‘Knowing the self’ through creativity: Is education about students understanding and knowing the self?

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Abstract

Is education about teaching students ways of finding and interpreting information and then preparing them for the workforce...or is it more than that? If it is more, what does the 'more' include? Many philosophers have considered that 'knowing the self' is an essential part of growing into a moral human being. Some believe this 'knowing the self' may be achieved through creativity, through expression in one or more of the arts. In this paper I will explore the interconnection between the arts and creativity described through specific instances of lived experience in education. I will inquire how this interconnection might give students the opportunity to understand themselves as people in relation to others and how this maybe central to all aspects of education.

Introduction

Where in education lies the importance of knowing the self? Is one inextricably linked to the other? What is ‘education’ and what does being ‘educated’ really mean?

Education is an age old story told from many different perspectives, depending on the attitudes, personal background and experience of the individual. Parker Palmer believes that “Education has always been described as the development of certain capacities (for example critical thinking and the tolerance of ambiguity) that allow the educated person to live more productively and more at peace in a complex and demanding world.” “Ethical education” he says, “is one that creates the capacity for connectedness in the lives of students” (1993, p.xviii).

John Ralston Saul reflects upon this view of ‘connectedness in the lives of students’ in his book *The Unconscious Civilization* where he comments on the disconnection between people and reality. He is concerned with changes in education that have made schools and universities into corporatist structures. He says that

> Public education is largely focused on aligning basic education with the needs of the job market. The problem is not to teach skills in a galloping technology, but to teach students to think and to give them the tools of thought so that they can react to the myriad changes, including technological, that will inevitably face them over the next decades. (1997, p.69)…What the corporatist approach seems to miss is the simple, central role of higher education – to teach thought. A student who graduates with mechanistic skills and none of the habits of thought has not been educated. (1997, p.74)

James Truslow Adams, American writer and historian, was quoted as saying "There are obviously two educations. One should teach us how to make a living and the other how to live” (Brainyquote, 2007). Do we need to have both types of education and if we do where might the balance lie between the two?

Sharon Todd, of York University, Toronto, discusses how the curriculum is “central in educating students to become certain kinds of people, individuals or citizens…there is an underlying assumption about what it means to learn and to be ‘educated’; indeed, who educators think students should become frequently defines the aims and purpose of education practices” (2001, p.431).

So if being educated or to educate means, as Todd says, to provide a curriculum that helps students become what educators or indeed society thinks they should become, as opposed to just what they can do, what part does creativity play in this? Is creativity a crucial part of a student's development as a person? Will it allow them to become what educators and/or society believe they should become? Will they be better members of society through their experiences of 'creativity'?

What does a classroom where students are working creatively look like? The Maine Art Education Association (2007) describes creativity as "the experience of thinking, reacting, and working in an imaginative and idiosyncratic way which is characterized by a high degree of innovation and originality, divergent thinking, and risk taking." I am sure this description could help us imagine or remember moments of creativity in the classroom. Creativity seems to happen all the time, whether we plan for it or not. Yet many teachers, including myself, fear that we don't give students enough time and space to explore creativity in all its shapes and forms.

I believe that it is more than just the 'subjects' Art, Drama, Music, Poetry and Creative Writing that stimulate student creativity. For example, creativity in mathematics may help students understand the real life application of their learning. Eric L Mann (2006) believes that "creativity is vital when applying mathematics to real-world problems, which often require reformulation"…"creativity in mathematics consists not just of finding alternative answers to problems, but also of 'finding problems' and being sensitive to deficiencies, 'disharmonies' and gaps in current knowledge." Creativity in both mathematics and science is further explored later in this paper. If we look again at the Maine Art Education description of creativity we could be surmise that all learning areas ought to require creativity. I think that being creative helps students and adults to understand difficult concepts, develop their talents and most importantly explore their inner realms of consciousness, applied across all curriculum areas of learning. The *UK Primary National Curriculum Handbook* states that:

> By providing rich and varied contexts for pupils to acquire, develop and apply a broad range of knowledge, understanding and skills, the curriculum should enable pupils to think creatively and critically, to solve problems and to make a difference for the better. It should give them the opportunity to become creative, innovative, enterprising and capable of leadership to equip them for their future lives as workers and citizens. It should enable pupils to respond positively to opportunities, challenges and responsibilities, to manage risk and cope with change and adversity. (1999, pp. 11-12)

There is more to creativity in education than this though. Let us first look at the story of education before today:

How has history influenced our perception of creativity and self knowing?

John Carey explores the true value of the arts in his book *What good are the Arts?*. He discusses whether experience within the arts makes us better people and if judgements about art are mere personal opinions or if they are something more. He starts his chapter 'Do the arts make us better?' by indicating what the ancient Greek philosopher, Plato, had to say:

> The arts make people worse. Unlike reason and science, they are 'far removed from truth' and have 'no true or healthy aim'. At best 'only a kind of sport or play', they incite 'lachrymose and fitful' behaviour in their adherents. Their encouragement of the passions works against 'the rational principle in the soul. (2005, p.96)

Even so, Plato makes an exception for music, so long as it is "virtuous" music that appeals to "the best and the best educated, as opposed to 'vicious' music that appeals to the majority" (1974, p.96). Can you imagine what Plato would think if he heard some of the music we hear today, the poetic rap music of

Eminem or the loud screaming and heinous lyrics from Cradle of Filth? Since Plato, thought around the arts has been through many changes; Charles Taylor says that since about 1800

> There was tendency to heroize the artist, to see in his or her life the essence of the human condition, and to venerate him or her as a seer, the creator of cultural values. But of course, along with this has gone a new understanding of art. No longer defined mainly by imitation, by mimésis of reality, art is understood now more in terms of creation. And that we become ourselves by expressing what we're about, and if what we become is by hypothesis of the original, not based on the pre-existing, then what we express is not an imitation of the pre-existing either, but a new creation. (1991, p.62)

Michael Polanyi, in a similar vain, says that 'the romantic movement of the nineteenth century mitigated the dilemma by claiming that the content of art is predominantly subjective, personal. Thus it does not imitate. It merely expresses our subjectively personal feelings" (1975, p.110). Polanyi laments that there appeared to be a return to the former belief of Plato in the twentieth century:

> Plato's critique of art, showing that artistic mimésis is a falsification of the truth, thus reappeared in our day to support an attempt to make art abandon all explicit expression of positive content. An explicit expression or our inner states was considered too trivial; an explicit expression of the truth about things, impossible. (1975, p.110)

Even though Polanyi's statement describes the early seventies there are still some areas of education that believe our 'inner states' belong to the realm of the psychologist or as Palmer shows in his description of the thoughts of college professors in his book *The Courage to Teach*:

> When students share personal experiences in class – experiences that are related to the themes of the course some professors regard them as "more suited to a therapy session than to a college classroom." and "insisting that the subject is primary and must never be compromised for the sake of the students' lives. (1998, p.12)

Historically Western schools have honoured the 'subject' and my experience of this and the experiences of my children confirm that the 'subject' continues to be valued more than our 'inner states', especially in high school mathematics and science classes. Do we not express ourselves in many ways, no matter what subject we are studying? Taylor says that:

> We think of the imagination as creative….where I discover myself through my work as an artist, through what I create. My self - discovery passes through a creation, the making of something original and new. I forge a new artistic language-new way of painting, new metre or form of poetry, new way of writing a novel and through this and this alone I become what I have it in me to be. (1991, p.62)

Thus a student, as an 'artist', maybe involved in a new way of solving a mathematical problem: if given the opportunity or the rap they have created be acknowledged as a new metre or form of poetry.

Taylor believes that "self-discovery requires *poiésis*, making" (1991, p.62). If we deny students *poiésis*, we might put at risk their opportunity to engage in self discovery. Following Taylor's thoughts we can imagine that each of us has an "original way of being human" and that we each have to discover ourselves through "giving expression in our speech and action to what is original in us". For Taylor this immediately makes a connection "between self-discovery and artistic creation' with "artistic creation becoming the paradigm mode in which people can come to self-definition" (1991, p.61).

What does this mean for the classroom learning and teaching program? What opportunities do we need to provide for our students and what is our ethical responsibility as educators?

Do we as educators have the responsibility of helping students know themselves?

What is the role of a teacher? Is there an accurate description of what a teacher actually does in the classroom? Teacher man, Frank McCourt enumerates the people teachers may have to become each and everyday:

> In the high school classroom you are a drill sergeant, a rabbi, a shoulder to cry on, a disciplinarian, a singer, a low-level scholar, a clerk, a referee, a clown, a counsellor, a dress-code enforcer, a conductor, an apologist, a philosopher, a collaborator, a tap dancer, a politician, a therapist, a fool, a traffic cop, a priest, a mother-father-brother-sister-uncle-aunt, a bookkeeper, a critic, a psychologist, the last straw. (2005, p.19)

As any one of these people, the teacher is a significant part of a student's life and has some responsibility for their emotional development. What then are the ethical implications of this? Some people, such as Palmer's college professors, do not believe teachers are responsible for a students' emotional development. Some believe that the 'I' is none of our business. What is our ethical justification, if we do believe in giving students the opportunity to journey through their exploration of self? As Todd suggests, might we actually be committing an act of violence upon our students by giving them 'creative' opportunities, resulting in a possible self-discovery of themselves? Todd's main concern is:

> what if attempts to realise even the most progressive or open-ended of aims enact an inevitable violence upon the very subjects being educated? In other words, what if learning itself (and not the curriculum *per se*) enacts an 'ontological or 'metaphysical' violence (Derrida 1978) – a violence which accompanies the very constitution of subjectivity? Indeed, if learning is the process through which each individual being becomes a subject of self and, is marked by the pains, struggles, renunciations and frustrations that accompany such growth and change (Castoriadis 1997), how might educators then think of curriculum? (2001, p.431)

Todd's paper entitled *Bringing more than I contain': ethics, curriculum and the pedagogical demand for altered egos* explores the idea of helping students to go deeper within themselves and their studies to find out who they are, to learn something new about themselves and as a result, change from who they were before. She explores "how the pedagogical demand for learning also functions as a demand for students to alter themselves, to become different people from what they were prior to the learning encounter" (2001, p.432). Throughout the paper she continues to be concerned that we may well be committing an act of violence on the very students we are trying to help by imposing on them what we believe they should become. Following Emmanuel Levinas, she explores the relationships between the self and the other and how we may or may not impose on the other. In the introduction to Levinas' book *Totality and Infinity* John Wild says of the meeting with the other:

> I may simply treat him as a different version of myself, or, if I have the power, place him under my categories and use him for my purposes. But this means reducing him to what he is not. How can I coexist with him and still leave this otherness intact?" (1991, p.13)

It would seem educators are faced with the quandary of how to honour a student's integrity but still allow him or her to grow into the person they could potentially be! There is the further dilemma of whether the teacher is on that same journey of 'knowing the self'. Is it important that the teachers knows themselves or are at least exploring knowledge of the self to successfully help students? What happens when we pretend to be something else and do not truly believe in what we are doing? I have met teachers who behave in exactly this way. They are fully aware of the inherent 'dangers' that lie just below the surface and avoid bringing people's emotions into the classroom. Their learning and teaching program might be full of what we call 'the arts' but there is no creativity…just a cloning of the one image or the learning of the same song played to perfection but with no soul. Palmer asks "Who is the self that teaches?" He believes that "Good teaching cannot be reduced to technique, good teaching comes from the identity and integrity of the teacher" and that

the "connections made by good teachers are not held in their methods but in their hearts – meaning heart in its ancient sense, as the place where intellect and emotion and spirit and will converge in the human self (1997, pp.7, 10, 11). Similarly, education phenomenologist, Max van Manen, states that:

> The teacher who only knows intellectually or cognitively that he or she must be patient and understand the child's experience, but who is not really patient and interested in the child's subjectivity is not really affected by the child's difficulties. In contrast, the teacher who feels "addressed" by children's situations and difficulties discovers in this experience his or her pedagogical nature and the need to be patient and understand the child's experience.(1994, p.19)

To what extent do we expect students to learn about the self without intruding on their privacy?

How far can we go and when does teaching become an act of violence? On the other hand what if we don't take risks by giving students opportunities to explore and grow as people? If we take Plato's 'ideals' from *The Republic*, as a guide for 'good' education and a 'good' way of life, it would seem that we should be depicting the world as a 'good' place and that if we just associate with goodness we will become 'good' people and live a 'good' life! We could then ask what is meant by the term 'good'. Another paper perhaps!

"If we prevent our poets, our artists and our craftsman from "portraying bad character, ill-discipline, meanness, or ugliness" (1974, p.162) as Plato suggests for his 'ideal state' will this mean our students will not know about or have any of these characteristics of humanness? Do we insist on portraying our world as just a 'good' place when we know that there are dangers, loss, sorrow and sadness? We could follow the words of Plato and "bear misfortune patiently and without complaint; for we cannot tell whether it will turn out well or ill, and nothing is gained by impatience, nor is anything in human life of great consequence; besides, grief prevents us getting just the help we need" (1974, p.434). Or we could provide our students with the strategies to deal with the least bearable aspects of our world. Do we dare give our students experiences in creativity to express the awful, the unbelievable and the unimaginable, along with the human need to reveal 'the wonderful' giving us faith to face the future? What might this look like in the 21st century classroom and how do we help our students, and indeed ourselves, deal with the catastrophic events that are happening in today's world?

Reading the book *Forever After, New York City Teachers on 9/11* well and truly opened my eyes to all the 'side affects' of a terrorist attack. I have personally visited 'Ground Zero' twice since 2001 and at the time of my visits had not given a thought to the danger, distress and disorder those schools and students situated close to the World Trade Centre suffered. When I visited a high school in Brooklyn in 2003 the teacher showed me where the students stood in the school to watch the twin towers fall to the ground. An image I would think students and teachers would remember forever. It did not occur to me that there were schools right next to the towers in Lower Manhattan, whose experience of the event would have been more immediate, life threatening and frightening than for the students in Brooklyn. Is it part of my naivety about what it means to live in a city like New York that prevented me from even contemplating what the lived experiences of those teachers and students were like on that day?

Teachers describe how students had hardly begun to arrive at school and pack their bags away when the first plane hit. It was the fourth day back at school for many students after the long summer break. The teachers' stories about their escape and their survival give examples of how creativity helped students cope with tragedy and fear and gave them the opportunity to express their feelings about what happened.

In one Grade 3 class students were writing stories and poems and drawing about what they did to make themselves safe after September 11. The third grade teacher asks the question 'what about the curriculum?' and then made the decision that it was too hard to worry about what they were supposed to be doing:

> …none of us had really got back to normal. None of us could handle a lot of pressure. None of us remembered what our best work looked like. Just getting from temporary homes via a crippled subway system to a temporary overcrowded school was a lot to manage. (2006, p.13)

Another teacher explained why she organised a mammoth Art exhibition, so big they had difficulty finding somewhere to exhibit! It was to provide community action that would give agency to the children:

> Children shared ideas about what they could do as children to respond to the attacks. The events of September 11 had created almost insurmountable isolation and helplessness. Individuals felt compelled to join with others. The mural project gave children that opportunity. Children began working on the mural that would become a collection of over 3,000 portraits. (2006, p.80)

This mural was not a depiction of the terror that occurred on September 11, it was a collection of children's portraits with children's messages for a hopeful future, drawn by the children themselves, not only from New York but other war torn countries such as Uganda, Kosovo and Columbia. The mural was a collaboration of hope and strength. Through creativity a new beginning could be envisioned.

And how do five year old children manage something like September 11? It would seem through paint, watercolours, clay, markers and block building. "Through block play the children were able to explore their questions, recollections, fear and anger about the tragic events". The teacher provided a plane in the block area so the very young children could "play out the disaster". Painting in particular gave students the chance to explore their knowledge and confusion about the disaster and when the teacher encouraged children to talk about their paintings there were times when the descriptions were "so wrought with emotion" (2006, pp.152, 155). It was months before many of the children could play outside. It was not just the poor air quality that kept them indoors, it was also the uncontrollable fear the children showed when a plane flew overhead or a fire engine siren was heard.

Another section of the New York City school community decided to use creativity to bring different cultures together. A school mural was created to help build cross-cultural understanding. This was an important mural because the moment the second plane hit the twin towers New York City became a city divided. The "Arab-American community instantaneously became the enemy" as did some South Asian communities. The main organiser of the mural believed that it would help people understand "that we cannot condemn a people or a religion for the wrongdoing of individuals who acted on irrational feelings and committed acts that are non-Islamic" (2006, p.130).

The children used poetry, visual art and drama to explore their feelings about what happened and to help bridge divides across cultures within the city. Why did Plato not value this form of expression for his 'ideal state'? As he explains "Poetry, dramatic poetry in particular, has a bad effect on its audiences, who learn to admire and imitate the faults it represents. We cannot, therefore, allow poetry in our ideal state" (1974, p.436). Plato explains that poetry (and visual art and drama) is mere representations and not the truth, "pictures and poems are second hand, unreal, and tell us nothing about life" (1974, p.421). He goes on to say that "the poet and the painter's work "have a low degree of truth also because he deals with a low element in the mind" (1974, p.435). In the world Plato has envisioned as the supreme way of living, there is no place for such expression because these 'expressions of creativity' do not represent reality, poems are just an imitation or reproduction of the imagination and do not require very intellectual thought! Would we want such a world?

The stories and pictures from the students of September 11 told the world a great deal about the effects that day had on the city of New York. Obviously they are subjective and interpreted accounts of that day but the stories are real to the children and teachers who experienced September 11 first hand. They tell us about life, the life of New York City children, scared and confused whose previously 'safe' world was changed

forever. Van Manen says 'poetic narrative describes a universal truth' and that 'it is significant of good narratives that they tend to reveal universal aspects of human being' (1994, p.18). I think I would prefer to follow the words of Van Manen rather than the 'ideal' beliefs of Plato.

In my experience, primary school students are encouraged to express emotions through creativity. What happens when these students reach high school? Many of the stories in *Forever After* are from primary school teachers. They describe how creativity helped their students work through the range of emotions such an event might bring to the surface. One story differs from the others, the story of the high school student. This student attended one of the closest schools to the World Trade Centre, Stuyvesant High School. Her recollection of September 11 and the aftermath reveal confusion and frustration. After a week away from school her teacher asked the girl's class how they spent their vacation 'as though we had just returned from rollicking spring breaks in Bermuda' (2006, p.99). The week after the hit the girl and her fellow students were relocated to another high school in Brooklyn because of Stuyvesant's close proximity to 'ground zero' which, as all the other schools in the area found, was a further disturbing and disruptive event for already nervous students to deal with. The younger students found the move upsetting, sometimes moving up to three locations in a short space of time. The teachers helped their students work through this by providing 'creative' opportunities for expression in daily classroom life.

The Stuyvesant High School student was not given these same opportunities for expression. "One [teacher] asked how we were handling everything, and I perked up, hoping we would finally discuss our experience of September 11. But the teacher quickly added, 'This school is built like a maze. You guys finding your way around?' The school's makeup was not nearly as confusing as the shifting makeup of our world and minds, but the teacher seemed reluctant to address the greater issues." There was one glimmer of hope from her English teacher who at least provided students with a "packet of poems, each of which handles grief in a different way" (2006, pp. 99,100).

The stories in *Forever After* describe how many high school teachers and students did not directly discuss September 11. Students were skirting around the subject, fearful of talking about it out loud, choosing instead to discuss it in relation to politics or on a non-personal level. They sometimes avoided the subject altogether and just talked about which college they would be applying for. It seemed that their teachers did not have the bravery or maybe even the skills to direct the conversations to a place where students needed to be. Schools and teachers just went along with business as usual, almost pretending nothing had happened. If the students or the teachers could not talk about it maybe some form of creativity could have released some of the frustrations and pain this one student was feeling. Plato suggests we should use our higher self, our reasoning, to deal with such catastrophes. But how could people apply reason to what seemed to be an unreasonable situation?

Many members of the New York City community, in our present day, are still finding it difficult to come to terms with the devastation that occurred on that day. The Stuyvesant High student only found comfort and resolution when she went to Yale University some years later, where others, not from New York City, were unafraid to discuss that significant day. In her reflection she says that

> I wish my teachers had responded differently to September 11. I wish they had normalised my feelings of shock and sadness. I wish they had eased my feelings of isolation by anticipating and articulating what I felt, by speaking of the variety of reactions we might be feeling, even by sharing some of their own. (2006, p.103)

Frank McCourt talks about this very school in his book *Teacher Man*. He was offered a position at Stuyvesant High School on his return to the United States from Dublin. As he embarks on his new appointment he notes that he has been offered a very envious position "teachers all over the city vied for jobs at Stuyvesant High School," He describes the school as the "top school in the city, the Harvard of high schools, alma mater of various Nobel Prize winners…a school where…doors opened to the best universities in the country." (2005, p.183)

So does Stuyvesant high school not value 'knowing the self'? Is it so caught up in academic rigour and reputation that it has forgotten that education may not be just about preparing students for entrance to a prestigious university but also about preparing students for life?

Plato's words once again echo in my ears, 'grief prevents us getting the help we need' (1974, p.434). Some people deal with devastating events by denying it ever happened. They have a 'Let's just get back to normality as quick as possible and everything will be okay' approach. Does this grief go away if we ignore it? It would seem that it did not for the Stuyvesant High School student. The younger students were given the opportunity to grieve and it was never thought as 'not the responsibility of schools'. Why was it different for the older students? Is it about the importance of the 'subject'? Or is it about whether young children need to grieve in different ways to adults?' Plato says that adults 'must learn not to hold our hurts and waste our time, crying like children who have bumped themselves' (1974, p.434). Does this mean children can cry and adults must learn to 'control' themselves? How does the seventeen year old high school student, who is in most respects an adult, continue to cope five, ten, twenty years later because she was denied the opportunity to discuss, grieve and understand her feelings?

Elliot W. Eisner believes the arts, particularly visual arts, helped him struggle through his years of schooling. He sees the arts as integral to successful education of all students along with the basics such as numeracy and literacy. He uses two of the world's most influential art educators, Read and Lowenfeld, to demonstrate his point regarding the importance of creativity in any child's life, in and out of school. Lowenfeld in particular believed that the child who used creativity as an emotional outlet, as many of the students did in New York City post September 11, will gain "freedom and flexibility as a result of the release of unnecessary tensions" and that this will help the child face new situations without difficulties. "Through his flexible approaches toward expression of his own ideas, he will not only face new situations properly but will adjust himself to them easily." He goes on to describes the other side, the inhibited and restricted child, as "accustomed to imitating rather than expressing himself creatively"…"preferring to go along set-patterns in life" (2002, p.32).

Eisner also explores arts education as preparation for the world of work "even though the projects students work on in an art class might not look as if they have much to do with the workplace, they are very much a part of the "skill set" students need to become productive workers" (2002, p.34). Eisner uses the comments from a chief executive of a large corporation to show the importance of the arts to the world of work from a non-educator point of view:

> …there are two sets of basics. The first – reading, writing, and math – is simply a prerequisite for a second, more complex, equally vital connection of higher – level skills required to function well in today's world. These basics include the ability to allocate resources; to work successfully with others; to find, analyse, and communicate information; to operate increasingly complex systems of seemingly unrelated parts; and finally, to use technology. The arts provide an unparalleled opportunity to teach these higher-level basics that are increasingly critical, not only to tomorrow's work force, but also today's. (2002, p.34)

The arts could provide this opportunity if taught in the right way…the arts can be just as absent of creativity as some academic subjects unless the teacher is mindful of the way in which they teach it. Even Eisner acknowledges that "two of the most important factors affecting students' experiences in the classroom are the quality of the teaching they encounter and the quality of the curriculum provided" (2002, p.46).

How do we teach creatively and will this 'creative teaching' enable students to use creativity within all aspects of their experience of school?

Eisner says there is a danger when teaching, particularly in art, that you might "risk stifling student's creativity, block their imagination and thwart their personal expression."(2002, p.46) He believes that teachers need to be mindful of the tone of their language, be able to modulate the pace of the class and have the ability to improvise in the face of uncertainty:

> Canned scripts in teaching promoted by some who believe that teaching can be reduced to a formulaic "science" (which ironically is not what science is about) do not work, since what cannot be provided to make the teacher's script useful are scripts for students. (2002, p.48)

A similar line of thought comes from Todd's paper, mentioned earlier, where she voices her concerns that we maybe doing violence to our students by imposing our views, our beliefs and our way of doing thing onto our students without considering their 'otherness'. She believes that the "curriculum needs to be more thoroughly considered as part of the quality of human response between teachers and students, as part of the delicacy of engaging students, rather than as a fixed set of representations" (2001, p.447).

How do we avoid 'the curriculum' becoming a fixed set of representations, and allow more creativity, especially in the more 'academic' subjects?

Earlier I noted that mathematics and science could draw on creativity and that I believed it did not just belong to the realm of the arts. Could creativity be used to help students, who don't normally feel comfortable in these learning areas, achieve some confidence and success? For me, personally, I am sure it would have. What about the student who understands and enjoys success in mathematics? Does the student who has a 'mathematical brain' draw on creativity to achieve this success? According to Howard Gardener we have preferred learning styles as shown in his work on multiple intelligences. Is it possible that our preferred learning style maybe related to a 'passion' about a particular way of learning or our attitude toward a particular subject? Would a student who is mathematically inclined be passionate about mathematics and as a result naturally be creative to help them understand the concepts?

Polanyi devotes a whole chapter in his book *Personal knowledge* to intellectual passions where he describes in detail the passion and value of the sciences, mathematics, and technology and at the end of the chapter, the arts. He proposes that intellectual passions have an "affirmative content" which, for each individual, provides value and interest for that particular content:

> This is their *heuristic* function. The heuristic impulse links our appreciation of scientific value to a vision of reality, which serves as a guide to enquiry. Heuristic passion is also the mainspring of originality – the force which impels us to abandon an accepted framework of interpretation and commit ourselves, by the crossing of a logical gap, the use of a new framework. (1969, p.159)

Following on from what Eisner and Todd had to say about the curriculum not being reduced to a formula, or a fixed set of representations, Polanyi points out that these intellectual passions around areas such as mathematics and science can "gradually become toned down to a faint echo of their discoverer's first excitement in the moment of illumination". Then there is "a transition" which takes this intellectual passion "from a heuristic act to the routine teaching and learning of its results, and eventually to the mere holding of these as known and true' and 'the driving power of originality is reduced to a static personal polarisation of knowledge" (1969, p.172). It would seem that many high schools teach mathematics and science in this manner, reducing the content to the learning and memorising of 'facts' and 'theories' to help students successfully 'perform' in state wide testing. Could this be the reason why mathematics and particularly

science are no longer such popular subjects at college and university? Could it be that they are seen to make little contribution to the life world and life consciousness of the students?

Will creativity increase student understanding and success in subjects students have previously failed? What if students were given the opportunity to engage with the subject using creativity rather than chalk and talk and merely carrying out practice exercises from a text book till they became proficient? Would this 'heuristic impulse', if encouraged, motivate students to continue with a subject that they really liked rather than giving up on it because of the way it was being taught?

At the end of his chapter, Polanyi extends his perception to other emotions he believes are kindred to the intellectual passions of science and mathematics, that of the abstract arts.

> …appreciated for the beauty of a set of complex relations embodied in them. As in pure mathematics, so also in the abstract arts, these interesting relationships are discovered, created, within structures composed of utterances denoting no tangible object. Among the abstract arts music stands out by its precise and complex articulation, subject to a grammar of its own. In profundity and scope it may compare with pure mathematics. We do not merely hear music but listen to it and enjoy it by understanding it, even as we enjoy mathematics. Like mathematics, music articulates a vast range of rational relationships for the mere pleasure of understanding them. (1969, p.193)

> It is true that mathematics differs radically from the abstract arts by its practice of symbolic operations; a mathematical symbol signifies the manner in which it functions within such operations. But while the elementary utterances of abstract art can have no such meaning, they can rely instead on their sensuous content. A patch of colour, a musical note are so substantial in themselves, that they speak their part in articulating a relationship with other patches of colour, or other musical notes, without pointing beyond themselves. Instead of denoting something – whether an external object or their own use – they emphatically present their own striking sensuous presence. (1969, pp.193, 194)

Even though I have articulated in my abstract that I am looking at creativity through the arts my reading of Polanyi has required me to think carefully about how narrow that way of thinking might be. The things that give me greatest pleasure and insights into the sort of person I think I am are through my experiences within the arts, particularly music and visual art but also drama and creative writing. This is where my intellectual passions lie. I feel comfortable in the spaces they provide for me. When looking back at my own lived experience of mathematics and science I know that there were 'moments' of intellectual passion. I love geology and astronomy and spent many years teaching science to primary school students and looking after science programs in two large primary schools. Science is the reason I started writing a PhD. As for mathematics, even though the negative experiences provide a solid foundation for the basic premise of my thesis, the importance of the teacher, I realise there have been times where I have found excitement and a sense of achievement through a mathematical experience! Even so, I am still not comfortable in the space of mathematics and the sense of panic awakens when I am asked to calculate difficult and 'abstract' problems!

I often wonder what would have happened if I had the opportunity to experience mathematics in an environment that encouraged creativity? Polanyi uses the example of astronomy to describe the need for a creative experience of the subject to become wholly engaged with it or even by 'dwelling in it':

> Astronomic observations are made by dwelling in astronomic theory, and it is this internal enjoyment of astronomy which makes the astronomer interested in the stars. This is how scientific value is contemplated from within. But awareness of this joy is dimmed when the formulae of astronomy are used in a routine manner. (1969, p.195)

Polanyi says this is also true for mathematics:

> Between the practice of hackneyed exercises on the one hand and the heuristic visions of the lonely discoverer on the other, lies the major domain of established mathematics on which the mathematician consciously dwells by losing himself in the contemplation of its greatness. (1969, p.195)

What of the reality of the high school classroom, the curriculum, and the assessment? My daughter's lived experience of mathematics was as negative as mine and yet she was in high school nearly thirty years later. Many mathematics teachers have the intellectual passion but how do they provide students with opportunities to engage with mathematics creatively if they are tied to a stringent time frame to complete all aspects of mathematics syllabus for years nine and ten, the reason my daughter's mathematics teacher used when asked why she was not given time to understand the concepts taught. Polanyi believes that

> A true understanding of science and mathematics includes the capacity for a contemplative experience of them, and the teaching of these sciences must aim at imparting this capacity to the pupil. The task of inducing an intelligent contemplation of music and dramatic art aims likewise at enabling a person to surrender himself to works of art. This is neither to observe or handle them, but to live in them. **Thus the satisfaction of gaining intellectual control over the external world is linked to a satisfaction of gaining control over ourselves.** [bold added](1969, p.196)

My experience in mathematics has always given me a sense of the uncontrolled and a state of vulnerability and failure which must have some impact on my sense of self. I can see the same thing in my daughter and many others who suffer from the 'maths phobia'. What if we had been given the opportunity to explore mathematical concepts creatively? What would that have meant for 'knowing the self'?

I have covered a wide range of ideas around the concept of creativity and how it may possibly help students come to 'know themselves'. I believe it is not necessarily student involvement in the arts as subjects. I think it is about taking some of the strategies of creativity that help students learn about themselves while at the same time authentically engaging them in an area of learning they prefer. The problem lies in how we help others understand that creativity is important in helping students develop as human beings. How do we change an education system that seems to be based upon an 'ideal world' that was proposed around 400 B.C? I am not saying we should not value science, mathematics and the other seemingly 'rigorous' subjects. However maybe we need to change the way in which we learn about them as there no longer appears to be passion around some of these subject areas and professional associations are spending money and time trying to revive these passions.

I would like to see equal value given to the arts subjects. I feel disappointed that my daughter was engaged with two pre-tertiary drama subjects, in which she did well, and receive a mere sixteen points (a pass level) for her efforts whereas her partner who was engaged with science and mathematics, with less on-campus hours, received triple the amount of points (also a pass level). Why are the arts subjects seen as easy alternatives and worth less in our current world? Is this a hangover from Plato's teachings? What realms of humanity does society deny when numeracy and literacy are the most important technologies for measuring student performance and success?

When Professor Fred Newmann, writer for curriculum and restructure, visited Tasmania in 2004 he talked about authentic pedagogy. He commented that even though we were acknowledging and using Gardener's multiple intelligences to support our Essential Learning curriculum, 'it is unfortunate that modern society recognises only two dominant forms of intelligence – Mathematical/Logical and Verbal/Linguistic. This provides a linear, narrow form of education.'(F. Newmann, personal communication, February, 2004). Newmann believes if we are realists we have to provide students with opportunities to succeed in the Mathematical/Logical and Verbal/Linguistic intelligences so that they can live successfully in our society.

George Bush's 'No child left behind' policy certainly supports the importance of valuing the Mathematical/Logical and Verbal/Linguistic intelligences above all the others that Gardener has suggested. Unfortunately this policy dictates that engagement with the 'arts' subjects and opportunities for creativity are to be removed from the school curriculum program if a school performs badly on their national tests. It is so important that the school maintains good test results; otherwise they could lose vital funding, or even have the school closed. When I visited a high school in Brooklyn in January 2003 I found a school teaching to the test. The classroom atmosphere was oppressive. No one was being disruptive, it was worse than that; there was total disinterest and apathy. On the board at the front of the room were various 'test' scenarios for the students to practice in readiness for the next week's 'finals'. The 'finals' decide whether these students will be an academic success in life and reflect the effectiveness of the school as compared with other New York City schools. The reason for my visit to this school was to see how they used the 'Teaching for Understanding' model in their school. The teacher said 'we use the model in our teaching when we can, but at the moment the students have to practice for the state tests. The students really thrive when we use the 'Teaching for Understanding' model but there are so many other pressures here for these students to pass the state tests.' She was nearly in tears as she told me about how the 'No Child Left Behind' policy only gave these students, who were predominantly African-American, the opportunity to fail. The Governor of New Mexico, Bill Richardson, recently articulated a similar view on *USA Today.com* (2007):

> In some grades, reading and math scores have actually declined for Hispanics, African-Americans and others. The current pass-fail rating system is worse than meaningless — it's counter-productive. If a school needs help, we should help that school. We shouldn't punish it, as NCLB [No Child Left Behind] mandates.

There are some educators who are now recognising the value of creativity and giving students *different* types of learning experiences. It is interesting to note that many universities are now providing opportunities for medical interns to participate in role playing activities to improve their skills as doctors, to reduce the number of mistakes they may make and to improve patient safety. They have found that didactic lectures and even small group discussions do not help reduce the number of errors made by medical staff:

> The use of drama has been remarkably effective in engaging residents in learning about medical errors. These scenarios broaden the focus from the doctor-patient relationship to explore the whole context in which the doctor-patient relationship is embedded. Learners are able to experience the emotions of the characters without having to reveal their own past painful experiences involving errors. The creativity of the dramatic production pulls the learners out of their detached analytical mode and promotes creative thinking about medical errors. (2007, p.5)

The designers of the *Doc-U-Drama* course quote Leon Shlain, a surgeon and author of the book *Art and Physics*, in their program, to support their belief that drama will improve doctor-patient relationships. Shlain describes artistic vision as a stimulus for a paradigm shift in medical science, especially through using the artistic medium of drama. "Doc-U-Drama places the medical errors in context and stimulates creative thinking about system redesign. The drama is emotionally engaging but also non-threatening" (2007, p.6).

Conclusion

For how long do we need to struggle to convince the community as a whole, particularly the academic community and our governments, the significance and value of creativity in education? The question arises again and again, 'What is school really about and what is education for?'

From the stories in *Forever After* a Jewish teacher recalls his family's experiences of World War II. One member of his family, a holocaust survivor, requests that her teacher helps the students become human

because “Reading, writing, arithmetic are important only if they serve to make our children more human” (2006, p.175).

Another story from a teacher who experienced September 11 is concerned that one of her students may have become too casual about what had happened. She thought that he may have removed himself from an experience “too close for comfort” or maybe even more frightening “that he is a product of the New York education system, where knowing is more important than understanding” (2006, p.181)

Her final thoughts explore the disconnection of the student’s school life and education, from the reality of their own lives:

> September 11 is a household term. 9/11, Ground Zero – these are phrases that we connect with a certain day, place, and feeling. I wonder if, in learning, they have become as anonymous as other dates we learn about, even though the wound is still so raw. We sit in classrooms learning about the Koran, the U.S. government, and how airplanes work, but we never seem to discuss how all these things are interconnected. There are forums and support groups all over the country to discuss the impact that September 11 had on our lives, but the rigorous curriculum has no room for feelings or real insights. (2006, p.181)

If the rigorous curriculum has no room for feeling and real insights, what will be the impact of this for our future society? What sort of citizens are we creating for our future society?

As I conclude my paper I cannot help but wonder how different the paper would be if researched and written by a person with a predominantly mathematical/logical intelligence? Maybe it would depend on where their passions lie?

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