VERBEEK EDUCATION SPECIALISTS

Evaluation Report

Implementation of XBox & Kinect

Lakeside Park Primary

3/1/2011

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Chapter 1: Literature Review

Learning theories in education

A common thread in contemporary research on learning refers to the ways in which learners go about learning. A theory of learning is presented that accentuates the interaction between the person and the situation. Research evidence implies a form of meta-cognition called meta-learning, the awareness of students of their own learning processes and their increasing control over them. The concept of meta-learning leads to a model of learners learning in which relationships among personal factors; the situational context; approaches to learning and quality of outcome are mediated by the learners' meta-learning capability.

Vicarious and symbolic forms of learning dominate our schools and classrooms, but it would be foolhardy to claim that these are the only, or even the dominant, ways in which we as human beings learn. In this brief study, an attempt to explore a few of' the philosophical and psychological relationships between experience and learning will be undertaken. Educational psychologists usually define learning as *"a change in the individual caused by experience"* (Slavin, 1986, p. 104). Change can and does obviously occur in the formal classroom as the result of such educational interventions as the lecture, laboratory, discussion, recitation, and the use of ICT. On the other hand, it is equally obvious that change in the individual or in behaviour can and does occur in the non-school environment, and thus learning is not something confined to the school, nor only that which occurs under certified educators and in interaction with state approved curricula and textbooks.

It is only in the previous century that learning in the formal school setting became the dominant mode for the majority of persons in the "developed world, and it is only in the past quarter-century that a majority of children throughout the Third World have had their learning formalized and curricularized in the classroom. The purpose of this review is not to deny that important learning does occur in the traditional school setting, but to look at what leaming theory, educational philosophy, the psychology of learning; theories of intelligence, and research on learning can tell us about how learning occurs in the non-school environment. Learning theories are generally divided into two principal types, behavioural and cognitive. Observable behaviour in or outside the classroom is the major focus of behavioural theories, while the mental processes individuals use to learn and remember information or skills is the focus of the cognitive theories. Adventure educators and others who use "real-life" experiences as their major teaching or learning tool, often ignore or denigrate what laboratory learning theorists have discovered, not recognizing that our carefully programmed experiences or work-study apprenticeship programmes make use of the same principles of learning, only in a different setting We also hope, as evidence is slim, that these non-traditional learning environments will result in greater, more beneficial behavioural change, greater learning, longer retention, and all the other points made so cogently in the learning laboratory.

Behavioural Learning Theories

Numerous principles of behavioural learning theories can be found in the practice of adventure, computer aided learning (CAL) and other forms of experience-based learning. The principle that behaviour changes according to its immediate consequences is perhaps the most important in both classroom and non-classroom learning environments. The use of' positive and negative reinforces; rewards and punishments, has been well-documented with laboratory animals, with learners in the classroom, and in the wilderness. While researchers in the laboratory reward rats with pellets of food, and educators use such positive reinforces as stars and grades, or aversive stimuli such as tests or various punishments, outdoor adventure educators can and do use rewards such as praise for an activity well done, or a wide range of positive or negative reinforces when working in therapeutic settings with alcoholics, drug abusers, and delinquents.. The course setting may differ from a psychiatrist's office, a detoxification centre, or a locked youth facility, but the basic behavioural principles remain the same. While adventure educators may not be as overt, as specific, or as well-planned in the behavioural conditioning process as B. F. Skinner (1968) or Ivan Pavlov (1936), the basic principles remain the same.

Social Learning Theory

Albert Bandura (1969), in his social learning theory, uses the basic principles of the behaviourists, but suggests that we also learn vicariously through modelling or imitating other's behaviour. In social learning theory not all learning is shaped by consequences, but rather can be directly learned from a model. Bandura suggests that there are four phases to this form of learning: attentional, retention, reproduction, and motivational. The attentional phase in which the learner is presented with appropriate cues and novelty is used to motivate the learner to pay attention.

In adventure education, such activities early in a course as crossing a Burma Bridge, *participating in cooperative games or initiatives*, or the group leader setting the metaphor (Bacon, 1983) are examples of the attentional phase,. In the retention phase the instructor models the behaviour and encourages the learner to imitate and practice the behaviour. Knot tying in preparation for a relay and paddling technique in preparation for the rapids are among the many examples in which adventure educators model the behaviour and then have learners practice it, before getting into the more dangerous setting. The reproduction phase is the time in which students match the instructor's behaviour and their ability is assessed. Adventure educators pride themselves in their instruction of' behaviours which have obvious meaning for the learner, and which must be properly performed or individual or group disaster might result. Assessment is immediate, as the raft might turn over or the tent blow away if the appropriate behaviour has not been learned. In the final motivational phase, the learners model the appropriate behaviour because they believe that in doing so they will increase their chances of being reinforced. Whether reinforcement comes in the form of praise from the instructor, in the successful climbing of a rockface, or in more traditional classroom reinforcements, the learning process is the same..All four phases are present when learners interact with the Xbox or Kinect programmes.

Cognitive Learning Theories

Aspects of the theories that appear to relate to experiential education will be discussed. Information processing theories attempt to analyze by what process information is absorbed

and how Learners can be helped to retain the information. Short-term and long-term memory is an important part of the research. Information from the senses (sight, hearing, touch, smell, taste) meets the sensory register, and if nothing happens in the first few seconds, it is rapidly lost.. Adventure educators pride themselves in using "all the senses" in their work, and while the research evidence is limited, it would appear that the memories of many of the experiences that are part of our adventure programmes would be retained much longer than the less profoundly moving experiences in the classroom. What is learned or remembered, however, has never been carefully researched, and it would behove experiential educators to limit their claims. Space does not permit any discussion of' critical cognitive learning research on perception, attention, automatization, levels of processing, or verbal learning.

Schema theory, however; attempts to deal with questions of meaningful learning as opposed to rote learning, and holds that long-term memory is enhanced when information fits into an existing schema. Outdoor, adventure, and other experiential educators constantly raise the importance of' schema in helping their students to learn new skills or function in new environments. Without well-developed schemata, the learner in any environment is involved in rote or "meaningless" learning. The memorization of 'the names of 'trees, without the ability to place them in a broader schema based on leaves, needles, size, colour, bark or a variety of other criteria, is rote memorization and in most cases will not lead to longer term memory.

Experiential educators also pride themselves in the teaching of concepts, not unrelated facts, and in addition often claim greater transfer of learning and problem-solving skills than is found in the typical classroom setting. There is once again little research on the transferability of skills learned in the games to one's home, school community, although some of the recidivism studies on delinquents would appear to point towards such a transfer. Problem solving and critical thinking are major areas of research by cognitive psychologists, and the educational reform movements of the 1980s are unanimous in their advocacy of these important areas It is in these areas that experiential educators make their greatest claims, and would appear to lead in pedagogy. Rather than deal with abstract mathematical problems in a textbook, the experiential educator seeks to place the learner in a setting which forces appropriate problem-solving behaviour e.g. computer programs. Rather than develop critical thinking skills unrelated to the real life of the learner, the experiential educator places the learner in an environment in which those skills can be used to solve problems around him or her. The computer programmes under evaluation fall into this category.

The Theory of Multiple Intelligences

Howard Gardner; in his influential book ***Frames*** of ***Mind*** (1983), defines intelligence as the "ability to solve problems or to create products, that are valued within one or more cultural settings. " He goes on to propose eight distinct criteria for an intelligence and seven human competencies. Among other critiques of' traditional IQ measurements, Piaget's developmental stages, and information processing research, suggests that they emphasize linguistic or logical-mathematical intelligences to the near total exclusion of forms of intelligence. Reviewing the basic biological research, Gardner concludes that there are seven distinct intelligences:

mathematical-logical-the ability to organize thoughts sequentially and logically; verbal-linguistic-the ability to understand and express ideas through language; bodily-kinaesthetic-the gaining of' knowledge through feedback from physical activity; musical-sensitivity to tone, pitch and rhythm and the ability to reproduce them; visual-spatial-the ability to learn directly through images and to think intuitively without the use of' language; interpersonal-

the ability to notice and make discriminations regarding the moods, temperaments, motivations and intentions of others; and intrapersonal-having access to one's own feeling life Space does not permit a detailed discussion Space does not permit a detailed discussion of Gardner 's research criteria, but he makes a strong case that all seven intelligences meet certain biological and psychological specifications, and that all can and have been isolated in various parts of the brain.

Gardner and other educators are only just beginning to discuss the pedagogical implications of his theory, but some of them for experiential adventure educators are quite clear Gardner outlines the forms of education and intelligences used in non literature societies and discusses the use of linguistic and musical skills in oral verse, spatial intelligence in sailing, numerous examples of bodily-kinaesthetic intelligence in the village and tribal settings, and many interpersonal skills passed on throughout a tight knit group. He points to the transitional "schools7' of the rites of passage or initiation rites, bush schools and the apprenticeship systems, and their emphasis on a range of intelligences. The modern scientific secular school, however, concentrates its efforts on the logical- mathematical intelligence, with some lesser emphasis on the interpersonal and linguistic

If Gardner's theory continues to gain acceptance among educators, it is likely to affect the way the public schools look at learning and intelligence. Experiential educators have always felt uncomfortable with the near total emphasis in traditional education on the logical-mathematical and linguistic skills, and have sought to provide a more holistic learning environment. Gardner's theory provides a solid research rationale for the wide variety of bodily kinaesthetic activities used in adventure programmes found synthetic media as simulations, and for the wide range of interpersonal and intrapersonal activities which form such a critical part of the pedagogy for both the therapeutic and non-therapeutic education programs. Rites of passage and apprenticeships, found in traditional societies have been resurrected by experiential educators as having relevance in the late twentieth century, and with the current emphasis in education on critical thinking and problem solving, adventure educators and others dealing with the role of experience in learning, can justifiably take the lead in providing a range of learning activities which use all the intelligences.

Dewey and Progressive Education

John Dewey (1930) and the Progressive Educational Movement in the 1930s took seriously the sole of' experience inside and outside the schools. The 1960s and early 1970s educational reform movements also attempted to bring the world into the classroom and reconnect the school with the broader society. Following a decade of "back to the basics" and a return to traditional education, the 1990s have been a period of' time in which experiential learning both inside and outside the classroom has to be looked upon with greater favour, if' still not with the same consideration as the more traditional information assimilation and symbolic and vicarious learning approaches which still dominate our schools. With the massive failure of the schools to reach the "forgotten half' of the students: particularly among the poor and minorities; a few researchers, psychologists, educators, and public policymakers are returning to some of' the basic ideas of experiential learning.

It appears that education is still going through periodic swings of its educational pendulum, and that many of the ideas which focus the argument go back almost a century to the original writings of Dewey, or even two centuries to Rousseau (1712-1778) and other European writers. Perhaps the pendulum will stop when education admits the need fbr both symbolic and vicarious learning which is predominantly classroom-based and for experiential learning, which involves all the senses, all the intelligences, and a range of learning environments.

While Dewey warned against unjustified dichotomies, he differentiated between progressive and traditional education in his 1938 classic. To imposition from above is opposed expression and cultivation of individuality; to external discipline is opposed free activity; to learning from texts and teachers, learning through experience; to acquisition of isolated skills and techniques by ill opposed acquisition of them as means to attaining ends which make direct vital appeal. Dewey also warned that experiences could be mis-educative if' they prevent further growth or lead to callousness or lack of sensitivity. Growth must be physical and moral, not just intellectual. Dewey constantly reemphasized the social aspects of learning (like a group of learners interacting with Xbox) and the importance of learning contributing to the good of the society, not just narcissistic pleasure. He emphasized the need for rigour and discipline in learning, whether in the classroom or on a mountain top. Adventure educators and other advocates of' experience-based learning, would do well to heed Dewey's warnings, or we shall surely be condemned to further swings of the pendulum.

Piaget and Developmental Theory

Part of the impetus for the revival of experience-based learning in the 1960s came from the work of' Jean Piaget (1952), the Swiss psychologist, whose work on the developmental stages of cognitive growth emphasized the importance to active learning and concrete experiences. Piaget's theory of development holds that there are interrelated factors that influence mental development: physical maturation; experiences that involve handling, moving, and thinking about concrete objects; social interaction, particularly with other children; and equilibration which results from bringing the other three factors together to build and rebuild mental structures.

Piaget went on to delineate the stages of growth as from 0-2 years of' age sensorimotor control; 2-4 extracting concepts from experience; 4-7 intuitive thought; 7-11 concrete operational thought; and 11-15 formal or abstract operational thought. The implications of Piaget's theory are critical for experiential educators of children and adults, as it posits the active nature of all learning: that children learn best from concrete experiences, and that even adolescents and adults who are capable of formal abstract thought, need concrete experiences in order to develop new physical knowledge. Computer simulations of real life situations are pseudo concrete experiences. Some research on Piaget's stages would appear to indicate that many adults remain at the concrete operational stage for much or most of their learning. Elementary educators in the United States, Britain, and other countries have been profoundly influenced by Piaget's work, but his warnings about overemphasis on symbolic learning and rote memorization and the need for active physical and social interactions with one's environment have generally been ignored by secondary, higher, and adult educators.

Adventure educators, who spend a majority of their time providing experiences that invoIve active, concrete learning in interaction with the physical environment and in social interaction with members of' the group, have taken a leadership role in the 1990s in putting into practice in adult learning environments the ideas of Piaget.

Coleman: Information Assimilation Versus Experiential Learning

James Coleman (1977) differentiates between the information assimilation process of the regular classroom and the experiential learning process. In the traditional classroom information assimilation model, the learner generally receives the information through a symbolic medium such as a lecture or book, and then assimilates and organizes the information so that the general principle is understood. Inferences are then drawn to a particular application of the general principle and the learner finally moves from the

cognitive and symbol-processing sphere to the sphere of action where the knowledge gained is actually applied.

Critics of contemporary education, such as Paulo Friere the Brazilian philosopher, suggest that modern schools seldom get past the third step of Coleman's model, or what Friere calls the reflective stage, and into the world of action, where genuine change occurs. Coleman suggests that the experiential learning process occurs in almost a reverse sequence and at least initially does not use a symbolic medium for transmitting information, as the information is generated through the sequence of steps itself. The steps in the experiential learning process then are to carry out an action in a particular instance and see the effects of that action. Understanding the effects in a particular instance and the consequences of the action, the learner then moves towards an understanding of the general principles involved, and finally applying through action what has been learned in a new circumstance. Coleman suggests that schools use the information assimilation model to a far greater extent than the experiential model, as it can reduce the time and effort needed to learn something new.

On the other hand for children, adolescents or adults who have not mastered the complex systems of symbols used in reading, mathematics and other disciplines, the information assimilation model leads to almost guaranteed failure, as they are unable to translate the learning into concrete sequences of action The traditional learning model is also dependent on artificial and extrinsic motivation, as action (the intrinsic motivation) comes at the end of the learning sequence The experiential learning model on the other hand is a time-consuming process because it involves actions sufficiently repeated that the learner is able to generalize from the experience Ideally, it uses no symbolic medium and consequences follow actions immediately.

The use of computer simulated games at high levels of sophistication when used by educators to pre-empt learning allows intrinsic motivation to come at the beginning of a learning sequence and allows subsequent learning to be scaffolded. It is the process that is being constantly conditioned with built in reinforcers that accelerate the rate of learning. Motivation is intrinsic, as actions with real consequences occur as the first step in the learning process. Finally, experiential learning appears to be more deeply etched into the brain of the learner, as all learning can be associated with concrete actions. and events, not just abstract symbols or general principles.

It is difficult to generate research evidence backing Coleman's theory, as most evidence of learning is shown through pencil and paper tests, which are dependent upon mastery of symbolic media When a mechanic cannot explain in writing what needs to be done to repair an automobile, but can carry out the necessary work, or when a rock climber cannot explain the physical motions needed or the physics of his activity, but can climb a rockface, one is faced with the question of behavioural evidence versus "book learning ".

Resnick: Learning in School and out

Adventure educators face the challenge of "proving" the efficacy of the learning which occurs on their courses using traditional symbolic research models, or in creating new models which document what has been learned. This research will attempt to use performance in numeracy and literacy as a proxy to measure short term evidence of learning. However, the measurement on the impact of the rate of learning is longitudinal in nature. There is ample evidence of children learning ICT technology at higher rates than adults. E.g. “Hole-in-the-wall” research conducted in India. One indication of the pendulum swing once again towards

experiential learning in the twenty first century is the growing interest on the part of the educational research establishment on what is learned "in school and out " Lauren Resnick, in her 1987 Presidential Address to the prestigious American Educational Research Association, explicated some of the differences between "practical and formal intelligence" Using research by anthropologists and psychologists in such disparate settings as navigation practice on U.S Navy ships, black market lottery bookies in Brazil, mathematics knowledge among dairy workers, and arithmetic performance by people in a Weight Watcher's programme, Resnick (1987) concludes that school learning differs from other learning in four basic ways:

1. individual cognition in school versus shared cognition outside;
2. pure mentation in schools versus tool manipulation outside;
3. symbol manipulation in school versus contextualized reasoning outside school; and
4. generalized learning in school versus situation-specific competencies outside.

Resnick suggests that school learning often becomes a matter of' manipulating symbols rather than connecting with the real world.. It often becomes the learning of rules disconnected from real life. and concludes that: there is growing evidence, then, that not only may schooling not contribute in a direct and obvious way to performance outside school, but also that knowledge acquired outside school is not always used to support in-school learning. The use of computer technology is fast bridging the gap between these two learning sites.

Schooling is coming to look increasingly isolated from the rest of what we do. She also suggests that there is growing evidence that there is little direct transfer from in-school to out-of-school use. Before experiential educators get too excited with these statements, however, she also suggests that much of' the situation-specific learning which occurs in our experiential programs can be very limiting, with little transferability to other settings. With the shift away from apprenticeship models in both the trades and the professions towards formal school settings, Resnick suggests that technical, management and professional education are adhering to too great an extent on forms of teaching found in the traditional classroom and that there is too little engagement with the "tools and materials of work," and more time given to theory than to developing truly expert performance skills. She concludes that we need to help students gain skills for learning even when optimum conditions do not exist. We need learners who can transfer skills from one setting to another and who are adaptive learners. The discontinuity between the worlds of' school and work suggests that we should not focus so much on "symbols correctly manipulated but divorced from experience." Successful schooling must involve socially shared mental work and more direct engagement with the referents of symbols. Schooling should begin to look more like out-of-school functioning and include greater use of reflection and reasoning. Resnick has clearly laid out the challenge for adventure and other experiential educators in coming years. With claims of an educational process that is dependent on shared cognition, skills directly related to real-life settings, learning in environments that demand a wide range of reasoning skills, and a range of specific competencies which provide immediate feedback and are transferable to other life settings, experiential education would appear to be uniquely poised to help overcome the current deficiencies of both traditional schooling and much of vocational-technical training as it occurs today. The rapid growth in adventure programming for the criminal justice system, many public schools, businesses, therapeutic centres, teacher training universities and in youth leadership, to name but a few of the institutions now using the methodology, would appear to indicate a growing acceptance of this form of experiential learning. The challenge now is to carefully document what is being done and its therapeutic and learning effects.

Educators' perceived advantages of using ICT for teaching and learning

Generally, educators pointed to many advantages of using ICT for teaching and learning but most importantly they acknowledged that it enhances learner-centred pedagogy. One respondent for example, pointed out that:

> *"The advantages are many but mainly ICT is important where there are not enough books especially in sciences. They (ICT) are a source for teaching/learning. Also, in laboratories and where other equipment is not enough, ICT can be used"*

Other advantages that educators mentioned are as follows:

- It enables the educator to cover a wide range of material in a short period of time.
- Using ICT enables educators to demonstrate, explore or explain work effectively; it allows routine tasks to be completed quickly.
- Educators and pupils can gain access to a wide range of information through the Internet. It allows learners to explore more information which would otherwise not be made available to them by the educator.
- One can teach many learners without necessarily writing on the chalk board and using a lot of energy , for example, one can use a projector
- Learners can get more information about lessons taught from internet
- It is an easy way to explain many phenomena and the work of the educator is reduced
- Teaching content and materials that cannot be found in text books can be easily accessed
- It enhances research and easy communication.
- Typing and printing of teaching materials is easy

However, educators also identified a range of issues which they regard as drawbacks of using ICT for teaching and learning. The main issues mentioned were:

- Some learners do not use ICT well for example, they spend most of the time sending emails and reading things that are not academic
- Slow learners may not keep up with the rest
- Some skills like hand writing may not be developed well by learners
- As its use entirely depends on availability of power, lessons can be interrupted when there is power failure.
- It is difficult to manage a large classes when ICT hardware is limited.

Report on the use of Xbox in Edinburgh

Representing Scotland in Vienna will be Deputy Head Teacher Ollie Bray, from Musselburgh Grammar School outside of Edinburgh. As Ollie mentions in **his own blog**, he's not new to the Innovative Teachers Network (ITN), having joined back in 2005.

Ollie's Virtual Classroom Tour is called Guitar Hero Transition and was designed to help improve pupils' transition from primary to secondary school. In this project, students work in groups using Xbox as a context for learning across the curriculum. One of the things that impressed us most about the Guitar Hero project is how it is now being implemented across other schools in East Lothian.

Ollie seems to be a bit of a rock star himself up in Scotland, as everyone I have met with on recent visits knows him, this work, and his blog. He has made a reputation within East Lothian for the innovative work he does in creating technology-rich environments for teaching and learning. He also drives a lot of CPD activities within the schools in his authority. Although he led the development and execution of this project, he did not work alone; 9 teachers from 6 other schools were credited in his VCT, along with the support of East Lothian Council.

Ollie's project had three phases:

1. Using Guitar Hero as a context for learning in the primary schools. Schools and students were able to develop their own learning activities around Guitar Hero, which ranged from creative writing and character studies around fictional bands, design of t-shirts and animations, marketing merchandise, learning and performing music and dance, and more.

2. Bringing together the entire primary classes - pupils who would be attending the secondary schools in the autumn for a "Battle of the Bands." Throughout the day, children had the opportunity to work together in workshops that allowed them to develop a band (logo, name, and jingle), compete against each other using Guitar Hero, and participate in several dance, music and drama activities

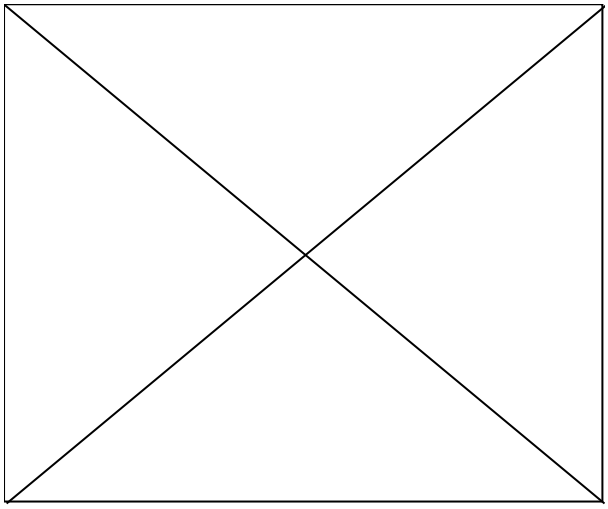
3. Continuing to work on Guitar Hero activities in the context of secondary subjects up to and during the pupils' transition to secondary school. This allowed children to have connections with other pupils when they arrived at their new schools in the autumn and to continue a project they had already started on in primary school. They designed a Guitar Hero postcard about their work, which they sent back to their old teachers in the primary schools.

There were so many things we liked about this project, that I don't really know where to start. I was particularly interested in something Ollie said at the Forum when he was presenting this work to the other teachers. He said he initially received some resistance when he wanted to purchase so many Xboxes and copies of the game for the schools. People were concerned that he wanted to spend so much money on technology. Ollie's response was perfect, I think.

He said that first of all, Xboxes were much less expensive than computers. And secondly, they were investing in children, not in technology. You can't really argue with that.

I've already mentioned Ollie's project to a local authority in London that is interested in using it. I can't wait to see the reception it gets when he showcases it in Vienna.

Microsoft Research Uses Xbox 360 as Teaching Tool



At the Microsoft Research TechFest 2007, the company's annual showcase of research projects, the software giant unveiled several new technologies, including an application that uses the Xbox platform as a teaching tool. Boku: Lightweight Programming for Kids is designed to give children early exposure to the principles of software engineering.

This application lets kids as young as four years of age to use the Xbox 360 to program Boku, a virtual robot in a simulated world. Kids learn to program the robot so it can interact with its world, travel around among various objects the kids create, and even eat an apple "It's very much like playing a game," Microsoft Research Senior Vice President Rick Rashid said. "But it's a serious endeavour that we believe will begin to interest kids in programming and eventually make them more comfortable tackling the really big challenges in computer science."

Games Based Learning

The Xbox Kinect will become a classroom tool for GBL in 2011. Having such technology integrated into desktop hardware offers potential for games-based group work and games based interaction with an IWB.

Early Years

Whilst it never ceases to amaze me how quickly very young children pick up the concept of using a mouse, it's clearly not the most natural way to communicate with a device. Sensing a child's hand and body movements would make this process much more intuitive.

Immersion

There is plenty of great software out there which takes learners on a "virtual tour" – the recently released Google Body is a good example of this. Imagine how much more applications like this would come to life if learners were able to immerse themselves in virtual worlds and environments by controlling and viewing their avatar is if it were actually them.

Collaborative learning

Working at a computer is very much an individual activity – there is one mouse and one keyboard. When students are working together around a computer, there is always one person "in control". A motion controller offers the potential for multiple users to access the computer simultaneously.

Interactive presentations

Although there are now more dynamic ways than just a traditional "death by PowerPoint" for learners to present their work to peers, they still often follow a point-and-click approach. Motion control would greatly enhance pupil presentations allowing interactivity by both the presenter(s) and the audience.

Clearly it will take time for motion controlled technology to enter the classroom environment but I would like to think it will have some impact in schools by 2011..

Conclusion

In this brief overview of experiential learning, we have attempted to provide insights from only a few of the many philosophers, psychologists, educators and researchers who have spoken to the issues of the role of experience in learning..If space permitted we would have gone into learning style theorists such as Kolb (1976), McCarthy (1980) and Gregore and Ward (1977), who provide valuable insight into how learners differ in both style and emphasis. Friere (1973), with his naming, reflecting, and acting has developed a pedagogy for liberation that is sweeping the Third World, while Kurt Hahn (1970) developed the theory and practice underlying the Outward Bound schools, and Maria Montessori (1972) gave her name to a whole pedagogy based on concrete experiences. Many experiential educators have looked to humanistic psychologists such as Maslow (1 968) and Rogers (1 969) for insight into personal growth, group processes, and openness to new experiences.

In conclusion, perhaps the educational systems in South Africa has finally come of age in their recognition that not all children, young people or adults learn in the same manner or at the same speed. They have begun to learn that the insights gained from adventure programmes and other experiential learning environments have great potential for use in the mainstream of' our educational settings, whether in schools and colleges, in therapeutic programmes or in the worlds of' business and industry.

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