

## *Flexible Learning: The Complementary Dimension In Future Education*

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In 1982, Philip Bonanno graduated from the University of Malta (UOM) with a Bachelors in Education specialising in Science Education. Between 1982–1995, he taught Integrated Science and Biology in Secondary State schools. In 2001 he graduated with a Masters in Philosophy from the Centre for Communication Technologies, UOM, taking a research route specialising in Individual Differences in Learning and Instruction. Presently, he is reading for a PhD in Instructional Psychology and Technology at the University of Twente, The Netherlands. He is currently Lecturing in Biology at University Junior College, and in Instructional Design and Individual Differences in Learning at the UOM.

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### **Abstract:**

Challenges facing higher education and training institutions in an information society are highlighted. The psychosocial aspects of learning are analysed in relation to the use of ICT. Fundamental shortcomings of collaborative virtual learning environments are discussed and the need to adopt 'Blended' approaches when introducing technology-enhanced learning experiences is suggested. Neurocognitive characteristics of young learners immersed in a digital culture are reviewed to identify underlying principles for an innovative pedagogy - 'Flexible Learning'. The characteristics of Flexible Learning are discussed and an innovative 'Programme in Flexible Learning' is proposed. Using the SWOT analysis model, a concluding section discusses the strategy to be adopted for promoting 'Flexible Learning' as a solution to the challenges encountered by Institutions of Higher Learning.

### **Introduction: The Challenges of the Digital Era**

'Higher education is adapting to one of the most challenging developments in its history: the emergence of a society that is global, networked and in which knowledge is the main economic driving force. This development is at the same time the result of and is facilitated by Information and Communication Technology. Higher education institutions are challenged to integrate these technologies into their core processes and organisation, and to develop strategies for effectively educating their students in this new social context.' (Van der Wende & Van de Ven, 2004).

Within this new social context, Maltese Educational and Training Institutions are facing challenges along various dimensions. These challenges call for vision, strategy and action. There is a growing mismatch between the static forms of our educational

system and the highly dynamic, swiftly changing features of the society it is intended, and funded, to serve. The structure of educational institutions, the educational process itself and the content that they transmit need to be tuned to match more the needs and the mood of a society where the prototypical job requires flexibility of thought, ability to learn, and skill in dealing with both problems and people. The need for finding new forms of learning, more efficient ways for training employed or unemployed workers, the need for life-long learning and for continual development of all professional and vocational sectors has become a matter of survival within contemporary Maltese society. Malta is passing through a tough transitional process demanding strong mechanisms of adaptation. Our job market is shifting from one based on hard industries, characterised by stable, life-long jobs, to job typologies based on services, especially those related to Information and Communication Technologies. Employment opportunities are increasingly demanding specialised, ICT-based skills, and a frame-of-mind demanding high degree of flexibility, mobility and adaptability. Educational and training institutions are constrained to stress training and re-training of a wide spectrum of new skills involving digital technologies. Employment agencies are facing an acute shortage of graduates and qualified workers in different domains of specialisation and ICT skills. In fact, only 7% of the total working age population (25-64 years age class) end with some form of tertiary education:

At 7.00% this indicator for Malta is well below the EU overall mean of 21.22%, and also below the lowest value for an EU country (10.17%), and is influenced by the very limited opportunities that were available for tertiary education in Malta for a significant number of years.

(The Innovation Scoreboard for Malta 2000, Pg.5)

Maltese society is facing a fundamental dilemma: how to develop efficient and sustainable means for educating and training its workforce in an attempt to increase the percentage of graduates, upgrade employed workers and re-train the unemployed! What is the role of the University of Malta within this scenario? Faculties need to adapt to the challenges of the 'Information Society' by striking a balance between traditional professional routes and new forms of learning and employment. Considering the Faculty of Education as an example, evolving learner needs and employment saturation within the Education sector, compels decision makers to find alternative routes for orienting students to different typologies of teaching jobs and employment possibilities. This situation demands innovative programmes of study based on a different philosophy and a truly learner-oriented pedagogy. The immediate challenge for Institutions of Higher Learning is to redefine their ideology and operationalise the new vision through a set of initiatives that address the fundamental dilemmas. What do we mean by education in an information society? How can educational and training institutions adapt for the 'digital generation'? In contrast to the 'classroom teacher', what are the characteristics and needs of a teacher practising his/her profession in virtual or 'blended' learning environments? Which domain, technological and social skills should be targeted to graduate teachers capable of designing, managing and evaluating 'Blended' courses that exploiting the advantages of traditional face-to-face interactions and the efficiency of Information and Communication Technologies? What type of learner profile we would like our citizens, graduates and workers to develop through a life-long education process? The focus should be on developing citizens capable of efficient interactions in their social environment and empowered learners capable and responsible for their personal

development. The challenge is to develop a society based on empowered learning communities capable of adapting to evolving social needs.

If one does not learn how to think in a new developmental paradigm, and most importantly to learn how to learn, sooner or later one will be under skilled, underemployed, and, even while employed, an obstacle to a successful enterprise.... Rapid development and adaptation is required. The ability to embrace advances rather than hide and hinder them is obviously preferred.

(MIT Bucksport program 1995, Pg.8)

Contemporary typical jobs demand that individuals work in different settings and as members of multifaceted teams. In such situation, social skills gain prominence over task-oriented ones. The major demands made by the job market in the digital era are the ability to function effectively as a member of distributed teams supported through continual participation in specialised communities of learning and practise and the resourcefulness to contribute to the tasks and evolution of such teams and communities, Collis & Moonen, (2001).

## **The Social Dimension and E-Learning**

What are the challenges for educational and training institutions within such scenario? From a social perspective, the revolution in ICT, liberalisation and the fruits of globalisation — easier travel across borders, quick, cheap and accessible means of communicating – are contributing to the development of an unconventional society. There is no standard way for do things. Any social and individual activity has been fundamentally changed, especially through digital technologies. There is a myriad of possibilities how to communicate, learn, manage own finances and entertain oneself. There are always new ways and different resources to be exploited. The underlying factor is that these heterogeneous activities are very differentiated involving specialised entities that provide tailor-made solutions. This is putting traditional institutions such as Universities at crossroads by challenging them to abandon their monotypical ‘production-oriented’ paradigm, that is becoming increasingly irrelevant, and embrace innovation as an attempt to tune more to the moods and needs of contemporary society. They have to accept that their role in knowledge building, propagation and preservation has been radically transformed. Knowledge is not anymore a limited, static, crystallised experience confined to monastery like edifices where the knowledgeable reside. The concept of the traditional university is built on a paradigm that developed when knowledge was scarce, very few sources were available and acquiring it meant a life long endeavour. And since scarce resources cannot be treated lightly, it implied a single responsibility - pursuing knowledge couldn't be done while doing other things. So segregation, confinement and life-long dedication within closed communities were the norm.

But this paradigm does not hold any more in a digital society where knowledge becomes a fluid experience that increases exponentially by the minute and where ICT makes it accessible to everyone, all the time and from anywhere: the ‘Just in Time’, ‘Just for Me’, ‘Just Enough’ paradigm (Kommers, 2002). Now information seeps from institutions to the WWW creating a virtual distributed cognition that is owned

and sustained by cyber communities. Information becomes a fluid, available resource that can be accessed through computer portals or in the near future through web-linked hand held integrated mobile devices. It is no more a commodity to own and store but something easy to acquire, produce, negotiate, share and disseminate through various digital facilities. It does not necessarily take the form of the traditional language based communication modes. Digital media provide many possibilities for capturing and sharing visual information or crystallised experiences that are almost incommunicable through language. Besides this, stimulating virtual learning environments are being created by the inclusion of various asynchronous and synchronous communication technology-based facilities.

Does this mean that technology-based learning is the solution? Will computers fitted with modems replace traditional forms of instruction? Will computer portals replace face-to-face classroom instruction? Are we heading for a modem-based educational experience? I strongly reject such contention believing that this is an oversimplified, technocratic position that negates the humane aspects of learning and as such based on grave misconceptions about learning. People need more than modems! Salomon, (1999).

Research into the social dynamics of groups interacting on-line point to a number of severe shortcomings related to communication, Gunawardena (1995), Hobaugh (1997). Kreijns, Kirschner, & Jochems, (2003) identify a number of pitfalls for social interaction in computer-supported collaborative learning environments. Two of these pitfalls, that seem to impede achieving the desired results, include taking for granted that participants will socially interact simply because the environment makes it possible and neglecting the social (psychological) dimension of the desired social interaction. According to these researchers the absence of facial contact and hence the ability to analyse 'facial movements such as deviations in eye gaze, important for gauging an individual's social attention, and mouth movements, indicative of potential utterances, collectively provide indispensable visual information'. Through such visual feedback decoding of complex social signals occurs. This may play a part in enabling appropriate affective responses and social behaviour. For example facial analysis leads to two important neurocognitive processes – mentalising and impression formation. In order to monitor and control the social environment our brain has an extraordinary ability to mentalise (or mind read), that is, to perceive and communicate mental states, such as beliefs and desires. This is an essential ingredient in group dynamics, especially in collaborative learning environments.

Impression formation is a neurocognitive process that uses information obtained from various sources, including facial expressions, tone of voice and olfactory stimulation by body perfumes. It is the first stage in human bond development. Positive impressions lead to establishment of friendship and camaraderie that facilitate social interactions. In fact both mentalising and impression formation determine how groups develop, how sound social spaces characterised by group cohesion, trust, respect and belonging are established, and how a sense of community is established.

Live visual presence is indispensable for yet another universal human activity, Imitation. Most forms of learning are mediated through imitation. Besides the apprenticeship model for psychomotor or cognitive skills, at a psycho-social level imitation deals with the process of comparing and contrasting ideas about oneself with

impressions about others. Such analysis is done prior to externalised behaviours. In any form of learning, the initial step in imitation involves a process of information analysis and comparison that leads to the activation of relevant motor areas in the brain responsible for developing a particular response or behaviour. Initial acquisition of salient information through modelling is followed by learner's efforts to imitate both task and person-oriented interactions. According to Meltzoff and Decety (2003) both developmental and neurophysiological research suggests a common coding between perceived and generated actions. This shared representational network is innately wired in humans. Functional neuroimaging studies that explore the neurophysiological substrate of imitation in adults provide evidence that imitation recruits not only shared neural representations between the self and the other, but also cortical regions in the parietal cortex that are crucial for distinguishing between the perspective of self and other. Hence imitation forms the basis for rehearsing psychomotor and cognitive tasks and for the accommodation of social typifications and roles, Berger & Luckman, (1966). Gallese (2003) discusses how the ability to code the 'like me' analogy between self and others constitutes a basic prerequisite and a starting point for social cognition. It is by means of this self/other equivalence that meaningful social bonds can be established, that we can recognise others as similar to us, and that imitation can take place. Gallese also maintains that all kinds of interpersonal relations (imitation, empathy and the attribution of intentions) depend, at a basic level, on the constitution of a shared manifold space. This shared space is functionally characterised by automatic, unconscious embodied simulation routines. Byrne (2003) proposes that imitation of complex, novel behaviour, besides mentalising, requires behaviour parsing through visual analysis that may be a necessary preliminary to attributing intention and cause.

Thus, in all forms of imitation, whether triggered through direct observation, mentalising or behaviour parsing, visual information obtained directly from models or colleagues is indispensable. And again this points to the serious limitations present in virtual learning environments regarding the promotion of specific forms of learning and interactions that rely heavily on socio-emotional cues. Computer portals used for E-learning, deprived of any live visual cues, pose serious limitations on human communication and interaction, two fundamental processes in learning.

Salomon (2000), acknowledging the limits of technology, states that while it's a mistake to avoid using electronic technology to transmit basic information, it is wrong-headed pretension to claim that one can provide a genuine community of scholarship and tutelage through E-learning. One cannot nurture excellence by remote control. When it comes to the development of higher order knowledge and to the nurturing of excellence, virtual learning environments can produce no more than virtual results. This provides ample reason for the limited success of technology-based learning solutions. Jochems, Van Merriënboer & Koper (2004) confirm:

Our starting point is not the technology per se but the educational process itself. To be more precise, we focus on educational issues or problems that might possibly be solved, at least partially, by the provision of learning arrangements that make deliberate, effective use of technology. It is our firm conviction that e-learning can play an important role in facilitating learning in the near future, but only under certain critical conditions that

enable the technology to become bearer of educational improvement and innovation.

(Pg 3.)

The synergy between technology-based and learning in contiguous groups proposes the best solution. Such technology-enhanced 'Blended' approaches that integrate the benefits of technology with fundamental humane needs provide the best model to be adopted for innovative educational and training initiatives.

### **The 'Digital Generation'**

But besides this psychosocial dimension, another challenge faced by present educational and training institutions is the neuropsychological build characterising the digital generation. Today, Universities and schools have to deal with students whose brains are literally rewired through their continual immersion in the multimedia digital culture. A conservative outline of the daily media exposure for an average teenager would include watching over three hours of television, mainly Music TV with an average frequency of 100 images per minute. They are on the Internet at least for 10 minutes to an hour, in many cases using chat portals for most of the evening. They also play at least one-and-a-half hours of video games. This means that by the end of formal schooling teenagers would have watched twenty thousand hours of television, played over ten thousand hours of videogames, seen hundreds of movies in theatres, on video-tape and DVDs, have been exposed to over four hundred thousand television commercials, adding up to tens of millions of images. Certainly they would have read fewer books than their parents, but even if they were the most voracious of readers, they would not have spent more than three to four thousand hours at it, Prensky (2001). Considering such extensive and intensive immersion in digital media, today's students have a different neurocognitive set up and a heightened predisposition for digital media that cannot be ignored when designing effective and relevant instruction. Prensky proposes a number of main changes in cognitive style of the digital generation that should be seriously considered when proposing new models of learning.

Young people are often called the 'Twitch' generation. Continual exposure from an early age, at processing information quickly (e.g. quick manoeuvring through games, hopping hastily from one hyperlink to another or scrolling through extensive documents) makes young people live always on the 'fast lane'. The paradox is that beyond the digital world, little in life moves that fast. They continually have to face depressing situations where they have to slow or power down. The challenge is to create instructional and training experiences that maintain the pace and exploit the facility of twitch speed while at the same time emphasising concentration and reflection. Learners should be encouraged to bridge the gap between this impulsive style demanded and nurtured by digital media and the reflective style characterising didactical approaches.

The 'twitch' approach develops a complementary parallel processing propensity – the ability to follow multiple tracks concurrently and feel comfortable at it. This cognitive style contrasts a lot with linear processing typical of book-oriented generations. Daily scenarios that manifest such parallel processing tendencies include doing HW and

watching TV, hearing music while reading and studying, managing multiple applications involving separate tasks, reading email during a phone conversation. Although some may argue that parallel processing limits attention to any one task, researchers are of the opinion that this is not the case as the mind typically has quite a bit of “idle time” from its primary task that can be used to handle other things. Greenfield (1996) cites parallel processing as a ‘cognitive requirement’ for skilful use of digital technologies. Prensky claims that non-parallel thought processes might actually retard learning for brains developed through computer games and Web-surfing. Most internet sites and news TV stations are designed for parallel information processing, where the anchorperson or main website occupy only one-quarter of the display, the remainder utilised to provide alternative sources of information including sports events, weather information, stock quotes, evolving news headlines and menus with ‘hyperlinks’ to wide range of personal choices. For many, this is the preferred way to monitor and evaluate current events, together with personally relevant changes in the environment. It explains why more people are getting news and services from the Web. All the required information is linked in one portal, at their own control and choice. Just a click and they arrive at the required information or contacts. The challenge for educators and instructional designers is to think of additional ways how to exploit this enhanced human capability for parallel processing and design learning experiences on a platform of choice for time, location, format, content and prerequisites.

This parallel processing capability is complemented by random access to information. Hypertext and random access to information creates “hypertext minds leaping around”, Winn, (1997) capable of taking information from multiple sources and in a less sequential manner,” Tapscott (1998). Prensky considers this new, less sequential information structure as a very positive development since this increased the Digital Generation’s awareness and ability to make connections, freeing them from the constrain of a single path of thought. At the same time, unbridled hyperlinking may make it more difficult for these learners to follow linear train of thought and to engage in deep, logical thinking. This pronounced tendency for random information processing might also interfere with interpersonal communication and collaboration in groups. Normally people impart their ideas in a sequential way. At the receiving end, understanding someone else’s logic is also very important. A challenging task for today’s educators is how to create experiences that, while allowing learners to link multiple sources of information or experience things in any order, yet they train themselves to communicate ideas in a sequential and logical way. On a compensatory note, what has been lost in linearity is compensated by a greater ability to perceive, and think in structure and patterns. The digital generation is actualising McLuhan’s (1997) prophecy that “Our electronically configured world has led us to move from the habit of data classification to the mode of pattern recognition. We can no longer build serially, block-by-block, step-by-step, because instant communication insures that all factors of the environment and of experience coexist in a state of active interplay.” This implies a fundamental shift in Educational and Training design - considering typologies of interactions as the main learning outcomes.

The digital generation manifest a compulsion for information in the form of graphics, preferring it to text. While for previous book-oriented generations, graphics were generally illustrations accompanying the text to provide support and consolidation of the concepts being presented, within a digital culture the role of text occupies a

subordinate role, usually accompanying something that was first experienced as an image. Continual exposure to TV, videos and computer games comprising high quality, expressive graphics emphasising virtual reality and with text occupying marginal importance, the younger learner generation acquires an extraordinary visual sensitivity and acuity. This phenomenon is so pronounced and widespread, manifesting itself as a worldwide increase in visual literacy that its pedagogical implications cannot be ignored. It is more congenial with young people to begin with visuals and then add or mix text later. This shift toward graphic primacy in the younger generation raises intriguing questions regarding textual literacy, linguistic elaboration and accuracy, and depth of information. While proposing approaches that exploit such assets, young people should be continually challenged to control for language degeneration through practice that emphasises refined linguistic communication. This may also include the promotion of metacognitive skills for monitoring the facilitation and mediation of linguistic skills through visuals. It is extremely beneficial to strike a balance between the uses of quick, intuitive, visually based information processing and the adoption of a slower, conceptually oriented and linguistically based approaches for processing language-oriented information.

Innovative educational models must also capitalise on yet another learner's characteristic - the sense of Connectedness as compared to the previous Standalone mentality. Today's younger generation experiences a worldwide sense of connectedness through which they participate in extensive networks of virtual communities and cyber relationships. They experience and express a common feeling of being connected to anywhere in the world, at anytime, with all types of people, at almost no cost. People can be contacted, spoken to, played with and dismissed - somewhere in the world - 24 hours a day. More important is the positive experience of being in contact and working with the best, most knowledgeable people, wherever they may be. In this way they form part of virtual teams that often recruit one another via messages on the Internet, operate smoothly from widely scattered parts of the world, though they probably never meet physically. Competence is top priority. Certification is valuable if it empowers performance. One may argue that this can lead to 'depersonalisation,' because people meet, chat, play, and even work on the Web without ever seeing one another, never getting to know each others' name, gender and personal biography, but based solely on impersonal relationships. Prensky states that people who do this often find it enormously liberating and fun to be freed of all the effects of "lookism" than can lead to prejudice. What one can produce counts more than his/her looks! If you're good you'll get an audience or working relationship. If not, work hard to become competent! This sense of connectedness makes the Digital Generation think differently about how to get information and solve problems. Instead of passing through the hassle and time consuming process of referring to knowledgeable people, they immediately post questions to bulletin boards where thousands of people can contribute to their request. The quantity and variety of material obtained can be staggering. Hence innovative models of learning should be based on new metaphors that integrate this sense of connectedness. Instead of perpetuating isolationist, transmissionist approaches emphasis should shift to distributed models of cognition and collaboration as implied by the 'Rhizome or Internet' metaphor of the mind. The main pedagogical focus would be based on a different set of priorities: developing resourceful, contributing learners as efficient nodes within the network of minds.

New metaphors of learning should also take into consideration the 'Just do it' attitude of learners growing in technology-enhanced environments. There is very little discussion about constructivist or constructionist epistemologies. They just practice them. Given a new software tool, older people, apprehensive of all problems that may crop up, start consulting elaborated instruction manuals or knowledgeable personnel before using the particular application. Younger people have grown out of this fear and click the 'mouse' at anything to make it work. They assume that good software is like games - designed to teach you how to use it on the way. They don't even think of using manuals, and if problems arise they assume the problem is with the software not with them. This 'Just do it' attitude makes the Digital Generation intolerant to learning experiences based only on passive instructional situations like lectures, video sessions, face-to-face discussions, meetings or text-based documents uploaded in virtual learning management systems. Exchanging ideas can also be done through chatting, posting messages, joining virtual clubs, surfing for information and on-line interactive games. Besides collaborating in the construction of knowledge, these possibilities give them more control over what happens and hence developing the right attribution to achievement. Success or failure lies within their command and not determined by some external authority. In fact one of the biggest lessons learned from growing within a digital culture is the 'pay for performance.' If one puts in the hours of effort and masters the technological tool, a reward surely comes along - moving to the next level in a game, added functionality or more efficiency in performing tasks or communication. The payoff for any action is immediate and clear. Due to this young people have grown to become intolerant to things that don't pay off within a defined time frame and at the expected level. The Digital Generation progresses in life through a continual 'payoff-versus-patience' decision strategy. While getting nervous with slow processing computers, they often show great patience with slow Internet connection speeds, since the payoff is worth the wait. Educators must acknowledge the importance these payoff-versus-patience tradeoffs have for younger people and find ways to offer them meaningful rewards *now* rather than advice about how things will pay off "in the long run." This also implies training in accepting situations where payoff is not in terms of immediacy or tangible outcomes, but may involve long-term growth or transformational processes.

Coupled with their strong visual orientation and the 'Just do it' mentality, young learners immersed in a digital culture show a stronger affinity for merging fantasy with reality. Being exposed to so many commercials and music videos that are a blend between real things and objects of fantasy, experimenting with multiple identities in anonymous relationships on the WWW and the immersion in the fantasy world of digital games, both from the past (medieval Dungeons, Dragons, Knights, Castles, Life styles) and the future (Star Wars, Spaceships, Laser guided weapons), creates a natural tendency to bring fictitious scenarios into real interactive settings. Though some may consider this as deplorable diversion techniques, if not alienation from reality, the fantasy phenomenon has become ingrained in the mind of young people. The challenge lies not in censoring such 'natural' activity but in devising new ways to combine fantasy and reality. Promoting reflection on such fantasy identities may provide the necessary feedback in the form of vivid metaphors through which young people may be helped to build their true identity and self-theory.

This extensive discussion about the natural propensities of the digital generation justifies Turkle's (1995) claim that computers are not to be considered solely as

analytic machine but more important as 'Intimate machines'. Such a personal outlook to digital technologies bears a lot of implications when designing technology-enhanced learning systems. The paradox is that such 'intimate machines' are inefficient along the socio-emotional dimension within collaborative learning scenarios. Any proposed pedagogical model should address this dynamic tension.

## The Way Ahead

The challenges arising from contemporary social and learner needs compel educational and training institutions to revise current pedagogical models and develop approaches that are relevant and efficient in the digital era. This implies a shift beyond the traditional course-and-certificate formula. Present models are highly biased towards learners having an academic inclination and thus motivated to pursue a professional carrier after securing the necessary certifications. Such an educational route is characterised by an initial long phase of study and training followed by employment, many times at the expense of other fundamental existential issues. A considerable number of countries are challenging this model, especially when taking into account vocational and adult training. What about the growing percentage of 'misfits' in educational institutions? What about people who prefer to follow a life style oriented to satisfy more existential needs? A growing percentage of young people prefer find a lower income job, become somewhat financially independent, enter in relationships possibly forming a family and then consider upgrading and training themselves for a better income job. Compared to the academic route that emphasises learning as an end in itself, such an approach advances another perspective. Learning is considered just a means to an end. Kommers (2002) claims that:

The educational paradigm of 'how to arrange' learning process has become subordinate; its prime goal is to find and build upon existential needs like food, housing, child care and purely intellectual interest. Learning is no longer a goal in itself; it is a side product of existential survival and moral identity.

(Pg 3)

Educational models that provide 'balanced' education are becoming more in demand. Learning and training in the future should be based on a 'blend' between institutionalised and digital forms of learning. From a pedagogical perspective 'balanced education' implies equal emphasis on content and process intelligence, employing both acquisition and contribution-oriented modes of learning and invest in approaches that emphasise interactions rather than transmission of facts. In this context both contiguous and virtual learning communities become indispensable.

'Blended' educational models compel educational and training institutions to differentiated along three dimensions. At the basic level, exploiting technological resourcefulness and efficiency, all information imparting have to be done through technological applications. But since learning is not only a knowledge-acquisition process but also a process of gradual participation and contribution to a professional community, institutions should strive to create strong communities of learning and practice in which human value systems that cannot be mediated through technology

are nurtured and shared. We need a shift from approaches that emphasise generic 'Patterns of Learning' to ones that promote 'Different Learning Patterns'. The way ahead is to create learning experiences not just learning environments.

### **Investing in Flexible Learning**

Considering the individual and social needs elaborated in the previous discussion, the Faculty of Education, University of Malta should first redefine its mission statement. Training teachers for formal school oriented jobs implies a myopic vision and on a negation of evolving social needs. Teaching and learning should be defined in a wider context and on a broader spectrum of potential opportunities for employment arising from blended approaches and totally on-line virtual learning environments. This implies, not only training to become teachers in the primary or secondary education sectors but also providing study and training possibilities for student and adult learners that would like to specialise in designing, managing and evaluating technology-based or technology-enhanced learning. Such a vision can be operationalised through a number of initiatives around the concept of 'Flexible Learning'.

'Flexible Learning' refers to technology-enhanced and/or technology-based learning systems that promote learners' choice through enhanced flexibility in time, content, entry requirements, instructional approach and resources, delivery and logistics, Collis & Moonen, (2002). Flexibility in time includes choice regarding the commencement and finishing of a course, time for submitting assignments and interacting within the course, tempo/pace of studying and choice regarding moments of assessment. Flexibility related to Content considers choices related to topics of the course, sequence of different parts of a course, orientation of the course (theoretical, practical), key-learning materials, assessment standards and completion requirements. Flexibility is also shown in entry requirements indicating the different conditions for participation according to programme and learner needs. Choice is also provided regarding instructional approach and resources. This includes the social organisation of learning, whether instructional settings will include face-to-face or group-based interactions, individual activities or a mixture of these possibilities.

The most important aspect of flexible learning is related to delivery and logistics. New personal and social needs are promoting unconventional patterns of learning regarding time and place where contact with instructor and other students occur. The 'Just in Time', 'Just for me' and the 'Just enough' mentality (Kommers, 2002) demands all round the clock availability overcoming any time or geographical limitation. 'Blended' approaches employing virtual learning environments that include synchronous and asynchronous communication facilities for mediating learner-learner, learner-tutor and learner-community interactions offer the best methodology to share and communicate information. In this respect the typologies and intensity of interactions will determine the specifications of the required delivery channels for course information, content and communication and hence the type of technological investment to be made by an institution.

This concept of Flexible learning should inspire the future philosophy and pedagogy of Faculty of Education. It can be operationalised by adopting a two-

pronged approach. On the one hand current programmes of study should be transformed into 'Blended' options through a technology-enhanced approach. In extreme cases where learners cannot follow the complementary 'on campus' activities of the course, they may opt for a totally "on-line" version. At the same time, Flexible Learning will be offered as an area of specialisation in the Bachelor and Masters in Education courses. Besides this, the Faculty of Education will encourage other Faculties of the University of Malta to adopt the concept of Flexible Learning and provides the necessary pedagogical support.

An innovative complementary route to the courses presently provided will be developed to train people interested or involved in the design, managing and evaluation of 'blended' or on-line courses. A 'Programme for Flexible Learning', having a 'blended' and a full on-line version should be designed and implemented. All levels of certification - from Certificate to Doctoral level - can be obtained by following any of these two versions. A elevated academic profile and international recognition of the Programme can be achieved through collaboration with foreign universities, renowned for their expertise and international reputation in this field. Besides this academic route, the 'Programme for Flexible Learning' will be extended to include other sectors of Education and training. In conjunction with the relevant institutions, a Vocational route and another in Adult Education and Training may be developed.

Challenged by a vision for a future balanced education, the mission of the Faculty of Education is to serve as a catalyst in promoting the necessary changes within the University of Malta and other local educational and training institutions. Driven by the principle to provide more accessible and adaptable learning, the concept of 'Flexible Learning' has to be promoted both as a means and as an end in itself. The Faculty of Education will lead the process of innovating the institutional policies for adopting technology-enhanced learning especially blended approaches. The strategy to be adopted should be based on the SWOT analysis - identifying the Strengths, Weaknesses, Opportunities and Threats.

What are the strengths of the Faculty of Education in relation to Flexible Learning? Which initiatives are going well? Most of the policies of the Faculty of Education, as documented in the recently published strategic plan, are in line with the fundamental principles of Flexible Learning. The adoption of principles like democracy and inclusion in education are crucial as this implies a commitment to bridge the technological 'haves' and 'have nots.' The drive for adult education and distance learning within the context of 'Life-Long Learning' tries to address the pressing need for building a learning society. The focused initiatives such as the Programme for literacy, Community-based learning and learners with special needs create the necessary predisposition for accommodating to Flexible Learning. The investments made for developing an advanced technological infrastructure are also a valuable asset for mediating innovative pedagogical models. Most important is the experience and predisposition gathered by Faculty members, across the various areas of specialisation, in their persistent efforts to promote learning through ICT.

Weaknesses can be experienced in different forms ranging from inadequate policies to technology-related limitations. For example a number of factors are related to accessibility. These include insufficiency in skills for using web technology, over-

demand for 'on site' computer facilities or their absence in homes of low-income families or workers. From an administrative point of view, a lot of unwarranted tensions and wastage of energy and resources may result from lack of awareness for the different phases when introducing an innovation. A host of different factors influence the Initiation, the Implementation and the Institutionalisation phases. Each is characterised by a set of challenges that demand different managerial strategies and support considerations.

While the Faculty of Education is in the process of updating its policies and developing the strategic plan for the coming years, it is the propitious moment not only to consider the opportunities for adopting 'Flexible Learning' but also those that arise as a consequence of following such a direction. The Faculty of Education needs an alternative route to attract local and foreign students and orient them to new job opportunities. This tallies well with the efforts made by the administration of the University of Malta to promote initiatives involving E-learning. On a national level, this is coupled with a drive to promote Life-Long Learning in specialised communities and ICT skills in all levels of society. Our country is passing from a transition period that demands new forms of learning and more efficient training initiatives. Our political climate, geographical position, relations with neighbouring countries, the academic tenure of our University and the fact that English is the medium of instruction are important factors that should be exploited when adopting and marketing the 'Programme for Flexible Learning'.

Embarking on a programme involving flexible learning opens further opportunities. Various universities from Europe, USA, the Mediterranean region, Middle East and the Gulf states have already shown keen interest and expressions of collaboration. They look forward to collaborate with entities promoting such initiatives as this provides the necessary network of partnerships through which financial support can be tapped, under different programmes from local and international funding agencies. In its role as coordinator of such initiatives, the international reputation and academic standing of the Faculty of Education will surely be boosted, a situation that could be exploited for attracting further investment.

A good strategy should also control for potential threats. First and foremost is territorialism. Any form of technology intensive learning is claimed as a domain under the jurisdiction of different academic bodies. Due to its technological component, domain orientation and underlying pedagogy, Flexible Learning should be promoted as an interdisciplinary initiative that capitalises on a synergy of expertise and resources. The same approach should be adopted amongst different sections within any Faculty where such an initiative should serve as a focal point for interdepartmental cooperation. To avoid the fate of many projects that were given the initial push and then left unsustainable to face their natural death, an animation and support team should be appointed. Its role would be to provide support during the different phases of the project cycle. Initially many people will be enticed in joining the new initiative but enthusiasm will soon dwindle. Many will start dismissing their participation on grounds of work overload or adopting the 'much ado about nothing' attitude. The input and support of people faithful to the original vision would determine the continuation and evolution of the initiative. They will have to tackle issues and problems that crop along the way until the programme establishes itself as part of the normal functioning of the institution.

While flexible learning offers many opportunities, trying to implement it brings many problems and challenges. But lessons learnt from previous experiences with technology, pedagogy, implementation and institutional responses could shape and temper our expectations for the future. (Collis & Moonen, 2001).

### **References:**

- Berger, P.L. and Luckman, T. (1966), *The Social Construction of Reality*, Middlesex: Penguin Books, England.
- Byrne, R. W. (2003). Imitation as behaviour parsing. *Philosophical Transactions: Biological Sciences*, 358 (1431), 529-536. The Royal Society.
- Collis, B. & Moonen, J. (2001). *Flexible Learning in a Digital World: Experiences and Expectations*. London: Kogan Page Limited, UK.
- Gallese, V. (2003). The manifold nature of interpersonal relations: the quest for a common mechanism. *Philosophical Transactions: Biological Sciences*, 358(1431), 517-528. The Royal Society.
- Greenfield, P.M. & Cocking, R.R. (Eds.) (1996). *Interacting with Video*. Ablex Publishing Corporation.
- Gunawardena, C. N. (1995). Social presence theory and implications for interaction and collaborative learning in computer conferences. *International Journal of Educational Telecommunications*, 1(2/3), 147-166.
- Hobaugh, C. F. (1997). Interactive strategies for collaborative learning. In Proceedings of the Annual Conference on Distance Teaching and Learning: Competition-Connection-Collaboration (pp. 121-125). Madison, WI: University of Wisconsin-Madison.
- Jochems, W., Van Merriënboer, J. & Koper, R. (Eds.) (2004). *Integrated E-Learning: implications for pedagogy, technology and organisation*. Open and Flexible Learning Series. London: Routledge Falmer.
- Kommers, P.A.M. (2002). *Intuition and Conceptual Awareness for Experience-based Learning: Effective New Models for Secondary Education in the 21<sup>st</sup> Century: The Focus for Change*. Paper presented at the Oman Conference "Secondary Education for a Better Future: Trends, Challenges and Priorities" Dec. 2002.
- Kreijns, K., Kirschner, P. A., & Jochems, W. (2003). Identifying the pitfalls for social interaction in computer-supported collaborative learning environments: a review of the research. *Computers in Human Behavior* 19 (2003) 335-353
- McLuhan, M & Fiore, Q. (1997). *War and Peace in the Global Village*, Canada: Hardwired.
- Meltzoff, A. N. & Decety, J. (2003). What imitation tells us about social cognition: a rapprochement between developmental psychology and cognitive neuroscience  
*Philosophical Transactions: Biological Sciences* 358, (1431), 491-500. The Royal Society.
- Micallef, J & Restall, B. (2002). The Innovation Scoreboard for Malta 2000. Malta: Malta Council for Science and Technology.
- MIT Project: Technology Works Enterprise Proposal. Program ran in Bucksport, Maine, 1995. URL: <http://sap.mit.edu/projects/yvc/icons/hline.gif>
- Premsky, M. (2001). *Digital Game-Based Learning*. New York: McGraw-Hill.
- Salomon, G. (1999). Higher Education facing the Challenges of the Information Age. Paper presented at the Catholic University of Leuven, Belgium.
- Tapscott, D. (1998). *Growing Up Digital: The Rise of the Net Generation*, New York: McGraw-Hill.

Turkle, S. (1995). *Life on the screen: Identity in the Age of the Internet*. New York: Simon & Schuster.

Van der Wende, M. & Van de Ven, M. (Eds.) (2004). *The Use of ICT in Higher Education: A Mirror of Europe*. Utrecht: Netherlands: Lemma Publishers.

Winn, W.D. (1997) quoted in Tapscott, D. (1998). *Growing Up Digital: The Rise of the Net Generation*. New York: McGraw-Hill.