

The Ghost in the Machine. A Structural Interpretation of Maltese Policies on ICT and Education

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Abstract: The unprecedented expansion of digital technologies has been likened to nothing less than the efficient spread of a biological virus (Schmidt and Cohen, 2013). The omnipresence of Information Systems and digitally mediated attitudes is now a prominent feature in contemporary society, not the least in education. With many world governments, including Malta, now boasting of well-established and ambitious educational policies that range from pre-school to lifelong learning, a chronological portrayal and Structural interpretation of an evolving recursive dialogue taking place between socio-economic influences and inherent qualities of published Maltese ICT educational policies is hereby presented.

Keywords: Education, Malta, ICT Policies, Structuration

Introduction

In controversies about technology and society, there is no idea more provocative than the notion that technical things have political qualities.

(Winner, 1980)

In the history of computing the very idea that people could one day integrate computers as part of their personal experience was described as sheer folly and unrealistic futurology (Graham and Dutton, 2014). Today Information Technology (IT) has become the normalised way of conducting many of the things in everyday life. The omnipresence of Information Technology (IT) and Information Systems (IS)¹ (Lauterbach and Mueller, 2014) has convinced many that IT, related 'living' IS, and therefore digitally mediated conduct can provide a leading edge in diverse organisational outputs (Paul, 2007), including education. Thus, while many still doubt whether digitally mediated processes in formal educational settings can really bring about the expected

quality leap (Laurillard, 2008; Livingstone, 2012; Barber, 2014), many governments all over the world are now enacting educational policies that support the use of digital technologies in schools and universities. Selwyn and Facer (2013) state that as digitally mediated learning is becoming more of a social context, then learning that employs digital technologies has to be seen as of socio-political concern. Consequently, this write-up does not seek to understand or document digital cultures and any accompanying technology that can be related to failures or successes in educational settings. Rather, this commentary provides an account of evolving trends of technology, as mirrored in various Maltese educational and other ICT inclined policies.

A chronology of events that saw the nurturing of ICT as an important aspect in the Maltese economy will be tackled. Initially in the absence of standalone educational policy documents, reference is made to several policy documents that over time came to progressively recognise and attribute ICT to progress. Eventually it will be seen that they came to incorporate more pronounced and solid referencing to the inclusion of Information Technology in education, ultimately culminating in standalone ICT inclined educational policies. This commentary's main intention is to raise awareness about the undercurrents that negotiate and influence the outcomes of implementations of digital technologies in mainstream schooling, offering grounds for the critical analysis of an emerging Maltese Informational Society² which, as reflected through several local ICT inclined policies³, inherently influenced the outcomes of the same policies that dictate ICT inclusion in formal educational contexts.

While accessed documents tend to vary in style, guidelines that characterise policies will be taken into consideration, namely:

- a. The vision that provides the overarching theme in the document in question.
- b. Strategic objectives that define benchmarks underlying the vision.
- c. Any strategies that specifically address and support the vision.
- d. Mechanisms and programs directed towards the catalysis of the implementation of strategies.
- e. Strategic objectives that tend to quantify the policy's vision and the political inclinations that can be contextualized in a socioeconomic context.

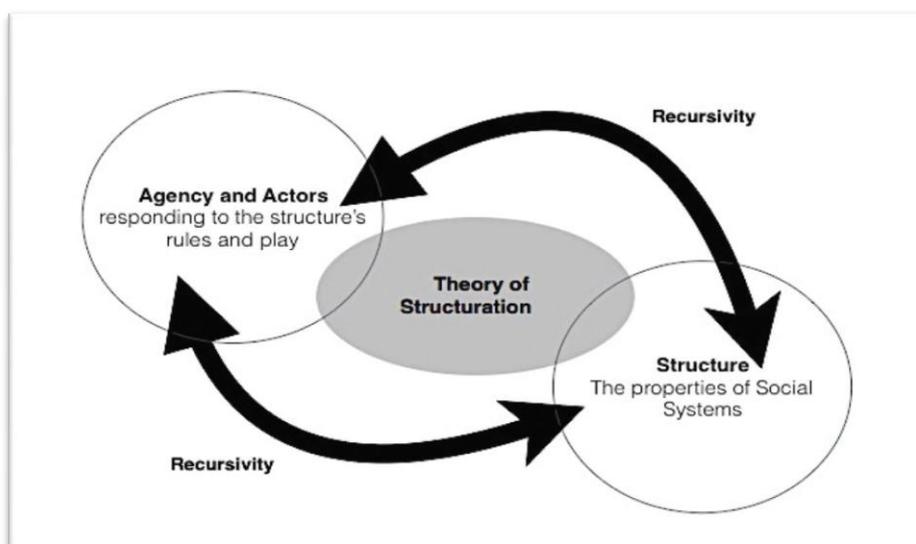
In the process, as a chronological order of events is presented, the theory of Structuration (Giddens, 2004) is employed to interpret outcomes of policies. Specifically, it will act as a springboard to more focused discourse on organisational science that deals with the 'Structurational Model of Technology' (Bijker et. al, 1989; Orlikowski, 2000; MacKenzie and Wajcman, 2005) the 'Duality of Technology' and the 'Interpretive Flexibility of Technology', (Orlikowski, 1992; Coombs et. al, 2006). The application of all

these notions will serve to elucidate how ICT requirements prescribed through economy inclined policies were and are still being mirrored in educational rhetoric, fundamentally marking a nascent and evolving Maltese Informational Society.

Theoretical Backdrop: A Structural Model of Society, Technology and Agency for change

‘Structuration’ is an unlovely term at best [...]. But structuration theory is sensitive to the shortcomings of the orthodox consensus and to the significance of convergent developments [...]
(Giddens, 2004, p. xvi).

If in his book: ‘The Constitution of Society’, Giddens (2004) almost excuses himself for the use of the term ‘structuration’. Giddens states that other than ‘Structuration’, he has not been able to find: “[...] a more engaging word for the views that he wants to convey” (Giddens, 2004, p. xvi). Orlikowski (1992) considers: “Structuration as a social process that invokes the reciprocal interaction of human actors and structural features of organizations”. This turns out to be a very important notion because it explains why societies are to be treated as having temporary natures (Fay, 1997, p.65). As a matter of fact, through the recursive communication between the agents and structures, societies can undergo transformation and change (Fay, 1997; Giddens, 1979, 2004; Sewell, 1992). Thus, as portrayed in the figure below, Structuration may therefore be visualised to be at the core of the constant interplay between agents’ actions and structure providing the facility to analyse the recursive⁴ actions between the agent that acts in, produces and reproduces the system, and the structure that enacts norms and limits to action.



Giddens (2004) suggests that: “[...] the rules and resources drawn upon in the production and reproduction of social action are at the same time the means of system reproduction” (p. 19). Hatch (1997) takes norms and values as bases for activities that produce artefacts which besides being actual physical objects can also be directly associated with a broader cultural image of a society (Woolgar, 1996, p.869). From a socio-constructivist’s point of view and as developed by Bijker et al. (1989), technological growth cannot be separated from the social context (Warschauer, 2003) with the first taken as a consequence of the second. So it does not come as a surprise if technologies remove certain limitations, giving rise to structures and actions not possible before, ultimately causing a metamorphosis in society as well. Thus: “In the model of technology proposed here, structuration is understood as a dynamic process which is embedded historically and contextually” (Orlikowski, 1992, p. 412). The independent development of the sphere of technology from its social context is taken as politically and intellectually too simplistic to explain the relation of technology to society (MacKenzie and Wajcman 2005, p. xiv.). Segregating one from the other would not allow us to realise that in reality the same structural qualities that define Information Technology (IT) create their own indispensability in the emergence of a new IT reliant economy and new social contexts (Castells, 2000). As reflected in the Bangemann Report (1994): “Today technology is in search of applications. At the same time, societies are searching for solutions to problems based on intelligent information” (p.26).

Malta in Context. Nurturing an ICT committed culture

ICT can empower the economy and society

(Digital Malta 2014-2020, p. 6)

In 1987 the Government of Malta embarked on a large-scale modernisation plan that, among other things, focused on setting Malta on the world-map of information technology. It was a transitional period marking the initiation of a long and systematic series of actions that shifted Malta from a closed, state-dominated and protected economy to a dual one highly dependent on international trade and characterised by a strong thrust towards research and innovation. In 1988 the Malta Council of Science and Technology (MCST) was set up. It was to act as an advisory body assisting in the formulation and implementation of a National Science and Technology policy that had the task of participating in the national socio-economic planning process of innovation and modernisation of the country. Saying it differently it was a tangible way of linking policy to science (Cassingena Harper, n.d). Out of eleven proposed objectives, the need for innovation was expressed through the establishments of educational programmes that could: “[...] ensure the availability of suitably trained scientists and technologists” (MCST, 2007, p.5) and, “[...] that will take due account of the specific situation and requirements of the

Maltese Islands" (Ibid., 2007, p.5). This drive was spurred by a very important strategy referred to as 'Vision 2000' (M'Pherson, 1992) fundamentally orientating possible future directions for Maltese economic settings. But fitting in imported technology solutions is often much more challenging (World Development Report, 2016) and the major hurdles that the local authorities were foreseeing were not technical but rather the challenge to exercise an idea that would bring in line the constructive use of implemented ICTs and organisational change (M'Pherson, 1992).

Vision 2000 spelt out the need for innovation and the transformation of Malta into a regional hub that enabled infrastructural and business services through the development and application of communication technology (ibid., 1992). In the face of geographic limitations and lack of natural resources, the way forward was to invest in human capital and gear in towards the creation of a niche in the fastest growing sector, that of information technology (Fenech Adami, 1992, p.3). The process of innovation was to be based on a comprehensive IT strategy that had to integrate in all sectors of the Maltese economy (M'Pherson, 1992, p.5). There was also the recognition of education and: "[...] *the urgent requirement for (the population) as a whole to be educated and trained upwards*" (Ibid., 1992, p.5).

In September 1993 the MCST commissioned an autonomous and independent study, "[...] *to formulate the initial thrusts of a National IT Strategy*" (MCST, 2007). It presented a dramatic description of a local economy in need of a major overhaul. It also sowed the seeds of change for an era marked with new socio-economic growth embedded in a global scenario. Incidentally, in the late 80s the term 'globalisation' came from almost nowhere and solely shared in academic circles to be almost everywhere (Giddens, 2002, p.7). From what can be perceived in the document, the instigation for change arose from the awareness of competition with foreign countries. The so called emerging information era and globalisation did not offer any choice but; "[...] *an onus on Malta to be part of the techno-economic evolution*" (Camilleri, 1994, p.2) already taking place overseas. All this reflected the awareness Maltese strategists had of a shrinking planet (metaphorically speaking) where the action of one nation or community would have repercussions on the rest of the world. "*Globalisation not only pulls upwards, but also pushes downwards, creating pressures for the local autonomy*" (Giddens, 2002, p. 13). In the case of Malta, it was recognised that protecting the economy from globalisation with isolation was not an option. "*Isolation for a small island is synonymous with death*" (Camilleri, 1994, p.2).

At the heart of change, IT⁵ was to play a fundamental and catalysing role in the process of innovation. But change could only be brought about if the human capital was properly invested in.

This does not mean that “technology rules” - people rule and make their choices.

Technology is an economic engine and [...] National economies are technological machines-with human aspirations.

(Camilleri, 1994, p.2).

Orlikowski (2000) mentions that there have been various insights into the roles and influence of technologies in organizations, but all models posit technologies as embodying structures built by designers to be appropriated by the users during their use of the technology. In the Duality of Technology (Orlikowski, 1992) the meaning that the users attribute to the technology is fundamental to its success. At the microscopic level, the interpretation and perceptions that one may hold with respect to a technology depends on how much the user is able to see its utility in context of the activities it is set to function in. The more the users meaningfully familiarise with a technology, the higher the probability will be of a successful outcome at the macroscopic level. Thus it did not come as a surprise when in the centre of the socio-economic change that was envisioned to be catalysed by Information Technologies there was the deployment of IT in education (Camilleri, 1994, p.1). It was acknowledged that “starting from the very basic building blocks” (Ibid., 1994, p.5), the ways towards an IT oriented culture were to be “evolutionary” (Ibid., 1994, p.5). It was to be a long term investment that required time in order to mature.

The Making of a National e-Agenda. IT in Education. A Business Plan

When Orlikowski (1992) talks about the interactions of technologies in organisations, she makes reference to incomplete models that are either biased and inclined towards deterministic approaches to technology and hardware or else focusing on the human aspect of technology and the outcome of social action. This does not seem to be the case in the Maltese context. Policy makers were more than aware of the recursive interaction between technology and its users in the Maltese Society so much so that a clear distinction between the structural properties of the artefact and the agents’ response as exhibited through digitally mediated behaviours were from the onset very clearly delineated.

Information Technology is taking the world by storm. No, not computers, but the wake of side effects which their applications bring to every aspect of socio-economic activity

(Camilleri, 1994, p.1).

The IT Education Business Plan seems to have been instigated by the need of an upward economic shift: “There is growing evidence that the national economy will be greatly affected by the level and quality of IT use in the country” (Ibid., 1994,

p.1). Subsequently, with special emphasis on the importance of IT literacy and its use on a national scale, the policy document was divided into five sections. The sections included suggestions for IT implementation as a cross curricular theme, to be followed by the rollout at primary, secondary and tertiary levels respectively, in adult education (for the skilling and of reskilling workers) and in the creation of an Educational Network (EduNet) that inherently was seen to work in abolishing our geographical limitations to the access of knowledge and information.

In 1994, the NSIT (National Strategy for Information Technology) document went beyond the recognition of a dynamic dialogue between users and implementers of the technology. It sought to take IT beyond the indisputable black box status (Orlikowski, 1992). It took into account the competent individual who, being well informed of things, had the ability to draw upon the structural rules of the technology and at the same time subjectively reconstitute the objective organisational structure in context.

The way I see it is that the central premise in the Duality of Structure is the recognition of the subjective intervention of the actors who are not only knowledgeable about any specific situation as proposed by the structure but who can also be reflexive of their action. In the meantime the compilation of adequate computer-aided learning (CAL) tools was to be left in the hands of a pool of experts comprising educators, computer scientists, teachers and software developers (Camilleri, 1994, p. 4). Subsequently education programs were seen to be designed, prepared and implemented across all school levels. It was also deemed very important to train the trainers. Thus in-service courses were conceived for teachers who wanted to teach computer science and also for those who wanted to become competent enough to use IT as a teaching and learning resource within their areas of specialisation (Ibid., 1994).

e-Malta. The early Years 2000-2003

The increase in volume and pace at which ICT policy related documents were being issued in Malta towards the end of the 90s is an indication of the sense of urgency that informed the authorities' undertaking of an e-oriented culture. In 1999, the Central Information Management Unit (CIMU) was set up with the task of providing leadership and vision for ICT in the Public Service. For the first time, in August 2000 the Central Office of Statistics made use of Internet technologies to present statistical data related to Informational Society Indicators for the general public (Central Office of Statistics, COS, 2000). Incidentally, another first was the issue of a seminal and official e-government 83-page-long strategy document titled: 'White Paper on the Vision and Strategy for the Attainment of eGovernment' which even from its opening statements manifested the importance of the intricate relationship

between the Internet as a technology, the economy and the successful outcomes of the setting of the Maltese Informational Society. More so it was directed towards the aptitudes and readiness of the people (the end-users) who had to make use of the service. Stress was made to “[...] *ensure universal digital literacy [...]*” (White Paper on the Vision and Strategy for the Attainment of eGovernment, 2000, p.i) especially “*on the ability to use Internet across all sectors of the population*” (Ibid., 2000, executive summary).

The way forward. 2003-2007

In 2003 the setting up of an office directly identifiable and responsible for Internet and ICT developments in Malta, the MIT&I (Ministry for Investment, Industry and Information Technology now MITA) was a proof of the importance with which the local authorities were taking on the implementation of Internet based systems in our society. Besides other purposes the ministry had the function to:

[...] develop further the Maltese Information society and economy both locally and within an international arena [...] strengthen the role of ICT and [...] transform Malta into a regional centre of excellence for systems development (MIT&I, 2008).

From the several Internet related documents and initiatives that emphasised the implementations of Internet based applications, it is not difficult to discern that the establishment of MIT&I was synonymous with a new page in the setting of the Maltese Information Societal. Maltese industries had to steer away from manufacturing industries and look for new opportunities specifically in ICT. “*Manufacturing in Western Europe has drawn its economic close. We have felt the effects here, with down-sizing and factories relocating to places where wages are poor.*” (MIT&I, 2008, p.4). Thus, as a number of manufacturing companies moved away from Malta to cheaper havens, hopes and solutions seemed to converge on the promotion and consolidation of e-commerce as one of the major driving candidates in the Maltese economy. But this required the provision of higher quality products which could only be achieved if the local industry was able to meet demands. Again, the importance of education for the provision of an ICT literate society and workforce was not ignored (The Malta Financial and Business Times, 2003) and in 2004 the National ICT Strategy was published.

Malta will be amongst the most developed information societies in Europe and the Mediterranean, leveraging upon ICTs to improve the quality of life of its citizens and contribute steadily to its economic growth

(National ICT Strategy, 2004, p.6).

The strategy carried deep and clear implications for the best way forward towards an e-society. But it was also indicative of a clear vision on what was required for the successful outcome of planned implementations: investing in the most available resource, the people.

It was a strategy with a discernible feature of finding and educating the right people when opportune: “[...] it is more a matter of whether you have people with the right skills working for you.” (Gatt, 2004, p.5), and, “[...] e-learning helps develop well-educated, skilled and adaptable workforces” (MIT&I, 2006, p. 2). Subsequently, a document identified as: Development of an e-learning Vision, Strategy and Action Plan for Malta (Ibid., 2006) was issued by the government through the MIT&I. The document issued a call for proposals for “[...] the establishment of an e-learning platform to be used on a nation-wide scale” (Ibid., 2006, p.3). Castells (2005) states that it is not technology that dictates society but it is society that shapes technology according to its needs values and interests of the people who use the technology. Incidentally with a telecomm broadband infrastructure well in place⁶, the platform had the function of promoting further the ICT culture both in the formal educational institutes and in other less formalised situations. Reference to virtual campuses and implementations of public e-learning platforms (National ICT Strategy, 2004, p. 10) formed part of the National ICT strategy of 2004. National policies to support adult education and lifelong learning were issued. The Report on the National Consultation Process on Lifelong Learning (2001) (eUSER, 2008) recommended the establishment of a National Commission on Lifelong Learning to develop a national policy and plan on lifelong learning. There was also the National Action Plan for Employment (Ministry of Education, 2004) which included a series of guidelines dealing with lifelong learning for employment. Incidentally, until then there was no specific strategy for e-learning itself.

In December 2007, a consultation process which led to a national strategy on e-learning was launched by the MIT&I and the Department of Education. Taking it from the then Minister of Education himself, Dr Louis Galea: “[...] we have no choice. We either move forward, or we will fall back [...]. The pace of change is not dictated by some authority but by the IT revolution” (Times of Malta, December, 2007). Now that e-government services had been implemented and readily accessible it was time to institutionalise the technology as an important structure in the Maltese community, acting as a medium through which e-government services could be accessed and used.

The Smart Philosophy. 2008 on

In the context of a general election and the introduction of the Euro as the Maltese new currency, 2008 saw the unveiling of two ICT related policies: a National ICT Strategy document called ‘The National ICT Policy 2008-2010’,

also referred to as the 'Smart Island Strategy'; and for the first time a formal standalone e-learning Strategy referred to as the 'SmartLearning' document. While it continued on the steps of the National ICT Policy of 2004, the Smart Island (2008) was also a document that had to complement the Malta's National e-Learning Strategy.

The SmartIsland Strategy (2008) depicted an island that was rapidly reconfiguring itself. At its core the strategy acknowledged the importance of fostering an approach of the 'e' into everything, consolidating the connected society through faster Internet connectivity that was taken as the lifeblood for its emerging and thriving e-economy. While the strategy acknowledged previous work, it preserved and updated legislations, and regulatory frameworks. It was a strategy set to consolidate previous objectives and harness favourable outcomes. What had been expressed in the Vision 2000 document (MCST, 1992) was becoming a reality. In the case of the SmartLearning strategy and from a structural point of view, the strategy focused on the people who had to enact meaning in relation to the Internet and other ICT. "[...] *technology has no value in and of itself: it is a tool for people to use and realise their vision [...]*" and "[...] *indeed their full potential*" (MIT&I, 2008, p.4). While the National IT Strategy of 2004 rightfully focused on the digital divide, the Smartlearning Strategy of 2008 went beyond. It was set to educate and foster a positive attitude towards the use of ICT and the Internet in a way that enabled governments' views to be actualised. Ultimately it conceded the importance of a flexible and ICT educated worker who potentially could have accelerated: "[...] *the development of Malta's knowledge economy*" (Ibid., 2008, p.8). Any user fully equipped with the right tools: "[...] *will be able to develop and use independent learning skills that will support them [...]* throughout lifelong learning [...] *diffusing ICT in education*" (Ibid., 2008, p.8). It also provided directions on how teachers learners and leaders could upgrade their ICT skills in context of their roles in schools of teaching learning and school management respectively.

In 2009, complementing the Smart Island Strategy for Malta 2008-2010, the now Malta Information Technology Agency (MITA replacing MIT&I) rolled out the MITA Strategic Plan 2009-2012 (Malta Economy Vision, n.d.) that sought to continue where the previous Smart Island Strategy for Malta, 2008-2010 left (Ibid., n.d.). Again, while emphasising the importance of ICT as a key enabler for the advancement of the local economy, it was also a citizen-centric strategic plan that acknowledged the importance of ICT instilled awareness and the opportunity to promote and channel Web 2.0 mediated attitudes in a constructive manner, technically putting the 'e' in everything as one of its main prerogatives. The same suggested attitudinal shift dictated in an economically inclined and guiding policy document was reflected in educational sector: The National Policy and Strategy for the Attainment of Core Competencies in Primary Education document (2009) devoted a whole

section for the inclusion of eLiteracy trends; the same importance was given by the long anticipated National Curriculum Framework document launched in 2012. Both documents asserted that in response to changing demands, globalisation, ICT developments and new paradigms (NCF, 2012), digital literacy became defined as an indispensable core competency and in par with other more traditional educational pillars such as Mathematics, Science, English and Maltese. In both documents e-Literacy was promoted both as a discipline as well as a cross curricular approach where digitally mediated attitudes could be employed to learn other disciplines. Thus: *“In this context e-Literacy is a learning medium for literacy and numeracy”* (National Policy and Strategy for the Attainment of Core Competencies in Primary Education, 2009 p.8), and a *“Competence in the fundamental basic skills [...]”* (Ibid., 2009 p.13). But, notwithstanding the validity underlying an idea, getting it adopted is never an easy task and the process between its availability and adoption will be lengthy (Rogers, 2003) making it a plausible explanation why, while reading through ICT policies that are separated by years one get a sense of déjà vu if not repetition. For instance the empowering qualities of ICT for enhancing competitiveness and growth and the importance of using technology as a foundation for learning are both common themes in the latest ICT related policy: Digital Malta 2014-2020 (2014), and The Smart Island Strategy (2008). The same can be said on the emphasis for setting the foundations for learning and learning to learn. While this may be indicative of the importance of ICT as a political clout in an evolving digitally driven economy, it may also be suggestive of a much required change that is slow to materialise. Discourse that considers developed typologies for IT innovations indicate cycles of adoption, adaptation and enactment. On implementation and therefore adoption, a technology will be appropriated by being instantiated in the social life of the users (Volkoff et. al., 2007; Orlikowski, 2000). Applying constructivists’ jargon, in adaptation there is also the mention of enactment whereas in the recurrent use of the technology, users will deeply deploy the technology into their everyday use (Lauterbach and Mueller, 2014; Orlikowski and Scott, 2008; Volkoff et. al., 2007), naturalising towards it. Subsequently they will use it to its full expected full potential, even enacting new forms of structures that go beyond expectations. Unfortunately all this involves time and uncontrolled trends of accommodation which may be the reason underlying recurring and therefore repetitive traits running through various strategy documents.

Then again, comprehensive discourse in the research stream of the Implementation of Information Systems (Leonardi and Barley, 2010; Orlikowski, 1992, 2000; Orlikowski and Scott, 2008) suggests that change can only emerge from an on-going chain of social action as manifested by a steady stream of documents and why not, even repetition that helps to drive an argument home. Subsequently, it is observed that documents do not only build on the outcomes of each other but keep on the emphasis on ICT as one

of the strategic pillars for developing Malta as a forward-looking economy. In the process they are seen to be creating the need and feasibility for the inclusion of digitally mediated learning in education: “[...] *eLearning will support the transformation of teaching and learning*” (SmartLearning Strategy, 2008, p.9) while the development of new skills “[...] *will release Malta’s potential as a global player in the world’s knowledge economy*” (Ibid., p.9).

The latest chapter so far.....

In the past twenty years government has substantially invested in ICT.
(Digital Malta, 2014, p.16)

The main elements are in place for the industry to prosper. The challenges now are to prioritise and implement the missing elements.

(Digital Malta, 2014 p.19)

2014 and 2015 saw the roll-out of several strategy documents relevant to this writeup. One of the strategy documents entitled ‘Framework For The Education Strategy For Malta 2014-2024’ (MEDE, 2014) sought to: “[...] *build more effective synergies between education, the economy and civil society*” (p.6). It essentially offered directions and structure to enhance the link between education, national developments, and therefore mechanisms for employability. Two other major ICT strategies were also presented: Digital Malta 2014-2020 (MITA, 2014), focusing on issues of ICT and the economy; and The National Lifelong Learning Strategy 2020 (MEDE, 2014), primarily directed towards adult education. These were also complemented by a green paper, Digital Literacy (Department of eLearning, MEDE, 2015), offering an academic perspective and purposefully written to educate and offer insights into digital literacy in the context of local policies and the Maltese educational system. Finally, there was the rollout of the Learning Outcomes Framework (LOF) (MEDE, 2015). The LOF offered directions in a push to move away from centrally imposed models to contextualised and adaptive learning models that sought to address better students’ specific learning needs.

Castells (2002) states that: “[...] *users are key producers of the technology by adapting it to their uses and values, ultimately transforming the technology itself*” (p. 28). Placing things in context, as macroscopic scenarios changed, so did manifested strategy outlooks towards ICT and digitally mediated attitudes adjust, with needs becoming necessities and necessities justifying outcomes of novel opportunities. In times when technology mediated attitudes were still being acclimatised to, documents such as The Smart Island (MIT&I, 2008),

and Smartlearning (Ibid, 2008) tended to place more focus on 'what to do with' the technology. But as can be observed in more recent documents and when taking in consideration of now established and accepted technological practices, the shift from what users can actually 'do with' to 'what do to' the technology became a more indicative trend. With: *"ICT [...] now singled out as an enabling technology for all sectors"* (Digital Malta, 2014-2020, p.19), emphasis in documents was given to nurturing learners capable of pushing forward the local ICT industry. In this case enabling the progression to a more proactive and adventurous role as a procurer of ICT rather than limited to the servicing 'plateau' (Ibid. 2014). As a matter of fact, and from a post-phenomenological perspective people and technology cannot be contextualised in isolation from each other (Verbeek, 2010). Adopting this to the recursive processes of structuration (Giddens, 2004) and the Duality of Technology (Orlikowski, 1992), the relation between human action and technology can therefore be conceived to expand from embodied to emergent states that provide grounds for recurrent interaction between the users and the technology. Therefore with a proven reliable technological infrastructure in place, the underlying indication in the documents ushered from 2014 on, turned more towards the necessity to stimulate, leading practitioners to shift from consumers of ICT products to producers. Essentially this emphasis towards ICT-driven initiatives indicated by the underlined need for: *"[...] ICT champions (for) important decision-making positions"* (Digital Malta, 2014, pp.16, 17) gives value to the consistent use of the first person terminology employed in the LOF (MEDE, 2015), such as: 'I can', 'I show' and 'I participate' and the empowerment of internet based technologies for the achievement of active digitally enabled citizenship (Digital Malta, 2014; Digital Literacy, 2015).

A complementing document to the 'Framework For The Education Strategy For Malta 2014-2024' (MEDE, 2014), fundamentally bridging between the fulfilment of macroscopic provisions in Digital Malta 2014-2020 and delivery from the micro perspective, was the Malta National Lifelong Learning Strategy 2020 (MEDE, 2014). Another 'first' as a standalone document for Malta, the 'Malta National Lifelong Learning Strategy 2020' (Ibid., 2014) focused primarily on adult education. With extensive explanations of indicative programmes that would enhance adult education, it offered a strong vision with clear strategic objectives to: *"[...] make better use of education as a driver for growth [...] through more personalised and innovative approaches"* (Ibid., 2014, p.5). The strategy addressed a number of challenges, namely the phenomenon of early school leavers and the need for better synergy between various adult educational institutions.

Corresponding with such arguments, the document (Ibid., 2014) made a strong case for the returns that digitally mediated aptitudes and resources

could potentially give to adult education programs in terms of skilling and reskilling purposes, and employment possibilities. In the case of specific ICT applications and digitally mediated activities, this policy document was comparatively more direct than previous ones⁷. Using specifically placed terminology it identified issues and challenges related to the quality of 'online course accreditations' in MOOCS (Massive Open Online Courses) and OERs (Open Educational Resources), the implications of the 'protection of intellectual rights' and issues of ownership that have now evolved to reflect the: "[...] *owning by participation rather than possession and control*" (Ibid., 2014, p.31). It complemented the Malta National Lifelong Learning Strategy 2020 (MEDE, 2014) by embracing qualities in line with the intrinsic properties of technologies such as those elicited through enhanced crowd-sourcing and remote learning envisaged as important bridging factors to various aspects of the digital divide such as alienation attributed to age, gender inequalities and diversities of social backgrounds. Consequently, with the expressed strategic measures, the document homed in on the wider strategies as exemplified in Digital Malta, 2014 where: "[...] *all our people are involved in the advance of the Maltese economy*" (Muscat, 2014, p.4) within an educational agenda of a readily available and well trained workforce.

Conclusion

This contribution is best described as an exploratory interpretation of unfolding Maltese socio-economic events which as reflected through indicated ICT related policies became closely knit within the core of educational ones. Arguments are hereby made at the intersection of the outcomes of educational technology and the context of power distribution, on-going socio-economic affairs and implemented educational strategies. Incidentally, it was not set to judge ICT inclusion but rather to portray a nation's developing macroscopic vision of modernisation as mapped through salient ICT related policies. Subsequently, in the process of exerting their structural properties the same ICT policies appealed for and provoked changes that unequivocally brought changes in teacher training and in the classroom itself. It is 'exploratory' because in the process, the relationship and negotiations taking place between presented policy documents and their institutional interpretations (Ball, 1998) were being rationalized through an interpretational lens based on the theory of Structuration and related socio-technological discourse which as a consequence had to be employed to make up for the limitations offered by the same theory of Structuration. It is notable to underline that whilst having Structuration at the core of the analytical and interpretational lens employed, and, albeit the importance of technology as a characteristic of modern society, Giddens does not persevere to develop the theory of Structuration into the agency of technology. This comes in the form of a blessing as in the absence of any specifically applied and constraining methodological scalpel, the interpretational task was left to me (the researcher) who thereafter had the

opportunity to wield the theory of Structuration according to the substance of investigation. Subsequently, arguments revolved around the simultaneous tracking and interpretation of a political drive which as it progressively crafted ICT into a major economic pillar for Malta it hewed in its structural properties into principal educational policies invariably dictating what takes place at the microscopic level, during teacher training, in schools and ultimately in the classroom itself.

Discussions have intentionally steered away from how technologies 'should' or 'could' be employed in educational settings. Whilst acknowledging the importance and validity that perspectives in the learning theories offer, I also believe that they are only representing a particular aspect in the inclusion of digital technologies in educational contexts inevitably asking for more research and the identification of causative influences in other dimensions such as those invoked by social theory. Selwyn and Facer (2013) almost lament that literature on various aspects of using digital technologies in education tends to be heavily inclined towards the psycho rather than socio-cognitive aspects of educational technology and therefore inherently dominated with concepts of 'what works', 'effectiveness' and 'best practice' (ibid., 2013, p.2). The ramifications and pace with which digital technologies and therefore associated attitudes have evolved is nothing less than extraordinary. Nonetheless, despite the fact that: "*No generation has yet lived from cradle to grave in the digital era*" (Gasser and Palfrey, 2008, p.3), educational technology research is now fast approaching a respectable middle age (Selwyn and Facer, 2013). While many eloquent researchers tend to proudly align themselves within the psycho cognitive realms, Livingstone (2012) states that research in the field should widen its horizons by pursuing other directions that look beyond those boundaries dominated by the learning sciences, classroom practices and the art of enhancing learning with digital technologies (Facer and Selwyn, 2013; Selwyn, 2010). Failures in mainstream education are often solely interpreted through emerging digitally inclined practices which as they disregard political undercurrents, are offering an incomplete real-world portrayal on the educational and learning aspects nascent from digital technologies.

Taylor et al., (1997) state that policies are created as a form of conduct for individuals, but the policy process by which such policies operate is also a value laden activity (Fitz et al., 2006) with far reaching implications and the possibility of having to redefine teachers' work (Ball, 1993). Effectively, out of the four categories that Bridgehouse (2006) employs to define educational goals, two of them go head-to-head. In the theory of human autonomy the goal is to increase a person's freedom and the right for self-determination. On the other hand in the theory of human capital, the goal underlying education would lie in the provision of a well- educated workforce as a guarantee for productivity and economic growth. As this write-up clearly portrays,

educational policies were not set in vacuum. Rather, market forces were at the core of educational policies. Unequivocally this may cause concern in regards to the professional freedom that educators would in reality have when it comes to adopted methodological approaches. On the other hand how sensible can it be to employ a pedagogy that is acting independently of political agendas and macroscopic needs? An underlying trait running throughout all the policies has been the importance attributed to the individual who ultimately has to make policies materialise. “*Performativity works from the outside in and from the inside out*” (Ball, 2000, p.4).

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End Notes

¹IT refers to a collection of hardware devices and software. What emerges from the use of IT is the IS, composed of users who as they use the technology can change and adapt according to requirements (Paul, 2007). In the case of schools refer to distinct information systems that support different types of decision-making that go beyond the administrative aspects to include and support different forms of learning activities in Technology Enhanced Learning (Breiter and Light, 2006; Manouselis et. al., 2011).

²Castells (2000) considers that what distinguishes one society from another is not the nature or content of information but the way it is processed. In the case of contemporary society 'Informational' pertains to the use of ICT to process information

³While the analysis adopts a chronological sequence of events, several ICT related documents are not exclusively educationally oriented. Rather, they contain sections that make reference to the inclusion of ICT in education.

⁴From all the dictionaries accessed. the Collins English Dictionary (2016) defines recursion the way I want to express it and as "the act or process of returning or running back" (1999, p.1290). The way I see it, it is a reflexive or retrospective mechanism that allows the human agency to look back on previous action with the cognitive faculty or ability of reformulating processes that give rise to forms of structures.

⁵Later documents, portray a shift to differentiate between IT and ICT marking the delineation between IT as an infrastructure and ICT that promotes digitally mediated behaviours through the use of technology.

⁶In 1995 MAGNET I (Malta Government Network I), the government-wide Intranet infrastructure that connected all of the government offices was set up. It was

partially superseded by MAGNET II in 2005, a wide area network that utilized a state of the art technology including enhanced bandwidth used to augment already available services and provide others such as VoIP.

⁷An explanation on the ways that different policies address implemented technologies can be complex and requires a study of its own. A look into the history of technology (Bijker and Law, 1994; MacKenzie and Wajcman 2005) shows that the contextualization of technologies in education, both in terms of aims and expected outcomes are always attributed to the technologies readily available at hand. MOOCs became popular in 2012 (Miller, 2014). From a social constructivist approach to technology and within the principles of the Duality of Technology and Technologies-In-Practice (Orlikowski, 2000), the recursive action between the: influence exerted by the implications of the technology, and the response of individuals to the named technology; would enact specific behaviours and therefore specific language to appropriately address the technology in question.

