that problems may be solved entirely

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‘in the head’. With their play partners, communication is conducted, from their own historically constructed perspective, which includes their understanding of the perspective of themselves constructed by the other participant in the communication (or SST). This has important implications for development as ‘the child’s position towards the external world changes … and the ability to co-ordinate his point of view with other possible points of view develops’ (Elkonin, 1978, p. 282).

Forman and Cazdan’s (1998) research suggests that children’s problem-solving improves in collaboration, as the partners alternately provide scaffolding for each other within the partners’ ‘zone of proximal development’ (ZPD). That is, the ‘zone of capability’ that extends beyond what the partner is capable of doing on their own to include those activities they may successfully do with the support of their peer.

This pedagogic sequence of modelling – progressive reduction of scaffolding – extension may continue to be employed in supporting children’s learning in a wide range of play contexts throughout the early years.

As children develop, a range of particular (and increasingly unique) cultural, personal and situational factors will make some contexts more significant to the individual child than others. But in the child’s first significant gestures, and later in many other communications, both positive and negative emotional influences are likely to motivate their learning, with the operation of interests, desires and impulses being applied on the one hand (perhaps dominating in the earliest years), and concerns about what Piaget referred to as ‘disequilibrium’ (and cognitive dissonance or conflict) being applied on the other.

For Van Oers (1998), the creative processes of learning that are involved can be characterized as a process of ‘progressive continuous re-contextualization’ (pcc-r), where it is considered that as soon as the individual recognizes the potential of achieving a recalled (and motivating) object (or outcome) they may choose to re-contextualize that object, transforming (or ‘transferring’) their (structure and meaning) of the activity to that end. The developmental significance of these first separations of meaning from objects is enormous: ‘At that critical moment when a stick – i.e. an object – becomes a pivot for severing the meaning of horse from a real horse, one of the basic psychological structures determining the child’s relationship to reality is radically altered’ (Vygotsky, 1933, p. 1).

It is in this context that the power of play and pretence may be seen most clearly. Vygotsky (1933) argued that in the child’s ‘real’ life, action always dominates over meaning. The evidence suggests that the crucial practice of substituting a real object for a symbol may occur spontaneously in play, but that this is also greatly facilitated in playful interaction with others.

**Conclusions**

This chapter has considered the role of SST as a form of pedagogy in the sense that it is something adults do to support and engage children’s learning. SST is argued as a high order pedagogical concept as the adult has to sensitively tune into the child’s interests and meaning making before extending it with them, and, as a common approach, has the potential to provide just this sort of continuity. Drawing upon
broadly Vygotskian sources, the model presented suggests that learning can change
the child’s developmental level through ZPD to which adults can progressively intro-
duce children to the cultural tools that they require to mediate cognitive develop-
ment. Furthermore, through pretend play, the chapter has argued that symbolic
construction and the role of language can be introduced as an appropriate pedagogic
activity for young children to enhance both self-regulation and metacognitive
abilities.

In discussing the transition from play to learning as ‘a leading activity’, Carpay and
Van Oers (1993) argued that ‘learning activity must be fostered as a new special form
of play activity. As a new quality emerging from play activity, it can be argued that
learning activity has to be conceived as a language game in which negotiation about
meanings in a community of learners is the basic strategy for the acquisition of

During the course of development, children experience more challenging SST in
their play initially with adults, then in reciprocal peer play and later in sophisticated
collaborative play. We can support this process in ECE by providing children with
more challenging forms of SST and by initiating more sophisticated and abstract s-af-
folding props. The prime objective should be further opportunities for meaningful
talk between adult and child, providing cognitive challenge that is manageable for the
children.

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