MOTIVATING THE RELUCTANT LEARNER USING MULTIMEDIA WITHIN A SOCIO CONSTRUCTIVIST LEARNING ENVIRONMENT.

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ABSTRACT

A class of unmotivated inner city secondary school children were introduced to an innovative, new, dedicated physical environment where computers and multimedia software were seamlessly integrated and which was served by a socio constructivist learning pedagogy. In this environment they were taught English as prescribed in the UK national curriculum. Success for the learners was demonstrated by unexpected levels of exam results and motivation was enhanced as demonstrated by student comments, raised levels of self esteem, ability to complete tasks and increased effort.

INTRODUCTION

'Motivation in a general sense is that which influences the arousal, selection, direction and maintenance of all human behaviour. …Students require some form of stimulus to activate, provide direction for and encourage persistence in their study and learning efforts. Motivation is this energy to study, to learn and achieve and to maintain these positive behaviours over time. Motivation is what stimulates students to acquire, transform and use knowledge' (Groccia, 1992, p. 62).

Broadly speaking, unmotivated individuals are usually underachievers. They do not consistently apply effort and they work far below their potential. Their problem is not ability; their problem is attitude. They squander their opportunities and increased options for tomorrow. They generally deny, by their actions, that what they do now has any impact on their future. They cannot see or admit or accept that their inability to complete tasks and assume responsibility will lead to continuing failure in the future.

Some researchers (Brophy, 1987 and Keller, 1983) have found that students learn best when motivated. Having a motivation or goal for learning then focuses a student towards the lesson, as well as fulfilling Maslov's Hierarchy of Needs. However, in order to understand what motivates a student, a teacher must also understand what it is that will create that interest for each individual child, i.e. how do they learn? At what pace do they learn? Is this important enough to them to want to learn? Often students are motivated for a variety of reasons, but in every case the motivation leads to learning.

Martin Covington (1993) and his research collaborators have for many years investigated motivations underlying learning behaviour. Their conclusion is that course grades and self-image are far less important in motivating student learning than a student's own self-estimate of ability. In other words, the strongest motivation for learning is the perception by students that their personal abilities will be maintained or improved. Even though an expected course grade might be low, learning motivation will remain high if students believe that necessary personal abilities are being enhanced.

Motivating unmotivated pupil

When unmotivated students feel pressure, their response is usually an over-reliance on defence mechanisms (procrastination, detachment, magical thinking, intellectualisation, minimisation, projection, denial,

repression, manipulation, avoidance, and so forth). Rather than acting to change their circumstances through mature, responsible action, they avoid progressing toward an effective outcome.

For these unmotivated students, their defences work overtime trying to protect themselves from the perceived discomforts of pressure. They do this because they are developmentally immature; they have low self-esteem, low self-confidence, excessive fear of failure, fear of the unknown and a plethora of other fears that keep them from reacting appropriately. When pressure arrives, their response is "I must escape" rather than the more productive "I must engage and take charge." They use defences well, so the perceived, surface pressure is lessened. They adjust to possible negative consequences which in turn yields a posture of nonchalance as the unmotivated student acts unperturbed. However, in reality, the situation has not improved, the pressure continues to climb and the resulting stress takes it toll in a number of indirect ways.

Helping unmotivated students toward the mature view and mature response to handling pressure is a slow process. It takes time, effort and commitment but the rewards can bring dramatic changes in their behaviour. Any learning environment which sets out with the dual purpose of motivating and providing learning must have a motivating element as well as an underlying learning theory. In this case a learning environment which was to be called the Little School was created. This learning environment had both an underlying learning basis and a motivational aspect. However before this environment could be achieved a learning theory had to be adopted to underlie the environment.

Multimedia and Learning theories

The most commonly considered learning theories that provide theoretical insight into the learning process are 'behaviourism', 'constructivism' and 'socio-cultural theory'.

Behaviourism

The 'behaviourist' view of Skinner (1938) mainly focuses upon measurable and observable behaviour, behaviour that occurs in response to a set of observable conditions or stimuli. This theory was the underlying basis of the old teaching machines of 'drill and practice', some of which are still in use. Papert (1980) said that in a drill and practice program the computer is in control of, rather than being in partnership with, the user. Behaviourism found favour for a period of time, e.g. in the programmed learning machines and the early CAL, but it has now generally fallen out of favour except perhaps in the area of the applied behaviour modification techniques used in control of socially unacceptable behaviour in classrooms.

In this model of learning the learner is merely a processor of information, the teacher is the dispenser of information and the curriculum is the focus of instruction. Situations are created where students can acquire knowledge, the goal being to increase the amount of knowledge in the learner's repertoire so that learning outcomes can be evaluated by measuring the amount of learning acquired, usually through examination or testing.

Constructivism

Constructivism is another view of learning where the learner does not just make automatic responses to external stimuli but reviews experiences and interprets them with respect to general ideas or categories. Cognitive Psychology is not the only psychology to have influenced educational practice; developmental psychology has had an influence also. It is probably widely accepted that the greatest impact on educational thought has been the work of the developmental psychologist Jean Piaget. Piaget and his associates carried out a series of experiments into children's reasoning abilities. Their belief was that the natural

progressive development of a child's thinking from when it is most primitive in its early stages in the first few years of life through to when there emerges more sophisticated abilities such as the capacity to make logical deductions and to formulate and test hypothesis and to reason abstractly is first and foremost a consequence of the children's direct involvement with physical reality. They claimed that the intellect develops and is an adaptive process whenever an intelligent organism comes to terms with its complex environment. It would appear that action is most important and that language ability and other higher order functions, such as making use of symbols, follow on from this development of the more general underlying cognitive structures. Piaget in his observations saw 'stages' that followed in an order that he believed to be in the same order but not the same speed for every child. Each stage builds on the previous one. Earlier construction is necessary for the later one. The order may be the same but the speed of change is different. Piaget and his associates stated that children's thought preceded language and was not determined by it.

Piagetian theory is a theory of development, not really a theory of learning. It is probably widely accepted or considered that internal development as described by Piaget must underpin any strategy of organised teaching. The nature of Piaget's cognitive development is captured in the term Constructivism. The 'constructivist' perspective runs through from Piaget to Bruner and beyond. Children are actively constructing their understanding of the world. Is it possible to create a learning environment where pupils interact with the computer, each other and the teacher in a way that is not provided in many classrooms? Hopefully the end product of this interaction would be learning. Draper and Anderson (1991) considered what is happening in such an environment as "knowledge construction". Here the emphasis has changed from the curriculum to the pupil. The learner has become a constructor of knowledge.

Piaget's stages suggested the intellectual process moving from the concrete to the abstract or formal (Boyle, 1969). Papert (1980) employed this concept of 'concrete' when developing his particular type of educational software. Papert also defined or redefined some terms that are in use within educational and learning circles.

He described Constructivism as that which happens in the head. It often happens felicitously when it is supported by a more public kind of construction 'in the world'. He attached special importance to the role of constructions in the world as support for those in the head. This constructionism does not call into question the value of instruction. He felt that the goal is to teach in such a way as to produce the most learning for the least teaching. Papert said that this cannot be done simply by reducing the amount of teaching and learning whilst the rest of the environment stays the same. There must be changes in all aspects of the educational environment, such as the role of the teacher, the resources, the use of computers and changes in pedagogy. These thoughts and ideas were used in the Little School in order to change the learning environment, especially in the way computers were situated and made use of, in the particular type of software used and in the underlying learning theory and resultant pedagogy.

Socio-culturism

Behaviourism and Constructivism, whilst not individual theories of learning, are theories focused on the learning of individuals and so might not be adequate for forming the basis of a pedagogy and environment for today's, much less tomorrow's, computer classroom nor provide the basis of good educational software. However, Bowers (1988) and Noble (1991) argued that the new Information and Communications Technologies are not just benign

servers of humanity but in fact actively transform human relations. Crook (1994) also warns that if we do not recognise these facts and seize upon them then others will hijack ICT and it will be used to perpetuate and shore up forms of educational practice many find unwelcome.

The behaviourist and the constructivist theories of learning are individualistic theories and could well be inadequate in explaining today's, much less tomorrow's, computer classroom and resultant educational software.

Teachers agree that discussion and interaction are good things in any classroom. The benefits were considered social as well as intellectual. Crook (1987) stated that good cognitive development involves a necessary co-ordination of our thinking with that of others in the interests of various kinds of harmony and in the sense of various kinds of joint activity. However in many cases they did not put these into action in the classroom. Learning has always had a social dimension and learning with computers should be no less so. There is a social element that involves interaction directly with co-learners or teachers or indirectly with the authors of the software or the supporting documentation. Thus the software is very important as well as the environment and the pedagogy. Possibly the learning theories associated with Skinner and Piaget, whilst not wrong, may be incomplete. Individualistic theories do not take proper account of the social quality of most learning. This social perspective could lead to the view that what is going on in successful classrooms, where this social element is made best use of, is not characterised as learning or even as teaching but rather as teaching-and-learning, a rich mixture of both.

The social theory of learning as suggested by Vygotsky (1978) has this social or cultural dimension and is more a theory of teaching and learning than simply learning. His tive' support from an adult or more capable peer. It is an area of growth and stresses the part others can play in an individual's development and also the essential social elements of cognitive change.

Socio-cultural theory is capable of accommodating the role of the teacher as someone who is an active communicative participant in learning and not someone who simply provides the learning environment. This theory allows an environment to be created where the teacher is not just a 'facilitator', where the teacher is not just allowing pupils to discover what the teacher wants them to, but one where the teacher directs them to discover what was on the syllabus, where experiential learning involves everyone and everything and that includes the teachers.

Socio-cultural theory places intellectual development between or outside people before the development happens in the person. We learn through dialogue with others. McMahon and O'Neill (1992) see the zone of proximal development as a region where there is a transfer from what is happening outside the individual, interpsychological, to inside the person, intrapsychological. It first appears on a social plane and then later appears on a psychological plane, after internalisation. They also state that "This process of internalisation is seen as a constructive process, not a simple transfer from a social to a personal knowing."

Case Study - The Little School

It was essential to find an underlying theory of learning that could be used to incorporate the computer into the classroom in the Little School. It needed to be a learning theory that would allow the computers to be used differently and in such a way as to motivate the pupils to learn. The computer was not simply to do the same things that have always been done in the classroom and it was not to be bolted onto the environment, to be used as reward and be withheld as punishment; in other words to control the pupils. It was not just a theory of learning that was needed but more a theory of teaching-and-learning.

It was this socio-cultural theory upon which the Little School was based.

In the Little School it was hoped that the computer could have the potential to create a real socio-cultural learning environment. This environment would be nearer to the concrete experiential and situated learning environment that children come from at the age of five and return to at the age of sixteen plus.

The Little School

The physical structure of the Little School was constructed around the technology and was equally important in terms of the pedagogy that was to be used. The design was different from the rest of the school. Important aspects of the Little School were the features relating to the physical environment, the features relating to the teacher. The relationships and the interactions between these areas were also very important. One aspect that was very important in the Little School was freedom. The Little School held few of the conventions of the rest of the school, the Big School, where the pupils were expected to sit at desks and 'do the work' for the majority of the class time, an environment and pedagogy where quiet indicated learning. In the Little School there was freedom, freedom of movement, freedom of speech. This does not mean that within the Little School pupils could do whatever they wanted. There were rules, or rather guidelines as to what was expected from everyone, including staff. These guidelines included advice on how to behave with others, how to co-operate, how to collaborate, how to listen and accept others' points of view and how to respect other opinions and property.

The pedagogy of the Little School was based on a learning theory that saw learning as socio-cultural more than anything. This was a theory that saw learners as thinkers in discourse. The learners play an important part in the learning process. This learning is helped through collaboration and discussion, where views are expressed and learners are encouraged to achieve meetings of minds with others who may have other views. The Little School provided opportunities for pupils to progress towards a centre of shared as well as personal knowledge. The pedagogy was one where there was a sharing of knowledge construction through a complex communication process. Learning in the Little School was a social and a cultural process based on socio-cultural philosophy. It was not possible however for pupils to build it all themselves and help was needed. This help was provided by other members of the society as well as the mediational tools such as language but more especially in the Little School, the computers. A different role for the teacher was also needed. They could no longer adopt the traditional role in front of the chalkboard as there were no chalkboards but would have to be an actual member of this socio-cultural environment.

The Little School was filled with computers and computer equipment. There were computers, scanners, digital cameras, printers, video input and output, sound input and output as well as a fully functional recording studio. There was within the Little School a computer infrastructure with pupils engaged in computer activities during break, lunch and after school. The computers were not there for the educational theme of Information and Communications Technology as demanded by the National Curriculum. They were not 'bolt-ons' to the ordinary classroom. Here the computers were embedded with deliberate pedagogical purpose and were assimilated into a surrounding framework of educational activity.

Teachers were available to talk to and to talk with. Staff in the Little School were aware of their changing role and that they were now more actively involved in being part of a fluid and complex environment. There were many

changes in the creation of the Little School.

The tasks used

The Little School used a special system of tasks based on the observations of Freeman (1990). Freeman worked with teachers who were using content filled multimedia systems (the Doomsday system). The teacher employed tasks that formed a sequence in which teacher involvement is progressively reduced as the teacher takes on a 'scaffolding role' with a group whose members may be new to multimedia software. The pupils gradually take on more responsibility for learning themselves.

These tasks were central to the Little School. These tasks were the Didactic Model, the Task Model, the Library Model and the Partnership Model. Each successively reduced teacher involvement and direction and eachgave the pupil more control over their own involvement, their own co-operation and their own collaboration with others.

Within each of these models another aspect was important; each pupil had to produce individual pieces of work which were to be judged against an externally moderated standard in order to fulfil the requirements of the Northern Ireland Curriculum in English.

The pupils enrolled in the Little School came from an area where the percentage of pupils who 'pass' the transfer procedure to secondary education is extremely low indeed. There appears to be a 'culture of failure' in the area. All staff and associated agencies would agree that ils requiring free school meals was 88% and more than 50% were considered to be in social deprivation. These statistics might appear to be similar to many other inner city schools but these pupils had one more disadvantage. They lived all their lives in an area that has been one of the focal points of the Northern Ireland 'Troubles'. Many had parents and relatives who had been victims of these troubles and many had parents and relatives who had been directly involved as activists.

The Community of Practice and Discourse

The Little School came into being as a result of many factors and events. The physical environment and resultant pedagogy developed as a result of questions being asked about the use of computers in the classroom. They were also developed as a result of a desire to see computers affecting change in school and motivating pupils in their learning.

The Little School emerged, had pupils, had a curriculum and appeared to satisfy some of education's stakeholders. From the Little School a holistic model of practice evolved, a model of a multimedia pedagogy. This model is of a Community of Practice and Discourse and is representative of what developed in the Little School.

The Little School with its newly created physical environment, its preponderance of computers and its newly developed socio-cultural pedagogy was in fact a community, a community of members. This community had within it opportunities for its members to participate and opportunities for learning. These opportunities allowed the participation to begin on the periphery of the community where they adopt a position. The community may have forced this position upon them or they may have adopted it themselves. After a while it was hoped they would adopt another position different from the first. The first position was usually, but not always, on the periphery of the community. The second and subsequent position was adopted after gaining the mastery of some knowledge or skill usually through interaction and discussion, collaboration and co-operation. These positions were usually considered closer to full participation within the socio-cultural practices of the

community. These practices also included discourse. The repositioning occurred after learning. Learning is not a condition for membership of the community of practice but is an evolving form of membership.

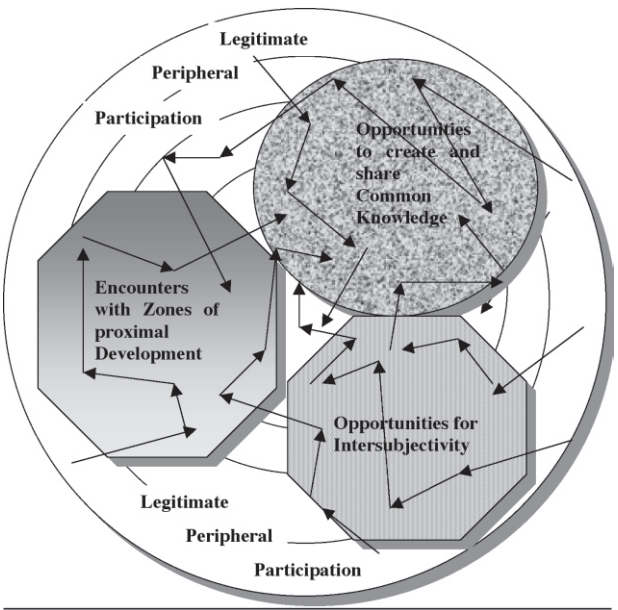

Diagram 1: The model of practice in the Little School

The pedagogical model of Community of Practice and discourse allowed pupils and teachers and indeed others to interact and communicate freely without many of the restricting and controlling aspects of the normal traditional classroom found in the Big School. It was designed to allow the interaction of the elements and sub-elements considered essential in the Little School. The layout was different with many interconnecting rooms, glass partitions and access routes which allowed and encouraged freedom of movement around the area.

The pedagogy that developed allowed:

- The pupil to be central and pivotal in the learning environment;
- learning to take place in the open; learning to be instructed between two or more people which could include teachers;
- the pupils to bring along their experiences and knowledge to the discourse;
- true collaboration in the form of mutual respect foreveryone's contribution to learning;
- the learning of procedural knowledge as well as propositional knowledge;
- The pupils to gradually move the centre of a community with shared knowledge and skills and commitment to the co-creation of new knowledge
- interaction to take place around, through and with the help of mediating tools such as the computer, the software and the tasks.

Conclusion

The socio-cultural tenets described by Vygotsky and his followers were central to the pedagogical model. These were Zones of Proximal Development, Intersubjectivity and Common Knowledge. If the model of Community of Practice and Discourse was in existence then there should be evidence within the Little School of these tenets. The case study was carried out in the Little School when all the elements were in position. The case study uncovered instances of such tenets within the Little School. Evidence from the data collected indicated that parts of the model were in place, existed and that pupils were taking part in them. Pupils were motivated to learn and achieve, interactions were happening, co-operation was in existence and there was collaboration through the mediating tools including the computers. Learning as indicated by positioning and repositioning was happening also.

There were instances of what happens within a zone of proximal development to allow learning to take place and there were instances of pupils working together and creating such a zone, a zone where they could succeed in

learning with the help of others.

There were instances of intersubjectivity within the Little School. Within the environment there were many instances where a shared understanding was evident. This shared understanding or intersubjectivity was a dynamic thing and was seen to change very quickly. The Little School environment with its opportunities for discourse and collaboration provided many opportunities for intersubjectivity.

Evidence was also found of pupils constructing a continuity of experience. This continuity of experience is greater than their individual experiences. The pupils shared terms of reference so that there was less reason to be as explicit as there was when the pupil was talking to someone where there was no such shared experience. This continuity is referred to as Common Knowledge and was evident throughout the Little School.

In interpreting the data obtained from the pupils the conclusion was that the pupils enjoyed it. They liked the physical environment with its newness and its special features such as carpet and music. They liked the freedom and the ability to move around and they liked the technology. They were aware that they were being treated differently. They were motivated to learn by both the physical and the learning environment.

The pupils considered that they worked hard, but not in the same way as in other classes. They did feel that they were learning but it was a different type of learning, unlike the other classes. They liked working in groups, they liked talking and they felt better about themselves and their learning. They also felt that their work was important and they were motivated to learn and achieve. Motivation was apparent in all their learning activities through enthusiasm and dedication to the tasks involved.

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Alan Largey has over 30 years teaching experience within Northern Ireland secondary schools. Alan has a Degree in Psychology, a Post Graduate Diploma in Computer Science Education and an MSc where he continued his research into the use of ICT in teaching and learning, culminating in a PhD in Education entitled 'A Multimedia Pedagogy'. Alan's research interest has changed slightly, shifting to learning environments which involve eLearning blends and digital distance learning to make learning environments and the learners experience as media rich and engaging as possible using modern technology, innovative learning resources and complimentary pedagogies. Alan is an evangelist for using computers within the classroom and providing learners with technologically rich activities and environments. Alongside his career in teaching he was a member of the Royal Naval Reserve where he held Sea Command of a minesweeper. He is currently the Educational Director of Synergy Learning an eLearning resource and consultancy company.

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Pat has been involved in education for over thirty years. Twenty eight of those years were in teaching with a variety of roles and responsibilities including Head of English and as Deputy Head teacher. She recognised the part that computers could play in motivating pupils if they were imaginatively and creatively used.