Affective, Interactive and Cognitive Methods for Learning Design:
Creating an Optimal Education Experience
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From e-Learning to e-Education: Goals. Strategic assessment and Implications

1. **Introduction**

Much, maybe most, of the e-Learning-related literature looks into technological issues.[1] Very few address content, mainly its use or availability. Platforms on which e-Learning should be developed are not, however, overlooked - with experts examine engineering or technological issues of e-Learning systems and structure (e.g., Gilbert, 2008; Lim, *et al.*, 2005). There is discussion related to financial facet of distance learning (Barmble, 2008), to specific sectors (corporate; academia) and to e-training (Tai, 2008; Kim *et al.*, 2005; Beach, 2002). The role of instructors, the training they should undergo and methodologies (Clark & Mayer, 2008; Marriott & Torres, 2008; Boon *et al.*, 2005) are discussed as well. Technological gaps, mainly in ICT,[2] between countries and regions, or segments of the population are examined. And so their influence on the actual potential of e-Learning and the role they play in educational institutions and workplace. Still another facet in the discussion looks into the learning process and attempts to relate it to what is known as "Constructivist Learning Theory." Content, as has been mentioned, receives little, if any, attention. Even Carliner & Shank (2008) present no discussion that even remotely examines educational contents or learning goals.

There are core questions that are evidently absent in much of the body literature on the subject. They concern educational value systems and social and educational goals which are the very *raison d'être* of education as reflected – or should be manifested – in e-Learning. This chapter addresses some of these issues, arranged in a few sub-sections. Starting with examination of educational goals it turns to look at socio-educational aspirations. Exposition and discussion of socio-educational agendas, e.g., conformity, rules, etc. follows. The economic dimension is then presented, as related to the educational process with discussion which is followed by examination of the implications on the student's economic performance, resulting from the practice within the educational arena. Next the relationship between information and knowledge is looked into, as related to the learning process, which is also examined in the context of the classroom in the following section. While examination of various aspects of e-Learning has been done throughout the previous sections as well, the next section focuses on the relationship between learning and e-Learning, leading to the last section which culminates in the call to redefine educational objectives with the development of information society.

2. **Commonly Perceived Educational Goals and Objectives**

Almost any survey in nearly any society in the world would turn out several cliché responses as to what education is all about. The maxim that education is a social process, aimed at social cohesion (or balance) is hardly ever challenged. Yet, the educational discourse seems to be almost entirely divorced from key social issues. To point at one example, the crucial economic processes (and implications) that shape society and its members are hardly ever addressed in the educational discourse. Still another anomaly stands at the heart of the general socio-educational debate: if education aims to change social values and concepts that have over time become undesirable or unwanted (e.g., discrimination, segregation and other outdated concepts), how can educators, themselves products of the system that encouraged these archaic ideals, be expected to eradicate or change such values, ideas and practice? Can they be true agents for such a desired change?

The concept of "equal opportunity" and its derivatives, "affirmative action" or "positive discrimination", exemplifies this inherent problem. It means equating discriminated groups to those considered to represent the mainstream of society (another problem, of course) through yet another form of discrimination – even if positive and based on good intentions.[3]

Examination of educational systems reveals discrepancy between desired social values and values actually implemented. One reason for this gap is funding. A quick scrutiny of budgets available to education, compared with other items on the national budget, of any country worldwide manifests it.[4] Restricted funding is reflected in budgetary allocations to physical conditions in educational institutions, to state-of-the-art schooling aides and to preparation and training of teachers, their earnings and social status. Budgetary issues also have an impact the pupil's future consumer behavioural patterns. This is also absent from teacher training programs.

Gender imbalances[5] and economic aspects of education occupy a rather modest place in the overall educational debate. It is rather devoted to such questions as whether teaching aims at "what to think?" or "how to think?"[6] This last point will be further discussed later on.

Debates concerning e-Learning, like those of education at large, rarely touch core issues. E-Learning heralds the desired shift towards the learner as the centre. Yet it also harbours some of the more difficult social and educational issues, both in their value-related ethical facets and the economic implications stemming from e-Learning.

The question of access is not just as economic one. Neither is the issue of priority of sectors in introduction to e-Learning. Resolving gaps of computer literacy between regions, sectors and populations is not a mere technical challenge. It goes to the very heart of the socio-educational process. It also touches such issues as equality: "equal opportunity" or otherwise: Is it equality in ownership of assets? Or equality in access

to assets, whether social or private? And what should be the normative "objective" (or should it be subjective) measure for equal opportunity, or the threshold for social assistance? And what type of assistance would that be?

Can e-Learning resolve such anomalies and polemics? The *e-Learning Guild* performs annual surveys (Pulichind, 2006) among users, developers, promoters and other interested parties.[7] The results rank desired direction of e-Learning. Number one on the list is "rapid e-Learning design & development," followed by "use of e-Learning to train customers & partners." The list continues to itemise technical subjects down to No. 9, "e-Learning bundled with or embedded in products," and No. 10: "learners assessed on a regular basis." No. 11 goes somewhat beyond technical or practical facets: "use of authoring tools that allow one person to design & produce interactive e-Learning content (instead of differentiated design and production roles)." It is only in No. 12 that we find: "Content management systems," Still a term more technical than content-oriented.

According to the rather wide definition of e-Learning offered by Fallon and Brown (2008:4), e-Learning encompasses "any learning, training or education that is facilitated by the use of well known and proven computer technologies, especially network based on internet technology". It opens endless discussions about myriad technical associated aspects. Other means facilitating learning, training or education, say blackboard and chalk, remain just what they are: means.[8] This calls for examination of the very issues of learning and education.[9]

Since e-Learning came to be, "the field of education has tried to exploit the web as a communications channel to connect distant learners with instructors and a rapidly growing of plethora of learning material". The challenge remains: "to ensure that we develop appropriate theoretical frameworks and formal approaches, which guarantee that we do not stop merely at creating technical solutions" (Mudur, 2005). Notwithstanding, the main models employed in developing e-Learning, tend to obscure this challenge as the body of knowledge is of the smallest concern within the pyramidal working model for e-Learning (Figure 1).

Figure 1. Layered model for e-Learning environment (inspired by Mudur, 2005)
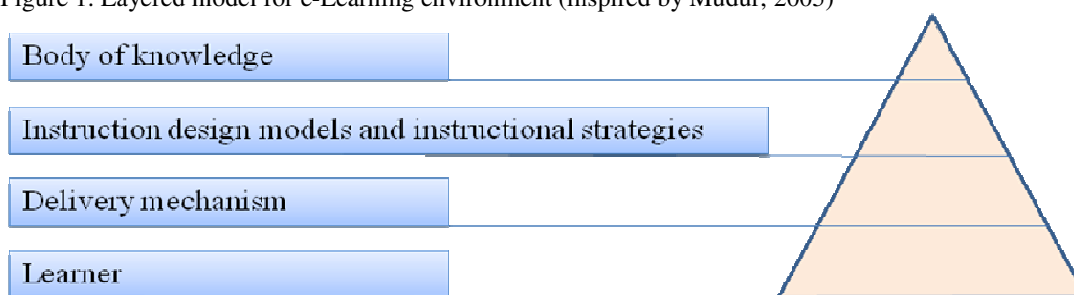
The learner is at the base, being OBJECTIVE, indeed: the object of the entire process, not the SUBJECT. The technical mediating layers dictate the body of knowledge delivered. Directed at the learner, they trigger strategies for instruction to deliver the "body of knowledge". Only a "representation schemes for the body of knowledge"

may, or may not, "be such as to permit non-linear access or a strict linear access" (Mudur, 2005).[10]

The bias towards technical and technological and even techno-methodological matters characterises much of the literature in the subject. In the *Handbook of e-Learning* (Brandon, 2008), the word "education" appears about a dozen times, all referring to tools or business or techniques and none relating to educational terms, either pedagogical or philosophical. Shank (2008:34-35) notes that "content-experts… often do not know what content is needed",[11] yet as Bates (2005) points out: "The effectiveness of a technology cannot be judged without making some basic assumptions about what constitutes affective teaching and learning and the goals and purposes of education and training". There is, it seems, an unbridgeable dichotomy between the technical experts whose concern is the medium and educational experts whose domain is the socio-educational philosophy and value system.

3.   **Socio-Educational Ends and Aspirations – Explicit and Implicit Issues**

The gaps between medium, concepts, and goals are far-reaching. Debates regarding educational processes often look into teaching techniques of particular subjects. Or issues like "preparing pupils for life", "instilling" values in youngsters, discipline and order, etc. These are noble issues, but other important questions seem to escape the educational discourse: How such goals coexist with competitive and economic, market life? How can survival in the highly competitive, fast-moving, current market economy be reconciled with deep and thorough research that is still considered to be the most effective practice in gaining and mastering knowledge? How could an atmosphere of quick and pressing decision-making be compatible with a thorough examination of multi-level options for comparative and historical learning and acquisition of knowledge?

These are but a few unanswered questions. They should dominate the development of the "knowledge-based society" and be at the heart of the educational discourse, aimed at the attainment and realisation of the answers, once agreed upon.

Schooling and education are perceived "pure" and "clean", unblemished by the harsh reality of cruel, inhumane competition, rivalry of people and groups, untruth of politicians and marketers, greed and other such social maladies. But is it really so? Are schools and the educational system really divorced (can they be divorced; should they be detached) from life? And if so, how are they supposed to "prepare" students for life and are they really equipped to do it? If schooling is supposed to produce "useful and efficient members of society" it cannot be shun away from real life; from tensions and disparities between various segments of society; from influences of political and economic realities on educational agendas and schooling praxis.

It has long been agreed by most educationalists and social scientists that the main goal of education should be to raise students' awareness of the world around them. It really means that they should become subjects of the world, rather than objects.[12]

Learning, like knowledge, is a social construct or process. The student is supposed to 'make sense' (or meaning) of the world as a result of learning. This cannot be a mechanical process where a collection of facts is deposited in the student's mind and kept "as is" until withdrawn in, say, examination. Such learning only constitutes transference that at best yields machine-like memorisation. Since life is dynamic, knowledge cannot be a stagnant, tradable commodity. Freire (1985; 1987) asserts that teachers should discover how their students develop their understanding of the world as a key to understanding how students learn. Learning, like knowledge, must be contextual and dynamic. Moreover, if knowing is a social process, then learning is the process where knowledge is presented to the learner as raw material to be then formed in experience-related terms into understanding, enhanced by discussion and reflection.

Also, there is the issue of credibility of sources of knowledge. Every social formation has traditional sources, be they religious or other authoritative structures. Maxims originating from these are instilled onto members of society through social institutions concerned with their own self-preservation. Change can come through revolution, collapse of a system, or gradual evolutionary alteration in interpretation, eventually creating a critical mass to effectuate the birth of a new order.

It is only natural that those in charge, in any social formation, are heard best and loudest when preaching changes, having the easiest access to public means of communications. But even if they truly mean it, those whose task is to carry through these change, are still tainted by norms and "true knowledge" of the old system, now challenged and by the values, practice and language that must now be eradicated.

To construct meaning, or understanding of objects, learners must first become thinking subjects. They must be aware of the learning process they undergo so that they can immerse themselves into active and intimate intercourse with their learning process.[13] Such awareness can bring them to gradually know what they did not hitherto. This is very concrete experience; not merely theoretical abstract. Learning, thus, cannot be divorced from previous knowledge. Teaching and learning must relate to (and depend on) content already taught, learnt, and processed. This is true for every level of education. Any attempt to place a "piece" or a "body" of knowledge, independent of prior knowledge of learners, can only result in a temporary knack to mechanically cite some pieces of un-related information.

Previous state of affairs might determine seemingly remote and unrelated issue: "equality of opportunity", twofold appealing concept that lures easy fall in the trap it presents: how either of the terms equality and opportunity, is defined? How can we balance the variance in circumstances (financial, educational, social, cultural, etc.) when we strive for "equality"? Or is it for "opportunity"? Take, at first 'equality': in what? How does equality relate to the uniqueness of each and every person, the most

basic premise of humanity? Or is it mere "technical" equality, certain starting point or economic level? And if so, how, if at all, should (or can) unequal pace of advancement of different individuals be equated? And regarding opportunity – where should it begin? What are the criteria for the threshold? How are differences in background, prior accumulated social benefits, personal dispositions and other such considerations be weighed?

Take a person of a second or third generation to formally educated family with their educational performance perfected with experience. It creates enormous advantage, compared with a person who is first generation to family education. This holds true even if the latter is better endowed in terms of talent, IQ or other such measures. The only way to resolve this imbalance is to consider equality in terms of access to social amenities according to self-determined needs. This is not quantifiable. As to opportunity, the problem is even more complex, unless defined in unquantifiable terms and regarded at the personal level of the individual. "Affirmative action" is ill-regarded not only by formal institutions but also by its recipients. Not only in Europe but also in the USA, black, as well as women professionals, argue that affirmative action is discriminatory and that it tint them.[14] The concept of citizenry may provide a key in answering these questions, as it allows access to social amenities while recognising inequalities.

This discussion is thus not devoid of economic, political and social realities operating on the educational process. Nor can it ignore such socio-educational issues or goals of pupil-moulding or what makes the student a useful (and hopefully participating) member of society. Attending to these issues is necessary to achieve coherent compatibility between the educational process and "real life."

4.   **Hidden Agendas: Conformity, Acceptance, Rules, and Codes**

Behind highly acclaimed educational goals sanctioned by social organisations, there is a harsh historical reality that keeps "haunting" the educational scene until this very day. Consider late 19th century schools. They were mostly established by the Church, often in co-operation with local "well-to-do" and "good hearted" individuals. Some inauguration speeches mentioned how suitable the schools were to the places where their graduates would spend their lives: the manufacturing mill or prison. To this day, more than any other institutions, schools and prisons are so easy to recognise, be it in the USA, Turkey, China or the UK. They all seem to have been planned and built as if inspired by Goffman's analysis of total institutions (1957).[15] While schools are not total institutions, they share many of their characteristics. During the time pupils stay at schools, they are more often than not exposed to such processes as described by Goffman, even if in a milder fashion. Just consider: uniforms (still apparent in many countries, particularly at the elementary level); forms of regimentation; the fact that any staff member has almost endless power over any of the pupils (inmates?); the artificial time setting (lesson duration); and the list goes on.

This is not really surprising. Schools and the educational systems in general, are expected to instil conformity, to assure acceptance of society's demands and enhance adherence to social rules and codes. This had been the case for centuries, although different trends began to emerge in the later part of the 20th century. Freedom of the child to develop unhindered has become a leading slogan, along with the adaptation of a more individually-suited coaching approach. Active and inter-active instruction was supposed to have replaced frontal instruction and study through play had won the day.

Social, political, and economic realities, pressures and interests, apparent and hidden, have been highly influential on the development of the educational systems all over the world (Peters, 2006; Cook, 2002; Quah, 2003; Hildreth & Kimble, 2004). The economic facet of the educational process is substantially accentuated in digital literacy or digital learning. Economic considerations are crucial here as the economic facet is no longer a playground for governments and government budgets alone. Commercial and corporate interests bring forth such measures such as profitability, efficiency, ROI and their like. Commercial entities require that expansion of digital literacy be measured not only in terms of achievement, comprehension or skill nourishment, but also in financial terms. At the same time, political and social demands for better e-inclusion or universal access to education make demands on what they regard as "contribution to society".[16]

However, these realities, pressures and interests escape classrooms and staffrooms debate (and higher level educational forums). They never really appear in the curricula taught in most, maybe all, schools around the world. Even in technologically-related economic issues it is the former rather than the latter that is dealt with.

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The story of e-Learning reflects this amalgamation of economic consideration and technological quests. But it also combines other drives, like intellectual curiosity of university professors or interest of human resources professionals. The idea of remote teaching appeals to university officials who wish to expand the studentship body and reach prospective students that cannot (or will not) come to the main campus. This consideration has been valid for institutions of higher education in the west as it has been for, say, African universities.[17] It has not gone unnoticed. For example, Holmes and Gardner (2006:1) begin their work by saying that "e-Learning is 'mission critical' because of globalisation of economy and citizenship and the recognition that the economy must become knowledge-based."[18]

Core educational values are absent in much of the body literature on the subject. It mainly concentrates on systems and structure's engineering or technological issues (Gilbert, 2008; Lim, *et al.*, 2005), financial facet of distance learning (e.g., Barmble, 2008), specific sectors and e-training (Tai, 2008; Kim *et al.*, 2005; Beach, 2002) and instruction or methodologies (Clark & Mayer, 2008; Marriott & Torres, 2008; Boon

et al., 2005). Content receives little, if any, attention. Even Carliner & Shank (2008) do not discuss educational contents or learning goals.

Currently, a major concern of the debate about e-Learning revolves around learning environment and, more specifically, its personal aspects and perspectives. Schaffert & Hilzensauer (2008) discuss these attributes of e-Learning while comparing learning management systems (LMS) and personal learning environments (PLE), two technological concepts that allow for pedagogical methods or personal learning strategies while limiting the learning settings.[19] They endorse the transition from "instructing" to "influencing" environments vis-à-vis the learning process so that organisation and adaptation are preserved. In this they accept earlier attempt of Knuth & Cunningham (1993:167), to create constructivist justification for lack of educational value content. This trend has been in the wider educational debate since the 1970s, endorsing slogans like "self-direct learning", where initiative for learning is left solely with the learner, relieving society from its responsibility over education (e.g., Knowles, 1975).

In constructivism, "learners construct knowledge for themselves" but not, indeed, "by themselves." Moreover, they really construct meaning socially, not just individually. Plato suggested that learning equals remembering previously perceived "perfect ideas" (Hein, 1991:1). This social nexus which Hein considers as necessary (even if not sufficient), presents a rather precarious situation for the learner, since it implies that it is really how he or she are guided, how the "fabrication" is made for him or her, that constructs meaning and forms perception.

Constructivists have been aware of this anomaly and therefore also attempted to harness social formations to the educational structure they suggested. Siebert (1998) argued that learning "needs stimuli and challenge from others." Wenger (1998; 2002) developed what is known as the "Community of Practice" approach, whereby learning is thought to happen only in social networks on the basis of shared interest, interaction and a repertoire of tools and resources, namely, social processes. This brings us back to the core of the discussion: what ARE the premises on which education is to be practised and what are the true goals that go beyond any sectarian interest in society?

In the context of e-Learning, its promise must be intertwined with the societal problems associated with the uneven spread of the technique.[20] Clearly, e-Learning manifests the great philosophical, economic and social attributes related to the information and knowledge-based society and more so, to the perennial learning society. Yet these attributes bring back the political issue, in its most acute all-inclusive civic (rather than ideological, party-like) sense. Foremost in this context, with consequences to all other aspects of this discussion, is, again, the economic realm in its widest, societal and civic perspectives.

5.   **Economic Preferences and Realities: The Economics of the Educational Process**

Teaching professionals and students tend to say that economics has nothing to do with education. They are surprised when asked to calculate the size of the market for textbooks alone (ignoring other items like drill books, notebooks, writing instruments and materials, school bags, school activities, trips, etc.). Once assessing it, they fall into total shock, which intensifies when they begin to consider the contents of school textbooks, from publishers' viewpoint. They, naturally, prefer to publish books they think the systems will endorse, which will increase their market share. Pupils must have textbooks, paid for by themselves or by the general school or local authority budget. It is a captive market of hundreds of millions of whatever currency, even in relatively small countries with school population of only one million pupils in twelve grades. Publishers, however righteous, would rather have their books recommended by the system than not. They profit from books. So their primary consideration cannot be the educational contents of their books. It is what would appeal to those deciding that these, not other books, are to be used.

Makers of school uniform, where still customary, consider fashion trends to attract potential customers: students. So do manufacturers of school bags. The list goes on. Huge amount of money revolves within and around the educational system, influencing choices of pupils and parents. This economic reality influences the nature of education and even its contents. It does not result from informed decision-making process based on educational or social considerations. No! The process is driven by market interests.

The economic drive, aiming at financial gain and based on market considerations in the "business" of education, is a legitimate one. It is the estrangement between this and the influence on the system that is baffling; it is the blind eye turned by educational systems towards this factor that reduces its legitimacy. No school devotes even a single class to examine the phenomenon, nor does any teacher training institution make it a topic for its students to ponder and deliberate on.

This is only the tip of the economic and financial iceberg in the world of education. Issues related to budget are even more pressing and cannot be ignored. Since teachers normally constitute the largest body of state employees, each cent added to their individual salaries is translated into many millions in the overall budget. And then there are other expenses: on school buildings and their maintenance, municipal direct and indirect contributions (property tax reliefs, etc.). They seem to be lost on educationalists and education researchers, left to treasury economists.

A glimpse at three lists comprising over 100 research papers specifically focused on economics of education[21] shows that not even a single paper deals with the monetary influences of the economy at large (or any specific aspects of it) on education or on the relationship between these factors and the setting of educational goals. Other absent topics include the financing of educational aids, the relationship between such financing and educational programmes, or the reflection of educational priorities in educational budgets.

UNESCO's list of publications[22] is refreshing in this sense. It contains a few papers that examine the financing of some education systems. However, they focus on the need to define the stakeholders and on ways to inform them of their rights. Some papers also discuss financial and educational issues vis-à-vis involvement of the private sector in education systems, yet their focus remains mainly on aspects of government subsidies (e.g., Pénao, *et al.*, 1997:179-186).

Bray (2007:84) brings illuminating statistics about the involvement of the private sector in the provision of education. He concludes that since "the nature of supplementary tutoring varies; different policies are needed for different societies at different points in time." Consequently, "the range of possible interventions is wide". He observes: "… private supplementary tutoring… is a mechanism through which individuals can expand knowledge and through which societies can accumulate human capital." The shift to e-Learning contributes to the decrease of governmental control in the arena of education, while promoting "social stratification and elitism." Good or bad, says Bray, "in many settings this shift is viewed with ambivalence. Governments may have positive reasons for withdrawing the dominant role that they have played in many countries; but in some societies the rise of private tutoring appears to be social response to inadequacies in government quantitative and qualitative inputs. One result is an exacerbation of social inequalities" (*ibid*: 84-85). Private tutoring is established to cater mainly for clientele characterised by special needs such as religion, language or ethnicity. In tandem, another type of private tutoring emerged in response to excess demand in both developed and developing industrialised societies.[23]

The educational endeavour grows increasingly more complex. Indirect costs and budgetary allocation to education are only part of this complexity. So are costs of developing new mediation techniques or other economic interests. Then there is the political concern about the access to new technology. The same goes for the democratic ideal of participation. The overall globalisation and the spread of inexpensive communications are also a significant factor, both financially and culturally. Just consider the impact of the spread of English as the new "*lingua franca*" of computer and internet age. None of these issues resolve the question of control over education, its related markets, and its content.[24]

The ensuing confusion cannot be too surprising. It is further accentuated in view of the lack of change in teacher training concepts, even if now students type their assignments or submit them electronically. The training curricula did not change. As before, they still do not offer any exposure to economic, bureaucratic, civic, administrative or even communal experiences. The classic works of education are still taught divorced of the new reality of text-messaging dominated by monosyllabic "NewTalk" dictated by cellular communication, so readily available now.

New technologies in the areas of communications and transfer of information have been introduced to daily life and changed it rapidly.[25] This has enormous impact on both people's activities and the way they perceive of these activities. These

developments coincided with some other mega-processes, like the collapse of the Soviet bloc, the expansion of the European Union, the development of huge economies as China and India and so forth. Little, if any, time was left for intellectual absorption of these changes. Remote instruction, distance teaching and e-Learning, thus, epitomise, in many ways, the phrase coined by Marshall McLuhan (1964:8): "The medium is the message."[26]

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Production and distribution of educational content is mainly dominated by private enterprises. It is "for the most part unregulated, with the exception of copyright regimes" (Downes, 2005). Yet, revenue is drawn mainly from direct public funding, such as school budgets, grants to colleges and universities, library budgets, or grants to museums.[27] Still, digitisation and increased capacity may pose a threat to interested private players, effectuating decrease in demand for commercial educational content and aides. This is not just theoretical figment of the imagination. It is supported by abundance of free online material sponsored by public organisations[28] or educators who publish their content on the net and, of course, the almost limitless amount of private production of content, some of which can certainly be classified as 'learning" material. Downes (2005) suggests that this content affluence may undermine commercial publishers because "the nature of their product has changed into one that can be reproduced for fractions of a cent." Reproduction of learning materials might be prohibited, but not for individually produced and distributed non-commercial material. "Consequently, even if the commercial product remains untouched, it faces increasingly significant competition from the non-commercial sector" (Downes 2005).[29] This may lead to weakening, if not collapse of educational content markets.[30]

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Commercial interests (also governments, for other reasons) do not welcome this scenario. It might be because they are afraid that their business might go under and disappear. They respond in heavy lobbying, mounting increasing copyrights defences, offers of sponsorships to colleges and schools and expressed concern with quality-assurance and quality-control issues. They are also apprehensive about royalty-holders within education, marketing and distribution of non-commercial content, etc.

With the appeal of non-commercial content, its acceptability will only increase and spread more widely. Content and content tools become available and cheaper, or free and more user-friendly. It stands to reason that the number of voluntary contributions to the world of content would continue grow. However, traditional authority attributed to educational content would wane gradually. The result can be seen in the development of a secondary technological or technical market of immediate or short-term nature of software tools designed to produce (or re-produce), distribute, manage and display content.

This type of process is not unique to e-Learning or to any other mediating technology. It is characteristic of the e-economy as a whole.[31] The focus of spending on learning shifts from purchasing commercial content towards in-house or self-production of

content. Aiming for wide dissemination, it concentrates on the technological aspects of delivery. This represents a challenge in the application of knowledge. With a weak history of cooperation, practitioners and policy-makers should now begin to "direct producers of knowledge in collaboration with researchers" (ECE, 2008:6). With the growing incorporation of e-services, particularly by authorities, more and more content is expected to be distributed freely, available to all. Encouragement, by authorities, of wider distribution of content will eventually be part of the expansion of e-activity. It can then become also a tax item, most likely as tax credit earner.

The business world does not lag in understanding the wave and its direction. Suffice to see how much energy and resources some big corporations allocate to the development of freeware and open sources.[32] Also, content and content-related markets, whether considered as e-Learning or more general education are not really heading towards extinction. To the contrary, various specialising niches are more likely to flourish. A whole range of technologies are now at the core of the developing efforts.[33] Amalgamation of different types of content is also at the height of the technological agenda, e.g., linking textual, audio and video units into seamless sequences of content, which can be analysed as a whole.

These changes allow the educational market to leap sunlight years, from the manufacturing age of production-based economy to the era of maintenance, service and support. Digitisation has allowed consumers to produce their own learning content thus bringing down millennia-old monopolies. Herein lays a true shift in the balance of power, from the authoritative institution to the individual, who now has power, but no knowledge of how to use it. The educational space becomes less regulated, more activity-oriented and self-managed by learners. Many educational officials and governments, local and national, fail to fully grasp this shift.

In economic terms, the *per capita* expenditure on learning is decreasing, allowing for market expansion. This should enable greater variety of contents accessible to more people. Theoretically, this is heaven on earth to governments that can now increase educational opportunities.[34] These realities are well in evidence. But "nature" of education, the "education-ness" of education, to use style coined by Gilbert Ryle's (1949) remains unsettled.[35]

6. **The Student as a Non-Particular Consumer/Shopper: Present and Future**

In 2007, a survey was conducted amongst more than 700 economists from over 80 countries attempting to identify the level and strength of evidence on the basis of which, or regardless of which, policies are adopted. Four areas were examined: economic growth (GDP); knowledge economy (research and education); labour market (employment); and social conditions (poverty). The survey measured the extent to which policies are anchored in reality and are based on factual evidence and data (Figure 2).

Policies related to economic growth are fairly considerably based on solid and concrete databases (76%). Labour and employment policies are less substantiated or supported by factual evidence (54%). Policies dealing with social conditions, or poverty, are even less based on fact, rated at only 37%. Knowledge economy policies rate lowest, at 29% only. This is a surprisingly low result in view of the rhetoric around these issues and their seemingly increasing importance in recent years. The combined "undecided" and "no" answers here, at 71%, portray an ominous picture.

Figure 2, Evidence base for policies in various areas (extrapolated from CESifo, 2007)
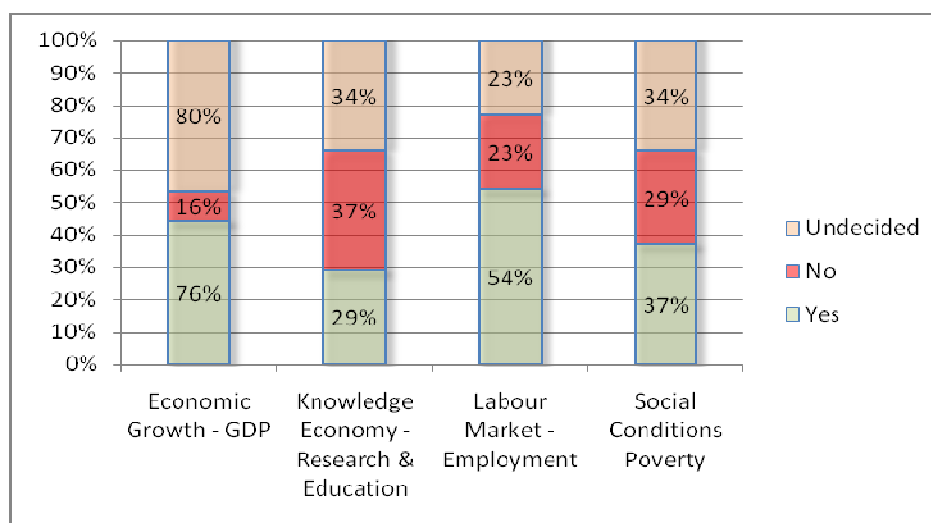
Some questions immediately rise. How can people (leaders, teachers, parents, students) take informed decisions if they are not truly informed? How can they draw conclusions if their knowledge base is deficient? How can society be at all a knowledge based one if decisions pertaining education and research are not based on factual evidence and informed contemplation? How could priorities be determined and a developmental path set so that society enters the knowledge era prepared?

It has already been asserted that the educational system does not actually prepare its pupils to successfully participate in economic life; neither as future workers nor as future or current consumers. In the age of instant messaging, multi-channel television and advertisement-infested internet, there is little doubt that it is necessary to train youngsters to become particular and careful consumers. Not only with regard to commercial offers but also non-commercial potential temptations lurking and harbouring risk.

The educational system is perennially under pressure of the political echelon, or the general public, to improve its output. Yet, standard international comparative tests show deterioration in most of the measures, criteria and study subjects tested, like language skills, mathematics and sciences. Some unmeasured aspects are also questionable, like the extent to which the educational system prepares its graduates to real life. It seems, also, that it fails to trains them adequately to tackle economic and

market realities; or to live in an atomised society and survive through competition. If such criteria were applied, the failure would have been even greater.

Dissemination of knowledge amongst professionals in the education sector, teachers, is much slower and less profound than in other industries like health (doctors) or planning (engineers).[36] According to OECD studies, the level of expenditure on R&D in education is less than 0.3% of the entire expenditure on it (CERI, 2003:10). Education has "little scientific knowledge to underpin it and not a strong enough body of research evidence about what works to inform it" (Hargreaves, 2000). Knowledge of advances in medicine reaches millions of doctors throughout the world within short period of time. In education, "if practitioners' and policy-makers' learning were as continuous as it is, by and large, for doctors, then they would be able to continually update their knowledge of educational practices so that they could acquire and apply these new techniques as they developed" (Hargreaves, 2000).

This, however, is easier said than done. The low degree of attention spurred on education renders the conditions within the educational sector and possibly also the level of the practitioners in the field not conducive for the creation and development of new content of value and relevance.[37]

It is beyond the scope of this chapter to look into the balance of interests which perpetuates this situation. But the situation itself is the issue here. Absence of informed basis for decision on educational priorities is certainly one reason for the inability of the educational process to prepare its clientele, i.e., the pupils, to be informed and selective customers. It is particularly so in a context of today's highly fast moving, competitive market. The "contexts of knowledge production and use in society are diversifying and new models of research are being developed to respond to these challenges" (Furlong & Oancea, 2005:6). Education cannot be isolated from this process. When considering the level of investment in R&D, this statement becomes clearer. New innovations incorporated into the educational process, such as e-Learning, are born of endeavours that take place beyond the boundaries of the educational discourse that remains neither relevant nor contextually related to real life.

If the educational system is to prepare students to become more particular in their consuming patterns, more informed in their decision-making and more attentive to the various contexts within which they operate, then it must change. The change should be initiated and encouraged by social leaders. As OECD puts it, the links are weak "between research, policy and innovation in education" (CERI, 2003; 2007).

Learning is no longer a monopoly of schools and universities. Life experience is increasingly accepted as a valid source of knowledge-related evidence. However, teachers, hence students "and other practitioners are seldom trained in how to make use of research and evidence and therefore they have a weak capacity to apply evidence-based knowledge" (CEC, 2008:28). There is here a vicious circle. Teacher training requires high level research-based pedagogy and knowledge construction. But this cannot be attained under the prevailing circumstances. Moreover, teachers at school must keep themselves updated on recent developments in the subject matter

they teach. They have to be able to "teach different learners in different cultural and societal contexts" and settings (Hargreaves, 2000). With the rapid changes in world economy, technology, social settings and nature of inter-personal relationship, they also need to be well informed about these changes and the powers behind them. They also have to know how to harness and incorporate these changes into their teaching routines. They must also avoid falling into the trap of substituting the medium for the message.

The rapid introduction and deployment of digital technology induces organisational and cultural changes. Modifications occur in internal and external procedures of firms and other subscribers to the ever developing digital world (Castillo-Merino & Sjöberg, 2008:4; Foray, 2004). These include not only means but also management systems and styles, ways of communications, language used, flexible working hours and locations, working environment design and employee involvement schemes, decentralisation and other participatory decision-taking practices; teamwork, knowledge management, work arrangements, compensation schemes and so on (Bates, 2005: 10-12).[38]

None of these happen in the educational system. Even if it does perceive itself to be "digitally aware" sector, it has not adapted to the elements comprising the digital productive culture. It is, therefore, unable to participate in what should have been its "natural" domain, namely, content production and dissemination - particularly for e-Learning. Thus, the educational system is also unable to offer its clientele, its students, a systematic training, supported by experimental space, in how to produce content, judge its validity and assess its effectiveness as educational material.

7. **Exposure to Information or Knowledge?**

Should education guide its customers to acquire further information or should delivery of knowledge result from educational experience? And if so, must knowledge be authoritative final and non-contestable? Answers to these questions reflect the way learning and teaching would be carried out in general as well as through e-Learning. e-Learning is typically associated with the relationship between humans and computers and other means through which information or knowledge are transferred. The question, therefore, is which of the two potential objectives – information or knowledge – (or is it both?) should be at the centre of this human-machine interaction. Also, how should either option be defined in the context of e-Learning process, both in terms of goals and of capabilities?[39]

The subject matter of education is the creation and dissemination of information and the intake of these, which is the learning process. It differs from production and distribution of other commodities. This assertion has led many to think that because of its special nature, educational processes cannot survive, let alone compete successfully, in open market conditions without external, governmental, assistance.

Some experts argue that "information is not a commodity; at least not in the way the term is used in neoclassical economics or understood in industrial society" (Bell, 1980: 513). It is accentuated when compared to industrial commodities, "produced in discrete, identifiable units, exchanged and sold, consumed and used up." When an industrial commodity is sold, or bought, a physical item is exchanged. When information, or knowledge, is sold, it still remains with the producer. Moreover, "It is a collective good in that once it has been created it is by its nature available to all" (*ibid*: 513). This argument is easily refuted, of course, particularly in context of the intellectual property market or that of scientific and technological developments (Walberg & Bast, 2003: 208).

Incentives for production of knowledge or information are as apparent and tenable as they are in the market of tangible commodities. Maybe even more so, if we judge by the amount of money revolving in the "breaking news" market alone. The difference between "announce-able" and tangible commodities is in the consumption end. Value of tangible commodities does not necessarily diminish with repeated use. News of just one hour ago is normally of no value at all or of very limited value.

And yet, unlike educational produced information or knowledge, other types of information are capable of generating huge amounts of money. Even the growing quantities of freeshare available to the public pose no threat. Already in 1999, the value of US market transactions on software and hardware alone was, respectively, $ 157 bn. and $ 800 bn., or total of $ 957 billion.[40] Additional tens of billions of dollars were spent on pharmaceutical R&D.[41] These do not include other knowledge-based industries like biotech, engineering, telecommunications, broadcasting and telecasting etc. Auxiliary and supporting services requiring knowledge base, like law or management are also not considered here. These data show clearly that information, or knowledge, end up as consumable commodities, even if of particular nature.

But the assertion regarding the non consumable nature of information is not entirely baseless. Some information has no market value. Data collected by governments in the course of service provided to citizens: defence, social security, civil registration, educational services and so on. Governments use it for the perceived greater good of society. On the basis of these data and information governments make theoretically informed decisions as to the allocation of resources, regulatory policies, distribution, etc.

The truth is that this information or knowledge can also be priced. Only because of its abundance and because it is not obliterated once used, it is thought to be available to all freely and costless.[42]

Production of information or knowledge can only happen within the constraints of ample investment, organisational structure and competitive environment. Yet, when it comes to schooling, many, including leading scholars, tend to look at this procedure as a metaphor, borrowed from other economic activities rather than reality (McCloskey, 1985: 40-51; Cobb, 1992: 1; Henig, 1994: 13; Fiske & Ladd, 2000: 312).

But schooling is part and parcel of the information industry with all the characteristic of commodity economy. To begin with, in every country in the world, expenditure on education is the largest item on the national budget. Hundreds of millions are spent on K-12 schools alone, mostly on teachers' salaries. There are markets of books and other paraphernalia items associated with schooling. Also, there are financial wavers accorded to school buildings, or activities, by the various authorities. [43] Lastly, providers and consumers in the schooling (or education) market perennially face and have to make decisions and choices between alternatives, in view of limited resources and budgets, like they would do in any other economic activity.

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We still have to determine what, if any, is the difference between knowledge and information. We also need to ascertain what is, could be and/or should be, delivered in the educational process in general and through e-Learning (or should it be referred to as e-Education?) in particular.

Information is regarded as related to human participation in the purposeful organisation of raw data. This includes "organised data" (e.g., Saint-Onge, 2002); "data endowed with relevance and purpose" (Drucker, 2001); or "interpreted data" (Probst *et al.*, 2002). Knowledge, on the other hand, is harder to define. The Greek *episteme*, from which the concept derives, means "absolute truth," in itself a difficult concept, dwelt upon already by early philosophers such as Aristotle and Plato. Knowledge can presumably only reside in one's mind, resulting from experience and reflection and based on a set of beliefs shared by individuals and the collective where they belong (Gordon, 2002). Originated and applied within individual minds, knowledge is gained by evaluating and incorporating new experiences and information. It consists of a mix of non-distinct values, experiences, contextual information and intuition: "true and justified belief" (Nonaka & Takeuchi, 1995).

Management of knowledge differs from that of information, albeit the tendency to mix the two. Information is easier to identify, organise and distribute, unlike knowledge, which is inherent in the particular mind of a specific person. Managing knowledge, therefore, is confined to the setting of ample learning environment for individuals. It is done through the use of information, supported by and supportive of individual and social experiencing of the world. [44]

Information, thus, is concerned with answers to questions such as "who", "what", "where", and "when." Knowledge is the domain of questions of "how" (Ackoff, 1989).

If this is the case, then the subject matter of any means of mediation, whether human or electronic, should be information-related and technical. Questions regarding PLE (Personal Learning Environment) vs. LMS (Learning Management Systems) should confine themselves to technical aspects of contents delivery to the e-learner. But can means of transference adapt themselves to educational content, rather than creating a situation whereby content should adapt to means of mediation? Judging from numerous publications, both practitioners and researchers in the field have yet to

answer this question.[45] The major attempt in the field is to confine and make pedagogy and even educational philosophy deliverable.

For amassing information, it is enough to collect data to which contextual and relational connection give meaning. But this is not the case for knowledge. Knowledge is not merely the collection of information, nor is it just a process that seeks to create added value of usefulness. Knowledge requires true cognitive and analytical ability. It requires the incorporation of understanding and aptitude, as well as prior or "stored" knowledge, into the mental processes, intellectual and emotional, even just for the answering of questions. Understanding involves an interpolative and probabilistic processes and observational capacities, used mainly in comparative nexus. It is process of distilling and synthesising new knowledge. This is learning; enabling the undertaking of useful actions based on synthesis of new knowledge, now rendered dynamic. Learning, thus, can build on information, knowledge and understanding of new constructions which are not only conceptual, but also capable of inspiring action. This is different from instrumental processes, such as mediation of preset materials, or artificial intelligence and machine learning, which could manipulate digital texts but which cannot change the course of events on the basis of dynamic understanding. Delivery of true e-Learning in this sense is currently lacking.

8.   **The Classroom**

In itself, e-Learning eliminates the need for a classroom. However, as the notion of classroom, its physical layout and the activities within it have changed greatly during the last hundred years or so, e-Learning may prompt yet another change while being incorporated into classroom practice. Classrooms are not all evil even if they might be structures that leading powers controlling education may wish to uphold to.

The physical layout of a class can encourage or discourage interaction, thus affecting the process of learning. Eye contact is an essential key in establishing human rapport (Argyle, 1975; Miller, 1967; Ornstein, 1972). It is also an important tool that can be, indeed is, employed by instructors, even if unconsciously.

Consider conventional, or traditional, classroom layout, dominated by rows. It allows the instructor to maintain eye-contact with all the participants.[46] It eases delivery and interaction (e.g., questions and answers). Such layout ensures the instructor's centrality. But participants cannot communicate with one another, exercising eye-contact. They are in rows, looking at the backs of their fellow classmates.

Informal sitting arrangements encourage group exchanges and the formation of relationships. Small-group-atmosphere is also conducive to effective learning. Eye contact encompasses all participants and even if the instructor is still in the centre, the intercourse is all embracing.

The "U"-shape or semi-circle arrangements are typically used in general discussions situations. Such arrangements allow group members to maintain eye-contact and interact among themselves as well as with the instructor without too many difficulties. Tables in such arrangements can create barriers while their absence may bring into play a measure of embarrassment resulting from the removal of "protection" they offer. This might cause participants to feel exposed and vulnerable.

e-Learning set-ups reveal new realms of interaction in a classroom. Even if there is eye-contact in the set-up, it is still mediated, less "threatening" but also less personal.

Thus the physical layout of the place-of-study effectuates the extent to which it is conducive to better and more efficient acquisition of knowledge. Learning efficiency depends also on the level of free flow of interchanges, particularly if moderated. It depends no less on the richness and fullness of knowledge, the subject matter of that flow.[47] But the role of knowledge base eclipses that of the free flow. The strength of the source of knowledge transferred in a learning session is of the utmost importance. We are thus re-directed back to contents, stressing that knowledge transferred must be full and complete, authoritative and standing on a wide and solid basis. It must be transmitted confidently since the human element in the transmission is extremely important: it can encourage or daunt learners.

Within this framework, e-Learning could constitute an essential and, more importantly, natural ingredient of day-to-day classroom activity. However, employing contents as servants of means could only lead to the deterioration in learners' capability to conceptualise and intellectualise whatever subject-matters they are exposed to. The missing element of human contact takes its toll on the learning session. e-Learning tools introduced into classroom, must therefore overcome the alienated nature of the electronic contact. Emphasis must be placed on other components of the learning process; primarily, the knowledge base. Harnessing mediating technologies to the service of the e-Learning process, instead of the other way around, might compensate for the difficulties presented by electronic modes of communications. This can happen if we agree to retain the less glamorous goals of classroom activities, like social conformity, discipline and obedience and, of course, enriching students' knowledge.

9. **Individual Learning in e-Learning World: Exchange vs. Unidirectional Instruction**

Learning at large and e-Learning in particular, demand certain attributes of teachers and educators, which are not necessarily part of their training curricula. There are attempts, maybe not enough, to change these curricula.[48]

Historically, education aimed at the training of the students to act in accordance to their standing in society. It helped in maintaining social strata intact. Society could thus resist and fend of all threats, real, potential and imaginary, to prevailing social order. The educational system had to be of highly rigid structure and discipline.

Obedience defined success and the transmission of educational contents had to be authoritative and unidirectional. Precision in performance was also demanded.

With changes in the socio-economic realities, corresponding modifications in teaching and learning experiences followed suit. These changed contents but eluded adaptation of new means of mediation. Students were still expected to perform accurately, often in a mechanical way. The overall expectation of society from its educational system was to prepare graduates to be good and useful citizens.

The debates about the role of individuals within society and about individual capacity vs. social expectations of individuals are long standing, starting with Greek philosophers in ancient societies. A renewed interest was actively resumed in later centuries as monarchies were thrown over and democracies emerged. These debates produced insights that characterised the educational thought in the 20th century. Here, the main thrust was that a child should be nourished to develop his or her individual unique capacities while retaining his or her position within the social context and codes. But these debates neglected to catch up with economic and technological developments and changes. A lag developed between the educational system and techno-economical realities. It was only in the last decade or two of the 20th century that the alarm was sounded, as parents became less and less satisfied with the lagging educational system. As a result, ICT were incorporated into the educational system in a hysterical rush. The balance between individual and society no longer mattered. Just as the social interaction no longer scored highly as an educational goal, although deemed necessary to induce efficient learning combined with social awareness.

A ritual of canonisation of ICT developed, succeeding that of individual learning. However, it lacked a thorough inward "soul searching" that could produce or re-define educational values and contents. It also lacked development of curricula that would encourage the understanding of economic and technological realities and explore relationship between these realities, educational values and the student experience. Educational environments cannot be isolated from their educational processes. These cannot be detached from target groups and stakeholders who are part of those environments. Yet this is exactly what happened (Ehlers, 2007).

e-Learning practitioners and researchers were more interested in mechanistic features of means and techniques of delivery and neglected fundamental issues such as content. Where educational content issues tend to be discussed, they are subject-specific, not general.[49]

Learning scenarios should allow for (and adapt to) different contexts. They should also consider personal and environmental conditions. This means that the learning process must assume mode of negotiation (Ehlers, 2007).

One way to overcome the content issue problem is developing "social software" which might "narrow the divide between producers and consumers… through creating and sharing" (Atwell, 2007). This can pave the way for "a new ecology of 'open' content, books, learning materials and multimedia, through learners

themselves becoming producers of learning materials". But this attempt to address the difficulties of contents production and availability provides no answer to the questions of values or to how to prepare students to independently understand socio-economical and cultural realities through educational tools.

Technology can and does offer vehicles for exchange and sharing. But it is not clear that they can enrich instruction, let alone contents. Some think that for this reason the "hype about e-Learning will decrease rather than increase in coming years" (Davey, 2007 quoting Prof. Ulrich Hoppe).[50]

There is no doubt, of course, that e-Learning can enhance learning through exchange and even elevate it considerably. However, like every other platform, it is the contents it carries that would render it useful or harmful. Educational scrutiny and approval – helpful as it may be – will not suffice. The real challenge for the next e-Learning developmental endeavours can be defined as follows: Developing new concepts and methods to deliver contents deriving from and shaping educational materials, value systems and understanding of socio-economic and socio-cultural realities and goals.

10. **The Need to Re-Define Educational Objectives and the Potential Offered by Information Society and Information Technology**

The evidence presented in this chapter clearly shows that educational objectives must be reformed, or redefined, to suit and harness technological developments as e-Learning and economic processes as globalisation. While some changes can already be detected, many are no more than a mere technical adaptation of what might be regarded as more convenient ways to do the same which was done before. Only by addressing the core issues of education and the social expectations and demands of education, could the latter truly enjoy the whole range of benefits that can be found in information technology and the information-based society. Moreover, only in this way can education become part of the overall socio-cultural and socio-economic development warranted by information technology. Educational objectives are the basic goals as set, accepted or agreed by social consensus, which determines where society expects the educational system should bring its graduates. Such objectives go beyond the technical taxonomy, as suggested by Bloom (1956). These objectives are anchored in society's most noble aspirations while also embedded in the socio-economic and socio-cultural realities.

The internet has imposed a wide range of changes on value systems and instigated a lively ongoing debate concerning these issues. Value systems are affected not merely in terms of the internationalisation of culture and the diminishing of local uniqueness, but also in terms of morals and other aspects of the value systems adhered to by various societies. The role of generation gaps, religious gaps, language gaps, and other such cultural attributes is changing, albeit at a different pace in different locations around the world. Notably, there is a call for new definition of participation, of civil and social bonds, of civil and social responsibility and so on.

Clearly, there is a need to formulate afresh concepts of socio-educational goals and a core value system that would define education. e-Learning, if subjected to these concepts, could become a leading vehicle at the service of education.

e-Learning is currently of mediatory nature in the main. It can, however, very well go beyond this role. It can grow and turn into true e-Education. Such a transition, however, is dependent on a transition in social outlook. Only if society enters an ongoing debate, in which all segments of society participate, could such a transformation be achieved. This in itself proposes what might be the first educational objective – to widen e-literacy to the entire population. Such a goal would necessitate changes in the allocation of resources and in the budgeting of education; a change in the mode of communications between governments and their citizens. Within the educational field, such a goal means a radical change in the way teachers are prepared in their various teachers' training institutions. The amended curricula to be pursued in such institutions will, as a matter of course, change the quality and professional (possibly also the psychological) profile of the new teachers. The direction of e-Learning, indeed of education development, would take an upturn signified by the ability to harness ICT to create vivid and viable contacts between basic educational goals as determined by civic society on the one hand and, on the other hand, by socio-economic and socio-cultural, as well as environmental realities (in their widest sense, not just in its natural sense).

Notes:

[1] For example, PLE (Personal Learning Environment) vs. LMS (Learning Management Systems), attempting to determine which might be more learner-oriented or user-friendly through a study of their characteristics. See also Beard *et al.* (2007:3), Tsui (2009), Gjøvik (2009), Bates (2005), Carwile (2007) and Nichols (2003).

[2] Information & Communications Technology

[3] This issue has reached the European Court of Justice, which ruled against affirmative action, which is perceived as merely another form of discrimination and is hence illegal. Neither the court not other who debated the issue have been able to determine how to balance between the need to encourage less privileged members of society with the equally important need - to enable other members of society to move on and advance in their own pace.

[4] The official EU document on the development of education system aimed at the enhancement of knowledge-based society states: "The challenges relating to the creation of knowledge on education and training are related to concerns about its relevance and quality as well as low levels of funding available for such research. This appears to be more of a concern than in other policy fields, such as social care or employment policy…" (CEC, 2008:6).

[5] The issue of gender distribution is, in fact, highly important and goes well beyond the political correctness or the social ethics (which are, of course, also important). Experience shows that whenever a profession undergoes a process of "feminisation" – that is, women become the majority of its occupants, not only do salaries in this profession, or sector, plummet but also, the social status of the profession deteriorates. Those who practise the profession are regarded less and less as primary household "bread winner" and in overall social terms, the clients of this profession no longer enjoy a balanced attitude towards the problems treated by the profession, as half of the population is no longer

represented in the profession adequately. This has happened to the teaching profession in most countries and it can now be seen in some other professions, notably in the public domains of the legal services (prosecution services, etc.). Such degradation also occurred in several countries in relation to junior academic appointments. Interestingly enough, "feminized" professions tend to hold feminine majorities only in lower professional levels while the higher echelons of these professions remain masculine at large; yet another facet of the imbalance in gender distribution.

6   This is a most important debate, even if this is not what is meant by most discussants. Indeed it goes beyond the constructivist debate which regards learning mainly in terms of the learner's construction, or reconstruction, of his or her learnt information or knowledge. If a student is taught how to think, the "what" will ensue automatically, since the "how" will always determine the "what". If, on the other hand, it is the "what" which is taught, then the student might be merely brain-washed. It is striking, albeit not surprising, when teacher education is examined, that none of these anomalies – or polemics – is found in their training courses.

7   Including personnel affiliated with higher education comprising (17%), commercial training or educational service (11%), financial services (9%), healthcare (8%), professional business or consulting (6%), insurance and government (5% each), manufacturing (4%), and others.

8   It seems that many tend to ignore that "the effectiveness of a technology cannot be judged without making some basic assumptions about what constitutes affective teaching and learning and the goals and purposes of education and training" (Bates, 2005, 4).

9   Bates (2005: 10) mentions two main roles of e-Learning: a) developing and enhancing new knowledge-based industry; b) serving as a means to improve quality of education & production of technology savvy graduates. According to Keegan (2002: 35), e-Learning definitions address themselves to teaching and information packages delivered electronically. They may contain units of information, self testing batteries and tests for quick (or automatic) evaluation and scoring and placement. He also refers to Dichenz 2001 (p. 91) who argues that E-Learning offers lower level learning goals. Higher order goals like understanding, reasoning and (moral) judging are more difficult to achieve. They require an individualised interactive discourse and can hardly be planned." Keegan agrees and adds that while learners are more and more mobile "learning cannot be mobile" and he adds that **"most definitions [of e- and m-Learining] take technology as the starting point."** (Emphasis added).

10   For years this issue has been widely discussed as a technical issue that warranted technical solutions. See, for example, Capuano *et al.* (2000) as well as others.

11   See also, in this regard, Branson, (2008: 34-35).

12   There are schools of thought, for instance the one adhering to the teachings of Freire (e.g., 1985; 1987), that argue that this goal can only be achieved through what they call 'teaching students to think democratically,' which in turn means provoking students' thinking by perennially posing questions which would help them to make sense – and meaning – from what they learn (Lyons, 2001).

13   The learning process is crucial stage in acquiring knowledge. Learners must be equipped with tools enabling them to read and write properly and effectively. They should also have analytical capabilities and contextual understanding of the world, based on a broad foundation of socially and educationally related subjects, including economics, ethics, scientific know-how, at least to a minimal operable degree, etc. Some add also cultural and cross-cultural studies and literature and comparative text reading aided by literary instruments (e.g., lingual, etymological and philosophical dictionaries, thesauruses, encyclopaedias, etc.). The list could be endless. The lack of such tools is reflected in the poor results of international examinations of reading comprehension, of sciences and of the level of use of native language. Techniques, it turn out, do not suffice.

14   When reaching senior position, they fear it will be looked at as if they got there thanks to some 'affirmative action'.

15   For some illuminating discussions following Goffman's analysis see also Davies (1989), Becker (2003), and Smith (1999).

16   See, for example, Junge & Hadjivassiliou (2007) for the issue of measuring, Casacuberta (2007) and Benigno *et al.* (2007) for the issue of e-inclusion and Ala-Mutka & Punie (2007) for the issue of expansion, particularly in view of the phenomenon of aging society.

[17] As was the case in the early years of the current century when institutions such as Kampala International University and other privately owned universities in Eastern Africa established multitude of remote teaching systems in order to increase their income from remote students.

[18] Later on they also say: While deriving its underpinning theories from such notable scholars as Plato, Rousseau, Skinner, Dewey, Vygotsky and Piaget, to name but a few, e-Learning is arguably eclipsing their impacts as the most dynamic development in education ever. Even with several decades behind us, there seems no end to the innovation and development that stretches into the future for e-Learning. For now and the foreseeable future, e-Learning remains 'mission critical.' It has emerged as an unparalleled explosion of innovations, creating opportunities for enriched experiences in traditional education for enhancing the breadth of opportunity and content for lifelong learning. The scope for e-Learning future development is so wide that it is with some trepidation that we attempt to paint the picture of the future (Holmes and Gardner 2006: 147). They hope that "future development of e-Learning will be dominated by social and technological dimensions of e-Learning" as "change catalyst." But they also recognise that it could, at best, "improve" learner's awareness of design (149). They dare not hope for an improvement in awareness of values.

[19] Bates makes the following observation, which is not unrelated to our debate: "Whenever a new technology emerges in education people in general ignore what has been learned in previous contexts. In most cases thought, many of the lessons learned from previous applications of technology are just as relevant for the new technology application, yet the same mistakes are made. For instance, the need to reorganise and redesign teaching to exploit fully a new technology is often ignored…. The failure to learn from prior experience in distance education has led to many costly disasters in online learning in the last few years." But also: "The effectiveness of a technology cannot be judged without making some basic assumptions about what constitutes affective teaching and learning and the goals and purposes of education and training." (Bates, 2005: 4)

[20] Bates says: "... technologies do not roll out evenly and all at once. Even in the more advanced industrial countries, there will be some target groups who will have access only to print, television and possibly the telephone. In developing countries, many of the newer technologies, for instance, the Internet will be beyond the reach of most of the target groups for distance education for many years to come." (2005: 4)

[21] One list is published by the Centre for Economics of Education of the London School of Economics and can be found at the following address: http://cee.lse.ac.uk/pubs/default.asp; the other is published by the Centre for Economic Performance also part of the London School of Economics, and can be found at: http://cep. lse.ac.uk/_new/publications/default.asp; the third list examined is that of the Institute of Education (IoE), University of London, to be found at http://ioewebserver.ioe.ac.uk/ioe/cms/get.asp?cid=11652&11652_0=11659.

[22] http://www.unesco.org/iiep/eng/publications/recent/rec8.htm.

[23] China might be an interesting case. In the last two decades or so, private education has sprung and grown significantly, as parents decided that they wanted to enable their children to stand out as "different", better cared for, believing that if they paid for their children's education they might indeed receive better tutoring and possibly also richer curricula. In many cases this belief was found justified.

[24] Already seven years ago, over 50% of all employees spent up to 50% of their time out of office. More than 75% of al internet viewing is done on wireless platforms. Over 525 million web-enabled phones have been shipped. Mobile commerce market was over $ 200 Bn. and mobile devices outnumber landline PCs. By 2005 there were more than 1 bn. wireless Internet subscribers. (Keegan, 2002: 13-14)

[25] Computing technology was introduced into telecommunication in the 1960s with the first public analogue software switchboards of the mid 1970s. These were digitalised almost immediately and were followed by the development of Integrated Services Digitalised Networking (ISDN) in the 1980s. In the 1990s, seamless digitalised connections between fixed and air networks were introduced. The increase in chips speed was crucial here. The replacement of silicon chips by nano-chips aims at further speed increase.
The development of broad band technology (more than 2 Mbits per second over a public switched network) is of vital importance for distant training, because of the needs of extensive bandwidth for picture, audio, video and virtual realities. Interactive multimedia, image processing, data and video are all large consumers of bandwidth.

The electronic revolution of the 1980s enabled face-to-face distance communication, with electronic eye-to-eye contact and distance group teaching.

It is worthy to mentions several currently used protocols: **Bluetooth** (Universal Radio Interface for Wireless Connectivity is improvement on infra-red linked portable devices; **GPRS** (General Packet Radio System is internet connectivity to mobile terminals that gives instant, transparent IP access with no cell set-up time; **WAP** (Wireless Access Protocol is web browser usability of the Internet to mobile terminals, providing data oriented non-voice services anywhere and at any time. (Keegan, 2002: 11-12)

[26] McLuhan argued that the medium, regardless of the content it carries, becomes the real message, hence acting as agent of change. Because of its own characteristics it would become a "message" in its own right, since it creates, by its very innovation or use, a "change of scale or pace or pattern" (1964: 8).

[27] Other sources include corporations, which use materials for their own learning or training and also some purchases by individual users. Materials purchased are determined almost always by the clientele, that is, educational institutions and corporations (Downes, 2005).

[28] For example, *BBC*, *SchoolNet*, NYPL, MIT OpenCourseWare, to name but a few.

[29] *Wikipedia* might be the most striking example. Also, consider such products as *Google Maps* and *Google Earth*, or the free content of the *Live 8 videos*. They all show that this impact will be widespread.

[30] Downes and other estimate that such a collapse, if not adequately tended to, might happen within a short period of a few years.

[31] Consider, for example, the economy of audio creation and storage technology and how it had so quickly developed into a huge free, open source shared non-commercial market, albeit the tenacious battle waged against it by the various interested parties in the audio related industry, from creators to producers to performers to marketers. Or, consider the blogging market, with the disappearance of sorts of Typepad or Userland which were replaced by free blogging services. This particular market has also implications pertaining to the e-Learning market, certainly in the domain of content.

[32] A case in point is the development of Linux by IBM and its new corporate strategic direction, to leave behind production of hardware or even software and become instead a consulting and integrator service provider. Likewise, consider *Google Maps*, *Google Earth*, or the free content of the *Live 8 videos*.

[33] They include such endeavours as classification, indexing, summarisation and dynamic relational database. Also, in this regard, one should consider the attempt to adopt hand held devices to the learning arena – or to information transferring in general. It requires simplification of the scenarios used. It also shifts the emphasis from textual – or visual – emphasis to the oral capabilities. It must be emphasised that working on the transferring of existing multimedia scenarios for collaborative learning to mobile multimedia scenarios is really more within the technological domain than that of pedagogy. See Keegan (2002: 35). In this regard, WAP based courses should be mentioned. They are supposed to be offered via PDA or Smartphones. Such courses a "keep it simple" attitude, avoiding large amount of data, underlined texts, using selection list for data entries and use short words.

[34] In the business sector, these developments allow SMEs, hitherto unable to bear costs of independent internal educational/training endeavours, to access affordable contents and means to mediate them to employees.

[35] See also the European Commission document on knowledge-based society: "Although the spread of the internet has given us unprecedented access to vast amounts of information, much of this is not subject to quality control. This increases the risk that irrelevant or questionable material may be taken up in the policy-making process and valuable evidence may be lost in the 'noise'" (CEC, 2008: 7).

[36] Note that education is always referred to as "sector" whereas other domains, like health or engineering, are "industries".

[37] To attribute it only to public apathy vis-à-vis education is a gross over-simplification. Also, it is wrong to copy development drivers in ICT or health 'as is' (or even in a "modified" form) into the educational field. The levels of R&D expenditure in high-tech it is very high; in health and medicine it is high to very high level. In education, it is low, or even very low level. R&D quality is high in high-tech, varied in medicine and low in education. Success in knowledge creation is, respectively, very high, high and low and speed of new knowledge mediation is very fast, fast and slow, with speed of implementation of new knowledge is very fast, varied and slow to very slow.

Success in knowledge creation and speed of the implementation of new knowledge are particularly important. The data for the educational sector, low and slow to very slow, might imply that possibly, education is kept at bay deliberately

The issue of content or knowledge creation is crucial, regardless of the medium through which it is transferred. Of course, the less informed are the customers, the less can they judge its quality or put it to ample use. This means that customers must be trained to understand the terms of consumption before even contemplating consumption. But since speed of knowledge creation and implementation in ICT is so much superior to the educational body of content, ICT knowledge products – the means, the media – become the new content. There might be a wish to bring everyone to ample computer/ICT literacy, hoping they will be able to look after themselves. But is it really possible?

[38] Bates mentions also the growing demand for higher education for many who were unable to obtain it (school leavers, etc.); cost effectiveness of education, particularly where demand exceeds number of available places; geographical distances; commercialisation of education; openness of discussion & learning through the Internet; etc. He does relate it all – as well as the flourishing of e-Learning, the attempt to develop new knowledge-based industry and, at the same time, means to improve quality of education by production of technology savvy graduates. But over all, he also recognises the importance of knowledge-based economics s necessary way to compete with lower-wage economies.

[39] Tsui (2009) identifies two major problems associated with online learning and with electronic/web based (or hypertext) environments: 1) unrestricted control by the learner of sequencing; 2) lack of learner's ability to meaningfully integrate unstructured information (which is so readily available on the net).

Also, there the issue of learning how to learn on the Internet: It requires pre-requisites skills, e.g., reflection, planning, study search, application, self evaluation, control, etc. These are not innate, but need to be groomed and nourished. "Inability of students to transfer learning strategies from traditional to online learning environment may result in different performance. Internet-based learning environment may prefer students with mature computer skills and meta-cognitive skills" Tsui (2009).

What is needed to emulate learning and transfer learning into knowledge is a multiple skill set of predispositions: skill, will, self regulation (the way students manage their learning process), planning skills, monitoring capabilities, focusing, self evaluation, ability to facilitate the acquisition, understanding and later the transfer of knowledge and skills Tsui (2009).

[40] *The Economist*, 14.4.2001, p. 4 of "Software Survey"

[41] $ 30 in 2001 (PhRMA, 2001:25)

[42] This, of course, is not limited to the information collected by governments. Consider television. While there are quite a few programmes based on "pay per view" arrangement, so called "free television" is still the most common way to consume this medium. Yet this "free" watching is entails a numerous expenses, ranging from the purchase of the set through subscription fees to the satellite or cable operator, or the state's television fee or license, etc. and we have not mentioned here the cost of the competition associated with the production of the programmes watched…

[43] Including property tax wavers, as well as other tax breaks, VAT wavers, etc.

[44] The term "data," denotes at facts serving as a basis for reasoning, discussion, or calculation. "Information" also indicates transferring of knowledge or intelligence. "Knowledge" means the understanding of facts or information retrieved through experience, or the comprehension through reasoning of truth or fact (Bouthillier & Shearer, 2002). Information, it turns out, "carries the connotation of evaluated, validated or useful data." While knowledge implies "a higher degree of certainty or validity than information," having "the characteristic of information shared and agreed upon within a community" (Meadow, *et al.* 2000: 35, 38).

Other extrapolations make no difference. Information can be regarded as organised facts and data depicting specific state of affairs. Knowledge would then be collection of concepts, perspectives, truths, beliefs, judgments and expectations, organised in a methodological manner based on formerly gained know-how (Wiig, 1999). In other words, information is data that by context-related arrangement becomes meaningful. Knowledge is data that create sense through the reliance on experience (or inference), pertaining to the interaction between actions and their consequences. Thus, it also has the capability to guide (Mitchell, 2000).

Transferring information to knowledge may be achieved by means of "experiential learning" which, in essence, "is the integration of theory and practice. The two are regarded not as independent but as

45 continuous process of interaction between the development of theoretical frameworks and their testing in reality" Ravenscorft, A. (2001: 12).

And also: "The natural order in the acquisition of knowledge is from the vague to the precise, from the rough outline sketch to the detailed picture, from the provisional and inaccurate approximation to the refined and balanced truth. This, too, has practical implications Mace" (1932: 43).

45 For example, Clark and Mayer (2008); Tai (2008): Delrio and Fischer (2007); Kastis (2007); Wild *et al.* (2008), who argue that "learning environments and their construction as well as maintenance make up the most crucial part of the learning process"; Gonella and Panto (2008), who discusses 'e-Learning 2.0' and the incorporation of 2.0 technologies and tools into the new mechanism of LMS, as a major didactic endeavour; Aviram *et al.* (2008), in their discussion of the iClass; Tüker and Zingel (2008); Banyard and Underwood (2008), who examine the relationship between digital technologies and learning mechanisms; and many more.

46 How effective or efficient is such an eye contact – which in order to include all the audience require a gaze and movement at a narrow arc of vision – is beyond this discussion.

47 See, on this subject, discussions in Ryle (1949/1964), Borger & Seaborne (1966/1976); or Thorndike (1931/1968), particularly in regards to the centrality of knowledge base for the conceptualisation process and also the value of freely flowing exchange in the human learning process.

48 See, for example, the discussion with former ministers of education, in Boyle & Crosland (1971); or Jackson & Marsden (1962); Rubinstein (1979), particularly Halsey (1979); Cosin (1972); etc.

49 For example, Godejord (2007); Tuparova & Tuparov (2007); Korte & Hüsing (2007).

50 An interview with Prof. Ulrich Hoppe. While advocating "intelligent tutoring", the mainstream of education-related AI (Artificial Intelligence), Hoppe maintains that it "has more difficult relationship with Computer Support for Collaborative Learning (CSCL)." He also suggests that "a potential conflict may exist between restricting the role of technologies to facilitating human-to-human communication, and Intelligent Tutoring Systems (ITS) that are often seen as active agents to steer human learning."

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