

A Science of Learning

New approaches to thinking about creativity in the Early Years.

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Someone asked me recently when I was at my happiest and I replied that it was when I knew that I was in creative flow, no matter what the project. The flow that I was talking about is intimately connected to dynamic processes, rather than any end result, and has a thrill that stems from the unknown and the unpredictable. It has an energetic 'quality' to it that invites intense focus and concentration that seems to go beyond the simple accumulation of information. When I am in flow I lose track of time and can achieve crazy amounts of work with what feels like the minimum effort. It is a state that is common in musicians and artists. Creativity isn't only about being good at the expressive arts though - it is about tapping into who we really are and how we express it.

The traditional approach to learning has relied on the transmission, accumulation and reproduction of information on the assumption that we need to constantly build on what has been acquired before. It is like a long linear staircase that we must climb, building a wall as we go, fearful of any cracks or holes in the structure that might weaken the edifice. The ultimate aim is to achieve externally imposed end results that then reflect our value to the system as a whole. In his recent TED Talk Charles Leadbeater called it a 'Bismarkian 19th century model that no longer serves the dynamic needs of the information age.'¹ Many voices are now coming together in the call for a new approach however, and this is one that relies more on the essential nature of personal 'meaning-making' i.e. learning focused on the excitement and discovery of something new rather than simply a function of memory.

Creativity in Natural Systems

Learning is a journey of personal, meaningful, discovery and development rather than the ingestion of a programme of externally prescribed knowledge. It echoes the dynamic efficiency of other autocatalytic systems and ecologies. In the words of Fritjof Capra, the theoretical physicist,

'A living organism is a self-organising system, which means that its order in structure and function is not imposed by the environment, but is established by the system itself'.²

Chaos and unpredictability are fundamental qualities of self-organising natural systems and they thrive on the creative edge, with just enough order to give them patterning, but not enough to slow their adaptation and learning. It is this 'chaordic' space between chaos and order that is the essential source of creativity. It is a place of 'deep learning' through which competencies and dispositions can be explored and brought to a place of balance. It is also the kind of free-floating mental space that births new thinking and inspiration.³

Natural Learners

We know that children have an innate motivation – a 'natural attraction' to explore those aspects of the environment that best serve them at any moment of time. When a child carries out an activity purely for the fulfillment that he experiences in the learning process itself he increases his contentment, self-confidence and general sense of being in harmony with the world. Children seek out meaningful work, demand responsibility and are capable of extraordinary creativity if left to their own devices in a supportive environment. What matters is not so much what they are doing, but how they perceive and interpret the activity.

Researchers into creativity and intrinsic motivation have discovered an underlying similarity that is common to all intrinsically rewarding activities: they all give the participants a sense of discovery, exploration and problem solution. They also appear to need no goals or rewards external to the activity itself. In Chicago Professor Mihalyi Csikszentmihalyi spent many years studying states of optimal experience in adults- those times when they report feelings of intense concentration and deep enjoyment - and has showed that what makes experience genuinely satisfying is the state of highly creative consciousness which he also calls 'flow'.⁴ According to him the state of Flow occurs when the experience of learning becomes its own reward - what he terms as an 'autotelic' or self-rewarding experience. In the "flow state! the achievement of goals is no longer a priority. Rather, the freedom from having to focus on any specific end result allows the individual to escape the confines of boredom or anxiety and to fully enjoy the experience for itself.

Perhaps the state that we most associate with childhood 'flow' is that of play, but from a psychological point of view work and play are not opposites and what matters is the intense involvement of the participant. There is a powerful force at work that seems to be inviting children to interact in unique ways with the environment. The most effective activities seem to need to be originated by the individual and to be open-ended, with the outcome determined by the participants. There is also frequently a feeling of togetherness and friendship with a consequent loss of self-centredness. Such social traits were observed in the 60s by the psychologists Carl Rogers and Abraham Maslow and were the characteristics that most astonished and inspired the Italian scientist and pedagogue Maria Montessori. They can now be seen in the extraordinarily creative learning environments emerging throughout the world where the child are taking control of their own learning processes. Sugata Mitra's 'Hole in the Wall' project is a good example of this which explored how children learn in

unsupervised environments and has gone on to establish more than 300 'learning stations' covering some 300,000 children in India and Africa.⁵

Children, therefore, are active learners in their own right. They do not simply passively absorb the strategies of the adults around them, but rather they strive to be the causal agents in their own environments.

The demands of a culture

Children are natural learners but the culture in which they develop has a great influence on them. There must, therefore, be a very fine balance achieved between the advantages of instruction and the very real dangers of outside assistance undermining the child's independent intuitive thinking. Under instruction children may well learn the expected knowledge and demonstrate the skills, but they may also do so, as Professor Lilian Katz says '*at the expense of the disposition to use them.*'⁶

In this respect it is also interesting to examine the research that has been carried out on external rewards. If learning is to be about the excitement of discovering something new, rather than a function of memory, children will tend to be rewarded by the joy of the discovery itself. External reward systems can even distort the developmental process itself. Classroom reward structures tend to implicate the children's self worth in their achievements, a problem that was recognised by many previous researchers in the field.⁷

Providing the correct degree of structure, however, seems essential for the child to make sense of the environment and to provide choices that lie within the ability of the chooser. Too many choices or too few can depress motivation and subsequent achievement. Creativity is therefore about allowing children to create their own questions and to find their own answers, to enjoy problem-solving for its own sake. There needs to be a 'reaching from within'.

The danger is that instead of us freeing children to become truly independent, creative learners, we must, by nature of our own conditioning, bind them to primarily fit the demands of the culture. As children internalise, they personalise or adapt cultural information. A culture that is predominantly *externally* motivated creates a particular social pattern that the young child must adapt to if he is to be accepted.

Very early on in such cultures children learn to make a clear distinction between 'play' and 'work', and have no illusions about what it is that reaps acceptable rewards. The moment that an early years teacher is given a 'target' or 'outcome' to achieve the dynamic between teacher and child is subtly changed and an adult agenda starts to shape the environment. These adopted value systems become part of the child's personality even though they may go against his own feelings and experiences. Once the source of evaluation lies outside of the self the individual must seek the approval of others in order to feel self-regard. The natural and highly intuitive capacity for

seeking out levels of unique personal challenge and fulfillment diminishes and we are disconnected from the extraordinary and joyful learner that lies inside. Classrooms, by their very nature, express the values, preoccupations and fears found in the culture as a whole and both parents and teachers convey the value systems that they have created and measured themselves by.

The demands of policy

Our culture has championed the accumulation of information together with the power of the analytical mind. The focus is on the parts rather than the whole and we have become very good at dissecting bodies of knowledge in order to better understand them. The problem is that our focus on content rather than context may have profoundly eroded the essentially joyful nature of human learning and development. The National Advisory Committee's report 'All our futures: Creativity, culture and education', (DfEE, 1999) states that

*“We are all, or can be, creative to a lesser or greater degree if we are given the opportunity. The definition of creativity in the report (page 29) is broken down into four characteristics: First, they [the characteristics of creativity] always involve thinking or behaving imaginatively. Second, overall this imaginative activity is purposeful: that is, it is directed to achieving an objective. Third, these processes must generate something original. Fourth, the outcome must be of value in relation to the objective”.*⁸

And a recent report undertaken by the Centre for the Study of Children, Youth and Media and the Institute of Education, University of London says:

*“The project will provide a detailed analysis of how educational stakeholders understand and conceive creative learning and innovative teaching, and to present examples of good practice within the wider context of educational policy and institutional innovation. Building on an understanding that creativity and innovation must go far beyond the arts in education, considerations of creativity and innovation must encompass, discourses around social critique, justice, citizenship, technology and economic regeneration as well as play and everyday cultural practices”.*⁹

Both look at the issue very efficiently in terms of structure but totally fail to emphasize the essential nature and importance of deeper 'meaning-making'. They are indicative of the way that our culture approaches education and we need to ensure that we, instead, open our minds to the wider context. It is too simple to say that we will now foster and encourage right-directed thinking (representing creativity and emotion) over left-directed thinking (representing logical, analytical thought). What is really needed is a profound revision of the way that we understand the learner and an appreciation that we all need a sense of purpose and contribution to something larger than ourselves.

A Science of Learning

So what does all this mean for educational policy-making? We need to see children within the context and demands of the unique systems within which they live and to better understand their need for relationships, personal meaning and contribution. This entails

Better Science

We need to understand more about brain development, what it is that nurtures human creativity and well-being (rather than achievement) and how to accommodate different styles of learning and development.

Better Collaborations

Building connections and oartnerships to establish new and innovative forms of global collaboration that bring together scientists working in the field with leading thinkers, practitioners and policy-makers.

Better Evaluation

We need to investigate the efficacy of alternative cutting edge approaches, to encourage and nurture innovation and to develop new criteria for success based upon personal fulfillment, flow, well-being and contribution.

The Dana Foundation recently bought together seventy four top neuroscientists, cognitive psychologists, education researchers, practitioners and policy-makers to explore the possible relevance to schools of recent developments in neuroscience and cognitive psychology. It is these kind of multi-disciplinary alliances that we now need to encourage.

The most important and beneficial development would be that of a new, empirical 'Science of Learning' based upon an understanding of optimising natural systems. In the same way that we are now revising our understanding of the importance of natural ecological sustainability, so we need to look again at how we achieve individual and community well-being and sustainability. As Einstein said you can't solve a problem using the same kind of thinking that created it. In our work as experts and policy-makers we need to understand that we are products of the system ourselves and there is a real danger that we will play comfortable and safe rather than having the courage to accept that we might be perpetuating systems that are no longer fit for purpose.

'Education reform movements are often based on the fast food model of quality assurance: on standardization and conformity. What's needed is a much higher standard of provision based on the principles of personalized learning for every child and of schools customizing their cultures to meet local circumstances...Standardization tends to emphasize the lowest common denominator. Human aspirations reach much higher and if the conditions are right they succeed. Understanding those conditions is the real key to transforming education for all our children.'

Sir Ken Robinson¹⁰

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