Learning embodied narrative patterns of meaning-making:

Nurturing human nature in school

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Abstract

Education is participatory and embodied. It requires active participation from both teacher and learner to come together to co-create shared projects of discovery that allow meaning to unfold and develop between them as individuals. This paper advances theory on the intersubjective and embodied nature of meaning-making in teaching as constituted by narrative units. It considers the developmental progression of subjective meaning-making by the child from basic, exploratory movements first evident in the foetus and young infant, to the complex projects of serially organised movements in the young child. When made in intersubjective engagements, these projects develop meaning between individuals, generating cycles of learning within narrative episodes that incorporate affective, energetic, and intentional components. These schemas of engagement retain knowledge of their processes and become units, stories, held in the memory of their creators. After reviewing theory of intentional and participatory sense making, we examine two cases of non-verbal narrative patterns of engagement between teacher and child within Nurture Group practice, a special pedagogy that attunes to the affects and interests of children with 'social emotional and behavioural difficulties'. Analysis of these cases of Nurture Group practice reveal narrative patterns that establish shared rhythm, affect, and body movement made in joint projects between teacher and child, which, on completion, generated shared joy and learning.

Keywords: narrative, embodied meaning-making, social emotional behavioural difficulties, Nurture Group, development, Intersubjectivity.

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Introduction

Learning as embodied participation

Children learn by active, intentional engagement with their world of both people and objects (Baldwin, 1895; Bernstein, 1967; Piaget, 1953; Vygotsky, 1978). Their actions are movements of the body that involve autonomic/visceral and proprioceptive regulations as well as voluntary exteroceptive control with distance senses, to mobilise the energy resources, level of arousal, sustained attention, and organisation of movement required for the successful completion of tasks (Trevarthen, 1984, 1986; Von Hofsten, 1989). Children learn and develop within these embodied engagements, bringing their whole experience of vitality to bear on a situation with its imagination of an unfolding future, coloured by vital affectivity and generated through the effects of coordinated motor skill. Learning is never just cognitive, picking up pragmatic information.

Especially in childhood, it is evident that knowledge is gained in rich psycho-physical experiences through dynamic interaction with one's own body, people, places, and things. Engagement made through purposeful movements of the body generates particular responses from the world, and these are both anticipated and learned. A rap of the knuckles on wood to signal a greeting creates a hollow knock with the full force of impact felt in the bones, together with its acoustic result heard by the ears, and affective joy felt in the smiles of pleasure of playmates. Such action on objects requires skilfully placed forces patterned across the body and made in anticipation of their result, the act itself accommodating unexpected contingencies, compensating for them, and appropriating the result into a memory that includes all its prehensions: affective, sensory, and social. Interaction with the world is dynamic, a process. It is not static, not

a fact to be learned, but an experience to be created. Knowledge is gained through active, participatory sense-making, and especially in concert with the actions of social others (De Jaegher and Di Paolo, 2007; Trevarthen and Delafield-Butt, 2013a).

The prospective structure of engagement: Reaching for the anticipated future

Of necessity, processes of engagement in life are structured by their anticipated consequences (Baldwin, 1895). From the first integrated actions of the developing human agent, movement is prospectively organised, geared to future expectations by necessity of the laws of biomechanics (Bernstein, 1967). The forces of inertia and momentum generated in a single act, such as an extension of the hand or turn of the head, creates forces thought the body that must be compensated for ahead of time, or else the actor loses balance and the hand will overshoot and create dangerous risk, or undershoot and be ineffective (Lee, 2009; Von Hofsten, 2007). Future oriented control of movement is a fundamental psychological principle of human action, and of consciousness (Delafield-Butt and Gangopadhyay, 2013; Gilbert and Wilson, 2007). The anticipated goal is always 'imaginary', not real until it is made 'concrete' in its actual accomplishment (Delafield-Butt, 2014). Even in a task as simple as reaching for a cup, the goal of the act, contact with the cup, is held in the imagination, as an image, until the cup is grasped in concrete, physical actuality. Similarly, a spin of the body or an action of the limbs made in performance of a dance is created in movement with an idea or image of the act that unfolds with integrated grace as the act progresses. This exploratory, dynamic goal of self expression demands the same prospective psychomotor organisation as a practical reach, to master the motor mechanics (Bernstein, 1967).

Importantly, these engagements with the future cannot be discontinuous or irregular events. Rather, they are *units* of coherent psycho-motor processes generated with characteristic patterning in space-time. They initiate toward a goal, develop in their progression toward that goal, reach the goal in a moment of peak excitation, and appropriate their effect into the character of the organism. Human agency is found to be structured by these imaginative 'story-making' units of prospective action, which are first evident in the simple movements of the foetus, several months before birth (Delafield-Butt and Gangopadhyay, 2013). They develop through their serial organisation into 'action chains' of common purpose to enable a child to undertake more complex purposes, such as reaching and grasping for a toy, tying shoe laces, or getting dressed. Made together with social others, these projects can generate shared meaning in learning, giving rise to understanding of the social value and utilitarian purpose of objects for future occasions (Delafield-Butt and Trevarthen, 2013), which is marked toward the end of first year by the onset of shared attention and collaborative interest in objects, a talent identified as 'secondary intersubjectivity' (Hubley and Trevarthen, 1979; Trevarthen and Hubley, 1978).

This is the so-called 'nine-month revolution' (Tomasello, 1995) that initiates prolific development in shared learning of the manipulation of objects and other manual skills, including their symbolic conceptualisation in language, the origins of technical knowledge of the kind that educational systems seek to cultivate (Tomasello, Carpenter, Call, Behne and Moll, 2005). However, as seminal educational reformers such as Comenius (1592-1670) (see Murphy, 1995; Quick, 1868/1890), and Bruner (1996), or commentators such as the philosopher A. N. Whitehead (1929) remind us, a child's learning is a self-animated adventure that involves the whole body and mind, rich with anticipation, feeling, and social importance. It is not just a project conceived by adult

teachers. As social creatures, children experience moral feelings of pride and shame that colour and shape learning experiences and determine the manner in which they engage, or disengage, from learning 'with' others (Trevarthen, 2011; Trevarthen, Gratier and Osborne, 2014).

Feeling, vitality, and agency in the Psychology of Behaviour

The feeling for learning arises from the impulses of the Self generated in the core of the brain, beneath the cerebral cortex (Panksepp, 2005; Porges and Furman, 2011). Affective learning occurs with the integrative actions of the brainstem, which is the primary generator of action. The cortex with more complex affective processing in regions, such as the amygdala, is not the principal generator of feelings. It makes sense that in evolutionary terms, the brainstem complex of sensory-motor nuclei found in all mammals is also the site where the effect of those actions is assimilated at a primary level of operation. Winn (2012) attempts to "put the brain back in brainstem" in our understanding of the role of this basic, central neural structure. The affective neuroscientist Jaak Panksepp's careful comparative studies of mammalian behaviour-brain relations identifies brainstem as the seat of the core Self (Northoff and Panksepp, 2008; Panksepp and Northoff, 2009). Feeling shapes evolution and development (Packard and Delafield-Butt, 2014).

Elementary adaptive actions accommodate perceptual knowledge of the world apprehended by the *distance receptors* of sight, sound, and smell, as well as feedback on forces of the the body-in-action from the self-sensing *proprioceptive* system, and information of the body's vital needs from *visceroception* of the internal organs (Sherrington, 1906). Comparative neuroanatomy demonstrates that brainstem is responsible for initiating perception, feeling by affective evaluation, and intentional

control of purposeful movement (Merker, 2007; Vandekerckhove and Panksepp, 2011). Brainstem systems generate the first active, future seeking agency of an individual that is the foundation for elaboration of our conscious and articulate experience of life (Low, 2012).

This core Self acts out into the world to test its contingencies and to generate understanding through exploratory engagement, but it is limited in its scope and power. It cannot perform complex perceptual discrimination, abstract reasoning, or sophisticated motor planning. These are capacities that require experience of the successful adaptation of actions registered in the cortex. Human agency develops in sophistication and power as the brain grows and the cortex matures, through a childhood of affective, embodied experiences (Vandekerckhove and Panksepp, 2011). Simple actions performed *in utero* and those first gestures in early life, made with a caring and sensitive care-giver, quickly develop into more sophisticated motor skills with greater precision and awareness of range of expected contingencies. Single simple actions of the kind generated by brainstem systems can be chained together to form projects of action with distal reach far into the future (Pezzulo and Castelfranchi, 2009). But always, action remains tethered to the present moment within its small domain of power of just under one second, or in small projects that reach only a few seconds into the future (Delafield-Butt and Gangopadhyay, 2013). With new capacities of cortical abstraction and planning developed over a childhood of learning, a subject becomes able to act in the present moment to serve a future, imagined need that may not arise for minutes, hours, days, or years to come. A university student studies intensely in the present moment to achieve a degree months away, and a lifestyle of employments that may not be realised for many years. We generate the future we desire, one movement at a time.

An embedded hierarchy of prospective organisation

Prospective control of movement is organised in an embedded hierarchy of purpose (Delafield-Butt and Gangopadhyay, 2013). Motor projects begin as single, simple movements (1) that can be chained together to produce small projects (2). And these projects can themselves be organised to conceive projects of projects (3). Altogether, an embedded hierarchy of purpose is developed, where the intentions performed at lower levels contribute affective colour and shape to the unfolding intentions that arise at higher levels; and conversely, those made at higher levels coordinate and integrate those of the lower levels in relation to wider knowledge of what the environment affords. A coherence of mind and action of both bottom-up and top-down processing is achieved.

In summary, these levels are as follows.

(1) Action Unit. The first level of prospective, intentional organisation is the single action unit, or movement of continuous velocity toward a goal. Examples include reach-to-grasp, reach-to-touch, a kick, turn of the head, or torso bend forward. Action units are typically completed within one second.

(2) Proximal Project. The second level of prospective, intentional organisation is the serial organisation of a sequence of action units into a short prospective project within proximal reach. The proximal project involves two or more action units chained together to complete a simple task, such as reach-grasp-eat, reach-grasp-place, walk to sit, or wiggle the head to be comfortable, or to say "No". Proximal projects typically range in duration from just over one second to about three seconds.

(3) Distal Project. These are compositions of proximal projects arranged to complete a more distal, more imaginative task. For example, cooking spaghetti requires

a series of proximal tasks that open the cupboard, take the packet of spaghetti, open the packet, empty it into water, and so on. Altogether a composition of proximal projects into distal ones can accumulate durations from just a few seconds to minutes, hours and days.

As the goals of a distal project become more abstract or imaginative, they lose focus of awareness in the time of the immediate present. They become more abstract 'cognitive' projects that may involve extensive 'off-line' imaginative manipulation of metaphors or symbols before being returned to lower levels in their actualisation through public, expressive gesture and language (Delafield-Butt and Trevarthen, 2013).Thus, the abstract distal goals of higher cognition are less constrained by actual physical space, and involve instead the arbitrary concepts, signs, and symbols of a culture. Nevertheless their top-down formulations remain regulated by bottom-up motor logic that confers serial ordering of movements (Lashley, 1951).

Within each stage, or level of action organisation, the same principles of agency apply - prospective organisation, perceptual control, and satisfaction in the success of accomplishment and learning. These are principles of learning by active agency, with success in accomplishment leading to learned patterns of behaviour, and the positive affective valence associated with successful acts render them more likely to be retained and repeated. For successful accomplishment at higher levels, action control at the lower levels must be efficient, effective and satisfying or the higher aim will be thwarted, and will require more carefully directed attention and additional resources to compensate for errors, as appears to be the case, for example, in autism spectrum disorder (Solomon, Holland and Middleton, 2012; Trevarthen and Delafield-Butt, 2013b). Experience and agency requires success at all levels of perceptuo-motor organisation for coherence of purpose to be achieved.

In her book "Human Minds" (Donaldson, 1992) the distinguished developmental psychologist and educator Margaret Donaldson, without referring to evidence concerning brain functions and their evolution or development, describes the growth of 'modes of mental functioning' from childhood as having different 'loci of concern', all involving perception, action, thought and emotion, but with different scope in time and space. The Point Mode is occupied with concerns 'here and now'; the Line Mode extends its concern to a definite imagined and remembered 'there and then'; the Core Construct Mode imagines being 'somewhere sometime'; and the Transcendent Mode lives 'nowhere, notime', out of space and time. Importantly the last two modes, Construct and Transcendent, can be either intellectual, or value-sensing. These levels of motivation engage the individual from infancy to old age in different projects of 'human sense' with companions who either teach, or learn, or teach-and-learn, cooperatively.

Learning life stories: From protoconversation to shared cognitive projects

Motor projects of the kind discussed above animate social narrative understanding (Delafield-Butt and Trevarthen, 2015). Engagements with objects and engagements with people exhibit the same principle of the serial organisation of action, whether made in movements to use objects or in movements that express feelings and thoughts in vocalization and gesture to others. They are both purposive and chained in sequences to give larger meanings with greater spatiotemporal reach, *i.e.* they expand the range of possible accomplishments of the agent, an increase in its 'behaviour space' (Trevarthen, 1978) and in the 'affordances' (Gibson, 1979) of possible intentions made manifest in action.

Narrativity of imagination in solitary projects of exploratory play or utilitarian action, or shared as in the unfolding protoconversational engagement between an infant

and an adult (Malloch and Trevarthen, 2009) gives cognitive form to the objective and social worlds of the young child (Gratier and Apter-Danon, 2009; Gratier and Trevarthen, 2008). And they continue to do so throughout development, and in school, where formal learning becomes a primary and stated focus of energy and attention. All projects, small or large, are composed or motivated in the mind of the learner with a four-part structure of (i) introduction, (ii) development, (iii) climax, and (iv) conclusion (Figure 1).

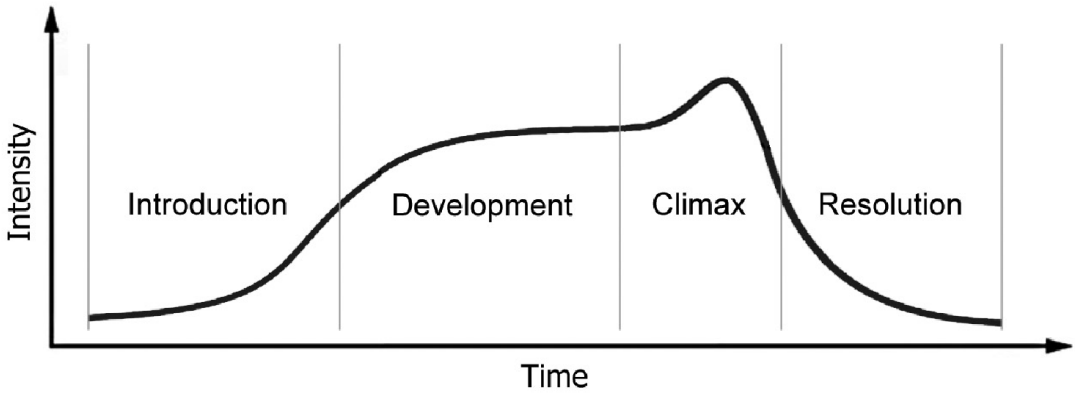

Figure 1. Narrative intensity contour of affective and expressive engagement in a project over its four phases: (i) interest and engagement in the project begins at a low-intensity in the *introduction***,** which invites participation; (ii) the coordination of the actions, interests, and feelings of participants intensifies over the *development*, as the project is developed**;** (iii) a peak of excitation with achievement of a goal in mutual intention is reached at the *climax*; after which (iv) the intensity reduces as the purposes of the participants share a *resolution*, allowing them to move on to other projects, whether together again or separate**.** From Trevarthen and Delafield-Butt (2013a).

The principle of sequences of expressive acts and the cognitive resources required remains the same for communication and cooperative action as it is for an individual's purpose. As intentional sequences become more complex and 'rational', mid-brain emotional and arousal regulation recede to the background of conscious attention.

Cognitive processes come to the foreground, occupying more time and attention in the formulation of plans of teaching and learning. But the regulatory processes and values of emotion and arousal, and their communication, do not become any less significant. All action must still be generated from and fed back through the midbrain brainstem complex and without regulation at this affective level, such as leads to enjoyable and valued social engagement between friends, the child's learning with adults and teachers becomes difficult – student and teacher fall out of tune, and out of step with each other.

Making sense of experience in narrative patterns of engagement

Narrative is a foundation of meaning-making and culture (Bruner, 1990; Cobley, 2014). It is "inherent in the praxis of social interaction [even] before it achieves linguistic expression" (Bruner, 1990, p. 77). Read and Miller, social psychologists, consider narratives to be "universally basic to conversation and meaning making" (Read and Miller, 1995, p. 143). Narratives provide a means by which we organise and make sense of our experiences (Kearney, 2002), evaluate our actions and understand our intentions (Cunliffe and Coupland, 2012), leading to positive learning experiences.

Infants and children make sense of their learning of meaningful tasks by combining a series of smaller tasks, each containing small manageable projects with an identifiable beginning, middle and end, into larger projects, organising their intentions exerted on the world from single action units into small projects of sense-making and larger projects of projects of sense-making to work methodically towards a pre-determined goal. In this way, they can engage with a task through the successful completion of its smaller units, which they experience as individual positive achievements. These come together to create larger completed projects with the additional value of their successful accomplishment. The child achieves satisfaction

from well-completed projects, and retains the memory of a task successfully negotiated to achievement of its goal. Continuous practice of this form of learning instils confidence in the young learner, enabling them over time to complete more complicated tasks requiring a higher level of social, motor and cognitive skill. Egan and Ling (2002) describe how these small projects, referred to as 'narrative episodes', act as a tool to facilitate the personal connectedness necessary for us to perceive, conceptualise and make meaning, by assisting the ordering and orientation of emotions, intentions, and actions.

The notion of embodied narratives of meaning-making also provides a methodological tool with which to analyse the intersubjective engagements of children, from birth. They give pictures of the lived experiences of the child to show the manner in which he co-constructs encounters with other persons. It is through repeated narrative encounters in convivial play that children come to understand the forms and norms of human activity that make cultural sense of his actions of the self, and those of others. Non-verbal, narrative analysis can describe the embodied, lived experience of individuals made with joint action, shared intentions, self awareness, awareness of others, motivation and purpose, into an observable and measureable entity; a purposeful act displayed through gestures, expressions, affect and vocalisations.

We believe measure of the narrative patterns of participatory engagement can be used to investigate the nature of the interconnectedness of individuals, its successes and failures, at any level of sophistication. Successful primary intersubjective interactions within positive relationships have been shown in studies of the vocal patterning of infants and parents in proto-conversations to display shared 'rhythm', 'quality' and 'narrative form' (Malloch, 1999; Malloch and Trevarthen, 2009). These are the hallmarks of creative 'communicative musicality', which, in combination with

expressive body movement, allows for the co-creation of meaningful experience in every day projects (Trevarthen and Delafield-Butt, 2013a), which establish cultures of meaning (Gratier and Trevarthen, 2008). Through examination of narrative episodes of intersubjective interaction we have set out to identify fundamental behavioural and relational patterns of engagement to better understand developmental principles of meaning making, and as a tool to understand individual children's progression and to help those who are having difficulty.

Learning to co-create meaning in school:

How Nurture Groups assist engagement with learning

We now turn attention to embodied, non-verbal narratives of meaning-making as they occur in school. In particular, we focus on a special Nurture Group practice for children identified with Social Emotional and Behavioural Difficulties (SEBD) (Boxall, 2002). Children who have difficulty communicating their feelings and interacting positively with others can find engaging with school learning very difficult. They compensate by attending to other, non-scholastic activities, tasks and interests. They are not, to use American jargon, "on the same page" as the teachers. This leads to poor developmental gain, and feeds back to re-affirm their social, emotional and behavioural disjunction with school society. They can become entrenched in their own sub-culture, which risks producing a lifetime of stressful experiences.

These children struggle to form and maintain relationships with other people and this affects their collaboration in both the classroom and the playground. Engagement with objects and ideas requires sustained attention, with self-regulation of arousal and interest, and anxiety weakens both concentration and enjoyment. In families where patterns of affective engagement may be disrupted or chaotic, a child's learned patterns

of engagement with objects, ideas and social others can also become disrupted or chaotic. Emotional needs may not be adequately met, leading to tensions and strains that draw energy and attention away from self-regulated engagement with a classroom task. In consequence the child enters school exhibiting SEBD. They need special teaching that helps them overcome their confusion.

In some cases pupils can be assisted by psycho-educational support that works in affectively attuned relations with the children to help structure their arousal, interest, and attention to tasks and activities commensurate with school learning and classroom culture. Nurture Groups employ especially trained teachers to work with the children separately or in small groups, allowing one-to-one attention and personal relationships to form in a safe, secure and regular environment. They set out to develop social and emotional learning as a basis for classroom learning (Boxall, 2002).

Nurture Groups provide a recognised targeted early educational intervention in mainstream schools in the United Kingdom. They are designed to re-create missed early socio-emotional experiences for those children with SEBD whose needs cannot be met within a mainstream class and whose difficulties are considered to stem from disrupted intersubjective learning in the early years. Careful attendance to the social and emotional competence of children within the Groups assists the building of positive relationships between pupils, parents and staff (Billington, 2012) and improves educational engagement and academic attainment (Mackay, Reynolds and Kearney, 2010; Seth-Smith, Levi, Pratt, Fonagy and Jaffey, 2010), allowing the pupils to reintegrate to their mainstream class, usually within one year, where they can successfully engage in learning with their peers. Within the Nurture Group, relationships between the staff and pupils are considered of vital importance as a focus for change (Billington, 2012). Children so supported appear also to be enabled to co-

create positive relationships with other pupils in the Groups. However, the psychological processes of learning new socio-emotional expectations and patterns of relation by which this improvement in sociability happens, and the effects of this on future socio-emotional development, have yet to be addressed in systematic research.

Examination of narrative patterns of learning in the Nurture Group

Two cases are examined where the Nurture Group teacher worked with a child to help structure his actions to develop a shared project that held common meaning or purpose. Both projects were structured by teacher-guided interaction, but importantly they were actively co-created with initiative and energy by both pupil and teacher.

In the first scenario, the teacher and pupil share a simple task of descending the school staircase. They hold hands and walk down the steps together, the teacher counting the steps in rhythmic fashion and the pupil joining in as they descend. The staircase has three flights of stairs with two landings. This physical space structures their engagement to produce three 'narrative' episodes, in each of which validated phases of 'introduction', rhythmic 'development', 'climax', and 'conclusion' may be recognized, and the complete descent down the full set of three flights of stairs produces a larger 'narrative project' that culminates with a great show of delight, animated by the child and shared with the teacher. Such shared narratives, we argue, are a bedrock for affective, social and cognitive learning. They make an embodied, participatory sense of the world and generate shared meaning, giving it value. Both the hand-holding gesture linking the bodies and the physical presence of the stairs keep the engagement tightly structured as the two couple their thoughts, feelings, perceptions and intentions through body action, gesture and vocal expression to descend the stairs, reaching a moment of shared triumph and joy as the project completes and concludes.

Similarly, we have selected a second scenario, where teacher and child engage in a 'Connect 4' game-play. This project is less structured by physical space and support, such as the staircase and hand-holding during descent, and instead involves arbitrary and abstract cultural patterns of engagement that require cognitive understanding as well as control of affect, intention, attention and body action. In other words, this project involves the fundamental psychological dimension of school learning – the capacity to sit still, engage attentively by down-regulating or up-regulating arousal in purposeful ways to maintain interest and the intention to participate, and to do so with intelligent planning and meaningful communication.

By measuring and identifying the constituent elements of the two embodied narrative engagements, we attempt to illustrate the importance of the organisation of thought and action sequences (foot-steps, arm movements), each with their own psycho-emotional-motor dimensions of intention, feeling, evaluation and action, to establish projects that are built in caring, affective relations within which the abstract cognitions necessary for school learning can flourish.

Method: Measuring the composition of narrative patterns of engagement

Two video recordings were obtained of children engaged in everyday Nurture Group practice in two schools in Scotland. The first (Case 1) was sourced from a Channel 4 documentary film-maker (Woods, 2011). The second (Case 2) was produced by Jillian Adie as part of a larger longitudinal study of teacher-child meaning-making in Nurture Group practice. Videos were micro-analysed to identify gesture and facial expression patterns, and annotated using the ELAN annotation package (Max Planck Institute for Psycholinguistics, Nijmegen, The Netherlands; http://tla.mpi.nl/tools/tla-tools/elan/). Audio data was extracted and vocal pitch analysed with PRAAT software

(http://www.praat.org/). Non-verbal narrative structures were identified from expressive body movements, facial expressions and patterns of eye gaze. The duration, rhythm, timing and patterning of individual movements and vocalisations were measured, plotted and described.

Results

Case 1: Descending the stairs together, and counting

A thirty-one second joint interactive episode was selected, of a Nurture Group child and teacher engaged in an everyday task, walking down the central school staircase (Figure 2). The teacher and the staircase both structure the interaction, giving regular rhythm to the task with each step and framing the project by an anticipation of what is to come, providing guidance to its completion. The teacher opens the project, describing the task ahead as they walk towards the top of the stairs. Then, leading the child by the hand, the teacher counts the stairs as they walk down the three flights, negotiating two turnings on the way. The overall project of descending the staircase presents an overarching narrative structure, which consists of the following elements:

i) An **introduction** as the child and the teacher walk along the landing towards the top of the staircase. Preparing for the task they are about to embark on, the teacher talks to the child, explaining the task ahead. She takes the lead, encouraging the child to count the stairs as they start their first descent, saying, "*Now let's count these stairs. Are you ready?*". Her vocalisations are regular and rhythmic, each with ascending pitch-glides that progress from below Middle C to the top of the octave above Middle C (*ca.*80Hz to *ca.*500Hz) in 7of the 8 words uttered, encouraging arousal and interest in her partner (c.f. Malloch, 1999; Marwick and Murray, 2009; Trevarthen, 1999).

ii) A **development** of the interaction between the child and the teacher as their vocalisations and footsteps fall into rhythm and the child is able to anticipate the counting of the next step. The pair negotiate a turning on the stairs, which interrupts the rhythmicity of their action; the child looks to the teacher as she takes the lead, holding the child's hand to keep him beside her and counting aloud, and their rhythmic footfall and counting returns. As the child becomes increasingly confident of his involvement in the interaction he excitedly starts to count ahead of their footfall as they negotiate a second turning, reaching a peak of **development** in their interaction, before the teacher re-establishes the regular pattern of rhythmic counting and they synchronise their actions and vocalisations for the final few steps.

iii) A **climax** to the interaction is reached as the pair arrive at the bottom of the stairs. The teacher raises the pitch of her voice to the top of the octave above Middle C as they count the final steps together *"nineteen, twenty, twenty-one stairs"*. The pair share a moment of joy in completing the task, expressed as a broad smile from both child and teacher as the child lets out an exclamation, "*woo-hoo!*".

iv) A **conclusion** to the journey as they walk away from the staircase, satisfied with what they have achieved, the teacher confirming the success of the task to the child, "*Good counting,"* leaving him with a positive, proud, memory as this task is left behind and they move on to something new.

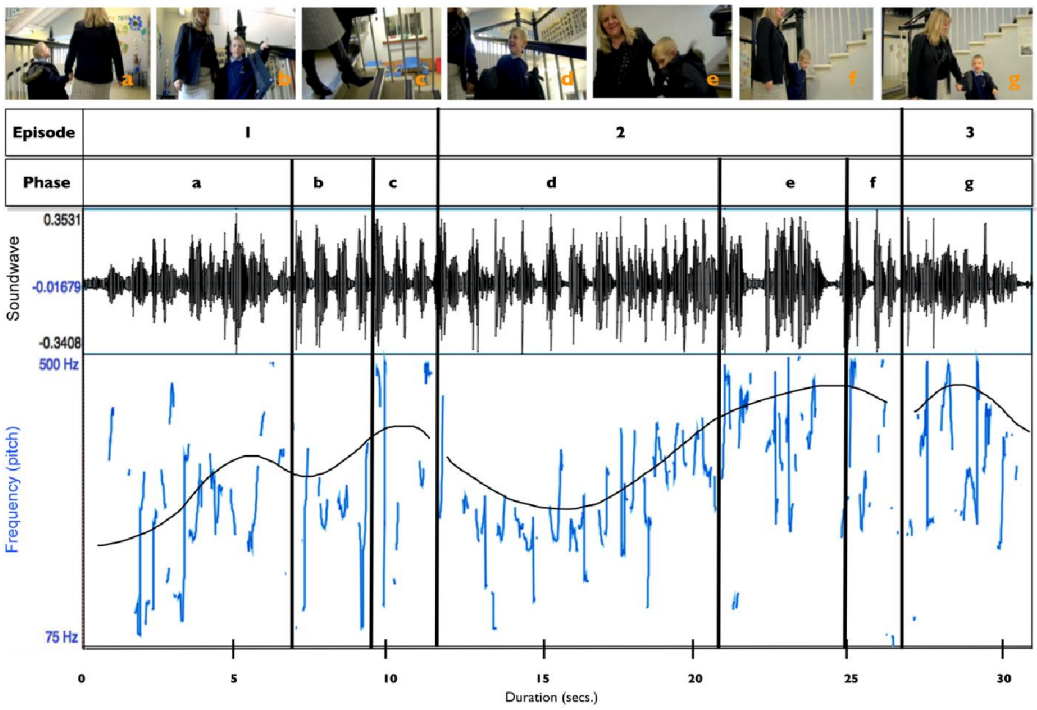

Figure 2. Case 1: A co-created narrative project, "Descending the staircase and counting." A picture board illustration (top row) organised by its three episodes (1-3), the first two with three phases (a-c; d-f) and final one with a single phase (g). The sound wave shows clearly marked rhythmicity of vocalisations by teacher and student. The sound wave spikes indicate footfalls on the steps. The pitch of each vocalisation is calculated (frequency, Hz) and plotted. The dyadic structure of child-teacher interaction displays a narrative pattern of intensity and progression as the pair move through the phases of **introduction** to the task**, development** of rhythmic shared interaction as they descend the stairs together, a **climax** as they share simultaneous joy on reaching the bottom of the stairs, and a **conclusion** of the activity as they leave this activity behind to commence something new. Narrative contours (black) approximately overlay the rise and fall of vocal pitch. **(a) Introduction** as the teacher structures the opening of the interaction, explaining the task ahead as they walk towards the top of the staircase. **(b) Development** as they descend the first section of stairs, their footsteps falling into rhythm as they count the stairs together. (**c)** A small **climax** marked by excitement in vocal pitch as they reach the first turning, quickly **concluding** and leading straight into a limited **introduction** to the next task as they negotiate this first turning and make their way to the second flight of stairs. (**d)** A second **development** begins as the child looks to the teacher as she counts the stairs aloud to re-establish their rhythm and **(e)** Smiles as they share understanding of their collaborative activity. This reaches a second small **climax**, this one larger than the first, as they reach the end of the flight of stairs, and begin to negotiate the second turning, leading to the final sub-narrative. They (**f) develop** this task by concentrating together on its completion as

they descend the final flight of stairs before **(g)** they share a final **climax** of peak satisfaction and joy as they reach the bottom, the teacher smiling as the child lets out a whoop of joy. The piece **concludes** as they leave the staircase behind, now quiet, and head towards a new activity.

This complete narrative project of descending the staircase comprises a structure containing these elements of activity:

i) Seven separate distinct phases, identified **a-g,** which are carried out in sequence by the participants, enabling them to successfully complete the overall task.

ii) Three narrative sub-units, identified as **Sub-Narratives 1, 2, and 3,** each comprising a combination of successive phases towards achievement of the overall task, and with each episode describing a smaller, shared project with its own introduction, development, climax and conclusion, embedded within the larger task.

Thus, together the seven phases describe:

a) The organisation or setting up of the activity as the child and teacher walk towards the top of the staircase, coming together from their own separate previous activities to participate in a shared task. The teacher structures the interaction, taking the child's hand and inviting him to join her in this shared activity.

b) Walking down the first section of stairs together. As they start to descend the stairs the teacher begins counting *"one, two"* before the child joins in *"three, four, five"* as they descend to the first turning and their footsteps and vocalisations begin to align.

c) A transition as they negotiate the first turning on the stairs. Their footsteps fall out of alignment with each other and the teacher ensures the child's continued attention to the task as she says "*Right"* and guides him by the hand to the next step.

d) Walking down the second section of stairs together. The child's attention has been successfully concentrated on their continuing journey by the teacher and he counts the next step *"six"* before the teacher comes in with a deliberate "*six"* in conjunction with placing her foot on the next step. The teacher steps and counts aloud in a rhythmic manner *"seven"* and the child falls into alignment as they count together *"eight, nine, ten"* as they share eye contact and smile.

e) A transition as they negotiate the second turning. The child excitedly counts quickly ahead of their footfall *"nineteen, twenty, twenty-one"* as they turn the corner of the stairs, displaying enthusiastic involvement in the task.

f) Walking down the third section of stairs together. The teacher again maintains the structure and rhythm of the task as she counts aloud *"eighteen"* as she places her foot on the next step and together they count *"nineteen, twenty, twenty-one"* as they complete the final steps of their journey.

g) Reaching the bottom of the stairs together, the child breaks into a broad smile and exclaims "*woo-hoo"* as the teacher also smiles in a shared moment of satisfaction. Then an acknowledgement by the teacher of a project successfully completed as she says to the child *"Good counting"* and they walk away from the staircase together, ready to start something new.

In summary, the shared narrative project of descending the staircase together, and counting, was formed altogether by three short, yet complete narratives, called sub-narratives here, each displaying its own introduction, development, climax and conclusion. The transition points were formed by the small landings between flights of stairs, forming a natural break in the psychological development of the overall narrative that concluded what came before it and at the same time initiated what was to come. These points, **"c"** and **"e",** create breaks between the sub-narratives where the rhythmic

quality of interaction was interrupted and the partners re-negotiate their actions and intentions prior to embarking on a new sub-narrative, working toward completion of the overall project. In this way, 'stories within stories' were evident, structured by the physical environment and manifest by the psychomotor need to navigate it purposefully and efficiently.

Sub-Narrative Episode 1 comprises the setting up of the complete project and the journey down the first section of the staircase. There is an **introduction** to the project as the child and teacher come together and the teacher explains to the child the task that they are about to embark on. The project **develops** as the child and teacher begin to share in the task and become actively engaged towards achieving their goal. A **climax** is reached although not fully completed as they reach the first turning on the stairs and their interaction plateaus as the child begins to dis-engage from the interaction, with a small **conclusion** to the episode as they recognise the achievement of the first stage of their task and turn their attention to the next stage.

Sub-Narrative Episode 2 comprises their descent down the second section of the staircase. There is an **introduction** as the child and teacher negotiate their activity, taking a couple of steps to align their footsteps and vocalisations, before falling into rhythm. This episode displays positive engagement and alignment of goals, with the partners sharing positive affect and rhythmicity of action through the **development** of the engagement. A **climax** to the interaction is reached as the child becomes increasingly engaged and excitedly counts faster, ahead of their footfall. The teacher **concludes** the episode by re-structuring the interaction which briefly plateaus before entering a new episode.

Sub-Narrative Episode 3 comprises the final descent of the staircase. The child and teacher both display active engagement in the project at the **introduction** to the

final descent, quickly **developing** their interaction through rhythmic footfall and counting, with the teacher raising the pitch of her voice, bringing an active **climax** to the project as they reach the bottom of the stairs. The episode **concludes** quickly as the child and teacher walk away from the successfully completed task, each sharing in the joy of a successfully completed project.

Case 2: Playing a game together, and winning

A Nurture Group game play session of "Connect 4" between teacher and child of almost five minutes duration was selected for analysis. The session was composed of five games, punctuated by four phases of tidying up and setting up for the next game (Figure 3). The object of the game was for each participant to take turns placing one of their coloured counters (small discs) into columns of the game board held vertically upright, with the objective of obtaining four coloured counters in a row. Each game unfolding between teacher and pupil was organised along approximately the same narrative template of joint activity, and altogether these formed a narrative structure co-created by both pupil and teacher spanning the full five minutes.

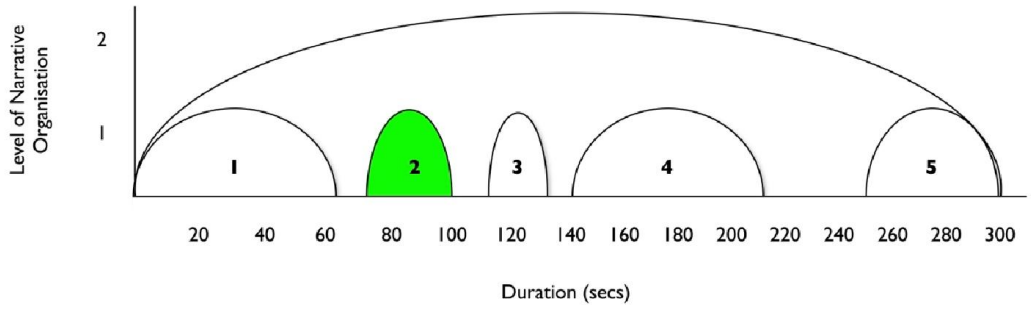

Figure 3. Schematic of the complete game play session in Case 2. Five individual "Connect 4" games are illustrated by smaller arcs, separated by periods of transition when the pieces were gathered up and sorted. Altogether the session of five games lasted nearly five minutes.

Analysis reveals a narrative pattern in each game. A micro-analysis of Game 2 (shaded) is presented in Figure 4 to illustrate this pattern.

Analysis of the complete five-minute session identifies a large narrative structure consisting of the following parts.

i) An **introduction** as the teacher invites the child to play and they make their way to the table where they set up the first game together. The teacher takes the lead assembling the game board and the child assists. The teacher then invites the child to start the play by taking the first turn, with a joint assumption that the rules of play are understood by both.

ii) A **development** of the interaction between the child and the teacher as their play falls into a rhythm, each taking turns to place their counters in the game board. At points the child becomes distracted from the game, placing his counters in the board ahead of his turn before falling back into the rhythmic turn taking as his attention is brought back to the game.

iii) A **climax** which is reached at the end of the final game as the child and the teacher share a moment of joy in completing the task, expressed as a whoop of joy as both child and teacher throw their hands in the air.

iv) A **conclusion** to the project as the child starts to lose attention and the child and teacher tidy away the pieces ready to move on to something new.

This overarching narrative structure describes the complete shared project and comprises five observable narrative sub-units, each describing a small, shared project embedded within the larger task, identified by episodes of game play punctuated by periods of transition where the game board is disassembled and prepared for the next game. The sub-units each display their own narrative structure.

A single, non-verbal shared interactive sub-narrative for the second game was selected for analysis (Figure 4).

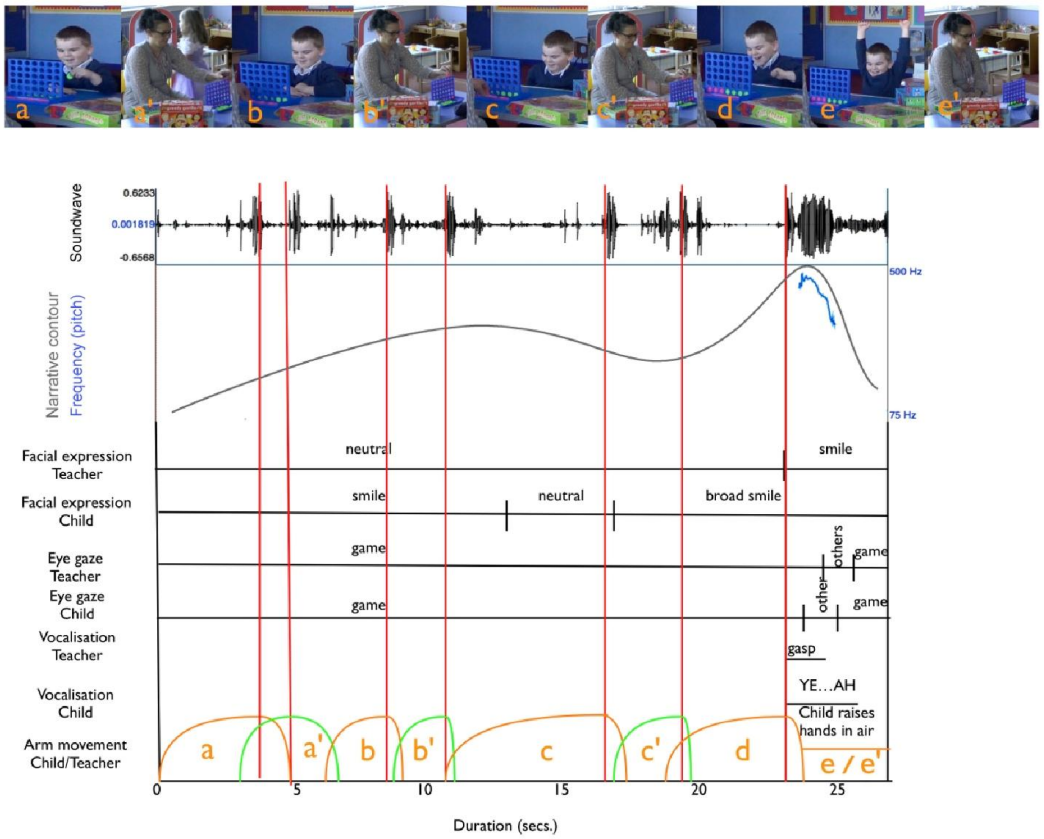

Figure 4. Narrative pattern of dyadic child-teacher one example of a "Connect 4" game. The soundwave indicates the fall of the tokens into the game, together with background classroom noise. Accoustic frequency of vocalisations is registered only at the final vocalisation of "Yeah!" by the child – no other vocalisations were made. The narrative contour of intensity approximately follows the combination of vocal pitch, facial expressions of teacher and child, eye gaze, gestures, expressions, and teacher and child vocalisations. The narrative develops through cycles of gameplay turn-taking. The child's turns are identified by the action curves **a, b, c, d,** with the teacher's corresponding turns identified **a', b' and c'.** Each action curve indicates a reach-grasp-drop – the drop indicated by the vertical line segmenting the piece – and final return of the hand to the table. The climax to the interaction at **e/e'** is identified by the child's high pitch exclamation, "Yeah!", at the top of Middle C with a downward glide as he simultaneously throws his arms in the air and the teacher takes a sharp inhalation of breath. The child and teacher are attentive to the game throughout while recognising it as part of a larger social interaction as they share their joy with another teacher and other persons in the room (other, others) on completion of the game, before tidying up.

The example displays a typical narrative pattern of dyadic interaction. The child and teacher share in turn-taking game play, communicating with each other through a shared repertoire of interest, attention, actions and emotions to achieve a pre-determined and mutually shared goal, *i.e.* winning the game. This episode of game play of less than half a minute contains smaller units of play, or individual turns, each lasting around three seconds.

The game involves dropping coloured counters into a game board with the aim of achieving four in a row of the same colour. The child's turns are identified **a, b, c, d** and the teacher's corresponding turns are identified **a', b', c',** with the arm movement action curves corresponding to the picture storyboard above the diagram. The turns show a rhythmic quality, with the child's turn "**c**", during which difficulty with the game board was encountered, lasting the duration of two turns. Each diagrammatic curve displays a complete child or teacher arm movement, encompassing the "reach", "grasp" (of the game counter), arm "raise", "place" (counter at the top of the game board), "release and drop" (of the counter into the board) and "return". The "release and drop' of each counter is illustrated with a vertical line at the accompanying intensity marking and displays the rhythmicity of play. The timing of movements is organised in purposeful, expressive action sequences. The child and teacher remain attentive to the game without distraction, with the game board providing a common focus of attention throughout, as identified through their eye gaze patterns. As the child becomes familiar with the pattern of play, he is able to anticipate his next move and his arm movement commences earlier.

Each partner shows awareness of the effects of the other's actions, adjusting their own actions to compensate by placing their counters in a specific column with the aim

of achieving their desired goal (achieving four in a row). Each has his or her own motives, intentions and feelings which are displayed through their actions, responses and emotions, joining together in the intersubjective co-creation of meaning. As the child reaches his final turn "**d**" he breaks into a broad smile at the realisation that he is about to win the game and the teacher reciprocates with a smile. Following the completion of his turn, he immediately raises his arms in the air and lets out a joyous exclamation "*Yeah!*" which is identified by a downward pitch from 24 *sec* duration mark (**e**), drawing to a close this gameplay narrative. At the same time the teacher takes a sharp inhalation of breath (**e'**), sharing recognition that the child has won the game. The child, recognising the social aspect of the game, turns his attention to the other teacher in the room who is sitting to his right, inviting her to share in his joy and recognising this dyadic interaction as part of a wider group interactive experience, and his game partner follows his gaze, with the moment of joy being shared by all three.

Discussion

Co-creating success and shared joy in narrative projects

The joy of the children expressed on completion of the shared narrative projects in both cases was palpable. The teachers worked with the children encouraging their participation and giving support to their engagement. In the first case, the teacher held the child's hand, physically guiding him down the stairs as she verbally narrated what was to come, how they were proceeding, and how they would conclude their project. Her verbal narration spoke to higher cognitive or semantic awareness, placed atop the embodied and affective project in which they engaged their body movements. The successful completion of the project was marked by an exclamation of joy from the child, "*Woohoo!*", with a word and a smile of satisfaction from the teacher, a job well

done. All that the project encapsulated – the tension of anticipation at the start, the build up to the first step, the complex coordination of motor activity in the descent, the maintenance of attention, arousal and affect during the descent – was of such high standard that the child, who was constrained in speech, was able to join in the verbal counting of the steps. Indeed, as his confidence grew, he enthusiastically began to lead in this counting. It is important to underline that the nonverbal project of descending stairs with another requires intelligence and learning: a motor cognition of body coordination for an efficient descent and social cognition of known patterns of affect and arousal co-regulation. Before higher linguistic and conceptual learning can be mastered, these affective and embodied patterns must be known.

In the second case, the child and teacher structure the interaction together, showing awareness of the other's actions, joining together in a non-verbal project, each with their goal in mind. As the child becomes more familiar with the game and the co-ordination of cognitive skill and motor action required to complete the project according to the rules, he commences his reach-grasp-raise-drop action sequence earlier, beginning his turn before the teacher has completed hers. This demonstrates a prospective awareness of the patterns of activity with its expectations, which can lead to development of conceptual learning. The successful completion of the project, marked by an exclamation of joy from the child, "*Yeah*" and a sharp intake of breath by the teacher, and shared with the other teacher in the room, marks the pleasure derived from concluding a piece of mutually, and 'publicly', shared activity. A narrative pattern with its patterns of expectation, affect and arousal co-regulation, and participatory engagement has been learned and shared.

Learning narrative schemas of embodied, affective knowledge

Projects that are successful are repeated, and those that fail are not repeated and may discourage trying other tasks. Success can often be marked by the joy of completion, giving pride in accomplishment to be shared with others. Seminal child psychologist Mark Baldwin (1895) noted that from birth, successfully accomplished actions are repeated time and time again in what he called the 'circular reaction'. But this 'reaction' even at this young age was not an unconscious reflex, but rather consciously or imaginatively generated by the infant to reproduce a particular action pattern.

> "The self-repeating or 'circular' reaction, to which the name 'organic imitation' is given… is seen to be fundamental and to remain the same, as far as structure is concerned, for all motor activity whatever: the only difference between higher and lower function being, that in the higher, certain accumulated adaptations have in time so come to overlie the original reaction, that the conscious state which accompanies it seems to differ per se from the crude imitative consciousness in which it had its beginning." (Baldwin, 1895, p. 23)

The fact that successful acts are repeated again and again gave the appearance to Baldwin of 'circularity', where the agency of the child 'imitated' successful acts that came before, again and again. Repetitive 'circularity' is clearly seen in the activities of toddlers and nursery school children, especially in playful games with great joy where a resounding chorus of enthusiasm to repeat the fun is commonly exclaimed, "*Again! Again!*" (Featherstone, Beswick and Louis, 2008). Experienced educationalists recognise the importance of this circularity in work with young children.

Piaget worked with knowledge of Baldwin's studies of the importance of circularity, and he, Piaget, coined the term 'schemas' to account for the regular patterns

of activity that he observed to develop from 'sensori-motor' to 'conceptual' patterns as the child develops (Piaget, 1953; Piaget, 1954). Children's 'pleasure in mastery' of these patterns are learned and shared with others, co-creating shared understanding (Trevarthen and Delafield-Butt, 2015). Children's schemas are a mainstay of teacher education (Meade and Cubey, 2008; Nutbrown, 2008), especially in work with young children before they learn how to accept the conventions of formal schooling.

The narrative patterns we have identified in this paper are schemas of a kind. They are units of process that can be learned as 'objects'; regular patterns of action and response. Successful completion brings repetition and learning. Co-created narrative episodes become appropriated into the memories and thoughts of the child, rich with social value and affective, as well as cognitive meaning. It is not difficult to suppose the child in Case 1 subsequently descended those stairs on his own, counting as he did so after the 'fact' of his shared encounter, recalling its process and form in memory. In this way, children learn socially accepted patterns and their conceptual implications.

The principle of Nurture Groups is to re-enact the social and emotional dimensions of early learning that dominate in the first three years of life, to enable a child with socio-emotional 'difficulties' to learn patterns of affect and arousal regulation that are needed for classroom based learning (Boxall, 2002). It is important for educationalists and psychologists to remember that joy inherent in successful action is paramount to successful learning. This can be forgotten in school when the technical accomplishment of the act begins to take centre stage, and the value of emotional expression recedes to the background. The role of joy, as experienced by children through early years play, in driving the act and fixing its successful process in memory for retrieval and re-enactment later, does not lose its psychological and educational importance in later years.

Toward an understanding of learning as embodied, affective meaning-making in shared narrative projects

Learning requires a hierarchy of levels of organisation of action, arousal and interest, each requiring attention, affect regulation, cognition, and energy to create, from both agents, teacher and pupil. These projects with their rich social and affective dimension, teach patterns of acceptable social interaction and engagement. At their most basic, these are simple and goal-directed actions, such as reaching and dropping the counter into a slot in a "Connect 4" game, which may be organised in a social composition to complete the game with a negotiated and anticipated ending, or in a series of performances according to the rules, collectively building a 'game of games' over a five-minute session. Coherent and meaningful social participation requires regulation of affect, intention, arousal and interest in 'mind time' to maintain co-operative engagement throughout the period of activity, organised in an embedded, regular hierarchical structure.

The child's Nurture Group experience is composed of a variety of solitary and social projects, like the two described above, through which children learn how to interact in the culture of a co-operative society. Such learning allows the child to engage with others and with the experience of learning, creating the desire and ability to draw on their newly acquired skills to achieve future goals.

Conclusions

We have presented theory to demonstrate embodied social engagements as organised by regularly patterned units of narrative meaning-making. These are profoundly affective as well as cognitive. They develop knowledge of persons and objects through the processes of engagement structured by a prospective, or anticipatory framework. They

are schemas expecting certain results from certain actions, with their cognitive and affective dimensions developed, learned, and re-enacted through social engagement as well as in imaginative solitary activity.

Our observations of Nurture Group classroom practice identified two particular cases that demonstrate unified mind-body units of meaning-making. We consider these to be core units of experience for learning. We show how and why emotion is part-and-parcel of embodied learning and of engaging effectively with others. Altogether our theoretical perspective and observations of classroom practice describe a particular kind of sensitive teacher 'attunement' to the rhythms and feelings of the children, which helps to encourage their active participation, sense of agency, and successful accomplishment in narrative episodes of co-created meaning-making.

Knowledge of the ways in which learning is structured in units of meaning-making can assist teaching practice to reach children with sensitivity for feeling in body movement, generating companionship as the basis of learning shared projects of discovery.

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Μαθαίνοντας τα ενσώματα αφηγηματικά πρότυπα δημιουργίας του νοήματος: Καλλιεργώντας την ανθρώπινη φύση στο σχολείο

Jonathan T. Delafield-Butt και Jillian Adie

Περίληψη

Η εκπαίδευση είναι συμμετοχική και ενσώματη. Απαιτεί ενεργή συμμετοχή τόσο από το δάσκαλο όσο και από το μαθητή προκειμένου και οι δυο να συν-δράμουν στην ανακάλυψη όσων επιτρέπουν το ξεδίπλωμα του νοήματος που παράγεται μεταξύ των δύο συντρόφων ως ατόμων. Η παρούσα εργασία προάγει/ενισχύει τη θεωρία της διυποκειμενικής και ενσώματης κατασκευής νοήματος αποτελούμενης από αφηγηματικές ενότητες. Τοποθετεί την ανάπτυξη της κατασκευής νοήματος από τις υποτυπώδεις κινήσεις διερεύνησης, οι οποίες πρωτο-εμφανίζονται στο έμβρυο και στο νεογνό, ως τις πιο περίπλοκες και σκόπιμες κινήσεις του μικρού παιδιού. Ό,τι λαμβάνει χώρα μέσα έσα στο διυποκειμενικό μοίρασμα, αποκτά νόημα για τους δύο συντρόφους, δημιουργώντας κύκλους μάθησης μέσα σε αφηγηματικά επεισόδια τα οποία εμπεριέχουν στοιχεία συγκίνησης, δράσης και σκοπιμότητας/εμπροθεσιμότητας. Αυτά τα σχήματα αλληλεπίδρασης πλαισιώνουν τη γνώση των διαδικασιών μέσα απο τις οποίες προήλθαν και αποτελούν μονάδες που διατηρούνται στη μνήμη των δημιουργών τους. Μετά απο μια ανασκόπηση της θεωρίας της εμπρόθετης και συμμετοχικής κατασκευής νοήματος, θα μελετήσουμε δυο περιπτώσεις μη-λεκτικών αφηγηματικών προτύπων. έτσι όπως αυτά ξεδιπλώνονται μέσα από την αλληλεπίδραση δασκάλου- παιδιού στα πλαίσια της τεχνικής της Ομάδας Ανατροφής (Nurture Group), μιας ειδικής παιδαγωγικής μεθόδου η οποία εναρμονίζεται με τις συγκινήσεις και τα ενδιαφέροντα των παιδιών που παρουσιάζουν *κοινωνικο-συναισθηματικές και συμπεριφορικές δυσκολίες*. Η ανάλυση των περιπτώσεων της Ομάδας Ανατροφής αποκαλύπτει τα αφηγηματικά πρότυπα τα οποία εγκαθιδρύουν το μοιρασμένο ρυθμό, τη συγκίνηση και την κίνηση του σώματος και εκδηλώνονται στις από κοινού δράσεις δασκάλου- παιδιού, και που με την ολοκλήρωσή τους προσφέρουν ευχαρίστηση και στους δύο και οδηγούν στη μάθηση.

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