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The Culturalisation of Educational Technologies: An Enquiry into Saudi Arabia

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Abstract This work looks into the culturalisation of educational technologies, a subject that appears thus far to not have received sufficient attention from the international academic community. It is structured around the research question: How have educational technologies been exposed and subjected to the influence of societal cultures? This question is addressed by a qualitative case study of a Saudi state university, analysing its documents, interviewing its members and observing its daily social-academic dynamics. The data were interrogated using the grounded theory approach. This method of analysis thus singled out two main themes: The Influence of Societal Cultures on Educational Technologies and The Influence of Educational Technologies on Societal Cultures. A theoretical proposition arises from these themes; that the field of educational technology is a fertile ground for anthropological and historical enquiry, with possibilities for mutual feedback between societal cultures and educational technologies. The recommendation is that researchers and commentators in the field of educational technologies seek to benefit from anthropological and historical ways of thinking.

Keywords Saudi Arabia, Education, Technology, Society, History, Anthropology

1. Introduction

This is an initial attempt to address the relationship between culture and technology in a society where technology is largely imported and where it has global connections. Enquiry into the 'culturalisation' of educational technologies forms the focus of the present study, which seeks to draw a triangle with education, technology and anthropology as its three corners. It is structured around the research question: How have educational technologies been exposed and subjected to the influence of societal cultures? This question is addressed by qualitative research on a Saudi state university, analysing its documents, interviewing its members and observing its daily social-academic dynamics. The data were analysed using the grounded theory approach and counterpoints are explored based on the history of education and technology. The article is made up of four sections, beginning with the current introductory section and moving on to the literature review in the second section. Section 3 covers the methods of investigation and Section 4 presents and discusses the themes emerging from the data analysis. Section 5 draws out a theoretical proposition from the emergent themes, makes recommendations, considers the strengths and weaknesses of the study and, finally, suggests avenues for further research.

2. Literature Review

Social anthropology places human survival and socio-political advancement within human agency (e.g. Bhaskar, 1989; Giddens, 1984). Following this, some anthropologists find that culture is itself a product of human agency as reported by Gasset (2001) and Jonassen *et al*. (2003). Nye (2007) and Al Qathami (2009) maintain that humans, unlike other animals, are politicising beings with the ability to consciously ratiocinate based on their surroundings or unconsciously interpret their environment to fit preconceived norms and conventions. Technologies are assumed to be a party to human agency, politicisation and cultural patterns (Winner, 1977; Bijker and Law, 1992). Hence, technologies, it is believed by some commentators, cannot be independent of the societal culture wherein they were constructed, located and used (Agar et al., 2002; Mackay and Gillespie, 1992). 'Society-oriented' scholars of technology have questioned the 'science-oriented' scholars of technology, arguing that it is social elements and not technological discoveries that have been the drivers of social change (Pinch and Bijker, 1984). Indeed, taking the society-oriented view of technology further, more recent scholars have argued that cultural values are themselves embedded within technological advancement (Agalianos, 1996; Johnson and Wetmore, 2009).

The counter-argument from science-oriented scholars of technology is that technologies themselves shape cultural change. The difficulty faced by these scholars is discerning

which technologies have catalysed social and cultural change or have been more far-reaching in their impact. A divide inevitable follows among historians of technology who examine the immediate and visible impact of new technologies and those who examine those antecedent technologies that brought about social and philosophical change and ultimately the quest for related technologies. Mumford, for example, famously posited that the industrial revolution did not arise from the development of industrial technologies (steam engines, etc.) but from the far-earlier development of the mechanical clock – which made time itself divisible, 'produced' and tied to commerce (Mumford, 1934). Furthermore, as a technology expands over time and entails more logistics and regulations it may then carry more influence over societal culture while simultaneously becoming less influenced by it (Giddens, 1984; DeSanctis and Poole, 1994; Hughes, 2009).

Currently, a blend of the society-oriented and science-oriented schools tends to dominate technology-oriented historiography. Some scholars, as reported by Kerr (1996), Winner (1977) and Newson (1999), believe that technologies are socially constructed but often consciously so, with the intention of bringing about cultural changes in wider society. In other words, technologies are both a product and an agent of cultural change (Lyon, 1996). In this perspective, technologies motivate cultural changes such as alliances, divisions, new practices and policies. This balanced stance suggests a continuous alteration in technological and cultural components: the two produce mutual feedback (Dubos, 1970; Angus, 1993; Graça, 2010). This standpoint prevents the reduction of a complex relationship to the influence of one component over the other (Chandler, 1995). Moreover, it allows researchers to examine the political relationship between technologies and societal cultures, with technologies being a source and consequence of social agents (Bromley, 1995; Wajcman, 2004; Al Lily, 2012). For our purposes, it is important to note the element of social satisfaction or dissatisfaction with the development of technology. Society is at times happy with these changes but at other times is not (Beer and Burrows, 2007). Beyond the point of inception, a socially constructed technology may have dramatic and unforeseeable consequences; it may turn against the societal culture which has constructed it (Toffler, 1970).

In summary, three approaches to the relationship between technology and culture have shaped the modern historiography and anthropology of technology: the society-oriented stance, the science-oriented position and the middle ground approach. This latter, in suggesting a mutual influence between technologies and societal cultures, seems the strongest in terms of its explanatory power. This theoretical background has informed the collection, analysis, and interpretation of the present data and will form the basis the current discussion.

3. Methodology

The methodology of the current study is informed by the notion of action research, wherein an employee researches his/her workplace in collaboration with his/her colleagues so as to develop the organisation with which all are associated (Herr and Anderson, 2005). As a member of King Faisal University, the first author collected this data as part of his own action research cycle, reflecting his concern to improve research on educational technologies within the university at which he works. Herr and Anderson (2005) encourage action researchers to challenge their own organisation; however, in practice, the ability of anyone to challenge his/her own organisation will be limited because an insider may take his/her surroundings for granted or may not have access to another organisation which would serve as a reference point for comparison. In order for action researchers to avoid taking the surroundings for granted they are thus advised to research their own organisation in collaboration with other action researchers from other organisations (Herr and Anderson, 2005). Following this advice, the first author invited an academic from another field to act as the second author with the task of troubling and questioning the first draft of the article produced by the first author.

Some cultural anthropologists, as reported by Davis (*The Guardian*, 9 January 2013), see the cultures of the world as part of a large living 'museum' wherein each individual society symbolises a rich cultural locale. Echoing this view, researchers are advised not only to focus on already well-researched societal cultures but moreover to study other exotic societal cultures about which little is known by the international academic community. Bearing in mind the limited amount of information about Saudi culture available to the international academic community of educational technologies, the current study concentrates on the social context of Saudi Arabia, looking into the relationship between its culture and its educational technologies. The current research was conducted between 2012 and 2013, and was informed – as recommended by Selwyn (2012) – by readings of others' literatures, attendance of others' academic events, involvement with others' networks and academic and social collaboration with members of other academic communities. The reason why this study examines educational technologies from an anthropological viewpoint is that the anthropology of educational technologies seems not to have explicitly constituted a major component of the contemporary theoretical literature up to now. In order to collect data on King Faisal University, administrative documents were analysed, an unstructured observation of its social/academic dynamics over a year was carried out, unstructured individual interviews were conducted among 17 academics, three academic-managers and 36 students, and one unstructured focus group was conducted with three students.

In order to organise the data, an iterative approach has been used: we have repeatedly followed analytical steps back and forth in order to make sense of the whole process and organisation (Denscombe, 2007). Our research question

was continuously used as a guiding element. In this regard, the data 'are taken as a whole and then organised according to themes, but the themes themselves are partly emergent and partly influenced by [the research question] that the researcher brought to the research' (Holliday, 2005: 108). Yet, the themes also mirror the authors' reading of the historical debates over technology in the opening section. Following Selwyn (2010), the data were then interpreted and interrogated, with the intention of problematising educational technologies and the hope of taking readers outside their comfort zone. The writing style deliberately switches from the overly-complicated and version to the over-simplistic with the intention of teasing the reader. The data are deliberately presented in a subjective manner, with the aim of showing the importance of researchers' role in questioning data.

The basis of the present study is the grounded theory method suggested by Glaser and Strauss (1967): Data → Code → Category → Theme → Theory. This method seems to be a powerful tool for the organisation of discourses, and hence we saw it as a good candidate for our research. Once the data were collected and with the research question in mind, we attempted to discern 'natural analytical divisions' (Holliday, 2005: 105). Consequently, a series of codes emerged from the data which were subsequently organised into categories. These categories in turn formed themes and, ultimately, a final theoretical proposition. Table 1 below shows the data after sorting.

4. Analysis and Discussion of Findings

4.1. Introduction

Analysis of the data pointed to two themes: *The Influence of Societal Cultures on Educational Technologies* and *The Influence of Educational Technologies on Societal Cultures*. What follows unpacks these themes, showing how they were generated from various categories.

4.2. The Influence of Societal Cultures on Educational Technologies (Theme)

This theme stems, as illustrated in Table 2 below, from two categories: The Influence of Societal Cultures on the Literature of Educational Technologies and The Influence of Societal Cultures on the Values of Educational Technologies.

Table 1. The Data after Being Sorted Using the Grounded Theory Approach (NB the unreadable text in the table will be enlarged and made readable later when discussing the findings)

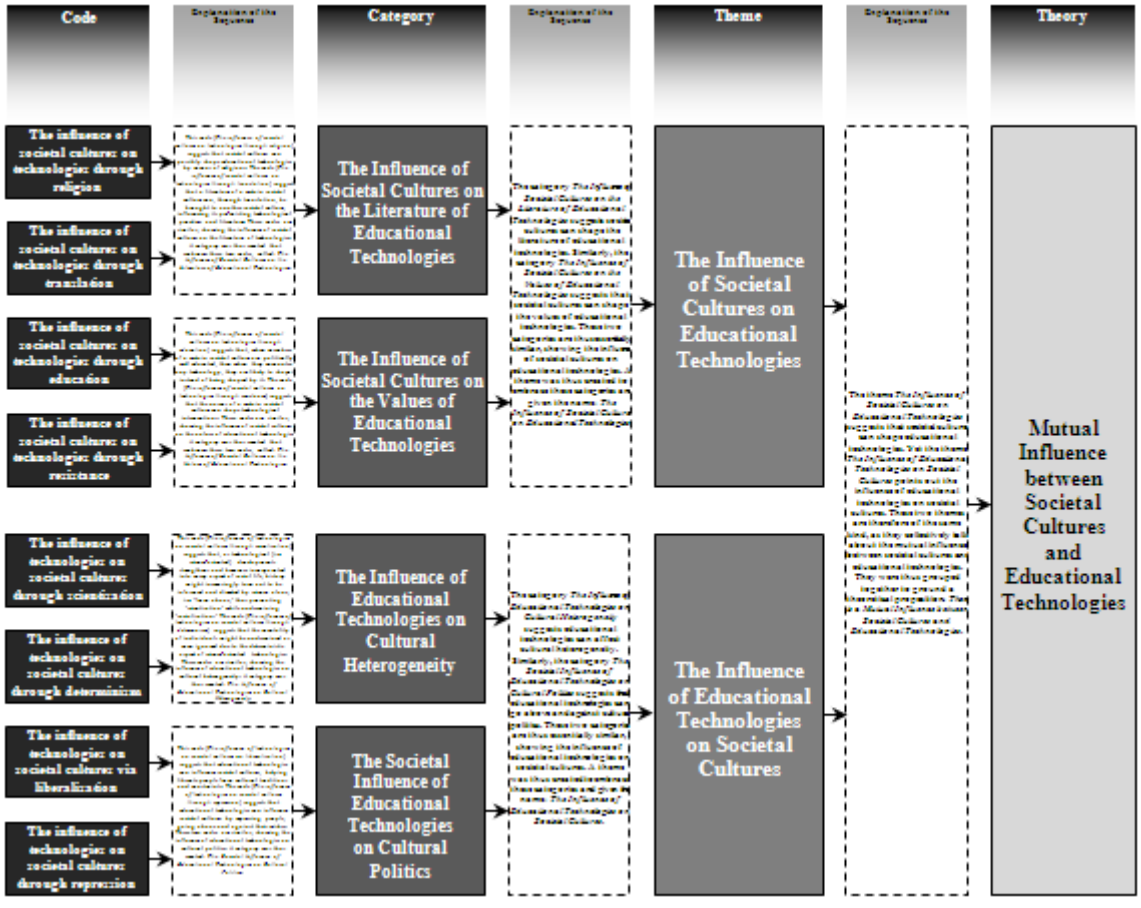
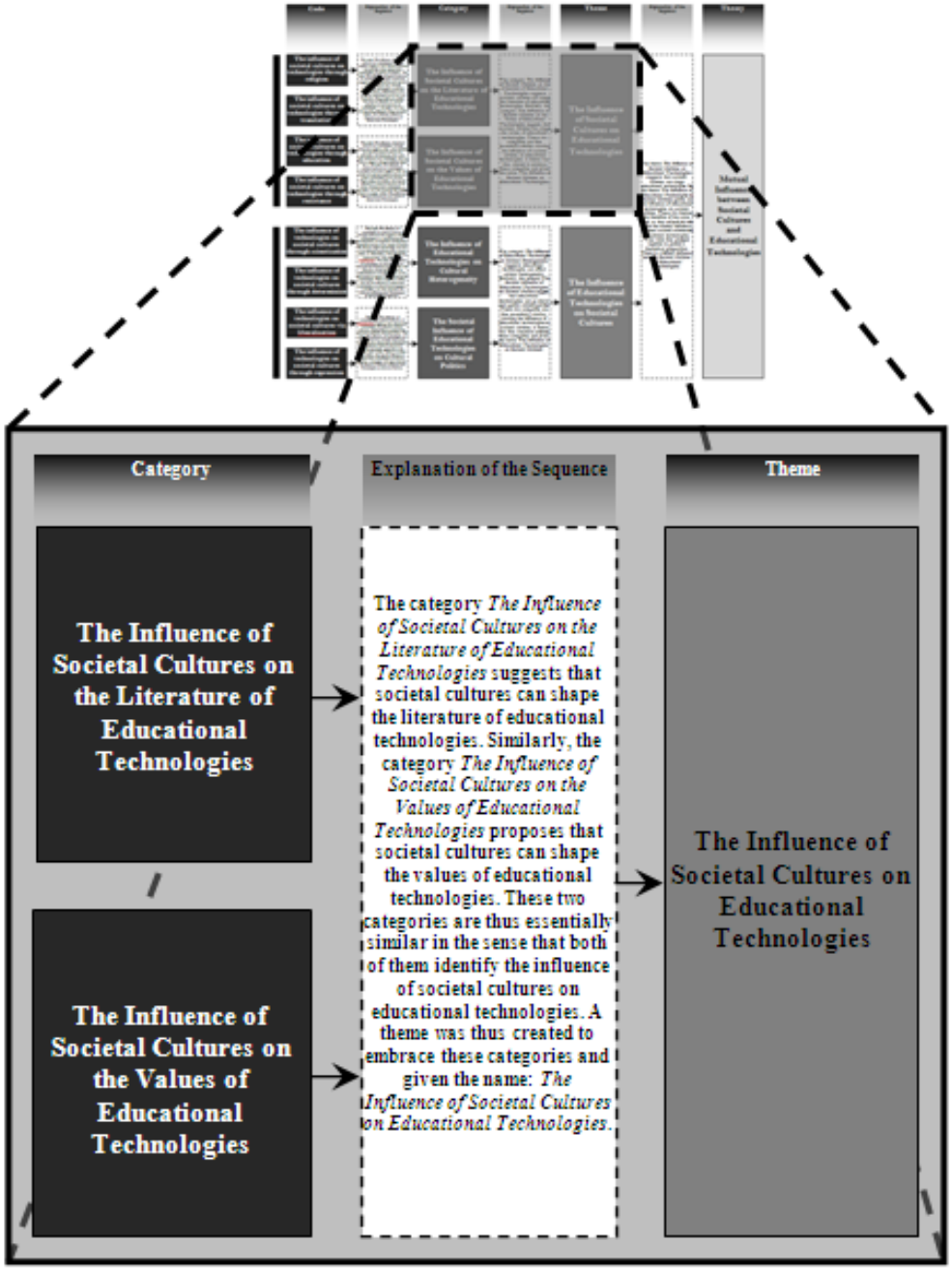


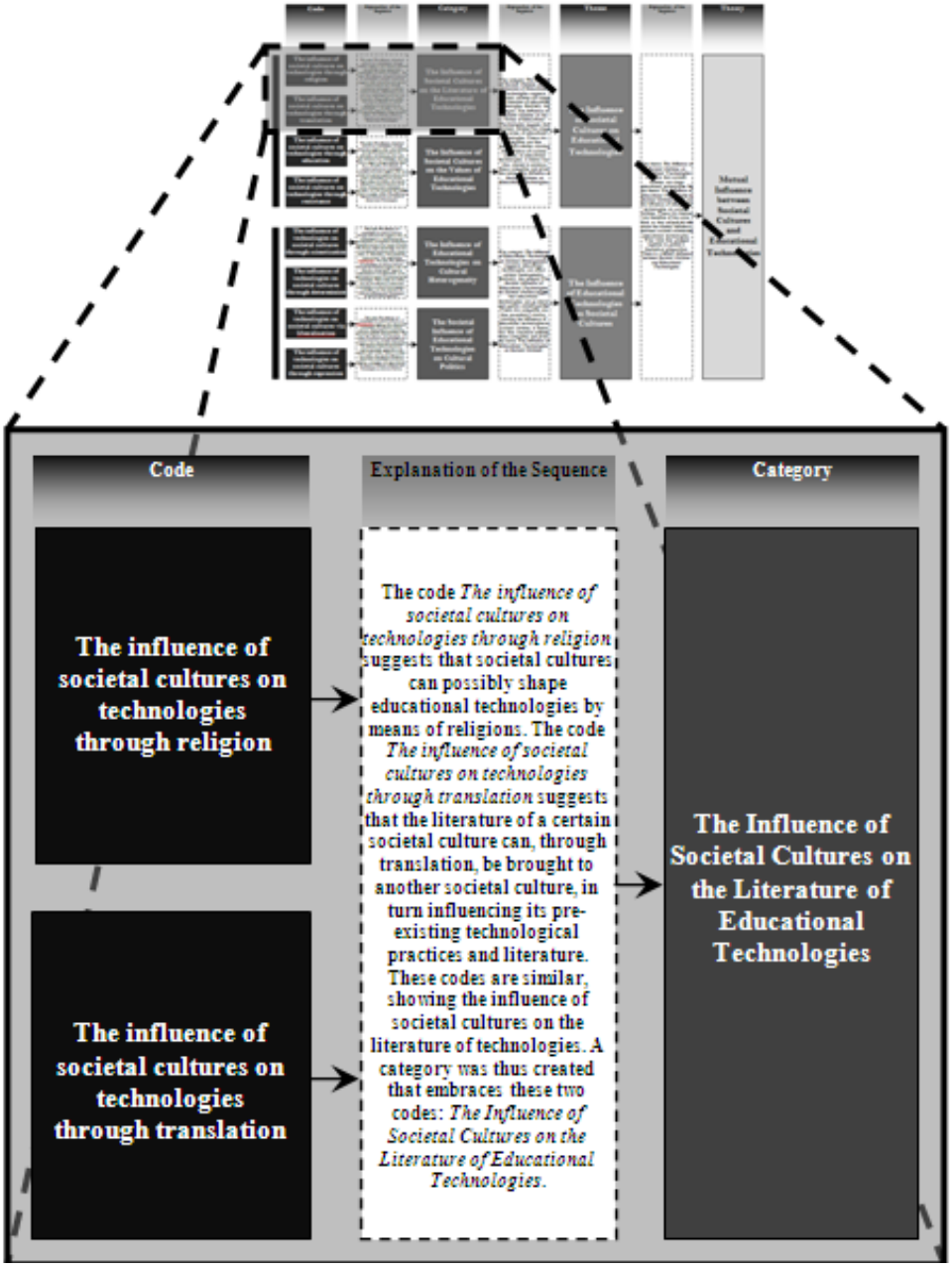
Table 2. The Influence of Societal Cultures on Educational Technologies (Theme)



4.2.1. The Influence of Societal Cultures on the Literature of Technologies (Category)

This category is, as shown in Table 3, composed of two similar codes: The influence of societal cultures on technologies through religion and The influence of societal cultures on technologies through translation. These codes are discussed below in some detail.

Table 3. The Influence of Societal Cultures on the Literature of Technologies (Category)



4.2.2. The influence of societal cultures on technologies through religion (Code)

Saudi Arabia is believed to be the land where Islam began and is the location of the religion's two most holy mosques. Not surprisingly, Saudi academics and the religious authorities have dedicated a considerable amount of scholarship, higher instruction and sponsorship to religious studies. Accordingly, this appears to have affected the quantity of scholarship and higher education time and funding dedicated to other fields, including the branch of educational technologies. Some interviewees agree that, although Saudi Arabian research on religious studies has been very popular and the history of Islam is well documented in its libraries, research on Saudi educational technologies has been limited and their history has lacked unbiased documentation. Other interviewees, likewise, show another (yet similar) aspect of this challenge, i.e. that 'Saudi sponsors are willing to invest in Islamic studies so that they become closer to God, but investment in such a field as educational technologies is seen by them as something that does not bring one closer to God' (in the interviewee's words). Sponsorship of Islamic studies, other interviewees add, has come to Saudi Arabia not only from Saudi society alone but moreover from the international Islamic community.

A historical comparison may help us understand how this code will play out in the future. The current status of

education in Saudi Arabia seems to mirror western attitudes toward education in past centuries. Great centres of education, such as Oxford, Cambridge or the Sorbonne, were initially focused on religious history and instruction. These centres of learning nevertheless accepted new technologies, such as the printing press and scientific instruments. They also embraced non-religious subjects such as classics, mathematics, and alchemy but, ultimately, technology and external disciplines served to supplement religious education. New technological literature slowly became integrated into traditional, religious curricula. The most obvious case is the re-discovery of Aristotelian science which gradually became blended with scripture-based education during the Late Middle Ages and the Renaissance. By the seventeenth century, entire disciplines, such as natural philosophy, had grown under the protection of this system of education – which was still nominally directed toward religious instruction. New texts emerged which did not utilise scripture, such as Francis Bacon's *New Method* (1620) and René Descartes' *Discourse on Method* (1637) and *Principles of Philosophy* (1644); these called for entirely new forms of logic predicated on scientific methods and mathematical instruments. Eventually, these methods became blended into the curricula. This is not to say that religious academics were quick to embrace the new methods and technologies: the famous condemnation of Galileo Galilei and the failure of his peers to utilise his telescope comes to mind. Because of such incidents, traditional historians have argued that science had to first break free from religious education in a bold 'scientific revolution' before it could be of any use. Thus, although religion, through technology, helped with the development of science, science subsequently turned against religion, resulting in a historical distrust of technology in religious education. Saudi religious academics and sponsors may have learnt a lesson from their western peers, realising the effect of technology in replacing religious explanations; thus, they have refused to invest in it in the first place. In other words, the failure of modern Saudi academics to embrace technology is not primitive; it is in fact reactionary. That said, it could be said that what has been mentioned in this paragraph forgets that the so called "modern science", in many cases, was believed to be developed outside the academic environment (for example, in the domain of the Royal Society in Great Britain). The quoted Bacon and Descartes were never appointed university professors. Further, in these times (XVII-XVIII centuries), science and technology were still two separated worlds.

4.2.3. The influence of societal cultures on technologies through translation (Code)

Analysis of the data shows the literature on Saudi educational technologies to be limited. Yet, to tackle this limitation, the Saudi Council of Higher Education and University Systems has placed a considerable value on translations of non-Arabic publications. For example, the Saudi educational technologist Mohammed Mushaiqeh and his colleagues in 2000 took the initiative and translated the work of the American Robert Gagne (1987). Likewise, the Saudi educational technologists Saleh Al Debasi and Bader Al Saleh in the mid-2000s translated the work of Gary Anglin (1995) from the University of Kentucky. Furthermore, since 2006, the King Abdulaziz Public Library Council has had an annual award for distinguished works of translation. Although such translation could be seen as having the potential to improve the quantity of Saudi literature, it could also allow contextually irrelevant or biased ideas to creep into Saudi society. Translated texts are likely to create a gap between educational technology and the context in which they were originally applied. This could be seen to suggest that the literature of a certain societal culture can, through translation, be brought into another societal culture, thereby influencing the latter's pre-existing technological practices and literature. In order to fill such a gap, researchers looking into Saudi society should consider adopting a qualitative approach to research, choosing local cases (i.e. small-scale contexts) within Saudi society itself and thoroughly investigating the educational technologies that exist within these contexts, considering nationally and institutionally situated and oriented societal, cultural, political and economic issues and thus building up a body of literature on educational technology that is actually relevant to Saudi society. That said, it is nonetheless to be recommended that foreign ideas and thoughts be used to challenge and 'trouble' the Saudi context.

From a historical perspective, the dependence upon foreign texts within Saudi education could be seen to smack of colonial 'top-down' approaches to educating non-westerners. The proliferation of well-researched foreign texts and methodologies may seem to be the most effective means of reforming Saudi education; however, one must recall the reluctance of Saudi education authorities to emulate the historical progression of western education from religious teaching to secular teaching. Nevertheless, deference to western centres of education technology will persist so long as non-western educational systems do not develop unique systems based on local non-foreign contexts. As we argue, an obsequious response to foreign texts is counterproductive in the Saudi case because Saudi education obeys radically different cultural mores. Saudi translators must therefore pick and choose relevant texts from a broad array of western sources. Some of these may be relevant and some may incur proscription from the religious authorities, but few such texts are intended specifically for a non-western audience. Saudi customs, however, are constantly in flux and the same can be said of new technologies. Therefore, the canon of foreign literature on education technology will inform and, at times, contradict local research but it should not mould the methodology.

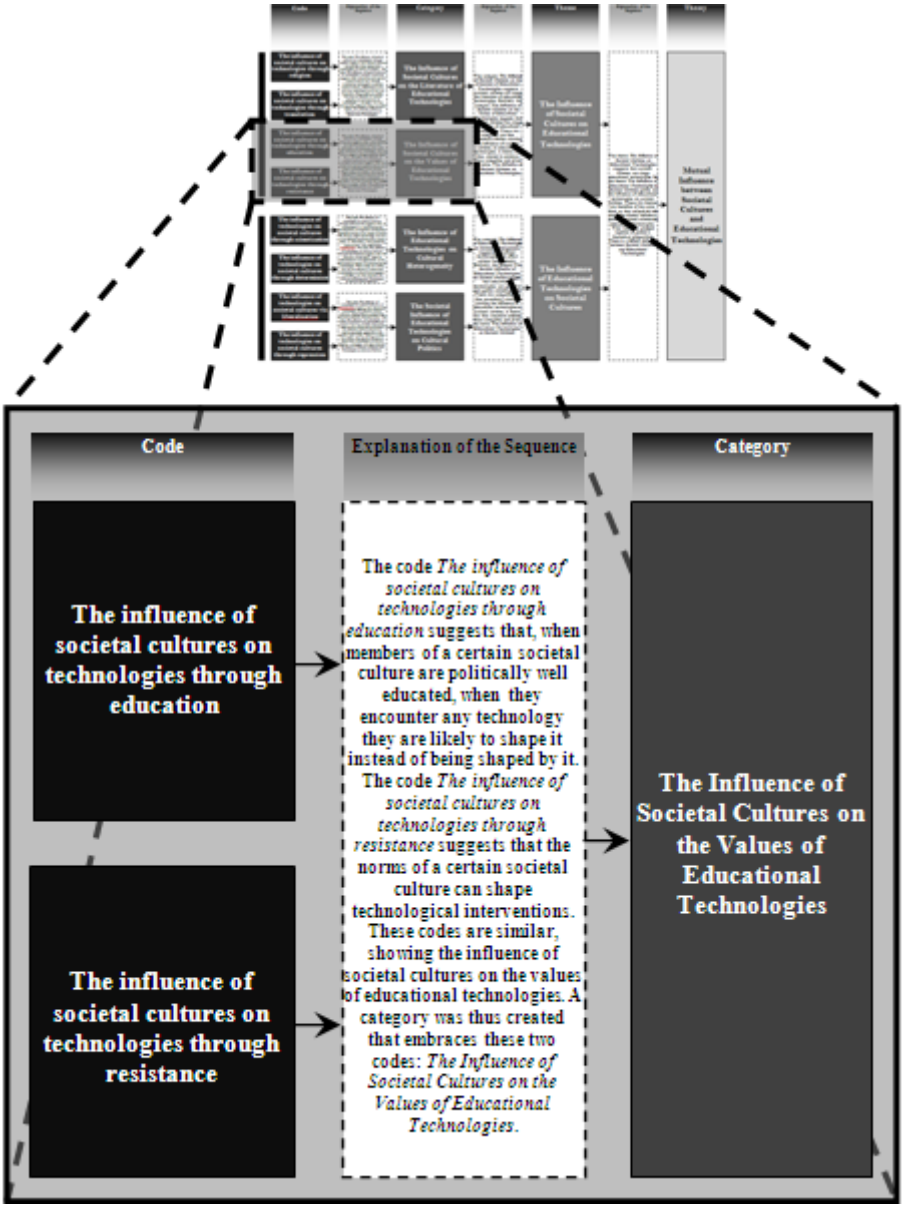
The Saudi authorities have shown themselves to be wary of the role of technology in education but this may not

always be the case. In order to enhance the use of technology within the Saudi context, it is recommended that Saudi educators develop localised means of implementing technology within the classroom which conform to localised customs. Equally, we call for western education technologists to modify their methodologies and technologies to suit non-western audiences in addition to their own.

4.2.4. The Influence of Societal Cultures on the Values of Educational Technologies (Category)

This category, as shown in Table 4, comes out of two parallel codes: *The influence of societal cultures on technologies through education* and *The influence of societal cultures on technologies through resistance*. These two codes are discussed below.

Table 4. The Influence of Societal Cultures on the Values of Technologies (Category)



4.2.5. The influence of societal cultures on technologies through education (Code)

Newborn citizens come into a society that is already socially constructed *for* them by previous generations, i.e. by the past. Hence, investigation into the past (that is, into cultural history) seems essential, encouraging one to do 'detective work' in order to unearth those values that were established by preceding generations but still affect current social life. Cultural history has built a contextual framework within which subsequent generations must function, having established an ideological box inside which they think and codify normative values. This is why subsequent generations need to be careful about the values passed on to them by previous generations, seeking to check the possibility of acting otherwise outside the pre-existing contextual frames and boxes given to them by earlier generations. According to our data, various methods have helped Saudis challenge such pre-existing contextual frames and ideological boxes. One such way is the use of the internet. What follows unpacks this way. Echoing Schütz (1944), anyone born or reared within a certain societal culture takes certain 'ready-made' values as an unquestioned and unquestionable guide for all situations arising within the social world. Such values, handed down to members by ancestors, teachers and authorities, carry their evidence within themselves and it is possible to simply take them for granted until evidence to the contrary emerges. The internet may provide such evidence as the awareness of the digital world can interrupt the flow of habit and lead in turn to what Mezirow (1990) calls 'perspective transformation' (see also Schütz, 1944; Al Salem, 2005). Yet Saudi cultural values, handed down by ancestors, teachers and authorities, seem to be inherited in a politically and carefully planned way, to the extent that these values appear to be impervious to the emergence of counter-values. Thus, when members of a certain societal culture are politically well educated, when they encounter any technology they are likely to shape it instead of being shaped by it. This suggests the influence of societal cultures on the values of educational technologies through education.

A historian might find flaws in the theory that any societal culture can successfully impede the flow of information which runs counter to its embedded values. Few societies, if any, seem impermeable to foreign information, especially if that information pertains to the use of new technologies. Foreign technology has ultimately become fashionable in Saudi society despite initial resistance, although it has not toppled dominant cultural paradigms. Furthermore, Saudi educators have been reluctant to embrace new technologies in the classroom either because they fear the denigration of current societal culture or because they are confident in the traditional methods of education based on methods of religious instruction.

With these aspects in mind, one might assume that cultural reform must precede educational reform in Saudi Arabia; however, this may not be the case. Historically, non-Saudi educators have faced similar pressures and, in times of cultural reform, education reform and technological advancement have not always been successful. For example, in the seventeenth century, the status of English university education was in peril following the Puritan revolution. The traditional centres of learning no longer seemed to satisfy the needs of the new Parliamentarian state and its new cultural policies: reformers embraced universal education and utilitarianism. Some, such as the minister John Webster, denigrated education at Oxford and Cambridge as elitist, archaic, non-utilitarian and unwilling to encompass the new scientific methods of Francis Bacon and others (Webster, 1654). In response, Oxford professors John Wilkins and Seth Ward, themselves clergymen, issued the *Vindiciae academiarum* (1654). This book detailed how instruction at Oxford and Cambridge had, in fact, embraced new scientific methods, instruments, and new modes of teaching without disrupting the traditional framework of university education. The Puritan revolution was short-lived, and when the old regime reclaimed power, it was Wilkins, Ward and their students who would go on to form the basis of the Royal Society and its call for new inquiries in science, technology and education reform. Thus, while in this case cultural change did not induce successful reform in education, gradual shifts within the traditional educational framework nevertheless did eventually ensure lasting educational and technological reform.

This is not to say that cultural revolutions do not induce educational reform – reforming and 'scienticising' education has been a major priority of cultural revolutionaries from the Jacobins to the Bolsheviks. However, one is struck by how little education curricula changed after such revolutions failed and once old regime powers and cultural norms were restored. Cultural history certainly dictates educational methods and technologies; however, cultural changes do not predictably alter those methods.

4.2.6. The influence of societal cultures on technologies through resistance (Code)

Having analysed the raw data, it could be illustratively argued that Saudi social life, perhaps like all other human lives (see Goffman, 1959), exists as a theatre. This theatrical outlook could be seen to imply that every aspect of social life is, or at least could be, divided into 'backstage' and 'frontstage,' with subjects staying 'in character' in the front stage while becoming 'out of character' (at least relatively) in the back stage. Moreover, what at times exists as backstage could, however, exist at other times as frontstage. The following example explains this statement. In the university, some faculty members seem to have perceived their office during office hours as frontstage, with them therefore feeling obligated to wear full Saudi outfit and sit formally. Outside office hours, however, they lock the office's door, thereby turning their office into a

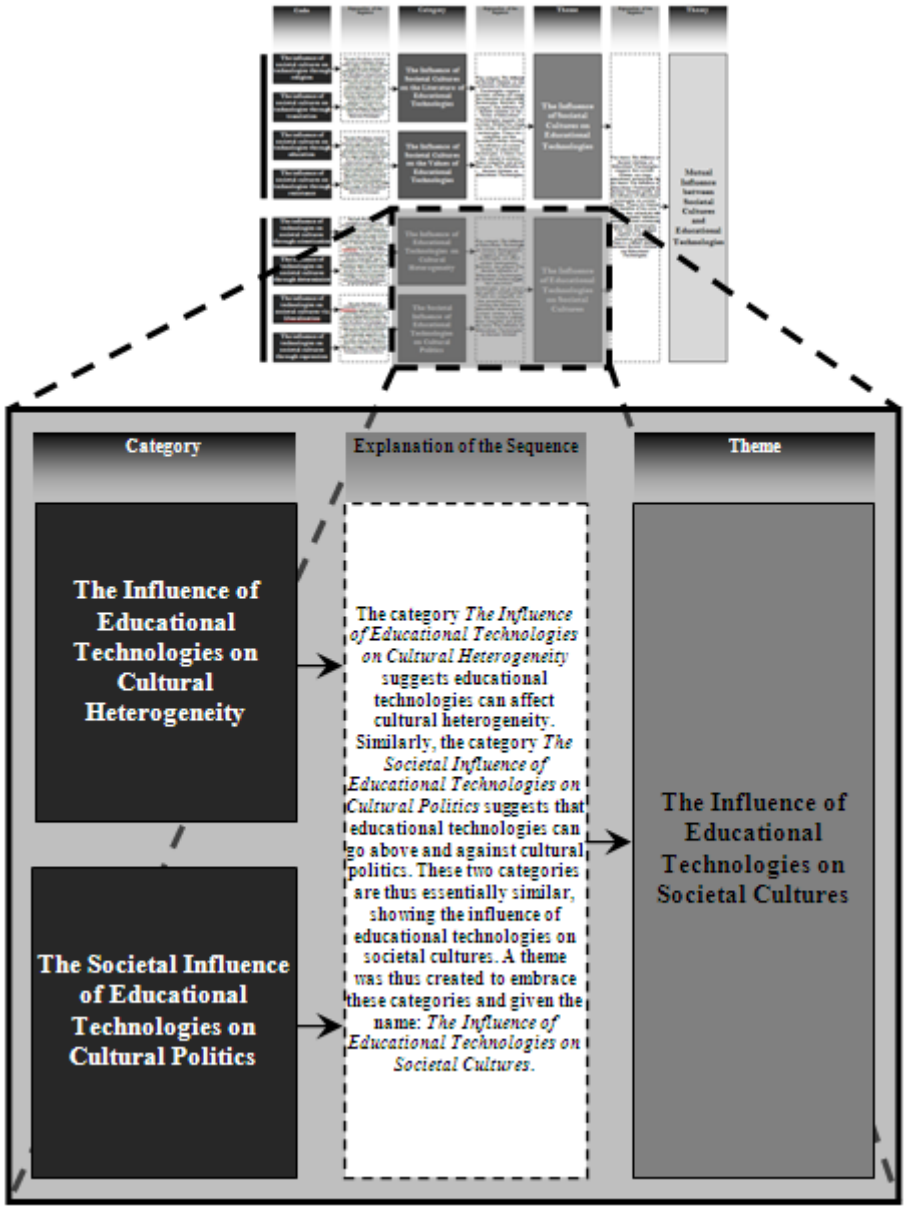
'backstage' sphere wherein they feel free to take off some parts of their traditional Saudi outfit, to sit casually and even to put on background music. Yet the university leadership has lately done something that seems to have resulted in the destabilisation of this balance, moving academics to new offices which have doors with transparent windows that enable people outside the office to look inside. Thus, their offices are now permanently frontstage. Some academics report realising that the design of the door in this way has subverted the sense of balance between the backstage and frontstage features of their offices, and therefore they have covered the window with non-transparent sheets, thus again ensuring the right balance between the backstage and frontstage features of their offices. What can be seen here is how the cultural norms of academia (in this respect, academic freedom and anonymity) have shaped (i.e. 'tamed') technological and architectural interventions (in this respect, the way the door and the window are constructed). A more straightforward example may be the rise of email. As in a western university, a student may email his or her professor at any time of day, thus intruding upon that professor's private time and space.

From a historical perspective, the divide between public and private space was not always entrenched in academia. One might assume that faculty members have always had an office door to shield themselves from the questions of puzzled undergraduates. However, this is not the case, as traditionally students lived with their tutors in colleges such as those at Oxford or Cambridge or, if one considers religious education, the two may have shared a living space within a monastery or cloister. Technology served to indicate social status within the education system but it did not physically divide teachers from students. The social status of a tutor or faculty member might be indicated by their ownership of texts or laboratory instruments which they shared with students. The educator might have worn different garments or sat at a 'high table' during dinner; such traditions are now almost absent in modern academia. Modern private offices within separate faculties certainly have a practical purpose, but they also serve as visual cues, signifying the higher status of the educator and, consciously or not, his or her professional separation from the student. In this way, technologies such as email and transparent offices do not undermine tradition but rather return education to its origins.

4.3. The Influence of Educational Technologies on Societal Cultures (Theme)

We now move on to the second theme, The Influence of Educational Technologies on Societal Cultures. This theme, as demonstrated in Table 5 below, stems from two categories: The Influence of Educational Technologies on Cultural Heterogeneity and The Societal Influence of Educational Technologies on Cultural Politics.

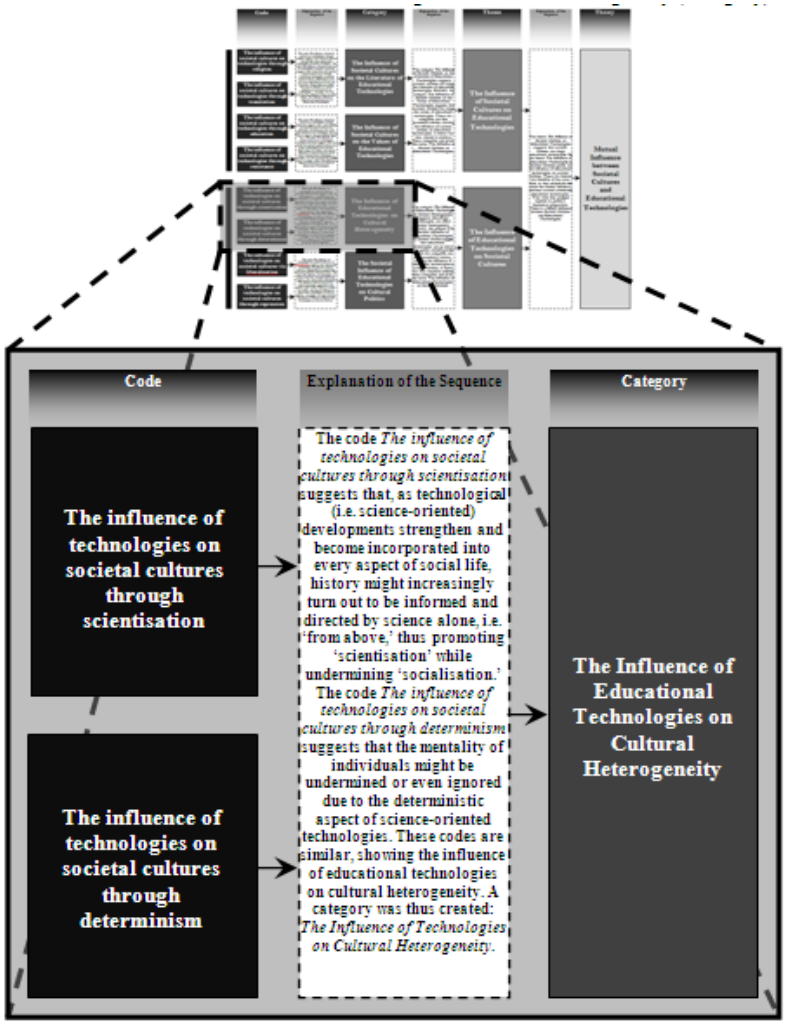
Table 5. The Influence of Educational Technologies on Societal Cultures (Theme)



4.3.1. The Influence of Educational Technologies on Cultural Heterogeneity (Category)

This category, as illustrated in Table 6 below, stems from two similar codes: The influence of technologies on societal cultures through scientisation and The influence of technologies on societal cultures through determinism.

Table 6. The Influence of Educational Technologies on Cultural Heterogeneity (Category)



4.3.2. The influence of technologies on societal cultures through scientisation (Code)

The readers of this journal might be familiar with the arguments of those science-oriented scholars of technology who depict technological developments as guided by science alone, thus going above 'society' (i.e. as an uncountable noun denoting the totality of social orders and structures) and beyond politics (see Agalianos, 1996). As technological (i.e. science-oriented) developments strengthen and become incorporated into every aspect of social life, a strong science-oriented scholar might argue that technology will be informed and directed by science alone, i.e. 'from above,' rather than by society, thus promoting 'scientisation' while undermining 'socialisation.' In the face of simple science-only control, such a concept as 'history from below' should be promoted by researchers and commentators so as to stress the importance of democratising the history of educational technologies. As the strength in scientific history increases, the literature therefore needs to be counter-balanced by an equal increase in the amount of cultural history. Researchers and commentators should promote such concepts as 'people's history,' 'the history of everyday life' and 'the history of the crowd' (Black, 1955; Sharpe, 2001). Such concepts are well entrenched in the field of history that aims to encourage the understanding of 'real' people, of 'lived' experiences and of subjects who are 'lost in history.' This investigation could be seen as a sub-area of historical enquiry into educational technologies that should elicit interest among researchers and commentators. There is a need for history from 'below' that sees everything as having a history and nothing as being without a story to tell. In the Saudi context, although lately there has increasingly emerged research on educational technologies, this research could be criticised for being informed mostly 'from above,' i.e. by technocrats or leaders of the hierarchy (i.e. managers, designers and faculty members), thus undermining the views of students and families. That said, 'history from below' does not exist in a vacuum and nor does it survive without reference to 'history from above' (Black, 1955; Sharpe, 2001).

These historiographic methods will paint a broader

picture of localised educational technologies. In particular, they will help us to better assess gender and class differences. Our Saudi case study is particularly fruitful in this regard as gender and class differences are physically embedded within the educational systems. If we examine technology among those members of Saudi society who do not have access to university education we may find that the level of education does not correlate to rates of technology. In fact, one might find that non-university-educated Saudis have turned to digital technology in order to supplement their education. Similarly, university-educated females in our study are noticeably using new technologies to broaden the scope of their studies. Thus far, these changes in technology have not threatened the current class and gender divides within the Saudi system of education, but they have radically expanded the pool of education-seekers. The consequences of this dynamic are still unknown.

From a historical prospective, there is evidence that a broader array of educational technologies will lead to a linear progression toward increased education all round. The spread of universal literacy and increased print material in Europe and the Americas has, for example, enabled a much broader pool of students to access higher education. Yet we must also recall that the rise of education in the west was often a 'top-down' movement. In the nineteenth century, educational authorities purposely promoted literacy and educational tools as a means of solidifying national identity (Weber, 1976). In doing so, the authorities effectively eradicated local traditions, languages, and local educational methods in favour of national standards. This trend has no doubt continued outside the west as a means of asserting new national identities in the wake of decolonisation. However, in the Saudi case, educational technologies have yet to bear the mark of nationalisation. If, in the future, digital technology becomes more integrated in the Saudi educational system it may come to spread, rather than subvert, the current cultural and social standards.

4.3.3. The influence of technologies on societal cultures through determinism (Code)

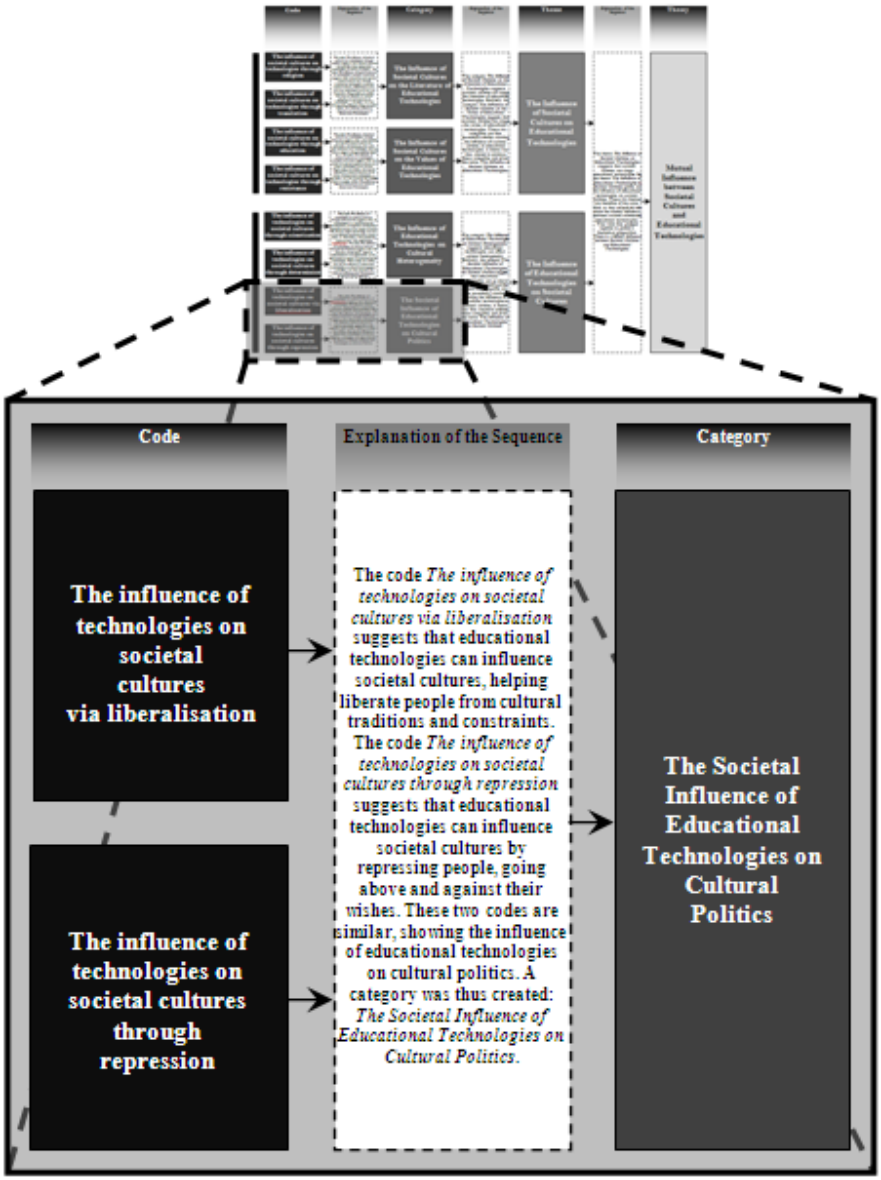
The data reinforce the idea that each individual has his/her own mentality, representing a 'slice from the life world' (Denzin, 1983: 134) and preserving a way of thinking. This mentality varies based on time and space. Yet the mentality of individuals might be undermined or even ignored due to the deterministic aspect of science-oriented technologies. According to the notion of technological determinism, technological progress is directed by science alone, thereby undermining the societal norms of contexts and the cultural mentality of individuals. As a counter-response to such a notion, the role of researchers and commentators on educational technologies should therefore be to record the configurations of each social context and the cultural mentality of each individual across time and space, thus generating a history of social contexts and 'history of mentalities' (to borrow a phrase from the field of history; Hutton, 1981). The number of mentalities in a particular place is equal to the number of people in this place. Likewise, the number of mentalities in a certain time is equal to the number of subjects in this time. The identification of the mentalities across time and space is important for various reasons. One is that this shows educational technologies to entail various mentalities, thus being 'contested and therefore political' (Whitworth, 2009: 27). Moreover, the identification of mentalities across time and space (i.e. of different ways of thinking) allows the reader to explore, become immersed in and merge with various realities, which can be similar to his/her own reality or radically different (Denzin and Lincoln, 2008). When one reads and accesses realities different from one's own, this can help a person get out of his or her comfort zone and to come up with new creative ideas. The identification of mentalities across time and space could be assumed to help identify not only similar but also conflicting ways of thinking, and this conflict could be said to help foster creativity and innovation, being a condition for the generation of fresh ideas (Kast and Rosenzweig, 1979). The identification of mentalities across time and space could be presumed to have the potential to help policy-makers to access the widest possible range of approaches and perspectives available, thus helping them make better informed decisions.

To build up a 'history of mentalities' is to reveal any possible implicit variation within human society, not to seek representative perspectives but rather to access as many different perspectives and experiences as possible, uncovering implicit contradictions and 'revealing hidden realities' (Holliday, 2005: 18). This aim might be reached via 'maximum variation sampling' (Lincoln and Guba, 1985), a sampling technique that refers to the effort by the researcher to maximise the variation within the data collected and to reach as wide a range of heterogeneous findings as possible. To maximise the diversity of participants, a large number of subjects with backgrounds that are as different as possible should be invited to participate in the investigation, sharing their values and opinions and telling their narratives. A supporting technique which can be used to enhance variation within the data is a kind of snowball sampling, with existing participants identifying people who might give different answers to the interview questions or view events from atypical vantage points. Interviewees should be encouraged to suggest other persons to interview and other conflicting sources (Yin, 2009). This practice is promoted by Mabry (2009), who encourages researchers 'to notice opportunities and to follow data wherever they lead' (p. 218).

4.3.4. The Societal Influence of Educational Technologies on Cultural Politics (Category)

This category, as shown in Table 7, is derived from two comparable codes: *The influence of technologies on societal cultures via liberalisation* and *The influence of technologies on societal cultures through repression*. What follows explores these two codes.

Table 7. The Societal Influence of Educational Technologies on Cultural Politics (Category)



4.3.5. The influence of technologies on societal cultures via liberalisation (Code)

The drama of social reality is well described in the following Shakespeare quote: 'All the world's a stage, and all the men and women merely players; they have their exits and their entrances, and one man in his time plays many parts [...].' Yet, in Saudi Arabia, it is only men who are 'players' in the drama of social public life; women are excluded, given that Saudi society is physically and politically split into two main spheres, with men being associated with the public and politically active sphere and women with the private and politically inactive sphere. This could be taken as an explanation for why Saudi women seem not to be essentially involved with the politics of Saudi Arabia and why the international discourse seems to lack the voice of Saudi women. Yet technologies have come to reshape this Saudi distribution of power between the public domain of men and the private domain of women, with Saudi female students now going online, participating in the university's *public* web-based forums and indeed other informal forums, expressing their views through Twitter and having their own publically available blogs. Thus, the drama of Saudi Arabian public life, which is supposed to involve only male players, is becoming increasingly open to new players (i.e. female citizens), with whom male players are reportedly politically unfamiliar and whom some Saudi males reportedly do not want to intervene in their own public domain. All of this suggests that educational technologies can influence societal cultures, helping liberate people from cultural traditions and constraints.

One might wonder if technology will lead to a change in

gender dynamics within Saudi Arabia. There seems to be no definitive answer. The rise of sexual equality or the lack thereof is much better documented in the west, but still it is difficult to assess how influential technology was in directing the first- and second-wave feminist movements, movements which have yet to be mirrored in Saudi Arabia. Because Saudi society has not embraced such movements, but is nevertheless steadily assimilating new technologies, one might predict a considerable leap forward in gender equality as the nascent Saudi feminist movement comes into digital contact with the modern western movement of third-wave feminism. However, there are few historical precedents for such an occurrence. Rather, history records how technology is just as easily used to enforce norms of power rather than eradicate them (Bijker and Law, 1992; Mackay and Gillespie, 1992; Pfaffenberger, 1992; Sørensen, 2002). Moreover, it would be politically naive to think that Saudi women were hermetically insulated from western feminist movements before the rise of modern technology.

4.3.6. The influence of technologies on societal cultures through repression (Code)

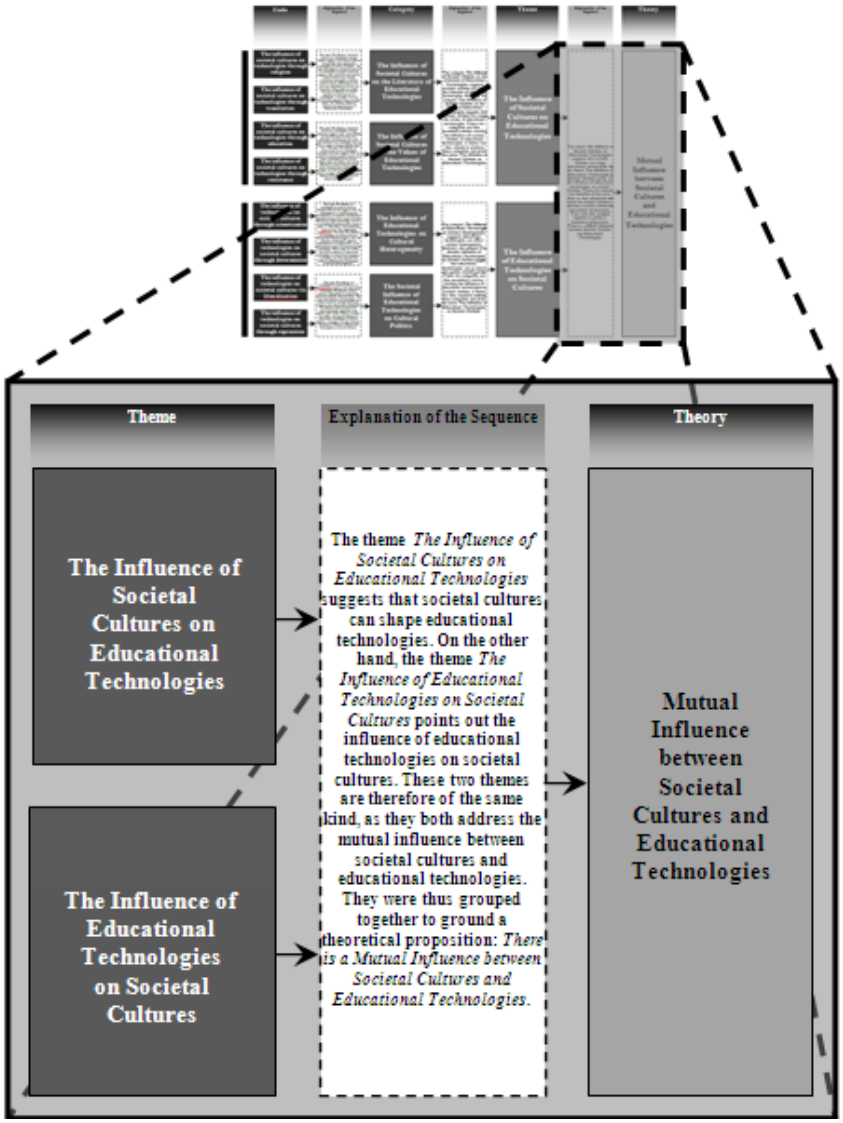
Having analysed the raw data, it appears that social change remains in a constant state of flux, meaning that the processes of reproduction continues and that, even when cultural crises occur, mechanisms of crisis management will accordingly be applied (Dear and Wolch, 1989). However, social change imposes a discontinuity in the process of reproduction, caused by political strategies to interrupt the repetitions of the reproductive cycle (Dear and Wolch, 1989). Transcendental social action occurs because the social, economic, political and technological spheres have some degree of relative autonomy, meaning their agents have some power to cause social changes almost independently (Dear and Wolch, 1989). In Saudi Arabia, the technological sphere appears to have played a key role in this respect, enjoying a high degree of relative autonomy, being able to bring about social changes in Saudi Arabia despite social resistance. Saudi history records a wide range of stories that support this claim. For instance, there was social resistance to the radio in the early years after its introduction to the country.

Another example is that, in the 1970s, satellite TV stations and cable networks were established in the country, but subsequently an activist was killed in a fight with the police after he led a group which pulled down a television tower. The internet faced similar resistance. When foreign music started to enter Saudi Arabia, there was a battle against it. Likewise, there was hostility against digital cameras. Microphones and speakers were resisted in mosques. In the end though, despite the resistance, all these innovations have gone 'above' society and become popular in the country. This can be taken to suggest that educational technologies can influence societal cultures by repressing people, going above and against their wishes. But the question remains: How far has technology actually gone above Saudi society? In other words, has the amelioration of Saudi society and culture through sincerely eradicated norms of power and authority? Religious authority and patriarchal social norms are still in place within Saudi Arabia, and technology seems to have existed within these norms not in opposition to them. Indeed, there are Saudi tribal formal and informal web-based forums that seem to have merely reinforced tribal face-to-face norms rather than challenging them (cf. Samin, 2008).

5. Concluding Remarks

The article has highlighted the relationship between societal environments and educational technologies. It has also drawn attention to the reality of educational technologies in Saudi Arabia, a social context that seems to be mysterious for many foreign scholars. It has explored the culturalisation of educational technologies, asking how educational technologies have been exposed and subjected to the influence of societal cultures. This question has been addressed by qualitative research on a university in the Saudi public sector. The data have been analysed by means of the grounded theory approach, which singled out two main themes: *The Influence of Societal Cultures on Educational Technologies* and *The Influence of Educational Technologies on Societal Cultures*. A theoretical proposition, as illustrated in Table 8 below, could thus be grounded from these two themes, which is that the landscape of educational technologies is a fertile ground for anthropological enquiry, with possibilities of mutual influence between societal cultures and educational technologies.

Table 8. Mutual Influence between Societal Cultures and Educational Technologies (Theory)



Thus, educational technologies may exert influence over the configurations of the societal culture wherein educational technologies are located. Yet the culture wherein educational technologies are located may also shape the way these technologies are constructed and used. That said, this two-way influence between educational technologies and societal cultures is not necessarily even, and educational technologies may exert more influence over cultures or the other way around at any given point. The influence of educational technologies over societal cultures could on occasion be promoted by societies but could at other times go 'above' societies. Similarly, the changes wrought by societal cultures in technological structures could at times be welcomed by the 'configurers' of these structures but could at other times annoy and frustrate them. That said, it seems to not be possible to definitively judge if the ways technologies and cultures influence one another are good or evil, considering that goodness and evilness are essentially subjective concepts. Subjectivity is, arguably, an unavoidable limitation of humanity.

Taking into account the idea that educational technologies are, or at least can be, culturalised, the recommendation is thus that researchers and commentators on educational technologies would be in a stronger position if they were to expose themselves to anthropological ways of thinking. In the Saudi context, it is believed that being older means being more experienced and wiser, and therefore younger individuals are expected to appreciate the wide experience and wisdom of their elders. Echoing this belief, one might think that the young field of educational technologies should appreciate the wider experience and wisdom of an older field such as anthropology. The findings of the current research are limited in terms of methodology and context. Nevertheless, this study is strong not through its individual findings but through its ability to show that the field of educational technologies and the field of anthropology could make 'a marriage.' The findings of the study can be criticised for not being deeply evidence-driven.

Although this criticism seems sound, however, this study could be defended as it is essentially conceived and written not for generalisation purposes but mainly for the sake of argument, with the aim of questioning and problematising received ideas in our field.

A criticism that could be directed to this study is that it is unclear how different variables both interplay and overlap. Yet, in the defence of the study, this is actually the nature of social life wherein it is difficult to figure out who shapes whom, which shapes which, who shapes which and which shapes whom. Actor Network Theory, for example, shows the complex political relationship among (not only between) human and non-human elements. It must be acknowledged that this article lacks references to the issues of Millennials and the role of web-based social networks in both societal life and students' careers. These issues, however, will be addressed in a forthcoming article, which will be moreover framed in the knowledge society context and its challenges. A criticism that could be directed to this article is that it is developed from a very male-centric viewpoint. Although this criticism is fair, access to the Saudi female community by a male is actually exceptionally difficult, and hence, it is suggested that this study should be re-conducted by female researchers. Another criticism of the study could be that detail is missing regarding the methodology and direct results of their research. This article, however, is part of a large project from which various articles have been submitted for publication that explicitly report the methodology and direct results of the research. The reviewers criticised our article for lacking data coming from the real action research practice. They stressed that, although 'the theoretical framework is really clear, not so the examples which have to fit in the framework and be the "meat" surrounding the theoretical "bones".' This criticism is sound, and hence this article has been dedicated to the 'bones' whereas a forthcoming article has been designed to put the meat on the bones, thus putting theory into practice. That is, although this article takes more an inductive approach, the forthcoming article takes more a deductive stand. Besides, since this article is hoped to 'kick off' a new interest within the field of educational technologies called 'the culturalisation of educational technologies,' we thought that the focus should be strongly made on the theoretical part of this new interest, which other researchers could therefore adopt as a theoretical framework for their own studies.

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