TACTYC Research Briefing

Taking play more seriously: A Montessori approach to understanding Free Flow Play

John Siraj-Blatchford, University of Plymouth
Lynnette Brock, Montessori Centre International College

The analytical model identified in this paper draws upon a distinction made between cognitive schemes and schema that was applied by the first author in a randomised controlled study of 54 five-year-old children engaged in constructive play (Siraj-Blatchford and Siraj-Blatchford, 2002). Piaget (1969) had suggested that the child's first cognitive schemas (representations of figurative knowledge) are developed through imitation; and that learning involves a progressive cyclical process in the development of these figurative or symbolic schema, and their *operative* schemes. As Athey (1990, p113-4) has suggested, it may be that research progress was being significantly hindered by our failure to differentiate between these terms. Applying Gibson's (1969) ecological theory of cognitive development, we have also come to understand that schemes represent the affordances, or perceived action possibilities, of schema.

As we argue below, the theories and practices of Maria Montessori suggest that she may have assumed consistent and emergent (Siraj-Blatchford and Parmer, 2011) processes of learning in prescribing the presentation of focused activities, followed by extended periods of free play. The focused activities serve to provide affordance schemes for the children to subsequently explore freely in relation to a variety of schemas in their play. A consideration of these issues may be considered particularly timely. OFSTED have recently drawn specific attention to the need to consider the relationship between teaching and play, and specifically how practitioners 'weigh up': *"...the extent of their involvement and fine-tun(e) how formal or informal, structured or unstructured, dependent or independent each learning experience should be to meet the needs of each child most effectively"* (OFSTED, 2015, p5). Our initial research questions have therefore been:

- How can we better understand the role of Montessori's focused activities and their contribution to children's learning and development, and what relevance, if any, does this have to the wider EYFS teaching and learning community?
- What practical significance might there be in differentiating between cognitive schemes and schema in early childhood teacher education?
- Does a distinction between the development of cognitive schemes and schema shed new light on the question of the adult's role in supporting children's learning through free-flow play?

Methodology

Montessori practice provides a particularly well controlled pedagogical context for us to begin to explore these issues. In the Montessori context, highly structured activities and materials are presented to children as 'focused tasks' to give them sensory and other foundational curriculum experiences that they may subsequently draw upon in their learning. As Williams (2009) has observed, Montessori activities introduce the children to significant new affordances, or action possibilities of materials that they will spontaneously come back to later, in both the classroom space, where the children are then encouraged to access the materials freely in their own time, and in their minds, in the emergent development of more elaborate conceptual operations. . Montessori emphasised the need for adults to observe each child's free play, and she suggested that each child should be allowed a three-hour 'work-cycle' of uninterrupted engagement in their own choice of activities and in their free use of materials to encourage the repetition of the activities, as well as to provide the opportunity for them to apply and adapt their newly acquired operational processes in new

contexts and in meaningful ways. This may be considered equivalent to the 'free flow' play recommended by *Bruce (2004)*, *which provide opportunities for them to "*try out their most recently acquired skills and competences, as if celebrating what they know" (p132). As Furth (1969) has explained:

"The child who re-enacts a scene from yesterday represents through symbol formation the event which was yesterday present to him through object formation…It gives food to his growing operative thinking which otherwise would be limited to perceptual events of here and now" (Furth, 1969, p89).

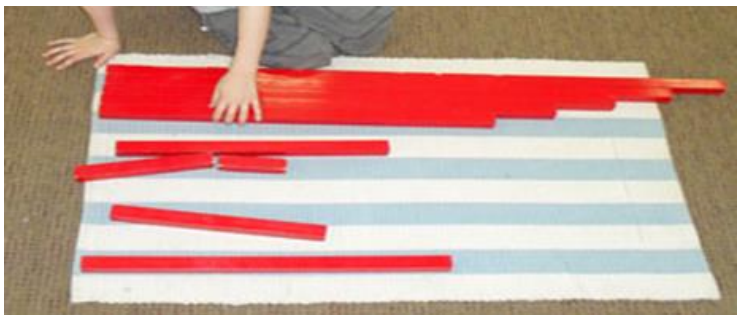
The research at this stage is exploratory and has involved in-depth participant observation in Montessori settings supplemented by target child video tracking and collaborative analysis. Following trials that have included the observations of Jack's learning referred to below, we have been following Alexa's learning journeys for 18 weeks in her transition from pre-school to a primary classroom, and we have analysed 13 hours of video. This data collection continues and will soon be extended to include a parallel child case study at another site.

Research consent has been obtained from all participants including the children themselves and their parents. As a four-year-old respondent, Alexa has been informed of the purposes of the study, and of the potential uses that may be made of the data, images and video material that is collected. This has included showing her publications that include children's images. In discussion she has made it clear that she is comfortable with this. The BERA (2004), 'Good Practice in Educational Research Writing', and rules relating to compliance and conduct of research methods and publication are fully adhered to. Observations of teachers' professional conduct and the children's play activities are carried out with integrity and sensitivity.

Learning Journey: Jack

In our preliminary studies, Jack (3:6) was observed by his educator, over a period of two weeks, combining the Montessori *Pink Tower* (grading cubes by size) and *Broad Stair* (grading prisms by size) Sensorial materials, to build different constructions. Many creations were recorded and one that was repeatedly built Jack named the "Eiffel Tower". This gave an indication that he might benefit from presentation of the Montessori *Red Rods* focused activity that would provide him with additional operational schemes including sequencing the rods by length using his hands and visual sense.

Following the Red Rods activity, Jack had worked with the materials in self-chosen spontaneous activity on four separate occasions.



In the following observation, Jack appeared to be experimenting with this newly acquired knowledge through another scheme, using his whole body:

*SiteA14/03/15/10.15am***:** Jack walked over to the Sensorial activity shelves in the classroom.

He lay down next to the lowest shelf and turned his head to face the ‘Long Red Rods’ activity. He smiled, looked away, brought his legs up to his chest and turned his head again towards the Rods. He remained in that position for a short while and then straightened his legs. He smiled, stood up and walked to where a practitioner was with a group of three children talking about Totem Poles.

SiteA14/03/2015/10.40am: After leaving the group of three children still talking, Jack engaged in a further activity, threading string through toilet rolls in a line. He selected the longest Red Rod to be a measuring device, which he used to identify a ‘long’ piece of string.

This provided evidence of a figurative schema; Jack was clearly applying some knowledge of length. The Montessori activity and materials could be seen to have indirectly supported Jack’s learning about length. In fact the activity and materials would appear to have been designed not only with the isolation of the sense (visual discrimination), but also with the development and elaboration of operational schemes, and supporting schema (figurative knowledge) very much in mind. The prescribed Montessori Sensorial materials may be seen to have provided important schemes to be applied in support of Jack’s emergent understanding of the mathematical operations.

In free-flow play, Jack extended his own knowledge by constructing a den using different length branches graded from short to long. Later, his practitioner built upon this scheme by introducing the Montessori ‘Number Rods’, which identify a fixed quantity to the differing lengths. This was later used by Jack in free-flow play as a device for measuring height of plants in the garden.

Discussion

Jack’s case suggests that if we are to improve the scaffolding of learning and support in our pre-schools, it will not be enough to simply respond to the observation of the child's schemes by presenting them with additional schema applications. As Vygotsky argued, we should not wait passively for children to learn; education should *"march ahead of development and lead it" (Vygotsky*, 1962, p 104). In this Montessori setting Jack’s readiness for additional learning was observed and acted upon.

In the Montessori context, the materials and activities support practitioners by identifying progression in terms of schema. Similar support was provided for practitioners in the DfCSF (2008) *Practical Guidance for the EYFS*, and is now included in *Development Matters* (BAECE, 2012), presented under three columns:

- ‘A Unique Child: **observing** how a child is learning’;
- ‘Positive Relationships: **what adults could do**’; and
- ‘Enabling Environments: **what adults could provide**’.

Jack’s example provides support for the adoption of *Emergent Curriculum* perspectives that recognise that the sophisticated cognitive operations that emerge in children are irreducible to their component parts, but which nevertheless act as developmental precursors that must subsequently be drawn together in the child’s mind as a unique and individual creative act of conceptual learning.

For Jack, and for his educator as well, there is a reciprocal link where knowing facilitates doing and doing facilitates knowing, as Neisser (1976: 56) explains: “The schema is not only the plan but also the executor of the plan. It is a pattern of action as well as a pattern for action.”

The selection of an appropriate focused activity depends upon the adult’s awareness of

conceptual progression across the curriculum as well as the quality of their observations. Montessori's identification of pre-defined didactic materials and activities provides valuable scaffolding for practitioners.

'Schema practice', as it is currently applied in early childhood education, commonly involves the practitioner in first identifying and then encouraging the child's operative 'patterns of repeated behaviour', into which new experiences are then 'assimilated and gradually co-ordinated' (Athey 1990, p37). But it provides no pedagogic consideration or account of the figurative source of these patterns. Yet Montessori identified a series of 'sensitive periods' where such patterns are typically displayed, and can be encouraged through focused tasks, and her free play 'work cycle' appears to mirror contemporary 'schema practice' in being concerned to encourage the application of these operative patterns in new schema contexts.

Our observations of the 'flow' involved in free-flow play confirm the relevance of Laevers (1999) application of Csikszentmihalyi's (1979, 1990) in describing creative flow as children's complete immersion, *involvement* and their sense of fulfilment in the activity at hand. Montessori (1965) made the same observations. Laevers has argued that this total involvement can only occur within the zone of activity that matches the child's capabilities, their zone of proximal development (Vygotsky, 1962), and that it stems from their:

"…exploratory drive, the need to get a better grip on reality, the intrinsic interest in how things and people are, the urge to experience and figure out" (Laevers and Heylen, 2003, p15).

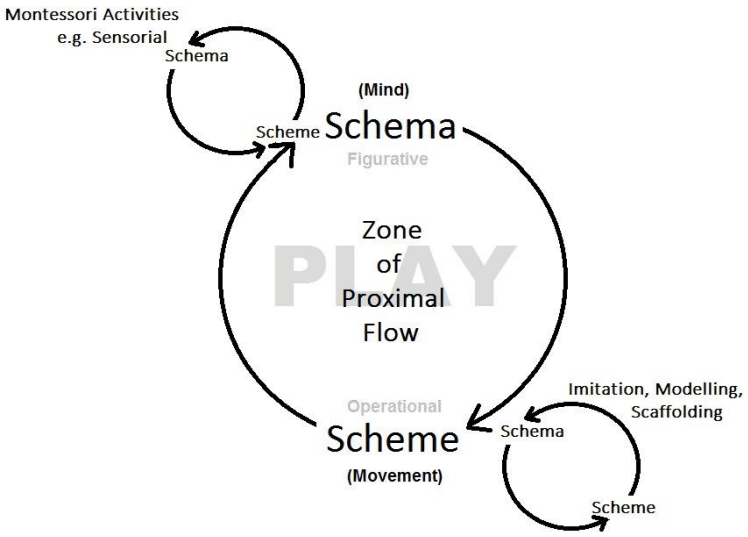
The diagram below provides a figurative representation of the analytic model that we are developing. The zone of proximal flow, defines the opportunity space that opens up when the child is able to draw upon a new scheme in their play.

Applying the cyclical account of the learning processes involved, we can see that this scaffolding includes recalled operational schemes and figurative schema, the learning takes place through a recursive engagement between the child's actions in the physical world and their emerging understandings of these actions. The figure shows, outside the ZPF, the source of the cognitive functions being applied in the play. They may be developed through focused learning activities, they may be deliberately scaffolded by the adult, or be simply some imitation of behaviour that the child has observed. As Vygotsky (1935) put it, within the ZPD cognitive development is prospective and these are functions:

"...that have not yet matured but are in the process of maturation, functions that will mature tomorrow but are currently in an embryonic state. These functions could be termed the "buds" or "flowers" of development rather than the "fruits" of development". (Vygotsky, 1935, p. 42)

Vygotsky's developed his concept of the ZPD with a focus on social learning, while Csikszentmihalyi's ideas about flow are focused on the individual.

We have therefore drawn upon Basawapatna *et al* (2010) and apply their conception of a 'zone of proximal flow' (ZPF) rather than the ZPD to describe the state of free-flow where the child play is scaffolded by their own recall of



prior learning and experience.

This is a self-scaffolding process that has also been identified in the research of Tharp and Gallimore (1991).

The zone defines the space where schemes are played out in different contexts to create new schema. Our case studies show Jack playing within this ZPF and it was clear to us that in doing so he was drawing upon schemes and schema that had been introduced to him in adult-led focused tasks. Observations at other times appeared to show him drawing upon many other schemes and schema that were most likely the result of imitative behaviour, or of peer or adult modelling or scaffolding. From this perspective, the task of the educator in supervising free-play will be to provide access to stimulating materials and environments and, through additional modelling or scaffolding, whatever additional (light touch) input the child requires to stay within the ZPF. In a busy classroom where several children are engaged simultaneously in free-play, such a demanding adult role might be considered analogous to 'plate spinning'.

Conclusions

Our research has been developed to explore more thoroughly the value of applying the distinction between schemes and schema in the practical context of teaching and learning in early childhood. Our findings suggest that consistent and valuable practical insights are provided by Montessori, Piaget and Vygotsky. Van Oers (1998), has referred to Vygotsky's account of the learning process most significantly as a process of 'progressive continuous re-contextualisation':

"A child's play is not simply a reproduction of what he has experienced, but a creative reworking of the impressions he has acquired" (Vygotsky, 1987, p11).

The central task of our continuing investigations will be to test our analytical model further in our observations of children's learning, to follow Montessori's lead by mapping affordance schemes to emergent operations and to define schematic progression to support educators in their scaffolding of the children's ZPF.

As Palaiologou (2012) and Bruce (2007) (p92) have argued, practice in early childhood education *should* be informed by both Piaget's and Vygotsky's perspectives (p32). The curriculum is itself an elaborate figurative schema and, if educators are to understand what constitutes learning in literacy, mathematics science and the arts, we need to consider these schemas and not just the children's most recently acquired schemes. Montessori, Piaget, Vygotsky and Athey all recognised this; as Wells (2015, p 2) put it, mathematical & scientific *"concepts are acquired as a result of deliberate and systematic instruction".* But as Athey argued in 1990, evidence of incremental development in schemas remains in short supply, and:

"If more were known about the build-up of co-ordinated schemas and concepts, more would be known about how best to teach some of the key concepts of the curriculum right through schooling" (Athey, 2007, p 114).

People sometimes seem to suggest that there are two different emphasis we can place of early childhood education. We could emphasise 'learning things' or we could emphasise creativity or 'learning what can be done' with things. Already when we put the apparent dichotomy in these terms we can see the contradiction. We need to have learnt things if we are to be creative with them. The common practice of applying the term schema to child behaviours that both Piaget and Athey clearly regarded to be operative schemes may have served to limit our understanding of children's learning and, even more crucially, our

understanding of how best to scaffold it.

References

Athey, C (1990; 2007) *Extending Thought in Young Children,* London: Sage Publications

Basawapatna, A., Repenning, A. Kyu, H-K., and Nickerson, H. (2010) *The Zones of Proximal Flow: Guiding students through a space of computational thinking skills and challenges*, Available from: ICER '13: International Computing Education Research Conference, August 12-14 , San Diego, California, USA. (Accessed: 15.08.2015)

The British Association for Early Childhood Education (BAECE) (2012) *Development Matters in the Early Years Foundation Stage* (EYFS) London: Early Education

Bruce,T. (2004) 'Play matters' in Abbott, L. and Langston, A. (eds) *Birth to Three Matters: supporting the framework of effective practice*, Open University Press: Maidenhead

Csikszentmihalyi, M. (1979) The Concept of Flow, in Sutton Smith, B. Play and learning (pp. 257-273). New York: Gardner

Csikszentmihalyi, M. (1990). *Flow: The Psychology of Optimal Experience*. New York: Harper and Row

Department for Children, Schools and Families (DfCSF) (2008) *Practice Guidance for the Early Years Foundation Stage,* DfCSF, Available from: http://www.foundationyears.org.uk/wp-content/uploads/2011/10/EYFS_Practice_Guide1.pdf (Accessed 19.10.2015)

Furth, H.G. (1969) *Piaget and Knowledge:Theoretical Foundation,* USA: Prentice-Hall

Gibson, E. J. (1969). *Principles of perceptual learning and development*, New York: Meredith Corporation

Grenier, J. (2009) *Schema theory in early years education*, Blogspot, 23.11.09, Available from: http://juliangrenier.blogspot.co.uk/2009/11/schema-theory-in-early-years-education.html (Accessed: 05.08.2015)

Laevers, F. (1999). The Project Experiential Education. Well-being and involvement make the difference. Early Education, nr. 27

Laevers, F. and Heylen, L. (2003) *Involvement of Children and Teacher Style*, Leuven: Leuven University Press

Montessori, M. (1965) *Spontaneous Activity in Education: The Advanced Montessori Method,* New York: Schocken Books

Montessori, M. (2012) The 1946 London Lectures, Amsterdam: Montessori Pierson Publishing

Montessori St. Nicholas Charity (2008) *Guide to the Early Years Foundation Stage in Montessori settings,* UK: Montessori Schools Association

Neisser, U. (1976) *Cognition and Reality,* San Francisco: Freeman

Office for Standards in Education, Children's Services and Skills (OFSTED) (2015) *Teaching and play in the early years–a balancing act?,* Manchester: Ofsted

Palaiologou, I. (2012) Child Observation in the early Years, London: Learning Matters

Piaget, J. (1969) *The Mechanisms of Perception*. New York: Basic Books

Siraj-Blatchford, J., and Siraj-Blatchford, I. (2002) 'Discriminating between Schemes and Schemata in Young Children's Emergent Learning of Science and Technology' International Journal of Early Years Education, Vol 10 No3

Siraj-Blatchford, J., and Parmer, N. (2011) Knowledge learning processes and ICT in early childhood education, He Kupu, Vol 2, No5, October

Tharp, R. and Gallimore, R. (1991) A Theory of Teaching as Assisted Performance, in

Tharp and Gallimore, R. (1991) *Rousing minds to life: Teaching, learning and schooling in social context*, Cambridge: Cambridge University Press

Van Oers, B. (1999) Teaching Opportunities in Play, in Hedegaard, M & Lompscher, J., (Eds) *Learning Activity and Development,* Aarhus: Aarhus University Press

Vygotsky (1962) *Thought and language*. Cambridge, MA US: MIT Press

Wells, G (1994) *Learning and teaching "scientific concepts": Vygotsky's ideas revisited,* Canada: University of Toronto

Williams, R. (2009) *Draft 10: The Ecological Turn: Affordances for Learning Research?* Available from,http://www.learning-affordances.wikispaces.com/file/view/Learning+and+Affordances+new+draft+2009-08-24.doc (Accessed: 01.10.2015)