The Role of Educational Technologies in Linking Saudi Male and Female Campuses

For an Electronic Copy

http://sdrv.ms/Lbogrf

The Role of Educational Technologies in Linking Saudi Male and Female Campuses

A Thesis Submitted to the University of Oxford for the Degree of

Doctor of Philosophy in Information and Communications Technologies in Higher Education

2012

≈ 80,000 words

Abdulrahman Essa A Al Lily

Learning and New Technologies Research Group

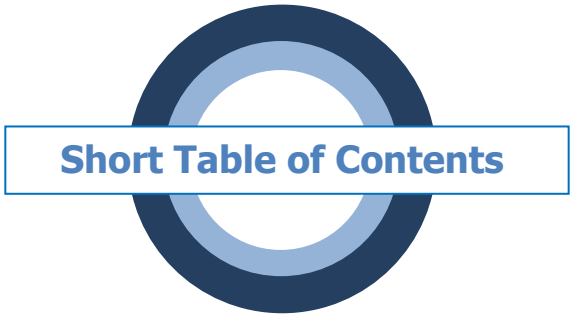
Department *of* Education, Social Sciences Division

University *of* Oxford

allili55@hotmail.com - http://kfu.academia.edu/AAlLily

Supervised by

Dr Chris Davies



Short Table of Contents

Short Table of Contents 3

Expanded Table of Contents 4

List of Figures 7

List of Tables 8

Acknowledgements 11

Abstract 12

Chapter 1: Introduction 13

Chapter 2: Literature Review 19

Chapter 3: Methodology 64

Chapter 4: Introducing the University under Study 104

Chapter 5: Discussion of Findings on Theme 1 121

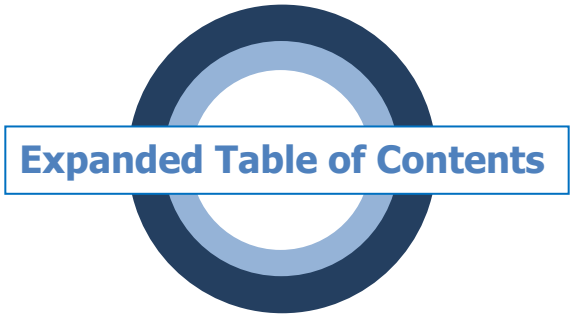
Chapter 6: Discussion of Findings on Theme 2 202

Chapter 7: Conclusions 285

References 329

Index of Entries 352

Appendices 353



Expanded Table of Contents

Short Table of Contents 3

Expanded Table of Contents 4

List of Figures 7

List of Tables 8

Acknowledgements 11

Abstract 12

Chapter 1: Introduction 13

Chapter 2: Literature Review 19

2.1. Guide to the Chapter 19

2.2. Introduction 19

2.3. Historical Account 23

2.4. Theoretical Account 40

2.5. Concluding Remarks 62

Chapter 3: Methodology 64

3.1. Guide to the Chapter 64

3.2. Research Questions 64

3.3. Method of Enquiry 66

3.4. Pilot Study 71

3.5. Data Collection 72

3.6. Data Analysis 81

3.7. Approach to Data Interpretation and Discussion 85

3.8. Sampling 92

3.9. Ethics 95

3.10. Trustworthiness of the Study 98

3.11. Concluding Remarks 102

Chapter 4: Introducing the University under Study 104

4.1. Guide to the Chapter 104

4.2. Introduction 105

4.3. On-Campus Education 106

4.4. Off-Campus Education 113

4.5. Social Interactions 115

4.6. Management and Administration 116

4.7. Concluding Remarks 119

Chapter 5: Discussion of Findings on Theme 1 121

5.1. Guide to the Chapter 121

5.2. Influence of Social Relations on Technology Construction (Category) 122

5.3. Influence of Social Relations on Technology Use (Category) 153

5.4. Concluding Remarks 200

Chapter 6: Discussion of Findings on Theme 2 202

6.1. Guide to the Chapter 202

6.2. Influence of Technologies on Relations among Animate Elements (Category) 204

6.3. Influence of Technologies on Relations between Animate and Inanimate Elements (Category) 251

6.4. Concluding Remarks 282

Chapter 7: Conclusions 285

7.1. Guide to the Chapter 285

7.2. Emerging Theoretical Propositions 285

7.3. Recommendations for Policy Action 296

7.4. Recommendations for the Academic Community 307

7.5. Strengths, Limitations and Suggestions for Further Research 315

7.6. Concluding Remarks 325

References 329

Index of Entries 352

Appendices 353

Appendix 1: Illustrating the Sequence of the Entire Analytical Process 354

Appendix 2: Information on the Participants [Example] 355

Appendix 3: Interview Questions [Example] 356

Appendix 4: Ethical Approval 357

Appendix 5: Participant Information Sheet 369

Appendix 6: Informed Consent 371

List of Figures

Figure 1: Illustration of the Saudi Norm of Gender Separation 20

Figure 2: Linear Process by which the Data were Analysed 81

Figure 3: Hierarchical Analysis of the Data 83

Figure 4: How the Diversity of Participants was Maximised 94

Figure 5: Illustration of the Male and Female Campuses 105

Figure 6: Simulation of the CCTV-Based Female-Only Class 107

Figure 7: Layout of the Glass Wall Classroom 108

Figure 8: Diagram of the CCTV-based Oral Examination 111

Figure 9: Layout of the CCTV-based Male–Female Class 112

Figure 10: Configuration of CCTV-based Meetings 117

Figure 11: Configuration of the Theatre-Like Training Structure 118

Figure 12: Possible Relationships among Social Relations and Technologies 291

Figure 13: How My Theoretical Stance Developed as the Research Progressed 292

List of Tables

Table 1: Research Questions 65

Table 2: Numbers of Research Invitations Distributed and Responses Received 77

Table 3: The Data after Being Sorted Using the Grounded Theory Approach 84

Table 4: Influence of Social Relations on Technologies (Theme) 122

Table 5: Influence of Social Relations on Technology Construction (Category) 123

Table 6: Way of Constructing Technologies (Concept) 124

Table 7: Manipulating the Regulations Attached to Technologies (Focused Code) 125

Table 8: Giving New Value to Ecological Technologies (Focused Code) 128

Table 9: Customising Generic Technologies (Focused Code) 131

Table 10: Manipulating the Natural Environment (Focused Code) 133

Table 11: Factors in Technology Construction (Concept) 137

Table 12: Sustaining Historical Values (Focused Code) 138

Table 13: Addressing Economic Issues (Focused Code) 143

Table 14: Influence of Social Relations on Technology Use (Category) 155

Table 15: Factors in Technology Deconstruction (Concept) 157

Table 16: Concern about Security and Privacy (Focused Code) 158

Table 17: Concern about Sexual Homogeneity (Focused Code) 162

Table 18: Interest in Depoliticising Technologies (Focused Code) 171

Table 19: Hatred for Technologies Facilitating Discrimination (Focused Code) 176

Table 20: Conflict of Interest (Focused Code) 182

Table 21: Factors in Technology Reconstruction (Concept) 192

Table 22: Interest in Promoting Political Values (Focused Code) 193

Table 23: Interest in Technologies with More Merits (Focused Code) 198

Table 24: Concomitant Influence of Technologies on Social Relations (Theme) 204

Table 25: Influence of Technologies on Relations among Animate Elements (Category) 205

Table 26: Influence of Technologies on Relations among Peers (Concept) 206

Table 27: Changes in Power Distribution within Gender Lines (Focused Code) 207

Table 28: Changes in Power Distribution across Gender Lines (Focused Code) 213

Table 29: Changes in Relations between Superiors and Inferiors (Concept) 228

Table 30: Changes in Labour Divisions (Focused Code) 229

Table 31: Changes in Relations between Students and Families (Focused Code) 231

Table 32: Changes in Relations between Authorities and Subjects in Favour of the Former (Focused Code) 234

Table 33: Changes in Relations between Authorities and Subjects in Favour of the Latter (Focused Code) 242

Table 34: Influence of Technologies on Relations between Animate and Inanimate Elements (Category) 251

Table 35: Changes in Favour of Animate Elements (Concept) 252

Table 36: Changes in Relations between Subjects and their Environments (Focused Code) 253

Table 37: Changes in Favour of Inanimate Elements (Concept) 258

Table 38: Achieving Vested Interests through Technologies (Focused Code) 259

Table 39: Expecting Follow-up Reforms through Technologies (Focused Code) 263

Table 40: Seeking Compromise and Convenience through Technologies (Focused Code) 267

Table 41: Lack of Critical Reflection on Technologies (Focused Code) 272

Table 42: Encountering Technologies with Far Logistical Reach (Focused Code) 278

Table 43: Encountering Efficiency-Oriented Technologies (Focused Code) 281

Table 44: The Main Emerging Theoretical Proposition 286



Acknowledgements

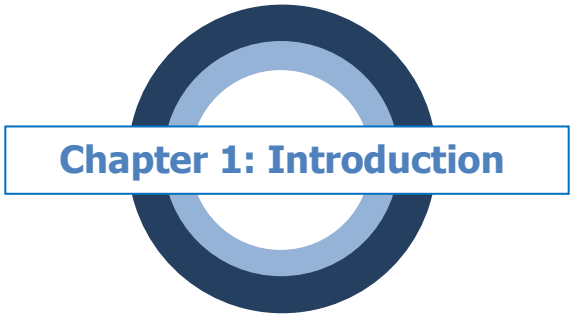
Thanks go to the following, all of whom know how and why:

The Saudi Arabian Government
The University of Oxford
The University of Manchester
Learning and New Technologies Research Group at Oxford
Wolfson College
Dr Chris Davies
Dr David Mills
Prof Avril Loveless
Dr Andrew Whitworth
Dr Margot McKinnon
My Mum and Dad
My Siblings
Dr Harry Hayball
Dr Nadia Khuzayim
Dr Awatef Al Dafar
Dr Abdullatif Al-Hulaibi
Mr Maher Al-Sultan
Mr Muhammad Al Mowaidi
Mr Mohammed Jamal Alarfaj
Dr Khaled Ben Motreb
Dr Mohammad Boteban
Mr Ebrahim Al Eid
Mr Muhammad Salaim Al Qahtani
Dr Muhammad Al-Jughaiman
Dr Ahmad Abdullah Al Shuaibi
Dr Abdullah M. Almugrin
Mr Muhammad Al Dafar

King Faisal University
Al Ahsa Teachers' College
Saudi Cultural Bureau in London
Department of Educational Technologies at King Faisal University
The Participants in the Study
Dr Rebecca Eynon
Prof Ingrid Lunt
Dr Abdulilah Al-Arfaj
Dr Wan-Ying Tay
Dr Anna Wells
Grandparents
Dr Jedediah Foland
Ms Valentine Guérif
Ms Maria Martisiute
Dr Fiona Elizabeth Whelan
Dr Abdulla Al-Taher
Mr Saleh Ben Ablan
Mr Hamad Abdullatif Al Hulaibi
Dr Abdul Aziz Alturki
Dr Abdulrahman Alguwaizani
Dr Yousif Al Jaber
Mr Abdullatif Al Mothen
Dr Abdulrahman Al Muhaisan
Dr Abdulhamid Alarfaj
Mr Mohammed Omer Bakhai
Mr Abdulrahman Al Sayyed



This empirical study examines the role of educational technologies in connecting male and female university campuses in Saudi Arabia. In order to do so, it addresses the research question: What are the outcomes, ramifications and implications of the ways in which educational technologies have been employed to reconfigure social relations between male and female campuses in Saudi Arabia? This question is answered by a naturalistic study of a state university in the Eastern Province of Saudi Arabia, based on analysis of interviews, observations and documents. From an analysis of the data following the guidelines of the grounded theory technique, two themes emerged: (a) the influence of social relations on the way educational technologies are developed and used, so as to sustain certain aspects of the social structure; (b) the reciprocal influence of the technologies so developed and used on other aspects of the social structure. Considering both themes leads to a theoretical proposition that educational technologies might be introduced to preserve particular components of the social configuration, although once introduced, these technologies might impinge in return upon other components of the social configuration.



Chapter 1: Introduction

This brief chapter first introduces the initial components of the research, stating its aim, the research questions, the data collection methods and the technique of data analysis. It goes on to make reflexive and reflective justifications of the study and its conduct, discussing why I chose as the focus of the investigation male and female campuses, the higher education sector, the public sector, Saudi Arabia, its Eastern Province, etc. Finally, it presents the structure of the entire thesis, so as to help the reader conceptualise in advance the piece as a whole and thus to picture the path down which s/he will go.

To begin with, an investigation of the role of educational technologies in connecting Saudi male and female campuses forms the focus of the current study, which is organised around the overarching research question: What are the outcomes, ramifications and implications of the ways in which educational technologies have been employed to reconfigure social relations between male and female campuses in Saudi Arabia? This question is addressed through a naturalistic study of a state university in the Eastern Province of that country, incorporating analysis of interviews,

observations and documents. This analysis is essentially informed by the parameters of the grounded theory approach.

A key reason for focusing on the connection between male and female campuses is that gender separation is an issue with a high profile in the country, a complex and fundamental feature that differentiates the Saudi Arabian context from other contexts (see Al Qator, 2011). What also seem to have made it timely to investigate this topic are both the shortage of relevant naturalistic literature and the organisational, historical, economic and political complexity and sensitivity of the subject. This sensitivity seems to explain why this issue has not been explicitly enquired into until now, despite its substance. Another reason why the examination of this topic is salient is that the risk of the complete physical elimination of gender separation has lately become a matter of pressing concern in Saudi academic and non-academic discourse and literature, which has nonetheless demonstrated no explicitly critical awareness of the risk (or possibly the opportunity) of the partial elimination of this separation through electronic connections between the genders (see Abu-Zaid, 2001; Al Shawairaq, 2001; Madar Al Watan, 2008).

The subject matter of the study merits investigation because the employment of educational technologies to set up ties between male and female campuses has resulted in distinct ways of grouping, engaging and participating which 'came into existence in the Saudi higher education system *solely*' (Nakshabandi, 1993: 127: emphasis added). The subject of the study is intended to be investigated from an international viewpoint, in order to ensure that, as a Saudi, I am not 'locked' into the Saudi Arabian context. The context and its issues thus benefit from 'foreign' theories, ideas and

arguments. The conclusions and recommendations that are drawn from this research feed in turn into the global literature. Thus, it is hoped that the discussions within this study contribute to the expansion of 'our sphere of consciousness from national to worldwide issues' (Kast and Rosenzweig, 1979: 38).

Saudi Arabia is chosen as the setting for the study because of its society's long-standing efforts to shape technologies, with its culture existing as politically constructed in a deliberate and conservative fashion (see Gallagher and Searle, 1985). This culture is seen to resist violently and uncompromisingly any socially deviant trend in behaviour or belief, making it very strong and so heavily protected that even those campaigning for change do not challenge existing configurations, but rather attempt to work within them (see Shokri, 1979; Doumato, 2000). This culture is believed to have been politically protected not only from above by the authorities, but also from below by most citizens – and moreover from outside by international Arab and Muslim communities (see Pharaon, 2004; Al Qathami, 2005). Klee *et al.* (1983) contend that Saudis 'as a whole [seem] in no doubt as to where their values lie' (p. 236). Al-Saggaf (2012) confirms that Saudis are still 'strongly attached to their culture and religion' (p. 207).

Because of this politically protected nature of the culture, Saudi society has been assumed to be an appropriate location for an exploration of the political dynamics between the forces of entrenched social relations and the determination of educational technologies. The subject matter of the study is worthy of investigation because it seems important to address how Saudi society has responded to technological change, a change that has left untouched 'no country on earth' (Evans, 1979: 12). The Saudi

context is seen by Al Qator (2011) as an 'amazing' (p. 31) arena, where politically protected traditions grapple with influential liberal values that have entered this context from the outside world through various channels, including information and communications technologies.

One reason for choosing the higher education sector as the focus of the study is its status as a milieu actively under the political influence both of technologies and of existing social relations. On one hand, it is believed that social changes internal to the higher education sector attempt to insinuate themselves into wider society (see Corbyn, *Times Higher Education*, 5 November 2009). Yet, on the other hand, Saudi society is thought to have actively exerted a 'counter-influence' against this pressure from the higher education sector, ensuring that any change remains within historically and politically structured configurations (see Klee *et al.*, 1983; Pharaon, 2004). This protection of the culture, however, conflicts with the promise that education is the 'saviour of human beings from their cultural illnesses' (Al Qathami, 2009: 10). An additional reason for choosing this sector is that its technologies seem to have been analysed mainly from the educational and technological perspectives, with little focus on the social context. Thus, it is hoped that this study will encourage the Saudi educational technology community to pay more attention to this 'neglected social context' (in Agalianos' terminology, 1996: 2).

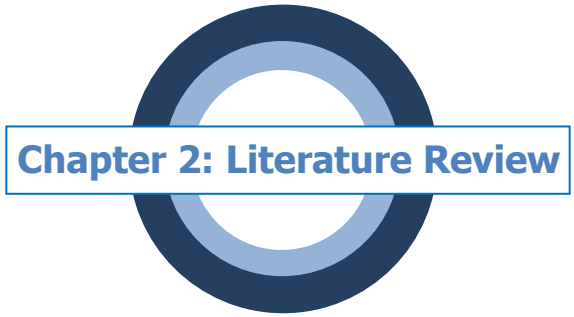
The current study, moreover, concentrates particularly on the public sector, within which I work, thus having a direct bearing on my professional life. This research, therefore, is expected to help me to begin understanding the complex configuration of this sector, thereby establishing the initial steps in my research path (see Al Lily,

2008). Furthermore, it reflects my concern to develop a better educational technology experience within the sector to which I am attached (see Al Lily, 2011a; 2011b; 2012).

Administratively speaking, Saudi Arabia comprises a number of provinces. This study focuses on the largest of these, the Eastern Province, which is the location not only of the university under study but also of approximately a quarter of the world's oil reserves (McHale, 1980; Luft, 2009). More importantly, it is where I come from, live and work as an academic; I see it as my duty to address issues with specific relevance to it. Such provincial loyalty is consistent with the recommendation of Al-Masudi and Tayab (2005), who encourage the higher education sector and its academics to contribute to local communities and through them to the wider society (see also Robins and Webster, 2002). Saudi higher education policy also recognises the value of this role of academics, stating that one criterion according to which faculty members shall be promoted is their role in 'serving the university and the public' (Act 25: 12457/b/7).

The thesis is made up of seven chapters, beginning with the current introductory chapter and moving on to the literature review in Chapter 2. Chapter 3 covers the methods of investigation and Chapter 4 introduces the university under investigation. Chapter 5 both presents and discusses the first theme emerging from the data analysis, then Chapter 6 covers the second theme. The main reasons for combining findings and discussions in consolidated chapters are to avoid repetition and incomplete approaches, to put on show both sides of each argument and to dwell on each finding in order to problematise it critically. Another reason is to avoid shallowness when presenting findings alone. Besides, separating findings chapters from discussions chapters seems

difficult and undesirable in naturalistic research (see Holliday, 2005; Berg, 2009). Chapter 7 draws out theoretical propositions from the emergent themes, makes recommendations, considers the strengths and weaknesses of the study and, finally, suggests avenues for further research.



Chapter 2: Literature Review

2.1. Guide to the Chapter

This chapter is organised as follows:

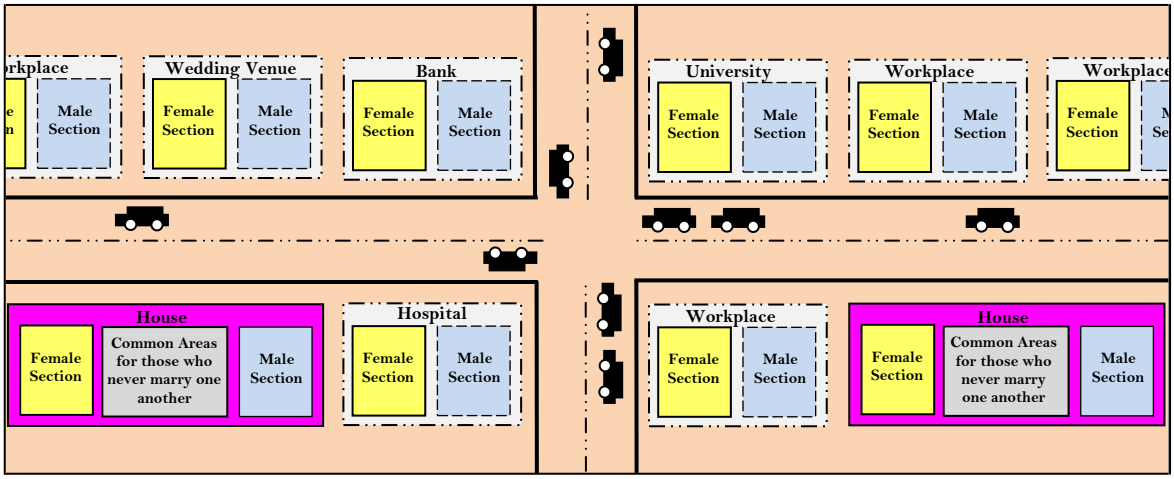
- **Introduction**
- **Historical Account**
- **Theoretical Account**
- **Concluding Remarks**

2.2. Introduction

Some thinkers, as reported by Fox (1956), argue that education 'cannot be understood apart from its historical context, either at a given moment or over time' (p. 19). For them, 'history provides an indispensable means of putting into context a given social phenomenon, in this case, education' (*ibid.*: 20). Building on this belief, what follows reviews the history of Saudi higher education with a focus on the role that educational technologies have played in connecting male and female campuses. Before going into

this, however, it seems important to introduce some aspects of wider Saudi society, so as to inform the broader discussion of the current study. An aspect of Saudi Arabia that has made its society distinct not only from Western society but also from other Arab societies is that its structure and infrastructure are based on gender separation. Al-Saggaf (2012) confirms that 'one of the important features that profoundly influence every aspect of public and social life in Saudi Arabia is the segregation of sexes' (p. 5). This separation has effects at the micro and macro levels, with the female place, name, voice, face and telephone number being perceived as private and sheltered (see the diagram below; see also Arebi, 1994; Jamjoom, 2009; Al-Sharif, *Out of Darkness, Into Light Conference*, 8 May 2012).

Figure 1: Illustration of the Saudi Norm of Gender Separation



*** At the micro level, the areas in blue are male sections and the areas in yellow female sections**
*** At the macro level, the areas in pink are part of the 'inside-the-house' female domain and the areas in orange part of the 'outside-the-house' male domain**
*** Dashed lines surrounding men's areas mean transparent walls, while solid lines surrounding women's areas mean opaque concrete walls.**

At the micro level, as the diagram above illustrates, the physical spaces within which Saudi society operates (e.g. universities, workplaces, hospitals, houses, wedding venues, banks) are divided into separate male and female sections (Al-Sharif, *Out of*

Darkness, Into Light Conference, 8 May 2012). This separation permeates the culture to the extent that no one has physical access to the other gender's section and, moreover, that the female section is bordered by high concrete walls that preclude physical contact and safeguard visual privacy. An illustrative equivalent of this division in the West is the separation between male and female toilets or changing rooms. Western single-sex schools and colleges, however, cannot be taken as illustrative examples, since parents, employers and employees of the other gender can access them.

At the macro level, there is a separation between the domestic ('inside-the-house') and public ('outside-the-house') domains, with women considered to belong to the former and men to the latter (see Bin Ladin, 2005). This separation is also all-pervasive, so that when a woman goes outside her domain into that of men, she covers her entire body with a loose black cloak and is accompanied by a man she can never marry (see Al Munajjed, 1997). The female domain is private and sheltered and thus surrounded by opaque concrete walls around 210 cm high (cf. Nelson, 1974; Deaver, 1980). In the public domain, women normally rely heavily upon cars for transport, even over short distances, although they do not themselves drive or ride bicycles or motorcycles (Al-Turki, 1987; see also Setrakian, *ABC News*, 10 March 2008). This practice has necessitated the employment of a large number of male chauffeurs to drive women (Prokop, 2003).

Consistent with this strictly applied gender separation, people must not meet with those of the other gender, whether individually or in groups, privately or publicly, with the exception of those who can never marry one another. This separation is unshakable to the extent that one will be arrested for any violation (Commission for

the Promotion of Virtue and Prevention of Vice Bylaw No. 2740 dated 20 August 1987; see also Verma, *The Times*, 7 February 2008). Accordingly, there is, at least in theory, no room for male–female friendship or even colleagueship (see Bin Ladin, 2005).

Although women, according to governmental statistics in 2007, represent 50% of the Saudi population, their presence in the labour market and the public domain is generally weak. Academic commentators therefore reason that, 'since women are half of Saudi society, the nation will not progress unless it invests its entire human potential and resources' (Al-Khalifa, *Al-Riyadh Newspaper*, 3 October 2009). This, Al-Khalifa remarks, is 'what the leaders of Saudi Arabia have realised during the preceding years, and therefore the Kingdom has witnessed significant changes with regard to women's education and the provision of the opportunity for them to participate in the renaissance of the state.' The consequence has been a growing interdependence of men and women at both micro and macro levels. Because of the gender separation norm, however, this interconnection has to be achieved in roundabout ways, through the use of communications technologies.

In the university environment, male and female campuses have been linked through educational technologies. The Saudi higher education sector has turned out to be a demanding consumer of technologies, attempting to utilise these media to cope with the necessity of separating the two genders and its higher cost, yet with no apparent deep awareness of the ramifications of their use and their concomitant influence on other aspects of the social structure. Hence my overarching research question is: What are the outcomes, ramifications and implications of the ways in which educational

technologies have been employed to reconfigure social relations between male and female campuses in Saudi Arabia? The study is structured around this question; therefore what follows is a historical review of the influence of technologies on the social relations between Saudi male and female campuses, leading to the construction of a theoretical framework within which I shall attempt to answer the question by reviewing the existing literature for contributions to an explanation of the influence that technologies might have over social relations and vice versa.

2.3. Historical Account

2.3.1. Introduction

Saudi Arabia is a relatively young country, having been founded in the 1930s. This was a decade when the country witnessed considerable changes in communications technologies, such as the establishment of telegram and telephone services and the development of postal services (Governmental Documents). It also saw the establishment of formal state education for men (Al-Aqeel, 2005), an innovation that was resisted by those who saw it as secular and a vehicle of Westernisation (see Arebi, 1994; Al-Owain, 2009). State education was also criticised for involving the use of textbooks containing paintings, drawings and photographs of humans, which were considered religiously unacceptable (Bent Al-Shateeh, 1973), and there was opposition from parents who did not want their children to leave home to attend formal education (Al-Washmi, 2009).

Women were confined to the home with no formal state education until the 1950s, when some educated middle-class men appealed to the state to allow them to enter the education system, stressing the importance of women's education for the family, child development and marital harmony (Klee *et al.*, 1983; Al Munajjed, 1997). This appeal, however, was opposed by those elements perceiving education as making women lose interest in their traditional home-based role and as undermining the foundations of their morality and family life (Abdullah, 1973; Al Rawaf and Simmons, 1991; Al-Owain, 2009). These elements also saw the idea of women going out as strange and as putting them in danger (Al-Mahazei, 2001). For these elements, Al-Washmi (2009) reports, the education of women risked making them more sophisticated, thus challenging the male–female hierarchical structure. Al Qasim *et al.* (2008) reports that 'citizens disapproved of it in the fear of perceived ill social effects which were caused by co-education or because of the indecency associated with it in many other countries' (pp. 103–4).

Nonetheless, in 1959, the state issued a royal decree reconciling these two contradictory views, ordering not only the foundation of a state female school education system, but also the formation of a commission to be supervised by the social authorities (Royal Decree, *Umm Al-Qura Governmental Newspaper*, 24 October 1959). This supervision in practice entailed setting up control mechanisms, such as composing a female curriculum, creating female-only schools and establishing a free-of-charge bus system to drive women to and from school (Sheikh Amin, 1972). Despite such attempts to shape this new system according to the national culture, there was still some violent rejection, which was mediated either by 'the protection of military

forces' (Al-Ghadry, 1965: 199; see also Al-Mrshad *et al.*, 1998) or by the announcement that this education was intended only for those willing to join and was thus not compulsory (Al-Mahazei, 2001). Girls' education, therefore, was assigned to this commission (called the General Presidency of Girls' Education), while the Ministry of Education supervised boys' education (Al-Bassam, 1984).

When the first generation of Saudi women completed their secondary education, some wished to continue into higher education (Al Rawaf and Simmons, 1991; Awon, 1999). Once again, some elements opposed this idea, for instance anticipating that, 'if women were educated beyond the elementary level, they might have access to men's professions or become associated with them' (Al Manaa, 1981: 93). This reaction was socially reinforced by a predominant male view whereby some men did not want to marry a highly educated girl, preferring their wives to be half-educated, as 'the university girl is always conceited' (Ali, 1979: 66; see also Al-Zahrani, 1985). Nevertheless, pressure was exerted by those families whose female members had already studied abroad for higher degrees, stressing that their daughters should be permitted to pursue their higher education in their own country and that the state should not impede their ambitions (Al Munajjed, 1997).

In the 1970s, women were finally given access to formal higher education and separate campuses were established for them (Al-Aqeel, 2005), meaning that, although the two genders can be members of one university and therefore of one organisational hierarchy, they cannot share a single campus (Mehana, 2009). The female campus is built differently from the male one, being bordered by the high opaque concrete walls referred to earlier, ensuring disconnection, privacy and security (*ibid.*). This separation,

moreover, is applied to the entire hierarchical structure, meaning that academic and support staff cannot meet or even see their 'colleagues' of the other gender, so neither students, academic staff, support staff, visitors nor anyone else has physical access to the campus of the other gender (Corbyn, *Times Higher Education*, 5 November 2009).

2.3.2. Introducing the CCTV Network into the Saudi Higher Education Sector

Consistent with the national rule of gender separation, women are – in theory – to be taught only by women. However, as Al-Saloom (1995) reports, there has long been a serious lack of qualified female academic staff, attributed to the fact that, in the 1960s, the illiteracy rate within the Saudi female population was almost 99% (Griffin and Algren, 1988). Two actions have been taken to remedy this deficit: employing non-Saudi female academics and resorting to Saudi male academics from the adjoining male campus. The educational and social influence of the former solution is worthy of investigation in an independent study and lies outside our scope. As for the latter remedy, assigning men to teach women face to face is strictly inconsistent with national education policy, which 'prevents the mixing of men and women in all the stages of education; except in nurseries and kindergartens' (Education Policy in Saudi Arabia, Act 155, Council of Ministers Decision No. 779, 26 November 1969). To overcome this prohibition, any mixed-gender teaching has to be done indirectly, through the employment of communications technologies.

The practical solution has been to build a room outside the female campus, from which the male teacher lectures at a distance to female students sitting in another room inside the female campus, where they observe him and the whiteboard through TV

monitors (Al-Senbl, 2003). Because of the privacy of the female face, there is one-way video from the teacher's room to the student room but a two-way audio link (Bin Ladin, 2005). This means 'the utilisation of modern technological innovations in ways that were patently never envisaged by [their] original designers and proponents' (Nakshabandi, 1993: 127). In this citation, Nakshabandi indicates the strength that Saudi culture has, not to consume technological innovations, but to adapt them for its benefit. Nakshabandi also reports that some faculty members supported the CCTV network not for educational considerations but because this saved them the trouble of going back and forth between the two campuses. This suggests that subjective interests can influence decisions on the use of educational technologies and are therefore worthy of consideration when analysing educational activity.

It was reported earlier that the main reason for assigning male academics to teach female students was the dearth of qualified female academics. However, there was also a shortage of qualified male academics, which likewise attributed to the relatively short history of male state education in the country (Al-Saloom, 1995). To address the fact that all available male teachers were required to teach their own gender, a new classroom structure was enacted, whereby the male teacher is present in the male class but also connected with the female class through the CCTV network (Nakshabandi and Alageeli, 1997). To respect as far as possible the privacy of the female voice, male students are not allowed to hear the voice of their female peers, so the teacher wears headphones (Al-Saadat and Afifi, 1990). Nevertheless, Al-Saadat and Afifi report that 100% of instructors, 80% of male students and 54% of female students among their participants agreed that 'class discussions and interactions would be more effective if

male and female students were allowed to hear each other's participation' (p 178). Al-Saloom (1995), in a self-reflective narrative on the Saudi education system published five years after Al-Saadat and Afifi's work, points out that some teachers had actually allowed male students to hear the voice of their female fellow students. Although this action has numerous implications, there has apparently been no relevant academic study of this apart from that of Al-Saloom, who identifies two potential advantages. One is that this change would build bridges between the perceptions of the two genders, informed by their different physiological and social configurations. The second is that the discussion taking place in one class might enhance the quality of the other class.

In a critically reflective book on 'The Saudi Woman,' the Saudi writer Maliha Al-Shehab (2010) briefly addresses her own experience as a student, learning via the CCTV network. For her, this teaching method reduces academic attainment, lowers grades and encourages students to use lecture time to sleep, to do homework for other courses or to study for other exams (see also Al-Saif, 2003). She also refers to the high cost of the logistics involved, concluding by asking why men do not teach women face to face. Al Eadi (2009) responds to this question in his doctoral study, referring to four bases (innate, religious, historical and educational) on which modern Islamic thought relies to justify the inappropriateness of 'gender mixing,' a phrase seemingly meant as the opposite of gender separation (see also Al-Aloola, 2008).

The innate basis, to begin with, holds that males and females are different from each other in terms of their biological and psychological configurations (see also Al-Azraq, 2008). The religious basis refers to the consensus amongst Islamic scholars that

gender mixing leads to falling into what God prohibits, such as adultery, finery and touching or looking at members of the other gender (see also Aba-Btain, 2010; Al Bdah, 2010; Al-Musaimri and Al-Habdan, 2010). The historical basis claims that 'gender mixing and finery spread obscenity and therefore are the reason behind the demise of the most powerful ancient civilisations such as Greece and Rome' (Al Eadi, 2009: 388–9). The educational basis argues that this mixing can lead to sexual discrimination, harassment, rape, distraction and jealousy in educational environments, thus lowering intelligence, reducing attainment, increasing the drop-out rate and weakening the psychological barrier between the two genders (see Al-Azraq, 2008; Al Qasim *et al.*, 2008; Madar Al Watan, 2008; Al Bdah, 2010; Al-Musaimri and Al-Habdan, 2010). Although the validity of these bases and claims can be questioned, they may serve to give the reader some idea of how the Saudi academic literature conceptualises 'gender mixing.'

Some educational activists submitted alternative suggestions to the social authorities, which they felt did not essentially violate the social custom of gender separation but would help to avoid the problems resulting from connecting the genders through a CCTV network. On 2 October 1990, a vice-dean of a faculty in a Saudi state university wrote a letter to the social authorities, complaining that teaching through the CCTV network is 'expensive and also has a lot of negatives for the performance and effectiveness of the teacher on the one hand, and on the level of educational attainment of the female student on the other hand' (Social Authorities Document). He therefore asked the social authorities if it would be possible to take two alternative actions. The first was 'the presence of the male professor with female students in the classroom

directly without a barrier on condition that the female students commit to the dress code and Islamic veil' (*ibid.*). The alternative was 'the teaching of male and female students together in one room on condition that the female student commits to the dress code and veil.' The social authorities responded with only one sentence, stating that the proposed actions were 'legally forbidden given their great evil and because they expose all to temptation' (*ibid.*).

This letter was followed on 13 December 1990 by another from a more powerful figure, a former president of the first, largest and most prestigious university in the country. He cited challenges similar to those raised in the previous letter, referring also to the difficulties in 'teaching scientific courses, medical materials and postgraduate courses through the CCTV network, as lectures are based on practical experiments' (Social Authorities Document). He also pointed to difficulties in class management, the costly logistics and the effect on education quality, as well as the confusion caused by technical problems and by some students. He then asked the social authorities if it would be possible to allow men to teach women face to face with strict control mechanisms. The social authorities again gave a short answer, stating that 'it is legally forbidden for a man to teach women directly given its great danger and serious consequences' (*ibid.*). This shows the social authorities to constitute an influential external actor, essentially shaping the activities of higher education institutions, including their use of educational technologies. The submission of these two letters can be seen to support the claim made in the introductory chapter that the higher education sector has attempted to push societal and cultural boundaries, while

the replies show how more socially powerful and culturally oriented organisations maintain them.

2.3.3. Radio and Television and the Saudi Higher Education Sector

Despite social resistance to the innovations of radio and television (McHale, 1980), in the 1970s satellite TV stations and cable networks were established in the country (Governmental Document). Subsequently, an activist 'was killed in a fight with the police after he led a group which pulled down a television tower' (McHale, 1980: 624). With the passage of time, however, these two innovations have gradually become socially and culturally acceptable, albeit with some reservations. There has been no radio station run by the higher education sector, although the Saudi Arabian Radio Station took the initiative and has broadcast (male) oral defence examinations for higher studies (Governmental Document). The exclusion of female defence examinations here reflects some aspects of how existing social relations (i.e. between the private/female and public/male domains) have shaped the media.

In this vein, the Saudi writer Hend Al-Khalifa wrote in a national newspaper about the concept of 't-learning' (television-based learning), hoping for official recognition of this learning method by the authorities (Al-Khalifa, *Al-Riyadh Newspaper*, 30 March 2004). In the early 2010s, the state approved the proposal to allow and encourage higher education institutions to establish their own TV channels. A leading government figure pointed out in a statement to the Saudi Agency Press that this proposal was intended to keep the country abreast of global trends towards the expansion of higher education activity and the exploitation of satellite techniques so as to generate

attractive, interesting and educationally rich experiences (MAWAS, *Saudi Press Agency*, 8 September 2010). He expected the idea to help to spread the values of higher education throughout Saudi society, to support e-learning and distance education and to contribute towards the spread of the 'knowledge society' (*ibid.*: n.p.). Yet the Saudi academic literature has not yet discussed the interplay between this innovation and the existing social structures, including the norm of gender separation at the micro and macro levels. It is of the essence to address, for instance, whether Saudi women would take part in the university channel and, if so, whether the channel would be shaped in certain ways to fit within the social configurations.

In the 1990s, a substantial project was initiated to develop a cellular mobile network (Governmental Document), which some universities, as reported by Altameem (2011), have exploited to develop a Short Message Service (SMS) system that enables teachers, administrators and managers to send text messages to individual students or groups of students, providing them with up-to-date information. Altameem (2011) investigated the implications of the cellular mobile network for learning in the Saudi context, promoting the concept of 'm-learning' (mobile-based learning). Altameem could also have examined the wider social factors that would influence this kind of learning, which certainly entails cultural sensitivity, given that some Saudis perceive mobile phones with cameras as 'storming our Saudi privacy' (reported by Al-Otaibi, *Al-Hayah Newspaper*, 27 April 2011). 'Our Saudi privacy' here surely refers, as least partly, to female privacy, showing that, in Saudi society, any educationally oriented technology is to be checked so as to ensure its compatibility with female privacy (see Al-Washmi, 2009).

2.3.4. The Internet and the Saudi Higher Education Sector

The beginning of the third millennium, Al Saleh (2004) reasons, was a historic turning point in Saudi Arabia, resulting in organisational, cultural, economic and political changes, partly motivated by information communication technologies (to be more precise, the Internet). In essence, public access to the Internet in Saudi Arabia was delayed until almost the start of this century, by which time an elaborate national system had been established to filter out any inappropriate and unwanted content. This delay reflected concern about the influence that the Internet could have upon the national culture by destabilising its internal homogeneity and causing 'cultural pollution' (Al-Sharhan, 2002 n.p.; see also Al-Tawil, 2001; Teitelbaum, 2002) – a concern which seems rational, given the capacity of this medium to reconfigure the boundary between the national and the international, broadening contact between Saudi society and the outside world, modifying its internal communicative infrastructure, providing foreign perspectives through considerable transparency and permitting competing opinions that challenge the static rhetoric of the culture (see Fandy, 1999; Davis, 2008).

Moreover, the Internet has not only opened Saudi society to contact with the outside world but also reconstituted inner communicative boundaries within this society, including the boundaries between the domestic and public domains. That is, this innovation has enhanced female 'quasi-outdoor' activity, given that Saudi women were reported in 2007 to be participating in the online world on an almost equal plane to their male peers (Asbar Centre for Studies, Research and Communication Statistics, 2007). This means that, although Saudi women are considered not to belong to the

'outside-the-house' domain, the Internet has offered them a means to function in that domain, albeit virtually (Al Salem, 2005). Some Saudi women are reported to have participated in online public forums allowing for the free expression of ideas, opening up the opportunity for them to canvass, to defend their views and to challenge beliefs (Al-Saggaf and Weckert, 2004; Al Salem, 2005). This indicates considerable changes in the social roles and relationships between the 'inside' and 'outside' domains, exemplifying the influence of technologies on Saudi social relations.

Thus, the Internet can be seen to have challenged the Saudi tradition of gender separation at the macro level. The literature records that this innovation has also reconfigured this tradition at the micro level, given that some Saudis were reported to be utilising the Internet to establish communication contacts (e.g. through web-based chat rooms and online forums) across gender lines, thus 'breaking down the barriers between [men and women]' (Al Zahrani, 2006: n.p.). Al Qator (2011) supports this observation, believing that technologies have broken 'the status of gender separation, enabling easy and addictive (at times respectful and at other times disrespectful) communication between the male and female worlds' (p. 326). Al-Saggaf and Weckert, in a paper investigating a Saudi forum (2004), indicate that the Internet has allowed the two genders to become electronically integrated whilst remaining physically separate. Teitelbaum (2002), in an article about Saudi society, reports the two genders as communicating increasingly through web-based chat rooms and online forums, each eager to canvass and curious to access the other gender's ideas in ways not previously possible.

Similarly, Al-Osaimi (2004), in a quantitative PhD study, found that online spaces gave half of his large sample the courage to communicate across gender lines, showing digital technologies to be diminishing the social and psychological boundaries between the two genders. Such findings show technologies to have allowed ways of grouping and engaging that were not previously possible in the Saudi context. They also show technologies to constitute a key factor in this social change in the country, given that such group-forming behaviour and engagement would not have taken place without their help. To the best of my knowledge, however, the academic literature does not discuss whether this change in the social experience of male and female citizens in wider society has affected how male and female university members communicate with one another, or whether these newly emerging ways of grouping and engaging in the outside world have crept into the Saudi academic world.

Despite – or perhaps because of – such Internet-facilitated changes in wider society, until almost the mid-2000s the Ministry of Higher Education still had reservations about online learning (Ibrahim *et al.*, 2007; Al-Khalifa, *eLearn Magazine*, 29 October 2009). Researchers (e.g. Al Saleh, 2004) warned of the severe consequences that would result from such reservations. In 2005, the Ministry of Higher Education decided to officially recognise Internet-facilitated learning, establishing a National Centre for E-Learning and Distance Learning with the aim of spreading online learning methods throughout its institutions. The Centre stresses that 'organisational restructuring is an important prerequisite for employing the recent enormous advances in communications and information technology' (Centre, 2005: 54), although it does not

provide a critically reflective account of how this restructuring should consider the gender separation pattern.

The Centre also considers that 'the information society is characterised by deep interdependence between its components' (*ibid.*: 54), giving no critically reflexive explanation of what form interdependence between men and women or between the physical and virtual Saudi Arabian realities should take. There is therefore a need to investigate whether virtual reality has welcomed 'the intervention of real-life law' (Grimmelmann, 2006: 1) and whether it has acted as a simulated model of the real physical realm where the law of gender separation applies. The present study considers such issues, researching the economic, political, cultural and societal implications of how educational technologies have reshaped (and have been used to reshape) the social and spatial borders between the male and female academic worlds.

2.3.5. Previous Studies

Up to this point, there appear to have been only two short articles dedicated to the relationship of educational technologies with the social and spatial borders between the Saudi male and female academic spheres: one is by Al-Saadat and Afifi (1990) and the other by Nakshabandi and Alageeli (1997). Al-Saadat and Afifi evaluated the learning effectiveness of an English course taught by a male teacher to male students face to face and transmitted simultaneously to female students through the CCTV network. They also evaluated the learning effectiveness of another English course given by a male teacher to female students only, through the CCTV network. Nakshabandi and Alageeli, likewise, examined quantitatively the learning effectiveness

of an economics course given by a male teacher to female students through the CCTV network. The present research differs from these two studies in that they focused on learning, whereas the current one expands the analysis beyond learning, considering wider organisational, cultural, political and economic issues.

Another key difference between the two earlier studies and the present one is that they were short, quantitative and written in the 'pre-Internet phase,' whereas mine was conducted in the twenty-first century and attempts to take a wider and deeper qualitative perspective. Indeed, the connection between the male and female academic circles has been considerably expanded beyond the classroom environment into numerous components of wider higher education activity, taking various shapes; the two earlier studies give no account of these developments, whereas mine addresses them as a central aim. Al-Jarf confirms this expansion, reporting in a conference presentation that the female academic community has begun to use electronic means to share 'conferences, classes, meetings, defences, workshops and functions simultaneously with men' (Al-Jarf, *NECC Conference Abstract*, 27-30 June 2005: n.p.).

Thus, there have been ongoing attempts to link men and women electronically within higher education institutions. Some academics are reported to have taken these initiatives further, utilising communications technologies to connect men and women across Saudi universities and cities, which entails reconfiguring to some extent the boundaries (be they spatial, organisational, cultural or political) between the two genders, between universities and between cities. Al-Jarf (2007) reports an experiment in which an academic and her female students from a Saudi city shared a course unit with a male academic and his students from another city. The experiment entailed

electronic communication across gender lines not only between male and female students for academic purposes, but also between male and female teachers in the administration of the course unit. It proved to be a 'total failure' (Al-Jarf, 2007: 1), with weak engagement and interaction, attributable to various factors. One is that the participants were not accustomed to communication and interaction across gender lines, nor to the negative consequences of this direct contact between male and female students being seen as 'unacceptable by many families' (*ibid.*). The female participants in this experiment showed concern for their privacy through such acts as anonymising their email address and registering under a male name.

Notwithstanding the substantial value of this work, it naturally has limitations. Since women in Saudi Arabia theoretically do not teach men, Al-Jarf should perhaps have explored how the female tutor felt when involved with male students and, conversely, how the male students felt when tutored by a woman. Although Al-Jarf reflects critically on the way in which the students interacted across gender and city boundaries, she does not discuss how the male and female tutors knew each other, agreed to collaborate in setting up a joint project or administered the course unit. That said, she had earlier published an article (Al-Jarf, 2006) considering how male and female schoolteachers interacted with each other in web-based discussion forums run by the Saudi Ministry of Education.

The research discussed so far shows that there have been various attempts by teachers to create communication nodes between the two genders, be they from the same or different Saudi universities. What is more, some academics have taken such attempts further, utilising the potential of communications technologies to build bridges

between female students from Saudi Arabia and male (and female) students from other countries, based on the belief that 'students are no longer citizens of their own country, they have become global citizens' (Al-Jarf, 2004a: n.p.). Such initiatives mean, again, reshaping the social relations between Saudi and non-Saudi women, between Saudi women and non-Saudi men, between Saudi and international universities and between Saudi culture and other cultures.

In this respect, Al-Jarf (2004b) reports an initiative whereby three academics and their students in the field of English in Saudi Arabia, Russia and Ukraine took part in a joint web-based writing project, which was intended to improve the students' writing skills, to enhance their awareness of regional and international cultural and social issues and to improve their ability to communicate with students from other countries. The Saudi female students were again anxious about male–female communication and about their privacy, asking the tutor if it would be possible to conceal their email addresses and use nicknames (*ibid.*). Reflecting critically on Al-Jarf's research, she could perhaps have usefully considered how other higher education 'stakeholders' (e.g. families and the social authorities) perceived such an attempt to open up the internal social communicative infrastructure of Saudi academic and wider societies to the outside world. Such an attempt must have numerous societal, cultural, political and economic implications at the classroom, institutional, regional, state and international levels, for which Al-Jarf's article shows no explicit critical concern.

2.4. Theoretical Account

2.4.1. Introduction

The overarching research question addressed by the current study and stated in the first chapter is essentially concerned with the roles that educational technologies have played in reconfiguring the qualities and patterns of social relationships between male and female campuses in Saudi Arabia. Since this research and its analysis are structured around this question, this section explores its theoretical background, examining the literature in order to discover how previous contributors have analysed the influence which technologies may exert over social relations and vice versa. I hope and expect that this theoretical grounding will provide me with the necessary knowledge and skills to achieve a deeper analysis, interpretation and discussion of the data being collected.

2.4.2. Influence of Social Relations on Technologies (Social Relations → Technologies)

Human society and social systems 'would plainly not exist without human agency' (Giddens, 1984: 171). Bhaskar (1989) agrees that a society 'does not exist independently of human agency' (p. 4). We may assume that human beings have always interacted with their environment, attempting to make sense of what they have experienced; 'this is as natural to humans as breathing' (Jonassen *et al.*, 2003: iii). It is held that human elements are 'distinguished on the basis of their sense-making proclivities' (Mabry, 2009: 215). Technological structures are seen as products of this sense-making process, portrayed as differentiating humans from other animals. Non-

human animals are 'atechnical' (Gasset, 2001: 100) in the sense that they are 'content with the simple act of living and with what is objectively required for it' (*ibid.*). Humans, on the other hand, intentionally or spontaneously, continually redefine their needs and extend their demands in line with their ability to manipulate nature in ways that serve their own needs, values and interests (Nye, 2007; Al Qathami, 2009).

On the other hand, unlike other animals, humans have 'the capacity for free, conscious, productive *activity*, which permits [them] not only to survive but also to develop [their] potential' (Winner, 1977: 37, original emphasis). In other words, the existence and advancement of human society 'depend upon the ability to manipulate the circumstances of the material world' (*ibid.*: 19). In this sense, human beings are better depicted as essentially political figures in the sense that, whether impulsively or with intent, they shape what they experience to their own advantage. Human beings, as Dubos (1970: 8) contends, are political animals 'whose behaviour at any particular moment appears to transcend natural law.' What is of interest here is by whom and by whose values this manipulation of the environment (i.e. the construction of technologies) is driven. It is likely to be influenced not necessarily only by science, but by existing social structures, relations and practices (Agalianos, 1996). With this argument in mind, the first research sub-question in relation to the topic at hand should be: To what extent have the existing social relations (in the present case, the social relations between male and female campuses) influenced the ways in which educational technologies are constituted so as to sustain themselves?

In theoretical terms, history suggests that the character of a certain society, including its technologies, is 'the product of a vast set of possible causes—climate, geography,

population, religious practices, the market, political structure, and so forth' (Winner, 1977: 76). The constitution and development of technologies are likely to mirror 'the complex trade-offs that make up our societies' (Bijker and Law, 1992: 3). Or, put differently, technologies 'are always and everywhere *actively* embedded within the social networks through which place is constituted and histories made relevant' (Agar *et al.*, 2002: 283, original emphasis). In Winner's (1977) terms, 'different ideas of social and political life entail different technologies for their realisation' (p. 76). Patterns of technology 'are themselves largely influenced by the conditions of the societies in which they exist' (*ibid.*: 76). Wajcman's line of reasoning is that 'technology is shaped in the social relations that produce and use it' (2004: 7). From a more radical perspective, 'technology is designed, consciously or otherwise, to secure particular social or political objectives' (Mackay and Gillespie, 1992: 687).

One could argue that, during the planning of a technology, disparate philosophies, societal values, cultural norms and political agendas may be thrown into the 'melting pot' (Bijker and Law, 1992: 3; Pfaffenberger, 1992). Hence, it is reasonable to hypothesise that technologies can act as contextually situated products, being 'carriers of particular social interests' (Sørensen, 2002: 31; Wajcman, 2008). For Winner (1977), 'the possibilities for matching political ideas with technological configurations appropriate to them are, it would seem, almost endless' (p. 325), while for Bromley (1995), technologies 'carry bias precisely because they are influenced by the surrounding society in the course of being designed' (pp. 32–3). The identification of such a bias has encouraged some critics (e.g. Pfaffenberger, 1992) to think of technologies as being fundamentally political phenomena and activities. It could be

argued that the constitution of an educational technology can be directed by implicit values from 'under the table,' just in the same way it can be (or, more specifically, can be claimed to be) informed by explicit values from 'above the table' (see Winner, 1986). It can be assumed that technologies are not arbitrarily constituted, but certain values can inform decision-making processes (Volti, 1992). Technologies may not originate from some disinterested source of innovation, but could instead be born of the social and technical relations already in place (Bijker and Law, 1992: 11). Such technologies can involve an array of political decisions, mirroring political realities.

Technology can be seen as 'a terrain where conflicting ideologies compete and relations of power are inscribed' (Agalianos, 1996: 2), while Al Saleh (2007) portrays educational technology as a 'product' (n.p.) of the mixing not only of technological, educational and pedagogical factors but also of organisational, historical, economic and political ones, all of which 'collectively affect the higher education sector' (*ibid.*: n.p.). For Cornford and Pollock (2003), 'technology is viewed not as separate from, but rather made up of, social relations' (p. 17). Moreover, switching focus to the institutional level, some scholars (e.g. Agalianos, 1996) are of the opinion that higher education institutions where technologies are situated are similarly 'deeply social and political, having a key role in social and cultural reproduction and transformation' (p. 2). Apple's (1979) line of argument is that educational institutions are politicised environments, considering the role that the form and content of culture consciously play in shaping the institution itself, its institutional practices and its members. Education 'is not a neutral activity, but rather a political act' (Koetting, 1993: 136). Kast and Rosenzweig (1979: 123) hold the general belief that 'each society has certain

fundamental characteristics, such as values, people and resources that greatly affect the nature of its organisations and their management.'

Some social theorists warn that the constitution of educational technologies can be influenced by certain values, which are then carried through the constituted technologies into the places where they are used (see, for example, Agalianos, 1996). Johnson and Wetmore (2009) caution that technologies can be intertwined with particular social values, which 'is sometimes done deliberately and other times not' (p. 245). Such values, once embedded in day-to-day technologies, go directly to the heart of the way that participants in higher education live and organise their educational or professional environments, experiences and lives (Bijker and Law, 1992). The integration of specific values into educational technologies means that they become concrete and 'penetrate the social fabric on a more or less permanent basis' (Whitworth, 2009a: 27). Pfaffenberger (1992) states that 'technological innovation provides an opportunity to embed political values in technological production and artefacts, which then diffuse throughout the context as a large-scale technological system arises' (pp. 282–3). Winner (1977) therefore warns that, since technologies can be socially configured, they can 'provide a positive content to the arena of life in which they are applied, enhancing certain ends, denying or even destroying others' (p. 29). Furthermore, technologies can 'have politics' (Winner, 1986) in themselves, politics that are 'wrapped' into the technologies being designed and then pushed into (and, at times, pushed against) the daily professional and educational activities of academic staff, support staff and students who, as a result, may find themselves compelled to tolerate these politics as integral to their professional or educational lives and practice.

One should also bear in mind that the influence of social relations has effects not only in regard to the construction of technologies at the institutional level, but in relation to technology use at the micro level (Bauer, 1997). Theoretically speaking, it could be said that each user of an educational technology has a degree of intent and may therefore intentionally or spontaneously engage in appropriation of the technology at hand. Human agency 'is always needed to use technology, and this implies the possibility of "choosing to act otherwise"' (Orlikowski, 1992: 411). From a more extreme point of view, 'there is nothing in principle that cannot be disputed, negotiated, or reinterpreted—in short, become the subject of a controversy' (Misa, 1992: 109). In Dubos' (1970) conception, the human being, in theory, does not respond passively to physical and social stimuli, yet 'whenever he [sic] functions, by choice or by accident, he selects a particular niche, modifies it, develops ways to avoid what he does not want to perceive, and emphasises that which he wishes to experience' (p. 46).

This turns the uses of such things as educational technologies into intrinsically politically 'messy and heterogeneous realities' (in the language of Bijker and Law, 1992), opening up possibilities in which users go beyond, above or even against the primary intentions of their implementers. Seen in this light, the use of educational technologies can be socially 'contested and therefore political' (Whitworth, 2009b: 27). Consequently, research should seek to identify empirically the socially contested nature of educational technology use, attempting to understand how educational technologies 'are shaped through various kinds of social interaction' (Winner, 1993: 368). Taking such a position, Woolgar (2002) notes the importance of investigating how technologies 'are actually used and experienced in everyday practice' (p. 6).

It seems that, once a technology is 'on the ground' (Woolgar, 2002: 6), it becomes party to 'the micro-political game' (Bijker and Law, 1992: 10), with users' responses to it varying with their motives. While using it, they 'continuously interpret and reconstruct the meanings related to the technology' (Vyas *et al.*, 2006: 2). They may involve themselves in various activities regarding the technology in use, such as 'appropriation, modification, sabotage and revolutionary alterations' (Pfaffenberger, 1992: 285). Users (or 'controllers of technologies,' to borrow a phrase from Winner, 1977: 89) 'can and do circumvent inscribed ways of using the technologies—either ignoring certain properties of the technology, working around them, or inventing new ones that may go beyond or even contradict designers' expectations and inscriptions' (Orlikowski, 2000: 407). Dubos (1970) believes that human beings, theoretically speaking, 'do not merely react as passive objects to the environment; they shut out certain aspects of it and select others to which they respond in a personal and often creative manner' (p. 85).

Johnson and Wetmore (2009) concur that the user can 'circumvent the designer's conception to fulfil his or her own desires and advance his or her own values' (p. 423). Bromley (1995) notes that, at times, 'the users of a technology end up appropriating it for wholly unanticipated and potentially subversive purposes' (p. 4). Whereas some users might become involved in 'contained practices' (fitting in without introducing pressure for radical change), others might carry out 'disruptive practices,' attempting to radically alter or dismiss the technological structure at hand (Ball, 1993; Riseborough, 1993). Such practices include 'working-around' (Gasser, 1986: 216), a concept typically applied to explain how a user has the potential to 'adjust a

technology to meet his or her particular needs or goals' (Pollock, 2005: 496). Put another way, this concept basically involves intentionally using the technology 'in ways for which it was not designed or avoiding its use and relying on an alternative means of accomplishing work' (Gasser, 1986: 216). When faced with a technology which limits him or her in some way, for example, the user might 'carry out a work-around and thus exercise some form of discretion or resistance' (Pollock, 2005: 509), employing tactics designed to circumvent or surmount the limitations imposed by the technology at hand (de Certeau, 1988).

Employing such resourceful or roundabout tactics may require users to wilfully engage in 'risk-taking activities' (Hope, 2007: 90), so as 'to skilfully negotiate potentially destructive frontiers and/or to attempt to challenge existing social borders' (*ibid.*). Yet there might be institutional sanctions applied against those 'misusing' the technology at hand, thus inhibiting their revolutionary capacity (*ibid.*). One might therefore contend that the influence of a user on a given technology could be affected by the regulations (i.e. sanctions) attached to the technology. Although 'working around,' 'employing tactics' and 'risk-taking' might reflect essential political insights, they might also be undertaken merely for fun and excitement and/or in an attempt to 'escape' (Cohen and Taylor, 1992) from tedious routines (Hope, 2007). Some users might 'take risks even when they expect to be caught and punished, because the perceived benefits, in terms of excitement, identity formation and the performance of control, are deemed to outweigh the negative consequences' (Hope, 2009: 895).

Some scholars write that, although technologies in operation might appear to be stable, the user might still attempt to 'make sense' of them. Pinch and Bijker (2009)

contend that, even after a technology has been constituted, 'closed up' and implemented, the 'end-user' still has 'the power to redefine what the technology means and to come up with unanticipated uses for it' (p. 107). Users 'may reject technologies, redefine their functional purpose, customise, or even invest idiosyncratic symbolic meanings in them' (*ibid.*). From the perspective of Webb (2008), 'the macro-environment does not simply represent "best" or "scientifically-based" practices handed down to benefit ignorant or overwhelmed practitioners; the policy environment is a political creation often motivated by economic desires contra the interests of public education [and] educators are not mere victims of an over-zealous policy environment but implicated, and often complicit, in its outcomes' (p. 139). Given this ability of users to influence and make sense of the technologies at hand, the first research sub-question as proposed should therefore be modified as follows, by adding the italicised words to it: To what extent have the existing social relations influenced the ways in which educational technologies are constituted *and used* so as to sustain themselves? This modification anticipates that social relations might influence technologies not only in the course of being constituted but also in the course of being used.

2.4.3. Influence of Technologies on Social Relations (Social Relations←Technologies)

The arguments above suggest that social relations can influence technologies. Yet, in order to achieve a balanced view, it is of the essence to consider whether the literature refers to any possibility of there being a concomitant influence of technologies on social relations and other aspects of social structure. Some analysts note that educational technologies, whether through invasion or invitation, can, for better or worse, occasion modifications to social configurations, norms and practices (Apple,

2004; Monahan, 2004; Selwyn, 2010). For Kerr (1996), social processes, actions and structures can be modified following the introduction of a technology. Some commentators, as reported by Winner (1977), accept that, when technologies are present, it follows that social change is also present. A much stronger claim is that, when technology is lacking, social change is lacking too (*ibid.*).

Newson (1999) contends that technologies can 'bring with them important changes in social practices and relations' (n.p.). Lyon (1996: 57) refers to 'the belief that technology "shapes" social relationships.' Beer and Burrows (2007) concur that technologies can lead to alterations in social divisions, alterations which at times go 'above' society and at others are willingly promoted by it. Toffler's (1970) contention is that 'we have been taught to create and combine the most powerful of technologies[, yet] we have not taken the pains to learn about their consequences' (p. 389–90). Toffler thus underlines the importance of considering the social, cultural, psychological and physical side effects of technologies. These arguments bring us to a second research sub-question: What concomitant influence has the introduction of educational technologies intended to sustain certain social relations (in the current case, the relations between male and female campuses) had on other aspects of the social structure?

One might believe that one reason for the unintended technological shaping of a society is that 'one does not always know in advance the requirements that a new technology carries with it' (Winner, 1977: 104). Besides, as technologies grow larger and involve more and more equipment, they are likely to turn out to 'be more shaping of society and less shaped by it' (Hughes, 2009: 148). It seems that the greater the

stretching of technological systems across time and space, 'the more resistant they are to manipulation or change by any individual agent' (Giddens, 1984: 171). It is reasonable to accept that, once in place, technological structures can be difficult to change, perhaps because they necessarily exist alongside substantial logistical systems, which makes it difficult for any major reform to happen, thus making them appear to be deterministic elements in a society (Johnson and Wetmore, 2009). Besides, a modification to existing technological systems can be time-consuming and result in organisational and technological discrepancies and complexities (Cornford and Pollock, 2003). Such continuity of technological systems has reportedly frustrated generations of educational reformers (Tyack and Tobin, 1994).

It can also be assumed that 'later adopters are influenced by the values and behaviours of earlier adopters' (DeSanctis and Poole, 1994: 131). More precisely, current educational technologies can 'shape and influence future social, economic and technical decisions' (Bijker and Law, 1992: 3). In this light, a technology should not be seen simply as an assembly of objects and codes, but rather as a means of building up a contextual frame within which current and future generations act (Johnson and Wetmore, 2009). Grosvenor *et al.* (2000) believe that technological structures have the potential to pass on traditions, enabling the remnants of prior pasts to carry on framing the present. One might say, since technologies have the capacity to frame social action, that a society performs within the context and potential of the available technologies; hence the social realm and relations are comprehended only within the context of these technologies (Sismondo, 2010). Besides, 'while every human being is unprecedented, unique and unrepeatable, by virtue of his [sic] genetic constitution and

past experiences, his environment [including surrounding technologies] determines at any given moment which of his physical and mental potentialities are realised in his life' (Dubos, 1970: 100).

It could then be said that, while technologies do not actually make themselves, but are essentially socially constituted by human beings, their creators may not afterwards have full freedom to decide how they will grow. Kerr (1996) speaks of 'the difficulty of keeping technology under social control once it has been introduced' (p. 199). As Winner (1977) reasons, the human mind sometimes becomes unable to manage what it has initially created; consequently, 'the same technologies that have extended man's control over the world are themselves difficult to control' (p. 28). There appears to be a risk, therefore, that 'we [become] the servants in thought, as in action, of the machine we have created to serve us' (Galbraith, 1967: 7). Hence, one might emphasise the importance of ensuring that technologies always remain 'the servant of man instead of his master' (Dubos, 1970: 232) and, moreover, that no technology is allowed to 'subvert the rule of its master' (Winner, 1977: 227). Such risks could probably be minimised through the participatory planning and development of technologies, with the affected public and the relevant actors coming together 'to express opinions, to formulate needs and interests and to participate in decisions concerning the satisfaction of these needs and interests' (Masschelein and Quaghebeur, 2005: 55). The human–machine relationship seems extraordinary, with the machine performing a task which is beyond the human's strength and capability of endurance, while the human, conversely, watches over those aspects of the work which are beyond the machine's processing powers (Evans, 1979).

2.4.4. Two-Way Influence between Technologies and Social Relations (Social Relations ←→ Technologies)

Some studies in the literature refer to continual feedback between societies and educational technologies, which inevitably implies a continuous alteration of both (see Dubos, 1970). On one hand, educational technologies can be socially influenced in the sense that existing social relations can influence their construction and use, while on the other hand, a certain society can be technologically influenced in that the introduction of technologies into its higher education sector can establish new relations and recast or even curtail old ones. Considering these two views beyond the 'either/or' mentality reveals the two sides of the coin, suggesting that educational technologies can simultaneously shape and be shaped by social relations, forming an intertwined relationship that occurs as part of institutional and social motion. Thus, although 'context is king' (Selwyn, *Losing Momentum Conference*, 14 June 2012), technology is also king, with ongoing shaping between the two entities.

Academic commentators commend the 'balanced stance' (Graça, 2010: 23) wherein technologies are seen as proactive, relational, dynamic and interactive, both affecting and reflecting the surrounding social conditions (Agalianos, 1996), almost in the same way that higher education institutions shape and are shaped, whether to a great or slight extent, by 'the cultural milieu of the society in which they are embedded' (Angus, 1993: 342). Such a 'middle-ground' theoretical standpoint helps us to avoid 'reducing a complex whole to the effects of one part (or parts) upon another part (or parts)' (Chandler, 1995: 4). While educational technologies can facilitate the

maintenance of existing power relations, they can also enable their transformation (see Bromley, 1995).

Wajcman (2004) refers to a mutually shaping relationship between educational technologies and social relations, wherein the former are both a source and consequence of the latter. Muffoletto and Knupfer (1993) contend that such technologies are situated within the social world, yet affect this world. Dubos (1970: 8) quotes Winston Churchill to the effect that 'we shape our buildings and afterwards our buildings shape us.' History refers to the existence of an ongoing (yet normally implicit) relationship or even a 'clash' (to use the felicitous term by Berg, 1998: 468) between educational technologies and the society where they exist and through which they derive meaning (Hutchby, 2001). This argument is consistent with the belief that 'the relationship between technology and society is genuinely an *interaction*, a *recursive* process: "causes" and "effects" stand in a complex relationship' (Edge, 1996: 15, original emphasis).

2.4.5. Useful Theories

In the discussion of science and technology, some analysts, as reported by Graça (2010), believe that 'technological developments occur independently of social, economic and political forces' (p. 32). They hold the belief that technological developments are 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. Such a belief seems to chime with the concept of 'technological determinism,' whereby technology-driven changes, as explained by Feenberg (2003), serve only

efficiency and rationality gains, following a linear internal logic and hence leading society towards progress. Such technological determinists, as reported by Mackay (1996), make the case that 'technological development is autonomous of society; it shapes society, but is not reciprocally influenced' (p. 41). For these thinkers, 'technology' (i.e. as an uncountable noun and hence a comprehensive phenomenon) 'exists outside society, but at the same time influences social change' (Mackay and Gillespie, 1992: 686). Some such determinists, as reported by Smith (1994), believe in technologies as depoliticising media and liberating instruments, helping to transcend political differences. In this sense, technologies are treated as political reforms in themselves.

Within this group, there exist 'hard' and 'soft' deterministic approaches, with the former viewing technology as a force manipulating society in a march of progress (see Smith, 1994). This hard deterministic approach, as Kast and Rosenzweig (1979) explain, perceives technology as destined to 'come to dominate every field of human activity and [to achieve] efficiency and rationality in all human endeavours' (p. 176). From this perspective, technology determines social events, so that 'technological changes force social adaptations and consequently constrain the trajectories of history' (Sismondo, 2010: 96). Soft determinists, on the other hand, acknowledge the existence of contextual factors that impede the inherent useful effect of technology. The Saudi academic Al Shae (2007) puts forward an apparently soft deterministic view, holding that 'it is clear that technology is there to increase the efficiency of the individual if the ground has been properly prepared to make use of it' (p. 14). However, Al Shae also

remarks that 'the adoption of technology without a suitable environment having being prepared for it will not serve this purpose' (*ibid.*).

Conversely, technological 'anti-determinists' argue that 'the lack of agreement on standards, the conflict of interests between the different groups involved, and the range of approaches and objects are some of the clues supporting the argument that the evolution of technologies is neither linear nor technical' (Agalianos, 1996: 4). The phrase 'technological anti-determinism' can be read as an umbrella term that covers the theories and ideas undermining and challenging the concept of technological determinism (read Selwyn, 2011a). A key anti-deterministic approach, then, would be the theory of the Social Shaping of Technology, whereby the planning and development of technology is socially negotiable, a process of negotiation which leads to the constitution of diverse technological tendencies (Williams and Edge, 1996a; 1996b). A similar notion is the Social Construction of Technology, which suggests that the construction of a technology should be informed by 'the relevant social groups,' i.e. by those who are involved in interpreting the technology under construction (Bijker, Hughes and Pinch, 1987).

One more tradition of technological anti-determinism is the Domestication of Technology, whereby generic technologies are transformed and institutionalised to fit within certain settings, with individuals, communities and societies making sense of, giving meaning to and achieving functions through the technologies produced and offered by the provider (see Caron and Caronia, 2001; Lally, 2002). Other theoretical practices within technological anti-determinism include feminist approaches, arguing that technologies should be critically and reflexively configured and reconfigured to

improve the status of women and to ensure 'gender equality' (Wajcman, 2010: 143; see also Wajcman, 2004).

2.4.6. Previous Studies

The approaches mentioned above exemplify the efforts of sociologists and historians to demonstrate that technologies are much more than just technologies, establishing a literature on the interplay between the technological and the social. Educational technology scholars have also made their own contributions to this theoretical debate. In 1995, Bromley sought to investigate the way educational technologies both affected and reflected the surrounding social conditions, remarking that this subject had received remarkably limited explicit attention from the educational technology community. He therefore sought, through his study, to contribute to the 'educational-technology-is-social' approach. His work was entirely theoretical, drawing on social theories to construct a generic theoretical framework for his approach. Where the current study differs is that, whereas Bromley's study examines theoretically whether science or society shapes educational technologies at the macro level, this study zooms in, examining empirically the shaping interface between social relations and individual technologies *within* organisations, at the institutional and micro levels.

Bromley's theoretical framework was used by Agalianos (1996) in an empirical study. Agalianos' work is also different from mine, in the sense that his study was of a single technology in two different social contexts (i.e. the United Kingdom and the United States), whereas the current study examines a single organisation in one social context (i.e. Saudi Arabia). Another difference between the present work and that of Bromley

and Agalianos is that theirs concentrated on educational computing in particular, whereas my subject is the overall technological structure and infrastructure of the campus.

The work of Garrison and Bromley (2004) also aimed to contribute to the growing literature on the importance of the social context in shaping the outcomes associated with the use of educational technologies. Two themes emerged from their study. One is 'defensive learning,' whereby students in the classroom were found either to pretend to be unable to complete the task, to pretend to be engaged with the task although actually they were not, or to prevent others from completing their work. The second theme is 'defensive teaching,' with teachers taking certain actions to maintain control over the class, the curriculum and the means (including technologies). Hope (2007) also conducted a qualitative study looking particularly at the socially contested nature of educational technology use, although his study, like that of Garrison and Bromley, focused more specifically on the subversive response to technologies, whereas mine covers many different possible uses, including such subversions. Moreover, the work of Hope and of Garrison and Bromley considered educational technologies only at the micro level among users, whereas the current study deals with educational technologies at both the micro level and the institutional level. Understanding educational technologies at both of these levels, as discussed already, is of the essence if one wants to have a wider picture of how technologies shape and are shaped by a society within a higher education institution. This matters because technologies are subject to such shaping at both levels.

The existence of the studies by Bromley, Agalianos, Hope, and Garrison and Bromley should in no way be taken as detracting from the *raison d'être* of the current study, which is concerned with a different and distinct social context (that of Saudi Arabia). Besides, the works of Bromley and Agalianos are now rather old. More important is that the literature on the shaping relationship between educational technologies and societies appears to be in need of more studies to contribute to its enrichment. Still, it must be acknowledged that these studies were sources of inspiration for mine, which was also inspired by other educational technology scholars (e.g. Whitworth), who have in various theoretical and empirical publications concerned themselves with the complex interplay between educational technologies and societies. A main strength of Whitworth's works is that they are richly informed by his specialist background in critical theory and the politics of organisations. Similarly, Selwyn has made considerable theoretical and empirical contributions, with the explicit intention of politicising the educational technology debate and analysis. The strength of Selwyn's writings is that they are carefully crafted in light of his expertise in sociology. Another inspiring figure is Hope, who is interested in looking qualitatively and critically at educational technologies from a societal, cultural, economic and political perspective.

What follows continues to argue that, although educational commentators, whether explicitly or implicitly, have drawn attention to the interaction between educational technologies and humans, this attention appears to have two limitations. The first is that it mainly examines the somewhat one-sided influence of educational technologies on societies, thereby underplaying the impact of social structure upon educational technologies. The second is that this attention has been focused more upon educational

concerns (i.e. regarding learning and pedagogical matters), thereby glossing over other historical, organisational, economic and political issues. For example, some thinkers have investigated the influence of educational technologies on human cognition, for instance investigating how they are changing the new generation's way of processing information and enhancing their ability to multitask. Prensky (2001: 1) believes that today's students are the first generation to grow up in a fundamentally different age of information and communications technologies, technologies which are integrated into almost every aspect of their educational and social lives, thus possibly making them 'think and process information fundamentally differently from their predecessors' (*ibid.*)

Theorists have, moreover, discussed the effects of technologies on the analytical capacity of humans. There has been a concern that the very availability and accessibility of the 'information revolution' might leave human actors with little time to evaluate properly and reflect critically on the information consumed, leaving them trapped in a state of 'intellectual inertia' (Selwyn, 2011b: 83). Whitworth (2009a) warns that the increasing amount of poor quality information on the Internet may lead to what he terms 'counterknowledge' (p. 35). For this reason, learners are advised to be politically wakeful, practising a kind of 'filtering' so as to 'sieve' information and to ensure its 'trustworthiness' (to import a phrase from the naturalistic research of Lincoln and Guba, 1985). This filtering is believed to be crucial if learners are to stay in a good 'healthy condition'; if instead they continue to act as mere consumers of information without applying any kind of filtering, they may end up being 'mentally unfit' (Whitworth, *Creating Knowledge VI Conference*, 8–10 September 2010) and

suffering from 'information obscenity' (Whitworth, 2009a), mere containers of counterknowledge and politicised information.

Further, there has been an academic realisation that educational technologies can influence social relations. Anderson and Garrison (1998) write about the role of communications technologies in shaping learner–learner, teacher–teacher and teacher–learner interactions. The academic literature records some attempts by teachers to use technologies to enable collaboration between students from different universities at institutional, regional, national and international levels (see, for example, the aforementioned work of Al-Jarf, 2006; 2007). The academic literature records that educational technologies have the potential to support socially situated and social constructivist forms of learning, for instance by exposing learners to a more social and participatory experience.

Yet other researchers, as explained by Mason (1996), argue that educational technologies have undermined social relations, resulting in a breakdown in human-to-human communication through the impersonalisation of learning. Sanders (2000), for example, investigated 'whether higher levels of Internet use are associated with depression and social isolation among adolescents' (p. 237). Some commentators, as reported by Selwyn (2011a), point out that educational technologies have brought about some changes in the power relations between teachers and learners, enhancing the ability of the former to monitor and trace the progress of the latter, such as through virtual learning environments. Selwyn (2011a) states that educational technologies are understood to have reshaped the social relationships between universities and teachers on one hand and disaffected and disengaged learners and

other stakeholders (e.g. parents and alumni) on the other, enabling the former to (re)connect with the latter, while Popkewitz and Shutkin (1993) report that 'telecommunications systems have been implemented that enabled parents to monitor the practices of their children by accessing the school database with touch tone technology' (p. 26).

Moreover, some commentators have discussed the influence of educational technologies on the relations between human and non-human entities, i.e. 'our relations with objects' (Beer and Burrows, 2007: n.p.). They point out, by way of example, that such technologies have enabled teachers to reduce their workloads, to manage learning materials and to modify teaching styles. Anderson and Garrison (1998) refer to the role of communications technologies in shaping learner–content and teacher–content interactions. Such technologies have brought about changes between users and content, with the user being involved in both production and consumption of content 'as they generate and browse online content, as they tag and blog, post and share' (Beer and Burrows, 2007: n.p). These technologies, it is argued, have resulted in 'massive replacement of teachers by machines' (Mason, 1996: 179). Siemens (2004), applying the theory of connectivism, puts forward the argument that educational technologies have the potential to enable learners 'to access and use distributed information on a "just-in-time" basis' (Selwyn, 2011a: 14), thus 'finding meaning in confusion and solving new problems, independent of acquired knowledge' (Cascio, *The Atlantic*, July/August 2009). Connectivism thus suggests that educational technologies have wrought changes in the relationships of humans with distributed and 'ecological' information. Because of educational technologies, students have come

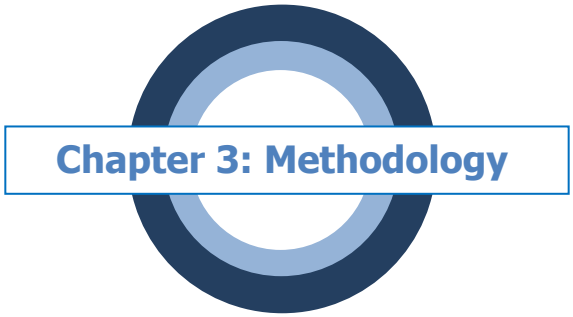
to be able to be engaged with formal education without spatial and temporal restrictions, bringing about fundamental changes in the relationships of learners with their surroundings and with their spatial and temporal limitations.

Finally, some scholars have discussed the effect of educational technologies on other non-human entities and structures, such as in challenging schooling configurations (by 're-schooling' or even 'de-schooling' society; Bentley, 2000) and even changing users' own ideological systems (Ben-David Kolikant, 2010). Rezabek (1993) refers to the change in the relationship between technologies and the structures that regulate them in the following terms: 'Computer technology has evolved faster than the legislation which governs its use' (p. 233). To conclude, despite the substantial body of relevant academic literature, more effort is needed on the part of researchers to consider not only the influence of educational technologies upon societies but also that of social structures upon educational technologies. This effort, moreover, should look beyond learning and pedagogical matters, considering other historical, societal, economic and political issues.

2.5. Concluding Remarks

This chapter has reviewed the history of the interplay between educational technologies and the Saudi gender separation pattern, showing educational technologies to have shaped and also have been shaped by pre-existing social relations between male and female campuses. It has, moreover, established a theoretical framework for understanding the causal relationships between social relations and educational technologies, suggesting possibilities of the former shaping the latter, the

latter influencing the former, and/or the two shaping one another. The chapter concludes with the hope that researchers may consider more explicitly how to situate educational technologies within their context, going beyond merely educational and pedagogical concerns by considering 'ecological factors' (to borrow a phrase from Zhao and Frank, 2003), which include organisational, historical, political and economic issues and challenges (Angus, 1993).



Chapter 3: Methodology

3.1. Guide to the Chapter

This chapter is structured around the following:

- **Research Questions**
- **Method of Enquiry**
- **Pilot Study**
- **Data Collection**
- **Data Analysis**
- **Data Interpretation and Discussion**
- **Sampling**
- **Ethics**
- **Trustworthiness of the Study**
- **Concluding Remarks**

3.2. Research Questions

Scholars such as Yin (2009) recommend that investigators should review the prior literature with the intention of developing 'sharper and more insightful *questions* about the topic' (p. 14: original emphasis). Echoing this recommendation, I reviewed the

literature in the previous chapter to compose an overarching research question and sub-questions, which are displayed in the table below.

Table 1: Research Questions

Status		Statement of the Question	Illustrative Explanation
Overarching Research Question		**What are the outcomes, ramifications and implications of the ways in which educational technologies have been employed to reconfigure social relations between male and female campuses in Saudi Arabia?**	**Social Relations ↔ Technologies**
	Sub-Question a	To what extent have the existing social relations influenced the ways in which educational technologies are constituted and used so as to sustain themselves?	Social Relations → Technologies
	Sub-Question b	What concomitant influence has the introduction of educational technologies intended to sustain certain social relations had on other aspects of the social structure?	Social Relations ← Technologies

The second sub-question seems the harder to answer, in that it is difficult to research empirically and that it is politically sensitive, given that social relations in the Saudi context seem entrenched and sensitive to any investigation that traces their ramifications (see Shokri, 1979; Doumato, 2000; Al-Saggaf and Williamson, 2004; Samin, 2008). The answer to such a question is further complicated in that the side effects of educational technologies are far-reaching, with problems to be found, for example, in defining 'the web of social intents, perceptions, decisions, reactions, group relations, and organisational settings into which a new technology [is] cast' (Kerr, 1996: 120). Addressing the second sub-question is difficult because of the complexity inherent in judging whether the environment was modified to make room for the technology or whether technologies have forced that modification, meaning that 'the [presumed] effects antedate the cause' (Winner, 1977: 104).

3.3. Method of Enquiry

A 'naturalistic enquiry' (Lincoln and Guba, 1985) was conducted into the faculties of Education and Arts at a Saudi state university. This kind of enquiry was chosen mainly because it is an appropriate method 'when (a) "how" or "why" questions are being posed, (b) the investigator has little control over the events, and (c) the focus is on a contemporary phenomenon within a real-life context' (Yin, 2009: 2; see also Mabry, 2009). The distinct need for naturalistic investigation, moreover, springs from the desire to comprehend complex social settings (Yin, 2009). The value of naturalistic examination 'is that it has the potential to deal with the subtleties and intricacies of complex social situations' (Denscombe, 2007: 42). With such a potential in mind, the naturalistic enquiry method seems suitable here, given that the current study seeks to investigate educational technologies in their complex social settings. Complexity is seen by Johnson and Wetmore (2009) as 'the norm in all the stages through which a technology is [constituted] and used (or rejected)' (p. 319). Liker *et al.* contend that, 'in the case of technology, the social reality is quite complex' (1999: 592). Given these warnings about the complexity of technologies in social settings, educational technology researchers are 'advised to focus [their] attention on what happens in specific spheres of [university] organisational life' (Kerr, 1996: 120). With this advice in mind, the decision was made to restrict the current study to one institution, concentrating my efforts and mind on one setting, thus ensuring greater depth in the analysis and reducing the extent to which it would be necessary to address the complex web of social relations, views, decisions, reactions and political interests within which an educational technology is enmeshed (Kerr, 1996).

One might wonder why the naturalistic method is privileged here over other research methods (e.g. experiments, histories and surveys). Because the experimental style intentionally separates a phenomenon from the context in which it takes place, it is seen to be incompatible with the explicit intention of the current study to investigate educational technologies within their social context (Denscombe, 2007; Yin, 2009). As for the historical approach, while it does actually take into account the intertwined relationship between phenomenon and context, it does this in terms of its previous occurrences; it is therefore thought to be irreconcilable with the aim of the current study, which essentially looks at an array of contemporary events within a real-life context (Yin, 2009). An advantage of the survey method is that it can consider the relationship between phenomenon and context within a real setting. However, its capacity to enable the investigator to look into the context remains limited (Denscombe, 2007, Yin, 2009), so I concluded that it would not satisfactorily assist in achieving the purpose of the current study, which was to grasp the deep complexity of a social context in which it is difficult to determine how educational technologies and societies work together and 'how they shape one another' (Law and Bijker, 1992: 306).

Some might enquire about the merits of using other research methods in addition to the naturalistic method in order to address the research questions of the study. If the experimental method had been used, this would have helped us understand the variables within the interplay between educational technologies and social relations. In terms of the historical method, researching the history of educational technologies can help us to become more conscious of the past and its persistent influence on the current educational milieu (Cunningham, 1997). If the survey method had been

applied, the single findings of the current study would have been more representative of the case population. Moreover, if I had taken an ethnographical approach, I would have been able to get closer to the University context and its actors and to provide deeper accounts of the case under investigation, as ethnographical studies allow for a long period of time in the field and for participant observation. One key reason for deciding, nevertheless, not to undertake more than one research method is the belief that the parameters of each method tend to be different from and sometimes incompatible with those of the others (Sandelowski, 2000).

One might similarly question the motives for taking a qualitative approach to educational technology research. One motive is the perceived need for Saudi research students, researchers and research centres to better appreciate the value of qualitative research. The popularisation of qualitative educational technology research in the Saudi context seems essential, given that, although the twenty-first century has witnessed a considerable increase in the strength of Saudi literature on educational technologies, most of these studies have taken a quantitative approach to research (see Omar, 2002; Alaugab, 2007; Aldurywish, 2010; Alenezi *et al.*, 2011; Al-Harbi, 2011). Considering this imbalance in the way the Saudi educational technology landscape has been academically viewed, I believe that the literature needs to be counterbalanced by a significant increase in the amount of qualitative research.

It could be argued that an approach mixing both qualitative and quantitative methods should have been taken. The rationale for taking a qualitative approach alone was that this study does not seek representativeness. One might counter that there would be no harm in taking both approaches, to which I would respond that my effort, as a solo and

student researcher, would have had to be split in two, which would have necessarily affected how I would have treated each phase of the study. Essential to this is that the ontological, epistemological and methodological parameters of each approach seem different and even contradictory. To illustrate, 'it is not possible to combine, merge, or reconcile a view of reality as singular and objective (positivist) with views of it as multiple and individually or culturally constructed (constructivist), or as historically contingent (critical theory)' (Sandelowski, 2000: 247). Moreover, 'it is debatable whether one researcher can hold two different viewing positions, albeit at different times, [considering the view that,] in cases of mixed-up research, the researcher's futile effort to mix the research [is the] equivalent of [trying to mix] oil and water' (*ibid.*). One might argue, against such theorisation, that it is a straw man, since there seems to be no one out there who views reality as singular and objective anyway. Similar arguments are that there is actually a reality but we cannot get it right and that the existence of technologies as objects 'out there' seems to reinforce some aspects of the positivist approach, especially when considering the belief that technologies, as argued in the literature review, can be talked about in deterministic terms. Although these arguments may be reasonable and support the importance of the quantitative approach to research, the current study regards quantitative studies as of particular value to decision-makers, who tend to seek representative findings and who have generous budgets and large working teams. Individual researchers are likely to have no such advantages, so are better off considering this limitation and concentrating on the illumination of individual small-scale cases; the small-scale cases illuminated by individual researchers can then be drawn upon by decision-makers to design large-scale quantitative or mixed-method studies.

Holliday (2005) stresses that the researcher must think about how the research method will 'suit the social setting' (p. 8). In Saudi Arabia, as was made clear in the preceding chapter, no person of one gender can access the campus of the other gender. This implies that subjecting Saudi society to naturalistic exploration is problematic, with the necessary accessibility being constrained by gender separation. Such inaccessibility can be seen to explain why naturalistic studies in Saudi Arabia, especially those conducted by solo researchers, tend to be carried out within gender lines. Jamjoom (2009), for example, states that the norm of gender separation obligated her to exclude men from her study and to limit it to the female population. In her words, 'there are several reasons for limiting the study to women teachers. [One is that] the conservative nature of the Saudi society would make it difficult for a female researcher like myself to interview or interact with male [...] teachers.' Al-Saggaf (2012), likewise, reasons that 'it is impossible [for males] to conduct interviews with females face to face or on the phone in Saudi Arabia' (p. 66). In any case, naturalistic enquiry into the Saudi female population, whether undertaken by men or even by women, seems limited given the privacy and sheltered nature of its members, making this population hard to reach (Al-Kahtani *et al.*, 2006). As a result, exposing such a population to naturalistic investigation results in kind of a 'clash' between 'the *culture* of the setting and the *culture* of research' (Holliday, 2005: 10, original emphasis). Despite these difficulties, however, my study did include the female campus in the current research, through the application of roundabout data collection methods, thereby synthesising the culture of the social setting and the culture of academic research.

3.4. Pilot Study

Between July and September 2009, I carried out a pilot study at the same university being investigated in the main study, with the principal intentions of familiarising myself with the context of the University, of advancing the research design and questions, of checking the operational and methodological parameters of the study and of improving the informed consent sheet. Other aims were to test out the interview questions and to examine possible ethical issues (Bassey, 1999; Willig, 2001; Cohen *et al.*, 2003). This pilot involved running semi-structured individual and group interviews, analysing documents and making unstructured non-participant observations of the University's day-to-day activities. This pilot offered substantial insight into the basic issues being investigated in the main study.

A lesson learnt from the pilot study with repercussions for the ethical side of the study was that 'the Arab does not reveal or sign his name' (Manager). Considering this cultural norm alongside the privacy of the Saudi female population, I modified the informed consent sheet, giving the potential participant the option not to reveal his/her name or to sign the sheet. A methodological lesson learnt from the pilot was that group interviewing (which I conducted with men face to face and with women through the CCTV network) turned out to be an unsuitable data collection method, as during the interview session individuals were seen to be discouraged from expressing themselves freely, especially given that some of the interview questions were socially sensitive and hence called for a private, secure and one-to-one atmosphere. The Saudi researcher Al Salem (2005) agrees that group interviewing is not a suitable strategy if the nature of the research 'is sensitive and deals with a very strict culture and belief' (p.

80). Al Salem remarks that one-to-one interviews can help to 'avoid the participants feeling uncomfortable or fearful when asked to expose [their] opinions to the rest of the group on sensitive topics, especially if these could be viewed as extreme' (pp. 80–1). Group interviewing, moreover, resulted in conflict amongst the interviewees. Such conflict is not necessarily undesirable, as it could enrich discussion, enhance engagement and show different dimensions of arguments. Nevertheless, conflict could also serve to discourage, or even frighten, those interviewees who did not feel self-confident or were not good at argument. Considering these negatives, I decided not to use group interviewing in the main study.

3.5. Data Collection

3.5.1. Defining the Spatial and Temporal Scopes of the Study

Any naturalistic research is believed to be permanently '*unfinished* in the sense that, with more time and access, more data could be collected over a wider scope' (Holliday, 2005: 88, original emphasis). Hence, 'the setting must have a sense of boundedness, i.e. time, place and culture' (*ibid.*: 38). Yin (2009) agrees that researchers should put on display and openly discuss the spatial and temporal boundaries of their studies. To avert negative repetition, the reader may consider revisiting the introductory chapter to review the reasons why the higher education sector, the public sector and Saudi Arabia (particularly its Eastern Province) were chosen as the settings for the current study. The present investigation was carried out between 2010 and 2012, a period in which many of the plans of the new Saudi monarch were taking effect. The reader of

the thesis should be cautioned that the study was conducted at a time when Saudi Arabia seemed to be witnessing fundamental educational, organisational, cultural, economic, political and technological changes and events, meaning that the culture-specific findings and discussions presented here may no longer be accurate just a few years after the conduct of the present research. This, however, seems to be a phenomenon not only of Saudi society but also of today's world, where knowledge has an increasingly limited lifespan, surviving 'only a short period of time before it is outdated' (Siemens, 2006: 44).

3.5.2. Data Collection Methods

A naturalistic enquiry is (in Holliday's terminology, 2005: 10), 'learning culture', with 'everything' within the setting under investigation acting as data. The current research involved in particular the analysis of documents, unstructured observations and semi-structured individual interviews. The documents analysed included relevant memos, announcements, guidelines, handbooks, leaflets, newspaper articles, reports, proposals, letters and large- and small-scale policies. The examination of this wide diversity of documents was intended to help me to grasp more deeply the dynamics of the University's activity, to trace its events and to triangulate sources, if possible. Many of these documents were available online and hence were easily accessible, which saved me time and enabled me to reach them without spatial and temporal constraints. The availability of such documents in electronic formats enabled me to 'go paperless' and to archive, classify and code them easily. I was conscious that the documents collected could be biased towards those who wrote them and I was therefore careful not to depend on them as a literal documentation of the events. These documents were

used, if possible, to triangulate the information provided by the other data collection methods (i.e. observations and interviews). If a documentary finding was found to be in conflict with a finding derived from another data collection method, I investigated this conflict and if it remained unresolved, I have acknowledged the two conflicting findings in the thesis without evincing any definite conclusion.

Besides analysing documents, I also made unstructured observations of face-to-face and technology-facilitated environments and events. In each case, I sought consent only from the person in charge of the environment, since my ultimate aim was not to trace and observe the activity of individual actors, but rather to observe the overall dynamics of the environment. More importantly, gaining consent from each person in the environment was found in the pilot study to be interpreted at times as undermining the authority of the one responsible for the environment, given the hierarchical structure of Saudi (academic) society. Although I managed to observe the female environments which were broadcast through technology to the male campus and those which were accessible via the Internet, I could not observe any that were inaccessible electronically, being precluded, as a man, from physically accessing any such environment. Instead, I drew on the help of female contacts who acted as data collectors for the study. To enhance the accuracy of the data provided by one collector, I double-checked it with another and, where possible, triangulated it with an alternative data collection method.

I conducted some observations of the public online communities of the University (e.g. web-based forums and Facebook groups), again seeking consent only from those in charge of these communities, given that my aim, as mentioned above, was not to track

the conduct of individual members but rather to observe the overall activity of the communities. Besides, obtaining consent from all members would have been unworkable, given that membership was not only large but constantly in flux and that the great majority of members were pseudonymous. Indeed, in some communities private communication with individual members was forbidden, meaning that I could not have contacted members individually to ask for their consent. More pertinently, a policy of seeking individual consent would have resulted in the research being abandoned if a single member had refused to grant it. I thought it unnecessary to obtain consent for collecting data from public domains, as it was seen to be the same as collecting data from television, public records and radio. Concerning confidentiality, the quotations from these online communities I have used in this thesis were translated from Arabic into English, which means that it would not be possible to use an online search engine to trace these quotations back to those who wrote them. The arguments above are inspired by reading Waskul and Douglass (1996), Frankel and Siang (1999), Anderson and Kanuka (2003), Keller and Lee (2003) and Eynon *et al.* (2008).

Besides these observations, I also conducted semi-structured individual interviews. The interview method is seen as an essential source of evidence in a naturalistic enquiry because most naturalistic enquiries are essentially about human affairs and/or behavioural events (Yin, 2009). Besides, 'the notion of *meaning* can be seen as being at the heart of whether an individual makes use or does not make use of [an educational technology]' (Selwyn, 2008; 108: original emphasis). In other words, the response of a user to a technology is fundamentally informed and motivated by what this technology

actually means to him or her. Thus, it seems important to understand 'the subject's construction of meaning in his or her experience and interaction with the technology at hand' (Mackay and Gillespie, 1992: 691). I concluded that the interview method could help to understand such constructions of meaning and thus adopted it as a data collection method. It is believed that the action of a technology user follows logically from his/her philosophies, values, intents, approaches and feelings, which can be uncovered through interviewing (Ajzen and Fishbein, 2005).

One reason for the interviews being semi-structured was that the pilot study led me to believe that this might help the interviewees to warm to the topic, to see its loose boundaries and so not to get lost, while still granting him/her some freedom to depart from the interview questions. I also thought that this would give me some space to personalise each interview based on the responses and experiences of the interviewee. Besides, the pilot study indicated that it might be good practice to inform potential interviewees about the key interview questions to be asked before they agreed to take part in the study, thereby making them feel more secure and psychologically better prepared.

During the course of the interviews, I asked mainly about interviewees' 'opinions, feelings, emotions and experiences' (Denscombe, 2007: 175) regarding the technologies used at the University. However, some interviewees also acted as informants, offering information about behavioural events and facts. I was aware that such information could be 'subject to the common problems of bias, poor recall, and poor or inaccurate articulation' (Yin, 2009: 108–9). Hence, I was again keen to triangulate the information offered by each informant with that gathered from other

sources, i.e. documents, observations and other informants (Denscombe, 2007). The table below offers some quantitative details of research invitations distributed and responses received.

Table 2: Numbers of Research Invitations Distributed and Responses Received

		Number of Invitations Distributed			Number of Responses Received		
		To Men	To Women	Total	From Men	From Women	Total
1	Off-Campus Undergraduates	400	1200	1600	6	37	43
2	On-Campus Undergraduates	300	300	600	52	57	109
3	On-Campus Postgraduates	50	50	100	17	21	38
4	Academics	50	50	100	24	16	40
5	Academic-Managers	15	5	20	8	3	11
Total		815	1605	2320	107	134	237

As the table shows, the first set of interviewees consisted of six male and 37 female off-campus undergraduates (i.e. online distance education undergraduates). Although the University now accepts off-campus postgraduates, there were no such students when the study was in process. Off-campus undergraduates were invited to take part in the study through their Blackboard environments, where I placed the research invitation as an announcement. The invitation consisted of the informed consent sheet, participant information sheet and interview questions. Although these environments contained 1,600 students, there were, as the table above shows, only 43 responses. This relatively low rate of response was because online students were reportedly busy, holding dual roles as students and employees or housewives, leaving little time to volunteer as research participants.

Off-campus students were spread all over the country and never came to the campus, which made the typical face-to-face interview unfeasible, so interviews with off-campus students were conducted over the Internet. Mann and Stewart (2003) note that communications technologies can provide researchers with 'a possible means of

communicating with people in sites to which access is restricted' (p. 606). Yet the privacy of the female voice prevented me from conducting synchronous online interviews with women. Al Salem (2005) found a novel way of conducting individual interviews across gender lines in Saudi Arabia: emails back and forth between interviewer and interviewee. He argues that, for a population such as that of Saudi women where social contact is limited by societal and cultural restrictions, 'email is considerably more effective than traditional interviewing techniques' (p. 81), adding that 'the potential for asynchronous communication that email offers is an excellent feature when considering its use as a research tool' (p. 81). I adopted this strategy for my study, conducting interviews across gender lines by email exchanges. To enhance consistency and fairness, men were interviewed in the same way. Al-Saggaf (2012) stresses the importance of using the same data collection techniques across gender lines if the research sample consists of male and female populations.

The second set of interviewees comprised 52 male and 57 female on-campus undergraduates, while the third set consisted of 17 male and 21 female on-campus postgraduates. Having obtained written consent from the University, I distributed copies of the research invitation to on-campus students in two ways. One was to send them through the official post to six male academics (i.e. my gatekeepers) to be passed on to female colleagues, who distributed them to potential participants and collected their responses afterwards. The other way was through some female relatives of mine, who distributed the research invitations to female students in class and during break times. In both cases, potential participants were told that they could submit their responses by emailing them directly to me or to the gatekeepers, who would pass them

on to me. I also told them that they could write their responses on a piece of paper and hand it to the gatekeepers, who would then deliver it to me. In addition, I informed them that I would email or write to them twice with some follow-up questions. The employment of such roundabout methods should demonstrate clearly my struggle to interview members of the sheltered society of Saudi women. This effort paid off, however, with a female participant writing to me: 'Thanks for giving the Saudi woman the opportunity to express her feelings in a society where her voice is not heard.'

In the event, written correspondence between interviewer and interviewee turned out to be the most practical and socially least objectionable way of interviewing across gender lines in Saudi Arabia, given the respect that this method grants to the four components of Saudi female privacy: place, name, voice and face. It enabled women to remain anonymous, not to reveal their voices and to be physically separated from the male researcher. This implies that, in Saudi Arabia, communications technologies (in this case, email and postal exchange) can be utilised to overcome the spatial, social and cultural boundaries between an interviewer and interviewee of different genders. Asynchronous written interviewing gave interviewees freedom in terms of when and how to respond. It also enabled me to email them further questions that emerged later. Writing-based interviewing enabled the interviewees to be almost fully anonymous, thereby encouraging them to express themselves more freely and honestly. Such anonymity provided a context for non-coercive and anti-hierarchical dialogue (Boshier, 1990).

Considering that, in Saudi society, both men and women are known for their shyness when talking to each other because of their unfamiliarity and lack of dealings with the

other gender (Al-Saggaf, 2004), the written mode conferred the additional advantage of avoiding the embarrassment of talking to an interviewer (or interviewee) of the other gender. Regardless of the impossibility of face-to-face interviews across gender lines within the cultural norms of Saudi society, however, it is a limitation of written interviewing that it denies access to facial expression, body language and eye contact. As an alternative, the participants used 'emoticons,' i.e. facial expressions pictorially represented by punctuation and letters. For example, some participants used the ☹ emoticon to show a sense of sadness, while others used various colours, fonts and capital letters (e.g. ONLY) to express their feelings and to stress certain words. A challenge regarding interviewing in Saudi Arabia was the difficulty in knowing the real opinions of individual interviewees. This difficulty is particularly acute because individuals in Saudi Arabia, as Al Qathami (2005) believes, tend to ensure that their views are expressed in ways consistent with the country's cultural and societal systems.

As stated earlier, in order to enhance consistency, male on-campus students were interviewed in the same way as women, in writing. I asked some teachers if it was possible to have a five-minute talk with their male students during class time to invite them to participate in my study. In these talks, I first introduced the study, then distributed the research invitations, informing the students that I would be waiting outside after the class to collect their written responses. Alternatively, they were able to put their responses in the envelope I attached and leave it in the Dean's office, where I would collect it later. An additional option was that they could email their responses to me. I also informed them that I would email them some follow-up

questions twice and that they should therefore ensure that they had written their email addresses clearly, as I would otherwise lose contact with them or might contact the wrong person.

The fourth set of interviewees comprised 24 male and 16 female academics, and the fifth set eight male and three female academic-managers. I invited male and female staff to participate in my study either by post or by email, directly or through gatekeepers. Moreover, I visited some male staff in their offices, inviting them to participate. As a result of their heavy workloads, some preferred to be interviewed face to face instead of by email. The oral interviews were recorded, except when the interviewees appeared uncomfortable in the presence of the recording device. In such cases, the data were, as recommended by Yin (2009), compiled through the taking of notes.

3.6. Data Analysis

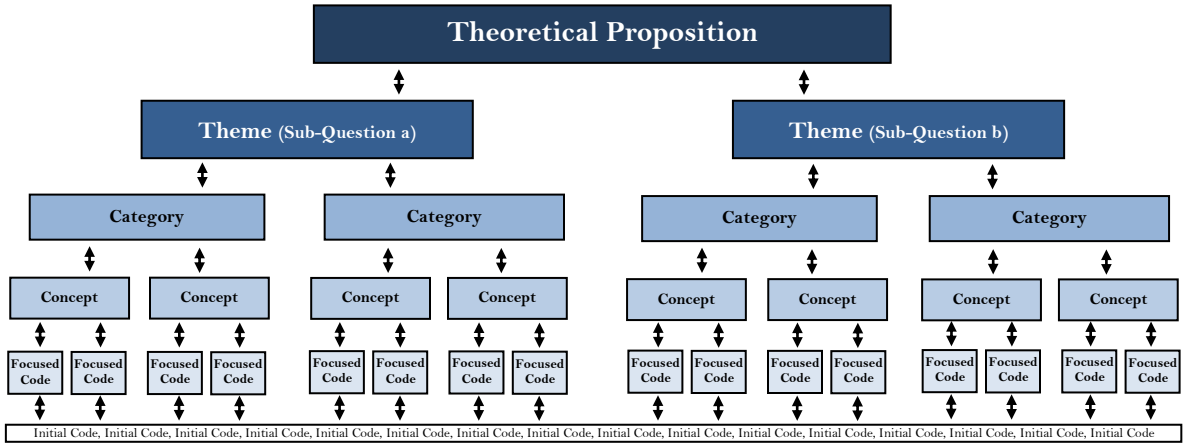
The social world does not necessarily 'have a ready-made sense which the researcher simply needs to record; the researcher must make sense of it' (Holliday, 2005: 75). What follows, therefore, sheds light on how I made sense of the data collected during the course of the study. These data were analysed in line with the parameters of the grounded theory technique, following the process illustrated in the figure below (Glaser and Strauss, 1967):

Figure 2: Linear Process by which the Data were Analysed

Data ⇔ Initial Code ⇔ Focused Code ⇔ Category ⇔ Concept ⇔ Theme ⇔ Theory

The target groups of the study, as discussed earlier in this chapter, were mostly interviewed asynchronously by email or letter. At the end of each electronic or postal correspondence, a narrative and interpretive report was developed and sent to the interviewee for approval. If I received no response from him/her, I assumed this to confer confirmation. This condition was made clear in the informed consent sheet. Once the reports were approved, I went repeatedly through them all together (alongside the collected documents and the written reports of the observations) in an attempt to find 'natural analytical divisions' (Holliday, 2005: 105), bearing the research questions in mind. Once these natural analytical divisions had been identified, I began to code the data with them in mind, generating initial codes. I next grouped similar initial codes to create focused codes and then pulled together similar focused codes to create concepts. I subsequently assembled similar concepts to create categories, which I grouped in turn to form themes and ultimately to constitute a theoretical proposition. The findings were then discussed with the ambition of critically making 'the familiar strange' (Holliday, 2005: 93). The adoption of such a systematic analytical process helped develop 'a chain of evidence,' thereby avoiding selectivity and covering the various issues within the raw data, with the exception of those which were obviously irrelevant to the core of the study. The diagram below, adapted from Denscombe (2007: 294), illustrates this analytical process in a hierarchical way and is intended to be read from the bottom up.

Figure 3: Hierarchical Analysis of the Data



As the diagram shows, the research sub-questions played a role in analysing the data, acting as themes. Thus, 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] questions that the researcher brought to the research' (Holliday, 2005: 108). Therefore, the thematic process here was actually iterative, as I repeatedly followed the analytical steps back and forth, in an attempt to make better sense of the whole structure (Denscombe, 2007). Moreover, whenever the overall structure seemed stable, I deliberately 'knocked it down' and built it up again, seeking a better one. Berg (2009: 400) encourages the qualitative researcher to write his/her analysis, 'rewrite it and write it again.' The table below shows the data after being sorted. This table is expanded in Appendix 1 with explanations of how the analytical process moved from one column to another, i.e. from focused codes to concepts, to categories, to themes and finally to a theory.

Table 3: The Data after Being Sorted Using the Grounded Theory Approach

Focused Code	Concept	Category	Theme	Theoretical Proposition
Manipulating the Regulations Attached to Technologies	**Ways of Constructing Technologies**	**Influence of Social Relations on Technology Construction**	**Influence of Social Relations on Educational Technologies**	**Mutual Influence between Educational Technologies and Social Relations**
Giving New Value to Ecological Technologies				
Customising Generic Technologies				
Manipulating the Physical Environment				
Addressing Economic Issues	**Factors in Technology Construction**			
Sustaining Historical Values				
Concern about Security and Privacy	**Factors in Technology Deconstruction**	**Influence of Social Relations on Technology Use**		
Concern about Sexual Homogeneity				
Interest in Depoliticising and Rationalising Technologies				
Hatred for Technologies Facilitating Discrimination				
Conflict of Interest				
Interest in Promoting Political Values	**Factors in Technology Reconstruction**			
Interest in Technologies with More Merits				
Changes in Power Distribution within Gender Lines	**Changes in Relations among Peers**	**Influence of Technologies on Relations among Animate Elements**	**Concomitant Influence of Educational Technologies on Social Relations**	
Changes in Power Distribution across Gender Lines				
Changes in Labour Divisions	**Changes in Relations between Superiors and Inferiors**			
Changes in Relations between Students and Families				
Changes in Relations between Authorities and Subjects in Favour of the Former				
Changes in Relations between Authorities and Subjects in Favour of the Latter				
Changes in Relations between Subjects and their Environments	**Changes in Favour of Animate Elements**	**Influence of Technologies on Relations between Animate and Inanimate Elements**		
Having Vested Interests	**Changes in Favour of Inanimate Elements** (*i.e. Factors in Users' Acquiescence to Technologies*)			
Expecting Follow-up Reforms				
Seeking Compromise and Convenience				
Lacking Critical Reflection				
Encountering Technologies with Far Logistical Reach and Long-Term Effects				
Encountering Efficiency-Oriented Technologies				

The table may appear to show a more or less logical sequence in the analytical process, but it is important to note that I do not claim that the stages between the initial data collection and the completed data analysis occurred as 'a nice logical sequence with each stage being completed before moving on to the next' (Denscombe, 2007: 288). This table, as touched on earlier, is the outcome of engagement with a reasoning of the data that was both inductive and deductive, of a kind which is perceived by Berg (2009) as likely to 'provide fruitful findings' (p. 350). The reasoning and analytical process followed throughout the study were informed essentially by the belief that, in naturalistic investigation, anyone's account represents a 'slice from the life world' (Denzin, 1983: 134) and is therefore 'appropriate subject matter for qualitative inquiry' (Sandelowski, 1986: 32).

3.7. Approach to Data Interpretation and Discussion

3.7.1. Theoretical Stand

The theoretical section of the literature review shed light on various theories and approaches, which can be criticised and challenged on particular points and are not necessarily compatible with each other. However, I have avoided aligning the current study with one specific theoretical stance, as this enhances analytical freedom in regard to the raw data collected and allows me to take advantage of the fact that each theoretical stance offers a different approach to 'questioning technology' (Feenberg, 1999). Amin and Thrift agree that 'no particular theoretical approach, even in combination with others, can be used to gain a total grip on what's going on' (2005: 223). Besides, 'there would seem to be little sense in dismissing alternative

perspectives out of hand simply because they do not chime with one's own experiences, opinions and intellectual standpoints' (Selwyn, 2011: 40). I thought, moreover, that considering all these theoretical theories and approaches was part of the doctorate learning process, helping me as a research student to become familiar with different theoretical stances. That said, the concluding chapter will draw on the findings to suggest a theoretical proposition that might be particularly appropriate to the reading of communications technology, at least in the specific context of the Saudi public higher education sector.

3.7.2. Considering Contextual Factors

Since social values and cultural customs can be objectified in technologies and therefore conveyed from one generation to another, technological structures can be 'read' as records of certain cultures and historical events, almost in the same way that geologists and archaeologists read landscapes and what remains of ancient societies' buildings, graves, tools and the like (see Star, 1999; Whitworth, 2009a). One might see technologies as having 'their own biographies, a history that tells us how they evolved, how they are used or finally discarded by people when no longer useful' (Caron and Caronia, 2001: 44). In other words, the biography of a technology 'reveals the specific and changing cultural dimensions of the environment in which the object lives and, moreover, people's commitment to it' (*ibid.*). Dubos (1970) quotes some theorists to the effect that societies are 'expressions of their landscapes' (p. 8), suggesting that the environment 'constitutes a book in which is written the formula of life that they communicate to others and transmit to succeeding generations' (p. 126). Low and Lawrence-Zúñiga (2002) place confidence in the belief that technologies can exist as

'inscribed spaces' on which a certain society 'writes' their presence. With these observations in mind, it would be politically naive to attempt to conceptualise educational technologies in isolation from the social values 'inscribed' on them. Some analysts express concern that to interpret and discuss technologies as isolated objects is 'to risk treating them outside of the fabric of history' (Apple, 1986: 5). It is therefore well worth considering both the 'culturisation' of technologies and the 'technologisation' of the culture (Pellow, 2002; Webster, 2005).

With these arguments in mind, the current study looks beyond the educational and technological aspects of educational technologies, expanding the interpretation and discussion to address the social and cultural issues raised by such technologies. It would surely be politically naive to deny the complexity of educational technologies in social settings by interpreting and discussing them from the educational and technological standpoints alone, while closing one's eyes to other contextual factors. Apple (1986) takes a similar line, advising that educational technologies should not be depicted as being constituted outside the wider organisational, cultural, economic and political conflicts which have historically transpired. Mackay and Gillespie (1992: 688) contend that 'technologies are created not by lone inventors or geniuses working in a social vacuum, but by a combination of social forces and processes.' Griffiths (1985), moreover, points up the influence of the social context on the 'personality' and 'disposition' of technologies: 'Technology is competitive, aggressive and controlling because it is generated in a social context which is itself characterised by these values' (p. 71). We do well to bear these insights in mind.

3.7.3. Critical Approach to Educational Technologies

Some scholars (e.g. Johnson and Wetmore, 2009) believe that 'it is difficult to deny that today's actions shape tomorrow's world and that those who envision, design and develop technologies play a pivotal role in designing some future' (p. 2). As touched on earlier, Grosvenor *et al.* (2000) hold the belief that technological structures have the potential to pass on traditions, allowing the remnants of prior pasts to continue shaping the present. One might take this belief further, arguing that, as these remnants move from one generation to another, they are likely to be increasingly taken for granted, impeding one's ability to reflect critically (see Schütz, 1944). Pfaffenberger (1992) concludes his article by arguing that 'all around us today are artefacts that were generated in the technological dramas of their time: railways, canals, aviation artefacts, radios and more' (p. 309). He adds that 'what was once the conscious product of human cultural and political action, passionate and meaningful, is now a silent material reality within which we lead our daily lives, mutely acting out patterns of behaviour that once had obvious connections to the root paradigms of our culture' (*ibid.*). Hence, some might believe in the need for a critical approach to existing educational technologies, so as to push these technologies back to the forefront of people's consciousness and discourse, thereby 'making the familiar strange' (to borrow the title from Bastos, 1998). The current study takes just such a critical approach to educational technologies, 'digging to unearth the dramas inherent in system design creating, to restore narrative to what appears to be dead lists' (Star, 1999: 377).

The study follows the recommendation of some scholars that educational technology research should take a critical approach, 'troubling technologies' (to borrow a phrase from Youdell, 2010), problematising their constitution, politicising their use, uncovering implicit contradictions and considering usually unheard voices (Feenberg, 1999; House and Howe, 1999). Kerr (1996) points to the need to look at educational technologies from a socially informed critical perspective. Angus (1993) cautions against apolitical and unrealistic approaches to educational technologies, where they come to be 'quarantined from social relations of inequality, cultural hegemony, sexism, racism and any of the other social and educational disadvantages and conflicts that surround and pervade [educational environments]' (p. 343). Al Qator (2011) criticises Saudi social researchers for lacking deep interpretations and conducting superficial discussions. Saudi society, including its scholars, officials and commentators, is accused of exercising social and cultural hypocrisy when designing studies and discussing findings (*ibid.*). It seems that, although Saudi nationals are protective of their cultural values, they do not necessarily know how (and sometimes pretend not to know how) to view these values through a critically reflective lens (*ibid.*).

Thus, the task of academic research should be to give centre stage to the contradictions and tensions of educational technologies: 'technology is good and bad; it is enabling and it is oppressive; it works and it does not; and, as just part of all this, it does and does not have politics' (Woolgar and Cooper, 1999: 443). The new research on educational technologies should aim to challenge its readers, bringing them out of their comfort zone (Whitworth, *Creating Knowledge VI Conference*, 8–10 September 2010). In order to address the research questions in a critical way, therefore, the research is carried out interpretivistically, given the potential of the interpretivist

method to not 'resolve social ambiguities into nomothetic findings but [rather] problematise them' (Mabry, 2009: 218).

However, it should again be noted that such a critical approach to Saudi society is likely to prove problematic, considering 'the sensitivity of the society towards research that examines its issues from a critical perspective' (Al Zaherani, 1996: 1). Al-Shehab (2010) contends that Saudi society is sensitive to critical enquiry. Kechichian (2002) agrees that Saudis do not 'encourage at all the examination of internal political developments' (p. 45). These claims proved to be accurate, considering the responses of Saudi society to the critical nature of the current study. During the course of the research, I received an anonymous email warning me not to pursue the study, while a female academic-manager warned me that, in conducting such a study, I was 'trying to climb a difficult mountain' and a male academic noted that I was 'working on a very difficult, sensitive and complicated topic.' Some suggested that I should treat my project 'mainly as a political study more than anything else,' cautioning me that my thesis would 'be read by national and foreign intelligence agencies.' I was even warned that I might 'be questioned by whoever one day for the reasons behind this study.' Some maintained that only the social authorities should answer my interview questions. One person, believing that the aim of my project was to precipitate educational reforms, expressed the conviction 'that our society can be tamed only by force.' Some conservatives were concerned that such a project could help foreign activists to learn more about Saudi culture, thus encouraging them to intervene in Saudi affairs. Some were even upset by the thought that this project was directed by liberal ideas. An apparently 'liberal' Islamic scholar, however, defended the study

against such criticisms, stating that he saw 'no problems with this research which looks at facts. Why do we bury our heads in the sand?'

On the other hand, conservatives thought that the outcome of my project could be exploited to serve their intentions and political interests. For example, after I had interviewed a seemingly 'conservative' Islamic scholar (who was actually a manager at the University), he thanked me for paying 'attention to issues we have never thought about.' Others were confused, unable to categorise my project as to whether it was intended to serve liberal or conservative ideas. Some, moreover, thought that its implicit aim was to convince the West of the value of the Saudi practice of keeping the genders physically separated and electronically connected. In a talk I gave one day about the Saudi higher education system, I stated jokingly that, 'my ultimate aim in my life is to problematise Saudi educational technologies, and then just die.' A member of the audience commented: 'I hope you do not die just because of that.' This could be taken as suggesting that the course of politicising, unsettling and calling into question the Saudi societal and political order is a necessarily risky one for qualitatively oriented critical researchers. Thus, a strong point of the current study is that I went ahead and took this risk. Admittedly, while the complexity of the critical investigation into the relationship between education, technology and society (especially in the Saudi context) occasionally discouraged me from pursuing this line of doctoral research, I realised later that 'the fact that [technology] is complicated is a fact of great analytical importance' (to borrow a phrase from Williams, 1991: 10). Thus, I came to believe that the 'messy' analysis, interpretation and discussion of educational

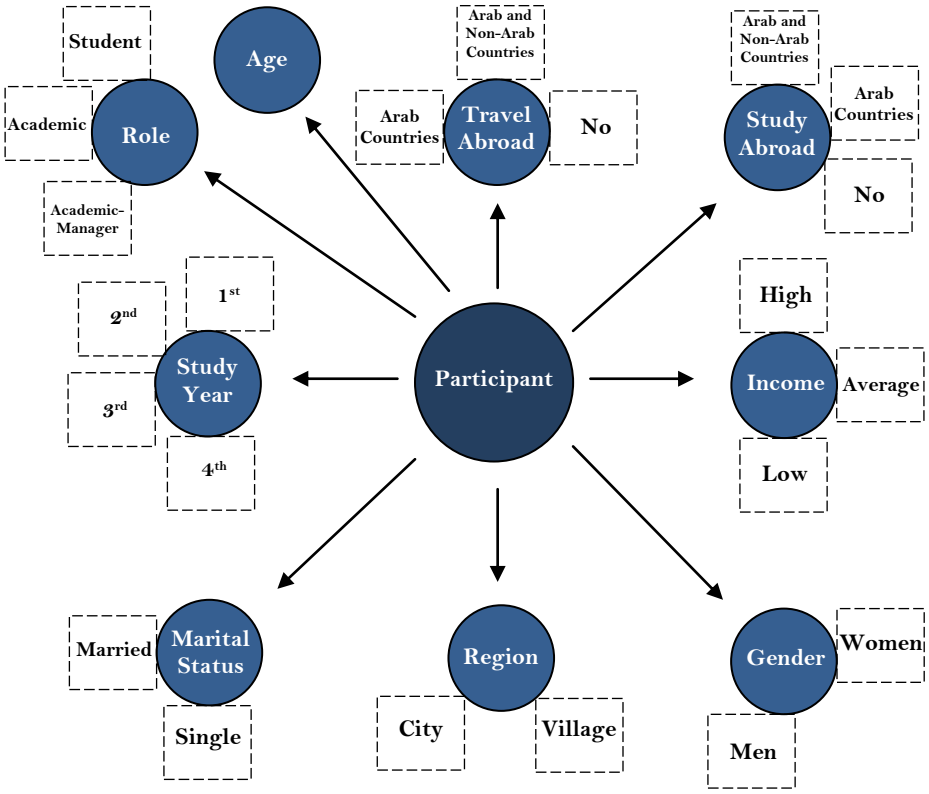
technologies are equivalent to effective and sincere research. This belief, whether accurate or otherwise, helped to get me back on track.

3.8. Sampling

As mentioned earlier, Saudi culture seems politically constructed in a purposeful and conventional way, acting as a filter or screen to ensure that any reform, change or development stays within socially organised configurations (Gallagher and Searle, 1985). Such a political culture has the potential to form citizens, including their beliefs, identities, emotions, language, stereotypes, memories and actions (Jamjoom, 2009). This could be seen to explain how Saudi culture, as a political system, has managed to gradually adjust its citizens to politicised arrangements within which opportunities for change seem limited (*ibid.*). This explanation underpins the claim that Saudi culture appears to be almost homogeneous (Al-Tawil, 2001; Al-Habeeb, 2006). More precisely, however, it is not Saudi society itself which has made the decision to stay culturally homogeneous. Rather, it is the social authorities who have made the decision that the society be homogeneous, for example by filtering what comes from the outside world and resisting violently and uncompromisingly any socially deviant trend in behaviour or beliefs (Shokri, 1979; Doumato, 2000). Saudi culture performs planned and unplanned strategies to teach, persuade or even force citizens to embrace existing values and lifestyles (Al Qator, 2011). In Al Qathami's (2005) words, 'there is no doubt that the most striking features of Saudi society is conservativeness, and that being conservative may not be up to oneself, his/her property and his/her desire, but it is required of and expected from him/her' (p. 4).

Yet Wright suspected that, despite the apparent cultural homogeneity, 'behind the closed gates of Saudi society, there was a social revolution in the making' (*New Yorker Magazine*, 5 January 2004). Thus, what is needed in this society is to disclose any possible implicit variation within it and to critically enquire into it. Bearing this in mind, the essential aim of this study became not to seek representative findings, but rather to access as many different perspectives and experiences as possible, to 'problematise and reveal hidden realities and to initiate discussions' (Holliday, 2005: 18). This aim might be reached via 'maximum variation sampling' (Lincoln and Guba, 1985), a term 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. Such a technique might help to uncover implicit contradictions and give 'voice to the marginal and excluded' (House and Howe, 1999: xix). Therefore, to maximise the diversity of participants, a large number of people were invited to participate in the study, in the hope that it would have at least one participant corresponding to each of the white boxes in the figure below.

Figure 4: How the Diversity of Participants was Maximised



Moreover, a large number of interviews were carried out effectively 'to the point where little new information [was] shared by participants' (Firmin, 2008). A supporting technique which was used to enhance variation within the data was a kind of snowball sampling, following advice given by existing participants identifying people who might give different answers to the interview questions. Some of the interviewees, whether at my request or spontaneously, suggested 'other persons [...] to interview, as well as other sources of evidence' (Yin, 2009: 107). This practice is promoted by Mabry (2009), who encourages interpretivist researchers 'to notice opportunities and to follow data wherever they lead' (p. 218). An additional subsequent sampling technique, required by the grounded theory technique, is 'theoretical sampling,' which means 'sampling to flesh out or refine theoretical categories to

increase the precision of the emerging theory' (Charmaz, 2009: 472). The strength of theoretical sampling is that 'it arises from researchers' analyses, not from any representation of population traits or status attributes' (*ibid.*). Adopting these various types of sampling allowed for the writing of this thesis in a way that I hope allows the reader 'to explore competing visions of the context [and] to become immersed in and merge with new realities to comprehend' (Denzin and Lincoln, 2008: 8).

3.9. Ethics

Stake (1994) believes that qualitative researchers are 'guests in the private spaces of the world' (p. 244); consequently, their manners should be 'good and their code of ethics strict' (*ibid.*). Willig (2001), likewise, reminds researchers that naturalistic studies are concerned with the details of individual participants' life events. Bearing these reminders in mind, every effort was made to undertake the best ethical practices, seeking to ensure that there was no harm to participants, no lack of informed consent, no invasion of privacy and no deception involved (Bryman, 2008). The ethical parameters of the study were cautiously refined using the existing literature and the pilot study, in addition to my commitment to the codes set out by the British Educational Research Association and the Association of Internet Researchers. I also had discussions with Saudi academics, my fellow research students and my supervisor, and obtained formal ethical approval for the research project from the institutional review board at the university which academically sponsored the study.

Following the suggestion of Yin (2009), I obtained informed consent from the potential participants, explicitly describing the relevant features of the research and

officially asking for their consent. I did my best to protect the participants from any possible physical, institutional or cultural risk, including the use of deception. I also attempted to protect their privacy and confidentiality, which involved ensuring that, as a result of their participation, they would not be unwittingly put in any unwanted situation, such as having their names added to a rota to receive requests to take part in other research projects, whether by myself or by other researchers. In addition, I took particular precautions to ensure the protection of the female name, face, voice and place, four components which, as mentioned earlier, are perceived as private and not to be exposed.

The current study took voluntary informed consent to be the condition in which the participants understood and agreed to their participation without any duress prior to the research getting underway. I took the necessary steps to ensure that the participants in the research understood the process in which they would be engaged, including why their participation was desirable, how their data would be used and how and to whom it would be reported. In the informed consent sheet, the participant was provided with all the information necessary, with the purpose of avoiding, for instance, deception or subterfuge. At the end of the sheet, the invitee was asked to declare that s/he had read the participant information sheet and had the opportunity to ask questions about the study and receive satisfactory answers. Other declarations were that s/he could withdraw from the study without penalty at any time by advising the researcher and that s/he understood that the project had received ethical clearance from the institutional review board of the university that academically sponsored the research. Another statement was that s/he understood how to raise concerns and make

a complaint. Finally, s/he was asked to state that s/he agreed to participate in the study. These declarations were reported to have deterred some potential participants. I understand this reaction, given that such ethical practices are not common in Saudi Arabia, although it is perhaps just a matter of time before the society becomes used to it.

Next, the invitee was asked either to write his/her name or to select a nickname. This choice was seen to be of the essence, since it was found in the pilot study that the participants preferred not to reveal their real names. It was also found to encourage participants to express themselves freely and confidently. The invitee was then provided with space to write his/her email address. In the last part of the consent sheet, the invitee was given the option either to sign or just to write the following sentence: 'I have read the information provided in the invitation.' This option was seen as important, because signatures were found in the pilot study to be sensitive in Saudi culture, while the writing of this sentence was thought to serve the purpose.

Concerning 'politics in social research' (in Bryman's terminology, 2008: 130), the academic and financial sponsors of the current research and the university under investigation exerted no political influence on the way the study was carried out or on the way its findings were analysed, interpreted, discussed, reported and published. However, the sensitivity of Saudi culture encouraged the use of a delicately worded and diplomatic language when writing the thesis, although this did not politically affect the core meanings, ideas and values of the findings and discussions. Yet writing about Saudi Arabia, by a Saudi, remains a 'dilemma' (Al Rayas, 2000: 103) because, 'if you write praising, you are accused of hypocrisy and toadying, and if you write

criticising, you are accused of deliberate provocation' (*ibid.*). Although the University did not require the preservation of its anonymity, it was made anonymous in this thesis so as to ensure better security and to prevent any unseen harm to it and to its members. Besides, I believe that this anonymity gives me the freedom to discuss the data collected more critically and openly. Neither the University nor the participants, moreover, objected to the publication of any the data collected.

3.10. Trustworthiness of the Study

Many methodologists have documented the fundamental differences between the qualitative and quantitative approaches to research (see, for example, Hammersley, 1992; Avis, 1995; Hoepfl, 1997; Fossey *et al.*, 2002). The quantitative paradigm follows the ontological notion of objectivism and the epistemological concept of positivism, holding that there is only one objective reality external to human actors. Therefore, the quality of quantitative research is aligned with the extent to which an explanation corresponds to the phenomenon being represented in an objective way. The qualitative paradigm, on the other hand, is associated with the ontological view of constructivism and the epistemological idea of interpretivism, whereby there are multiple internal realities produced by different human actors. Therefore, the tasks of the qualitative researcher are to postulate the presence of those realities and to achieve an understanding of them, seeking to interpret them in a sufficient and trustworthy way.

Drawing on this distinction, the said methodologists have criticised those who simply follow the guidelines of quantitativism to judge the quality of qualitative research (see also Hope and Waterman, 2003). They argue that the criteria used to assess the

quality of quantitative work have no relevance to qualitative research, meaning that their application imposes unnecessary limitations (see also Koch and Harrington, 1998; Stenbacka, 2001; Hope and Waterman, 2003). Accordingly, Guba and Lincoln (1981) and Lincoln and Guba (1985; 1986) have suggested an alternative set of qualitative criteria corresponding to those employed to judge the quality of a quantitative product. These criteria are: credibility as an analogy to internal validity, transferability instead of external validity, auditability in place of reliability and confirmability for objectivity (see also Graneheim and Lundman, 2004; Schwandt, 2007). Guba and Lincoln use the term 'trustworthiness' to embrace these new criteria, and this approach was thought to be suitable for evaluating the quality of a qualitative study such as the current one.

The concept of credibility speaks of 'confidence in how well data and processes of analysis address the intended focus' (Graneheim and Lundman, 2004: 109). In order to establish such confidence in the current study, four techniques were applied. One was to expose the thesis to criticism through peer review (Seale, 1999; Anfara *et al.*, 2002). Another was to send my translation of the key findings (from Arabic to English) to a bilingual who provided a 'back-translation' (Peña, 2007: 1256) of this into Arabic. A further technique was to triangulate the data, thereby 'converging lines of enquiry' (Yin, 2009: 115). This involved triangulating data sources (data triangulation), data collection methods (methodological triangulation) and theoretical perspectives (theory triangulation), so as to improve accuracy, to provide a fuller and wider picture and to reveal not only homogeneity but also heterogeneity, since the identification of heterogeneity is an essential aim of the current enquiry (Patton, 2002; Denscombe,

2007). The fourth technique was 'member-checking,' which involved sending the report of each interview to the interviewee for approval. This technique is recommended particularly by Smith and others (1995), Maxwell (1996), Willig (2001) and Cohen *et al.* (2003), who stress its potential to enable the interviewee to challenge what are perceived as wrong interpretations, to volunteer extra information, to suggest a better way of expressing the information and/or to elaborate, challenge, confirm or qualify the points made.

If we accept with Charmaz (2009: 469) that research acts 'are not given; they are constructed', this opens research to possible criticism for being subjectively biased by the one(s) constructing it. To highlight any possible bias in the current study, it is crucial, therefore, to clarify my position as the researcher, with regard to three contexts: to the University, to the Saudi male and female domains and to Eastern and Western cultures. Although I am an outsider in relation to the University, I am an insider in relation to the wider society in which I lived until I turned 21 years old. On completing my undergraduate studies, I moved to Canada for a few months, then to the UK where I have remained since then, first studying for a master's and then for a doctorate. With these biographical details in mind, it appears that I am in some ways an insider, in relation to both Eastern and Western higher education cultures and their societies. This can be thought of as a privilege, enabling me to reach a deeper understanding, analysis, interpretation and discussion informed by my experiences with these cultures and societies. Commentators on Saudi society think that inside researchers (i.e. Saudi ones) understand well the configuration of the culture yet avoid critically analysing it, because they are either frightened of censorship and

punishment, fear being accused of national treason, become subject to vilification and harsh criticism by Saudi society, and/or lack critical skills (see Al Qathami, 2005; Al Qator, 2011). Outside researchers (i.e. non-Saudi ones), on the other hand, are critical of Saudi culture yet lack understanding of its configuration (*ibid.*).

Whatever the value of such judgments, the fact that I am an insider in relation to the culture being studied must mean that bias could occur (Hewitt-Taylor, 2002). However, the analytical technique of this study, which allows for 'a chain of evidence,' helped to reduce this potential for bias, enabling the auditor of the thesis to trace the findings back to the raw data and then to confirm their sequencing (Bassey, 1999). These actions by the auditor helped to fulfil the trustworthiness criteria of auditability and confirmability in the current study.

I studied for my undergraduate degree in a Saudi male-only university, meaning that I had no experience of the Saudi female campus, making me an outsider with regard to this campus. Although this helped to reduce potential biases while at the same encouraging my ability to consciously notice things within this campus, it influenced my ability to deeply understand the culture of this campus, especially given that I could not physically access it as part of my research and therefore had to ask women to act as data collectors and informants for the study.

The naturalistic approach accommodates both 'generalising' and 'particularising' analyses (Yin, 2009: 15), but the generalising analysis of naturalistic enquiry is notably 'generalisable to theoretical propositions and not to populations or universes' (*ibid.*). The current study has essentially been carried out and written with the desire to put

forward theoretical propositions that other researchers, policy makers, analysts or anyone concerned might consider borrowing to analyse situations of concern beyond the current setting and social context. In other words, the present naturalistic study, unlike a survey-based study, can offer 'analytical generalisation' but not 'statistical generalisation' (*ibid.*: 38). Analytical generalisation here means a developed theoretical proposition that someone can use in the future as a template to analyse an empirical naturalistic study (*ibid.*). Holliday (2005) agrees that putting forward theoretical propositions 'is often the outcome of qualitative research' (p. 35).

Nevertheless, if the findings of the current social context are to be merely *transferred* to another social context, then the extent to which this action can be seen to be effective depends on how similar these two contexts are (Denscombe, 2007). In other words, the 'transferability' (in the terminology of Lincoln and Guba, 1985) of the findings from one social context to another is essentially based on the level of similarity between the context being transferred from and the context being transferred to (see Hoepfl, 1997). Seen in this light, the qualitative researcher is not required to specify whether his/her findings can be transferred to other contexts, but should rather leave it to the reader to decide for himself/herself whether these findings are relevant and applicable to his/her situation (Stake, 1978; Lincoln and Guba, 1985; Hoepfl, 1997).

3.11. Concluding Remarks

This chapter first introduced and discussed the research questions and enquiry method, showing that the naturalistic enquiry method had been chosen to investigate

the subject matter qualitatively, pointing to its strengths and acknowledging its limitations. It then explained my academic preparations for the fieldwork, which involved conducting a pilot study. It moved on to data collection, explaining that the study was carried out in 2010–12 at a Saudi state university and involved analysing documents, observations and interviews. It outlined why participants were mostly interviewed by exchanges of emails or postal correspondence. After discussing some relevant ethical issues, the chapter showed that the grounded theory approach was used to analyse the raw data, following this process: Data ↔ Initial Code ↔ Focused Code ↔ Category ↔ Concept ↔ Theme ↔ Theoretical Proposition. It then showed why the raw data were looked at interpretively and discussed from a critical perspective. Having explained the sampling techniques used, it concluded by showing how the quality and trustworthiness of the research were enhanced.



Chapter 4: Introducing the University under Study

4.1. Guide to the Chapter

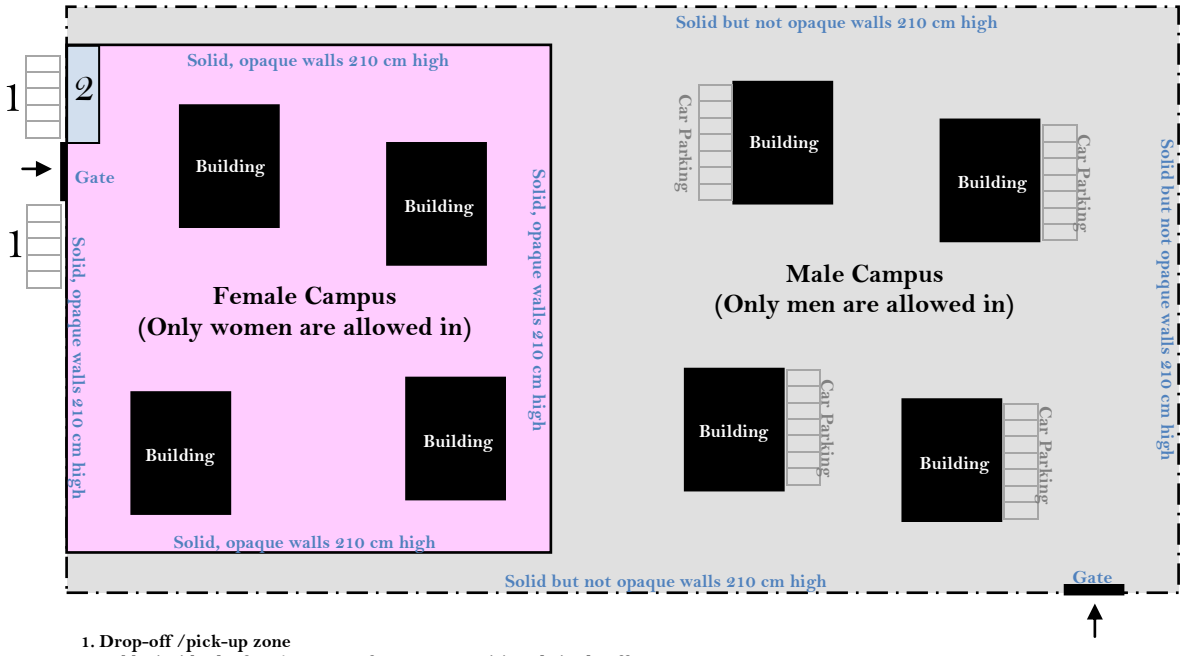
Being informed by the raw data, this brief chapter descriptively introduces the key technological structures of the University that inform the wider discussion of the study. It is organised as follows:

- **Introduction**
- **On-Campus Education**
- **Off-Campus Education**
- **Social Interactions**
- **Management and Administration**
- **Concluding Remarks**

4.2. Introduction

The Ministry of Higher Education established the University to encourage local people to access higher education, 'implanting scholarly hopefulness in the hearts of citizens' (Document 32). This encouragement has also involved awarding students a monthly allowance of around £150. The University 'relied on rented premises in the first year of its inception' (Document 32) and since then has established its own premises and 'smart classrooms,' with voice and video systems, smart boards, data projectors and videoconferencing systems. Gender separation has necessitated splitting the University into separate male and female campuses, as illustrated in the figure below.

Figure 5: Illustration of the Male and Female Campuses



1. Drop-off /pick-up zone
2. Lobby inside the female campus for women awaiting their chauffeurs

The female campus is constructed differently from the male one in that the former is bounded by opaque concrete walls 210 cm high, whereas the latter is surrounded by solid but not opaque walls of the same height. This separation applies to the entire organisational hierarchy, meaning that staff and support staff do not meet or see their 'colleagues' from the other campus, just as students do not meet or see their peers of the other gender. Neither academic staff, support staff, students, parents, visitors nor indeed anyone else has physical access to the campus of the other gender during working hours. There is a drop-off/pick-up zone adjacent to the gate of the female campus, necessary because women do not drive or ride bicycles or motorcycles and are therefore driven from and to their homes. There is also a lobby inside the female campus for women awaiting their (male) chauffeurs, who announce their arrival through a microphone at the gate.

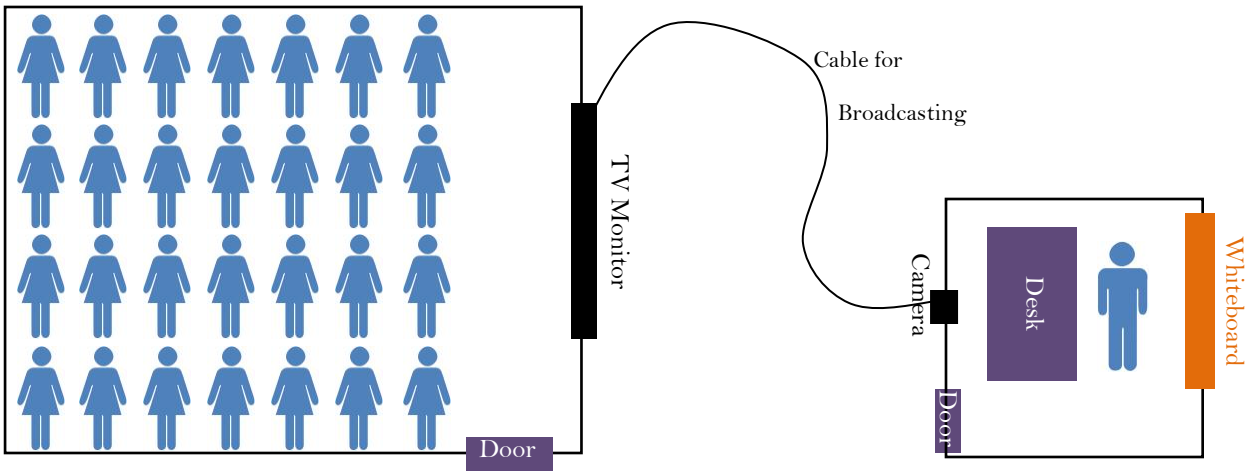
4.3. On-Campus Education

5.3.1. Connecting Male Teachers with Female Students

When the University was founded, the dearth of female academics necessitated permitting male academics to enter the female campus to teach women face to face. This arrangement lasted only a short period of time and was then strictly banned in response to pressure from those who saw it as inimical to gender separation. In its place, the University's leadership established an unorthodox, roundabout classroom structure enabling male academics to be technologically connected with the female campus while being physically outside it. The male teacher was moved to a 2x3-metre room outside the female campus, from where he would lecture to female students

sitting in another room inside the female campus, observing him and the whiteboard through TV monitors (see the figure below).

Figure 6: Simulation of the CCTV-Based Female-Only Class



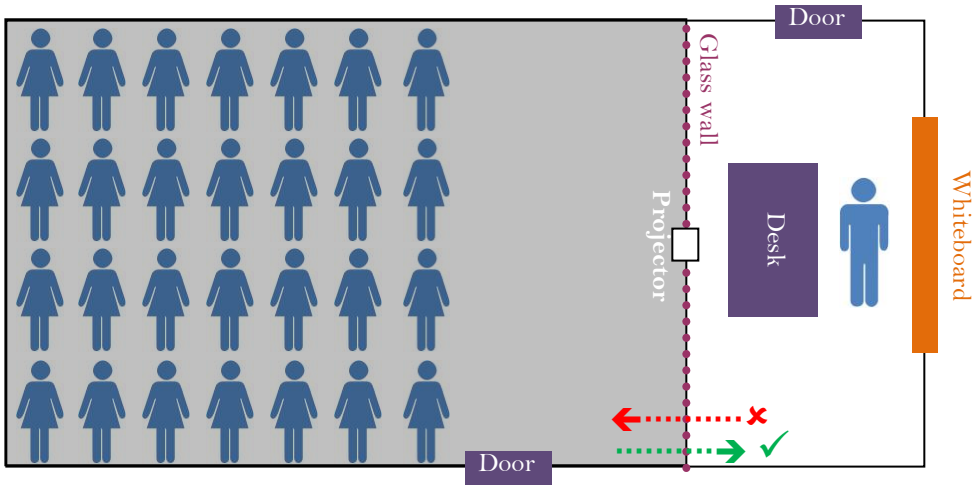
On the right of the diagram, the teacher's room, located in the male campus, is equipped with facilities such as a camera, speakers, a microphone, a whiteboard and, generally speaking, a desk, chair and computer. The students' room, which is positioned inside the female campus, is supplied with a set of TV monitors, speakers and microphones spread throughout the room. The TV monitors are connected to the camera in the teacher's room and to his computer, enabling him to show the students what appears on his screen. To respect the privacy of the female face, the CCTV-based structure is designed to enable one-way video (from the teacher to the students) and two-way audio. Thus, the female voice sometimes appears to be less sensitive to privacy issues than the face.

The entire CCTV network is connected to external TV monitors, speakers and video recorders in the operations room, making it possible for a third party to listen, watch

and record teachers' and students' inputs at anytime. Connecting the CCTV network to a video recorder makes it possible to record lectures and retransmit them to other groups of students. There is a post box located between the male and female campuses, enabling the teacher and students to exchange documents, letters, written messages and other post. There is a female coordinating assistant present in the student area, helping the teacher to manage the class. The CCTV-based structure is in operation at both undergraduate and postgraduate levels.

More recently, the University has, once again, manipulated the 'socio-spatial organisation of the typical classroom configuration' (to adapt a phrase from Low and Lawrence-Zúñiga, 2002: 8). It has devised another architectural structure that enables both the male teacher and female students to occupy a single classroom, with a glass wall separating the two parties:

Figure 7: Layout of the Glass Wall Classroom



To preserve the privacy of the female face, whereas the students can see through the glass wall, the teacher cannot. This enables the students to take off their veils and

cloaks, since the teacher cannot see them. The teacher's and students' voices go through the wall, enabling the two parties to communicate with one another without the need for microphones and speakers. The teacher's 2x4-metre area houses a whiteboard, desk, laptop, data projector, speech platform and chair, while the students' 6x4-metre section is furnished with eight rows of fixed chairs and long horizontally connected desks. It is designed to be dimly lit, so as to prevent the teacher from seeing the students. There is a notice that warns students not to turn the room's lights on, explaining that this would enable the teacher to see them. A female coordinating assistant is present in the students' area, assisting the teacher with class management. There is a post box in the glass wall enabling the teacher, the female coordinating assistant and the students to exchange documents, letters, written messages and other post. This architectural structure operates at the undergraduate level only.

Since female students cannot meet face to face with their male teachers, the leadership has provided male academics with individual landline telephone extensions, through which their female students can reach them during office hours. The emergence of email has encouraged the University to move away from this telephone-based structure, supplying male teachers and female students with email accounts to facilitate communication between them during office hours. Yet because of the emergence of further advanced technological facilities, the University has reconstituted this structure too, adopting the virtual learning environment Blackboard. This system has been adopted mainly, as the policy formulates it, in order to 'provide students with the opportunity to communicate with their teachers and peers outside the classroom through several electronic means and to encourage their

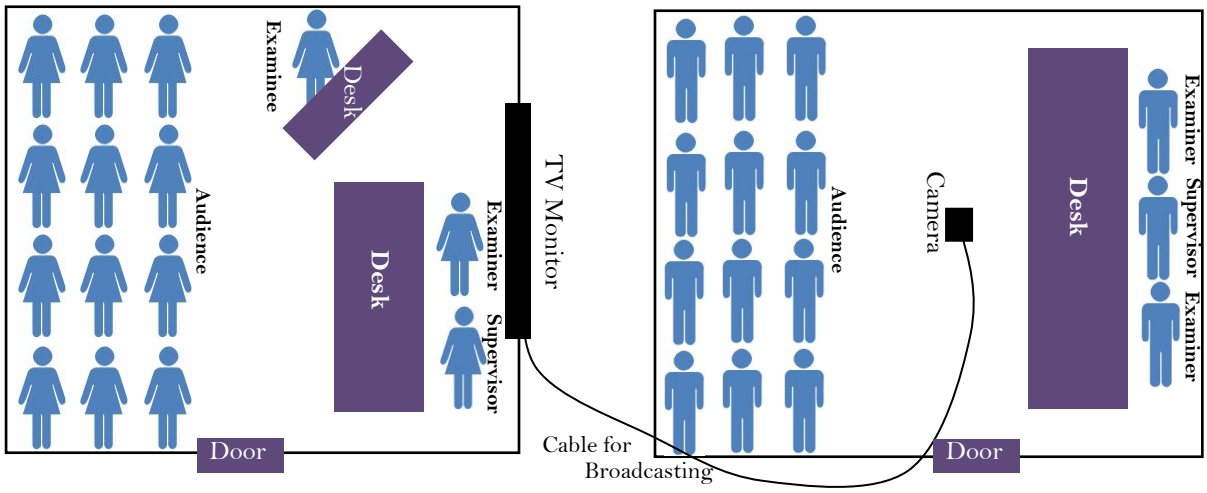
involvement with the course and course content in an attractive and easy way' (Document 17).

5.3.2. Linking Male Supervisors and Female Supervisees

The University has, in theory, two supervision structures, with men supervising men and women supervising women. Yet because of the dearth of qualified female supervisors, an additional structure has been enacted, enabling men to supervise women. However, again as a result of gender separation, such supervision has to occur in a roundabout way through the communications technologies of postal exchange, telephone and email.

As regards the oral examination (i.e. the viva or defence), men can conduct such an examination for women, again through technology. This, as illustrated in Figure 8 below, entails male examiners sitting in a male-only hall with a male audience, examining through the CCTV network a female candidate sitting in another hall with the female examiners and audience.

Figure 8: Diagram of the CCTV-based Oral Examination

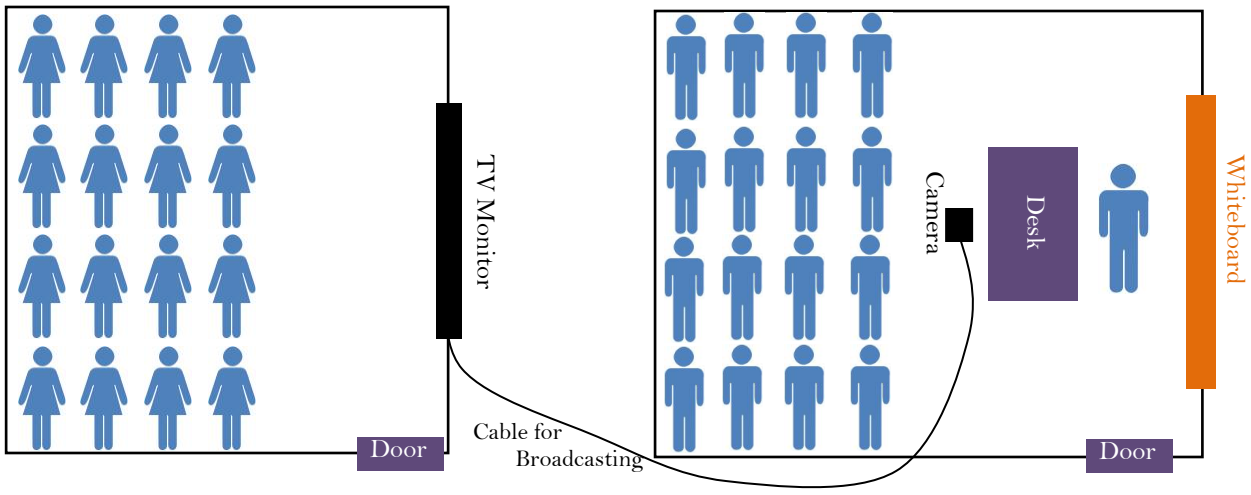


In the male hall, there is a large table facing the audience. The supervisor – if a man – is seated in the middle of the table and the two male examiners are at his sides. On the table are three microphones enabling the male examiners and supervisor to deliver their input to the female hall. There is a camera in the male hall that broadcasts images of the male supervisor and examiners to the female hall, from which the women watch them through TV monitors. In the female hall, there is a large table facing the audience with two microphones on it, for the supervisor and/or examiner if either or both of these is female. There is also a small table with a microphone, set up for the examinee, at an angle facing the large table. The examination is a public event, with the examinee starting with a 15-minute talk, outlining her study. Next, the examiners ask her questions for an hour and a half to two hours, after which they and the supervisor move to a private room to discuss the result. Finally, they return to the hall to announce the outcome.

5.3.3. Connecting Male and Female Learners

The leadership has also instigated a further CCTV-based structure connecting male and female classes, seminars, symposiums and conferences. The male and female classrooms, for instance, are connected synchronously through the CCTV network, with the male teacher being present physically in the male classroom and electronically in the female classroom. This structure is illustrated in the figure below.

Figure 9: Layout of the CCTV-based Male–Female Class



As the diagram shows, female students watch the teacher and whiteboard through TV monitors, listen to him through speakers and deliver their contributions through microphones. The female classroom is located within the female campus and is furnished with technological facilities including speakers, microphones and TV monitors, while the male classroom, in the male campus, is equipped with headphones (for the teacher only), a microphone (for the teacher only), a camera (focused only on the teacher and whiteboard) and speakers (throughout the room).

The CCTV-based structure is configured so as to respect three of the four components of female privacy (i.e. face, voice and name). With regard to the face, the structure, as always, is constructed to enable only one-way video from the male to female class. Concerning the female voice, although the male classroom is supplied with speakers that make it possible for the students to hear the voices of their female peers, headphones are supplied to the teacher so that he can prevent male students from hearing them if he chooses. As for the privacy of the female name, the teacher is reportedly discouraged (by some female students, families and parts of the University's leadership) from using the full name of a female student in front of her male peers.

4.4. Off-Campus Education

As well as its on-campus initiatives, the University's leadership has established an online distance education programme. Although on-campus women are, theoretically, taught only by women, off-campus women are taught exclusively by men. In other words, only males teach online, irrespective of whether their students are male or female, mainly because online teaching was believed to be inconsistent with the privacy of Saudi women. This programme involves a number of technological facilities. One is a recording system producing nine weekly pre-recorded lectures per course unit. The recorded lecture involves the teacher sitting alone in a studio, where he is videoed. The University purchases the copyright of this video and then uploads it to its website, from which students download it to personal computers and mobile phones. The video is reused every year, meaning that there is no need for the teacher to do the recording again, unless he volunteers to do so, as he is paid only for the first

recording. The studio is provided with facilities helping the teacher to explain and convey ideas. Thus, what he writes on the whiteboard is shown on the recorded video. He can also display hard-copy sheets and pages of books on the video while giving the lecture.

Another related technological facility is what the University calls a 'virtual classroom,' which provides an interactive electronic tutorial that follows each recorded lecture. The tutorial uses a videoconferencing system, enabling students to discuss the recorded lecture collectively with the tutor and their peers. As the policy formulates it, 'the virtual classroom offers real-time many-to-many collaboration and synchronous learning' (Document 22). The tutor participates via writing, voice and video, whereas students are limited to writing and voice. The virtual classroom 'ensures the best user experience through superior quality, interactive whiteboards, video abilities, application sharing, breakout rooms, real-time quizzing, record and playback and advanced yet easy-to-use moderator tools' (Document 9). Each online tutorial lasts for two and a half hours, being divided into three periods. The first hour is assigned exclusively to male students and the remainder, after a thirty-minute break, to female students. Thus, the norm of gender separation is applied to the videoconferencing class.

In addition, the University has adopted the generic learning management system Blackboard, which offers course content tools such as a syllabus, course module, glossary and students' tips. This is in addition to communication tools such as discussion boards and chatting. Other services are evaluation and activity tools, including quizzes, self-tests and assignments. Regarding examinations, the University

has set up examination centres throughout the country, so as to 'facilitate the exam-taking experience in a way not requiring students to travel onto campus' (Document 133). A multiple-choice marking system has also been adopted to cope with the very high number of off-campus students, which would make manual marking laborious, so teachers are required to transform their exam questions into multiple-choice items that can be marked by the system. The items produced are then stored in a bank of multiple-choice questions, to be used for exams over the coming years.

4.5. Social Interactions

The leadership has constituted a technological structure of modern digital technologies to enable its members to socialise electronically across and outside its male and female campuses. It has developed a web-based forum that enables its members (be they men or women) to gather and socialise electronically. The forum operates three kinds of communication: students amongst themselves, staff among themselves and between students and staff. As the policy is formulated, it 'acts as a connecting circle enabling all University members to exchange feelings, ideas, criticisms and experiences and also enables them to get assistance and advice, to sharpen talent and to participate in holding responsibility' (Document 12). According to 2012 statistics, it has received 1.5 million inputs, has 50,000 members and has a daily average of thousands of visitors (Document 20). It has sections for university activities, occasions, faculties, freshers and public tutorials. Other sections deal with publications, ideological arguments, self-development, employment, sports, health, lifestyle, poetry, novels and foreign languages. There is a relaxation section, which

involves jokes, puzzles and mysteries. Finally, there are sections where computers, mobile phones, design, graphics and photography are discussed.

Besides the forum, there are mailing lists of both male and female students, run by course teachers and employed to ease the exchange of administrative information and academic knowledge concerning a course unit. The University's website has been updated in a way that enables users to share the website's news on Facebook; and the University has created its own Facebook page, where the leadership communicates with University members and where they can communicate amongst themselves. The University has also updated its website to enable its users to tweet any news from the website that they wish to promulgate, and has set up its own Twitter account.

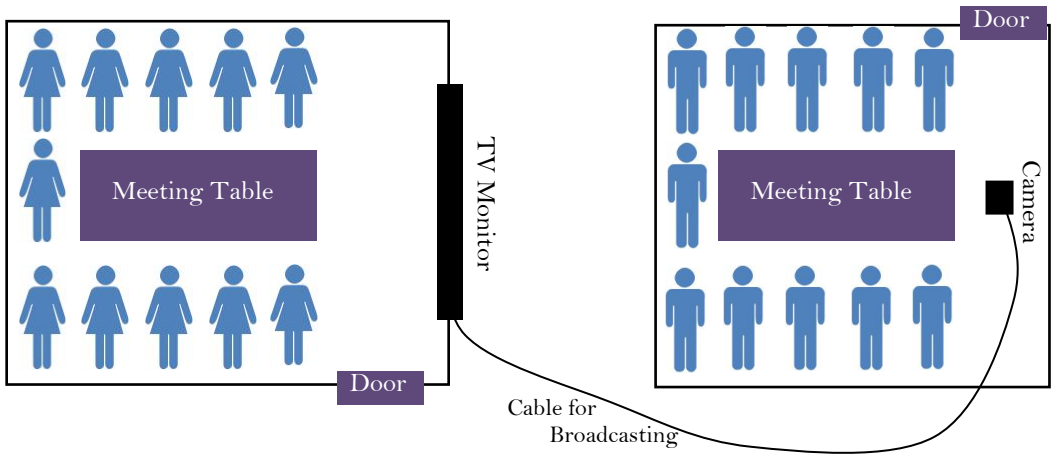
4.6. Management and Administration

4.6.1. Management

The male and female workforces of the University share the same hierarchical structure and are attached to the same departments and faculties. Hence, when the University was established, there were rooms where employees of both genders met for managerial, administrative and academic purposes, the males occupying one half of the meeting table and the females the other half. There were reportedly campaigns against this kind of meeting, which was seen as inconsistent with the social norm of gender separation and with the national labour system, which stated that 'men and women may not mix with one another in the workplace...' (Saudi Labour System, Act 160, 16 November 1969). Hence, the leadership found itself obligated to enact a

technological structure whereby the genders would share managerial, administrative and academic meetings, activities and committees only by electronic means, while being physically separate from one another, as illustrated in the figure below.

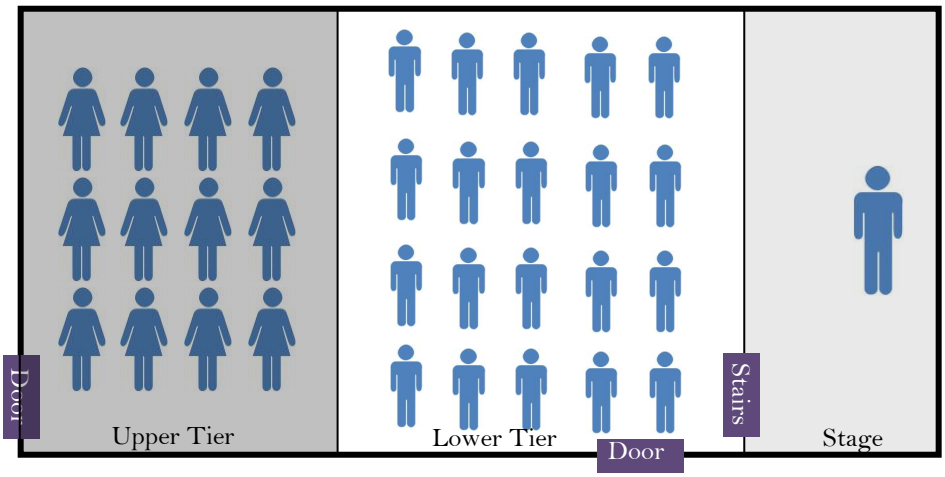
Figure 10: Configuration of CCTV-based Meetings



The University has two training structures, with men training men and women training women. In addition, the leadership has constituted a technological structure that enables male trainers to offer training sessions and workshops simultaneously to a group of males face to face and to a distant set of female employees through the CCTV network. This structure is also sometimes used to train females alone; most trainers, whether of men or women, are male.

In addition, the University has recently built a theatre-like structure making it possible for male trainers and trainees of both genders to occupy a single auditorium, as shown in the diagram below.

Figure 11: Configuration of the Theatre-Like Training Structure



As the figure illustrates, the trainer on the stage faces an auditorium on two levels, with male trainees in the lower tier and females in the upper tier, which is situated to the rear, enabling the female trainees to see the stage while preventing the male trainees from seeing them. There is an independent door for each level to avoid any physical contact between the genders. Each tier is supplied with a set of microphones and loudspeakers, enabling communication with the trainers and amongst trainees.

4.6.2. Administration

The University has two interviewing structures for those applying for academic programmes or posts in the University. In one, male candidates are interviewed face to face by a single panel of male academics, while in the other, female candidates are interviewed both face to face by a board of female interviewers and remotely by a panel of male interviewers, either by telephone or through the CCTV network.

The University has developed various technologies to enhance the spread of information and the efficiency of administration across its male and female campuses. Although there are separate libraries for the male and female campuses, an e-catalogue has been developed to enable members to search for resources across the two libraries and to request them from the other if they are not available in their own. In addition, members have been provided with free access to electronic resources, such as e-articles, e-books, e-dissertations and e-theses. The University has also adopted administrative technological systems that ease the application of procedures across the two campuses and make them accessible online. One such system is the Students' Information System, which enables students 'to register, to omit and add units and to collect information on tuition fees, study timetables, final grades, academic transcripts and bonuses' (Document 16). A complementary system is the Teaching Staff's Information System, enabling academics 'to obtain lists of registered students, to present office hours, to obtain teaching timetables and to enter marks and information about syllabuses and courses' (Document 17). There is also a Financial, Administrative and Technical Affairs System, dealing with personnel matters, financial accounting, purchasing, stock and storeroom administration, maintenance and technical support.

4.7. Concluding Remarks

This chapter has introduced the key technological structures of the University. It first shed light on the structures facilitating on-campus education, connecting male academics with female students and linking male and female students. It moved on to the structures facilitating off-campus education, including a system for recording

lectures, a videoconferencing system for interactive tutorials, the Blackboard system, a system for generating multiple-choice exam questions and a system for automatically marking the answers to these questions. It then covered the structures facilitating electronic social interactions across the male and female campuses and between University members and the outside world, including a web-based forum, a Facebook group, a Twitter page and mailing lists. It concluded with the structures facilitating management and administration, including a structure connecting the administrative, managerial and academic activities of the male and female workforces and the structures facilitating the promulgation of academic and administrative information across the two campuses.

Chapter 5: Discussion of Findings on Theme 1

The Influence of Social Relations on Technologies

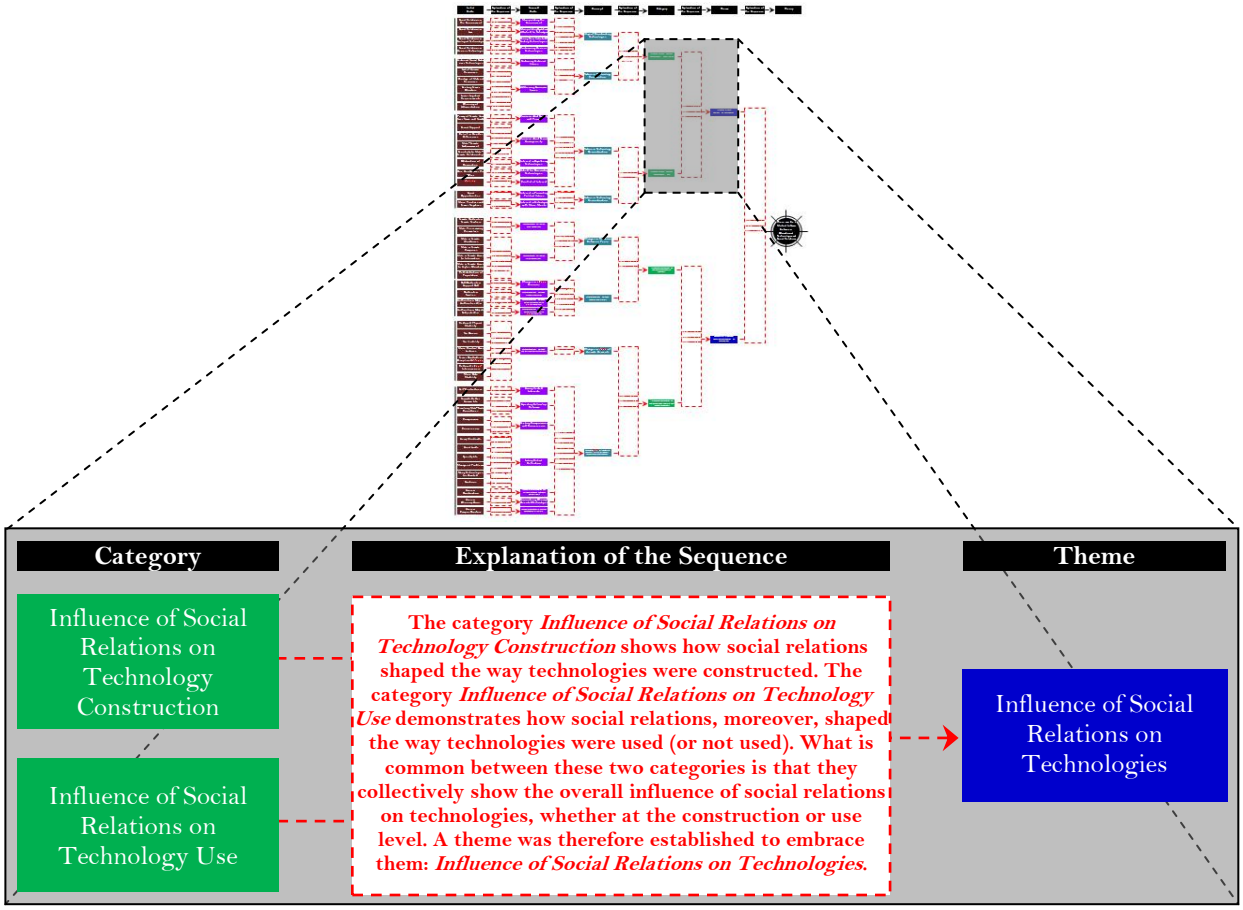
(Social Relations → Technologies)

5.1. Guide to the Chapter

This chapter addresses the first research sub-question: To what extent have the social relations between male and female campuses influenced the ways in which educational technologies are constituted and used so as to sustain themselves? It presents and discusses the first theme emerging from the data analysis: the influence of social relations on the ways that educational technologies are constructed and used, in an attempt to preserve themselves. It demonstrates that Saudi society, whether consciously or unintentionally, remains committed to many established structures, identities and relationships, a commitment that has resulted in the existing social relationships shaping the ways in which educational technologies have developed, been experienced and made use of. The current theme, as illustrated in the diagram below, emerged from two categories: the influence of social relations on technology

construction and the influence of social relations on technology use. This diagram zooms in on the relevant components of Appendix 1, which displays the sequence of the entire analytical process.

Table 4: Influence of Social Relations on Technologies (Theme)

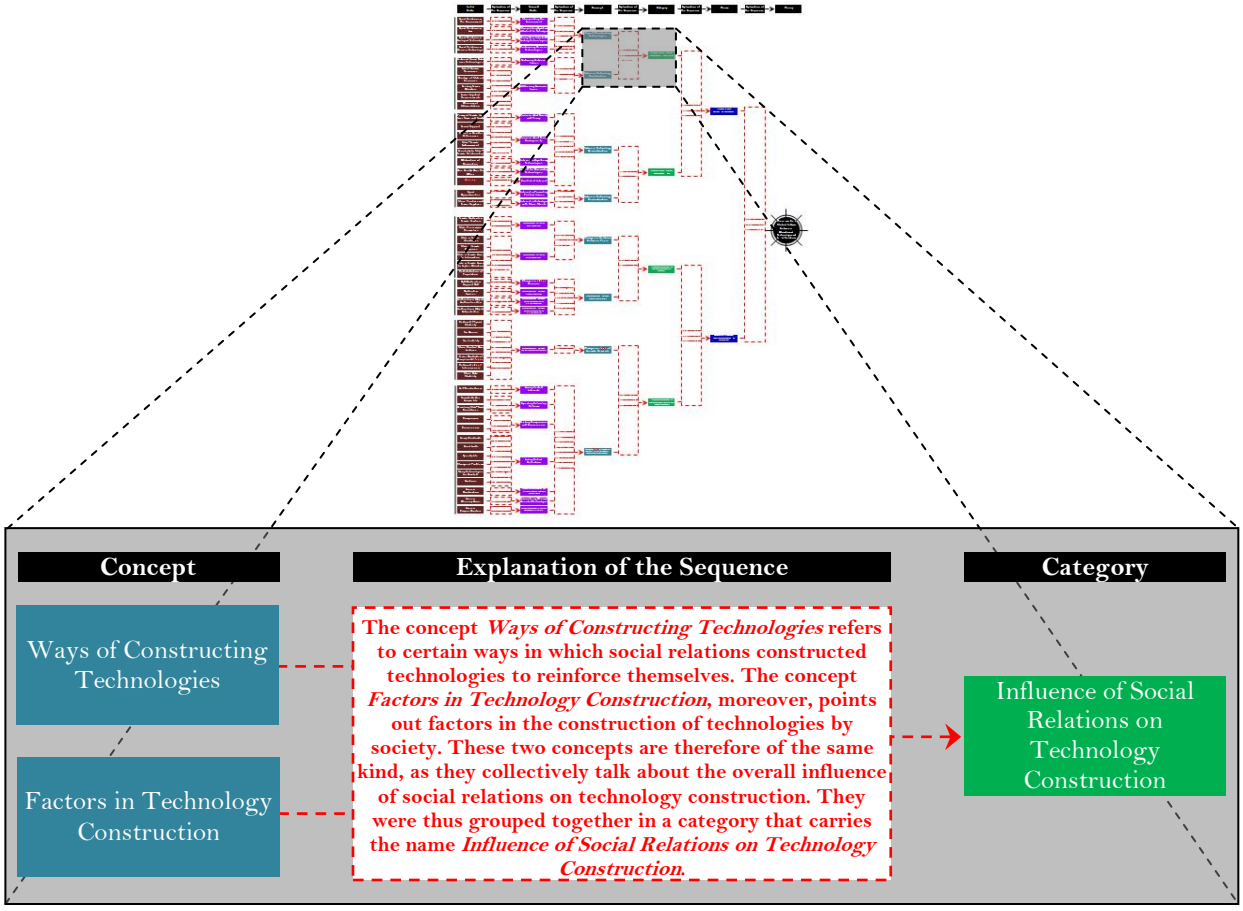


5.2. Influence of Social Relations on Technology Construction (Category)

This category demonstrates how pre-existing social relationships influenced how educational technologies were constructed. As explained in the illustration below, it came out of two concepts: ways of constructing technologies and factors in technology construction. What this illustration does, again, is to home in on the relevant parts of the expanded table in Appendix 1. These two concepts are informed mainly by analysis

of the University's documents and observation of its infrastructure and structure, and are discussed intensively with reference to the existing literature.

Table 5: Influence of Social Relations on Technology Construction (Category)

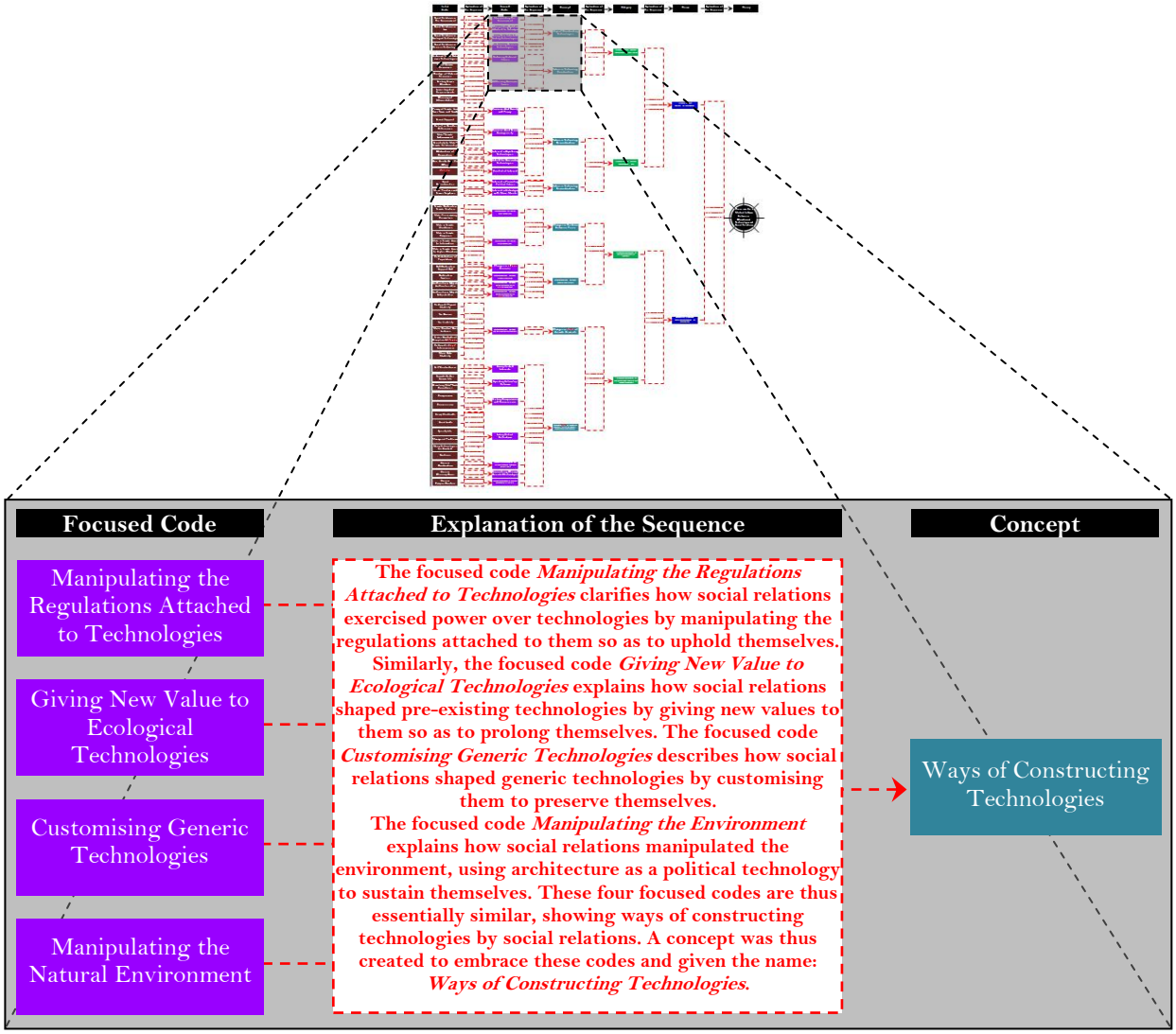


5.2.1. Ways of Constructing Technologies (Concept)

This concept concerns the ways in which social relations have constructed educational technologies in order to reinforce themselves, viz. by manipulating the regulations and mechanisms attached to technologies, by giving new values to ecological technologies, by customising generic technologies and finally by manipulating the natural

environment. Each of these ways, as illustrated in the following table, acts as a focused code and is unpacked below.

Table 6: Way of Constructing Technologies (Concept)

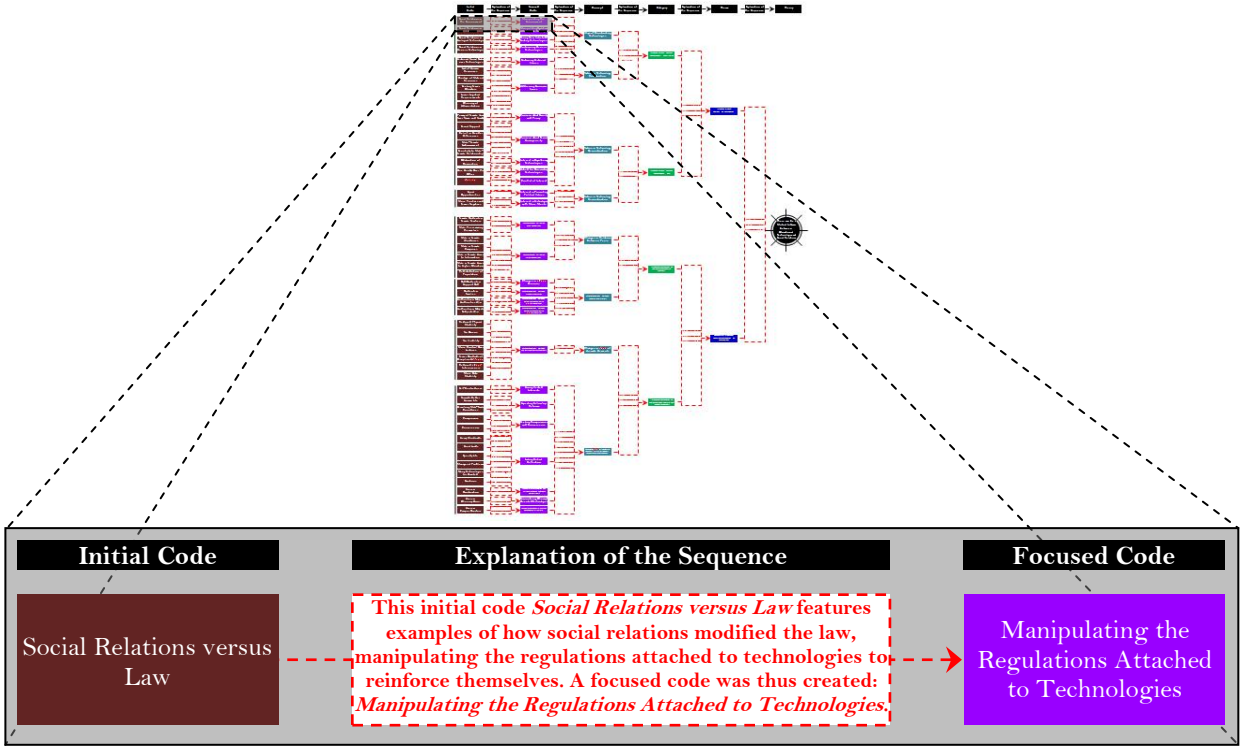


I) Manipulating the regulations attached to technologies (Focused Code)

Within this focused code, pre-existing social relations were discovered to have modified the law, manipulating the regulations and mechanisms attached to

technologies in an attempt to fortify themselves. This focused code, as shown in the illustration below, originates from one initial code: social relations versus law.

Table 7: Manipulating the Regulations Attached to Technologies (Focused Code)



Engagement with the data shows technologies not to stand alone within the University but rather to exist alongside regulations and mechanisms that explain the ways in which the parts of these technologies and the components of wider society are connected to form a whole. The influence of social relations, therefore, could involve controlling and manipulating the regulations and mechanisms attached to technologies. An outstanding example from the data is that only males teach online, irrespective of whether their students are male or female. In like fashion, although the University has recently launched its own TV channel, only males appear on it. Thus, women have been excluded from these two technological structures, not because

technology is itself 'anti-women' but because pre-existing social relations have manipulated its regulations, deciding that technologies simply must be constituted in this way. Another relevant instance is that, although technology, as an inanimate element, is value neutral with no ability to think for itself, the CCTV-based classroom structure enables only male academics to teach across gender lines, with female academics remaining limited to their own gender. Thus, female academics have, once again, been excluded from this technological structure because of the manipulation of the regulations attached to it.

Each videoconferencing tutorial, as mentioned in the previous chapter, lasts for two and a half hours, being divided into three periods: an hour assigned exclusively to male students, followed by a 30-minute break, then an hour for female students. Thus, although the videoconferencing system may seem 'un-gendered' in itself, a regulation is in place that enforces gender separation, so challenging the belief that 'the central act of the coming era is to connect everything to everything. All matters, big and small, will be linked into vast webs of networks at many levels' (Kelly, 1995: n.p.). In other words, while it was never entirely accurate to claim that everything would be linked to everything in the present age, it is probably fair to think that the application of the gender separation pattern to the videoconferencing system in the Saudi context is a sign of the social shaping of technology. This is because we can see here how a technology which in other cultures has had different effects is in this context constituted in ways that accord with broader societal structures.

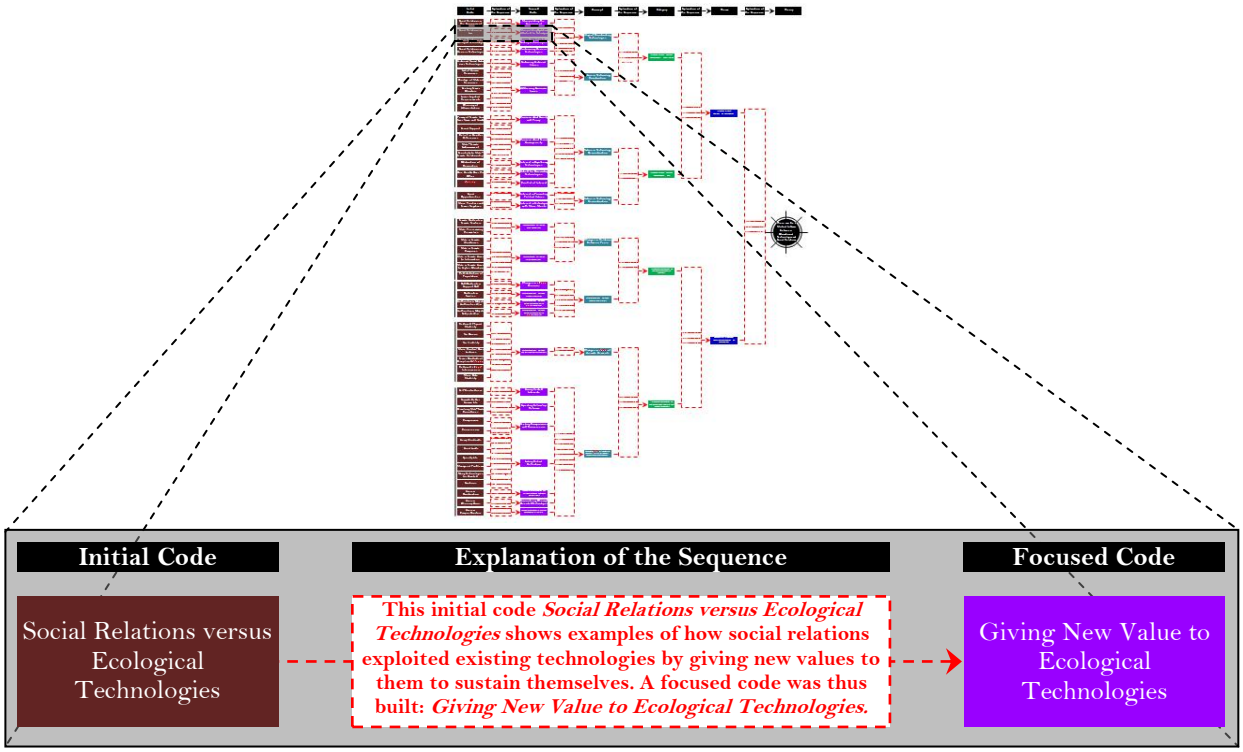
Another example is that, in the CCTV-based structures, while there is two-way audio communication, video communication is unidirectional, from the male to the female

room. This restriction is imposed not because of technical limitations but because society at the institutional level has consciously controlled the regulations, deciding that the technology must operate in this specific way in response to nontechnical considerations. To consider a further example, although a forum as a generic technology seems context-free, the leadership has manipulated the regulations concerned, preventing users from uploading photos of women and from releasing any personal contact information (e.g. their mobile numbers or email addresses). This is done partly in order to prevent any *private* contact between males and females beyond the forum's *public* communication. To switch focus to the national level, although there has been no radio station run by the higher education sector, the Saudi Arabian Radio Station has broadcast male oral defence examinations for higher studies, with female candidates being excluded from this technological structure.

II) Giving new value to existing technologies (Focused Code)

Pre-existing social relations, as this second focused code shows, have come to influence surrounding technologies (i.e. 'ecological' technologies), giving them distinct values with the purpose of reinforcing themselves. This focused code, as explained in the diagram below, originates from an initial one named 'social relations versus ecological technologies.'

Table 8: Giving New Value to Ecological Technologies (Focused Code)



Examination of the collected data suggests that a technology is best seen as a 'text' which is 'written' (configured) by designers and providers and then 'read' (interpreted) by 'consumers' (see Grint and Woolgar, 1997). This implies that, although the authors of a technology may attempt to impose certain 'readings' and to limit other interpretations, consumers may nevertheless sidestep them, producing innovative readings that best suit their own needs and interests (*ibid.*). To cite a related example from the raw data, the University's leadership read the telephone and email innovations in a very different way, employing them to enable men to supervise women remotely while keeping the two parties at a distance. The leadership also shaped these two innovations to enable female students to reach their male teachers during office hours, since the custom of gender separation prevents them from meeting face to face.

The leadership also gave a new value to the CCTV technology, using it to connect the academic, managerial and administrative activities of the two genders electronically while keeping the two parties physically apart from each other. It used SMS to enable its staff and support staff to text up-to-date information to individual students or groups of students and furthermore gave a distinct value to the mobile phone, supplying teachers on the online distance education programme with mobile phone handsets and accounts, via which their off-campus students could reach them during their 'mobile office hours' (Document 102). In this respect, a certain community might not simply comprise passive recipients of the meaning of a certain technology, but rather act as a politically active contributor to its meanings (Wyatt *et al.*, 2002: Oudshoorn *et al*, 2004).

Switching focus to the wider society, some Saudi families have given a distinct value to the technology of the car, covering their windows with a dark one-way film through which people inside the car could see out while those outside could not see in. One purpose was to protect the occupants from the heat of the sun, which is considerable for most of the year. A more relevant reason was that this technology prevented people on the street from seeing a family's female members when they were in the car, thereby protecting their privacy. With this in mind, it seems reasonable to assume that communities are not necessarily purely malleable subjects, bowing to the dictates of the meaning of a certain technology, but may rather be politically active, inventive and expressive (see Mackay and Gillespie, 1992). Pinch and Bijker (1984: 428) seem to be justified in arguing that the organisational, historical, economic and political situation

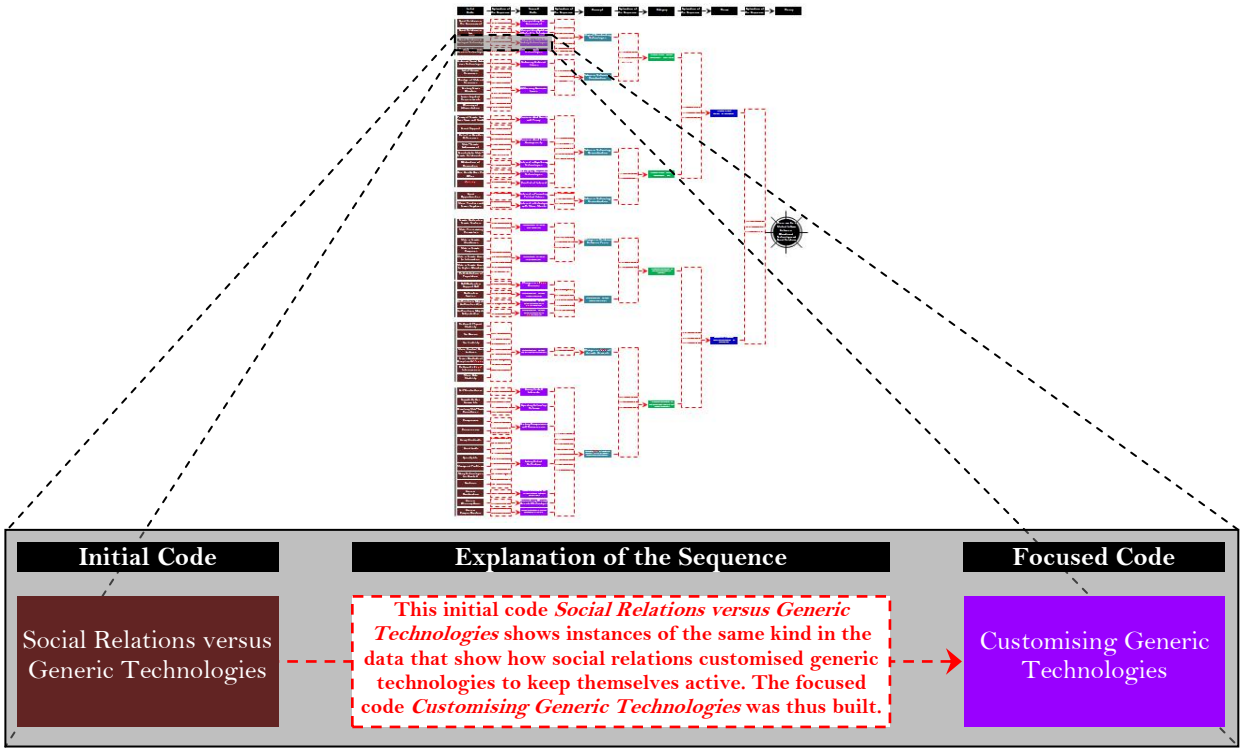
of a particular society 'shapes its norms and values, which in turn influences the meaning given to an artefact.'

Such assigning of new meanings to existing technologies suggests the emergence of certain applications and meanings of a technology within a certain community (Vyas *et al.*, 2006). With these actions in mind, it might be reasonable to presume that the influence of social relations on technologies at the institutional level can involve giving a distinct value to an existing technology based on community requirements and in response to local conditions (see also Caron and Caronia, 2001). An implication that can be drawn here is that some pre-defined technologies can still be flexible, protean and put to different kinds of use (see Collins and Pinch, 1982; Sterling, 1996). It can also be contended that some 'technologies are seen to be characterised by "interpretive flexibility" and that various "relevant social groups" articulate and promote particular interpretations of the technology' (Dery *et al.*, 2006: 231).

III) Customising generic technologies (Focused Code)

In keeping with this focused code, pre-existing social relations appeared to have exerted influences on generic technologies, customising them in an attempt to preserve themselves. This focused code, as explained in the illustration below, originates from an initial code named 'social relations versus generic technologies.'

Table 9: Customising Generic Technologies (Focused Code)



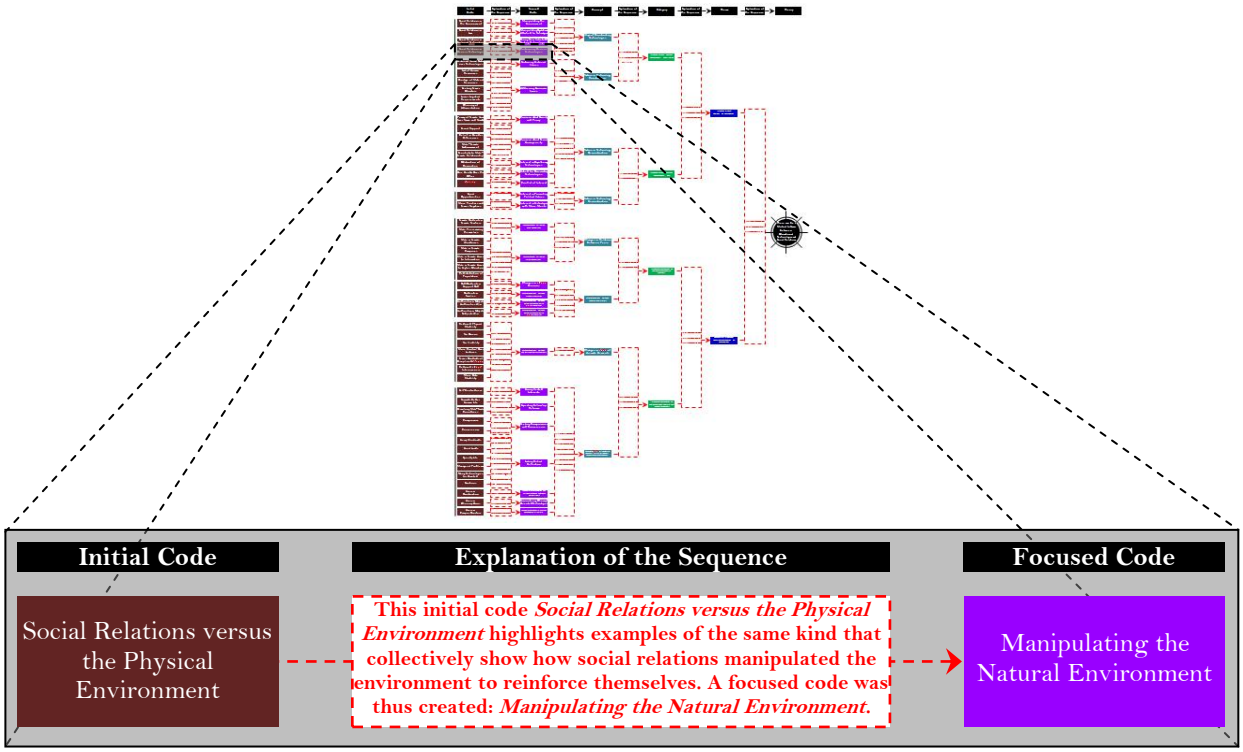
There are indications in the data that the influence of social relations on technology constitution at the meso level might involve customising (i.e. 'taming,' in Toffler's terms, 1970: 394) generic technologies in a way that fits within local and regional norms and needs (see Mackay, 1996). For instance, the leadership deactivated the generic chatting feature of Blackboard and the one-to-one messaging feature of the forum between male and female students, to forestall any moral problems. Likewise, although the videoconferencing system ordinarily allows participants to use the video feature, the leadership has 'filtered out' this feature, limiting students to written and vocal communication so as to maintain the privacy of the female face, not to overload the system and to enable a larger number of students to attend the videoconferencing class (i.e. 400 students at one time).

Thus, generic educational technologies here were 'harnessed to social ends' (Toffler, 1970: 389). This can be seen to underpin the observation that, while generic technologies across the world are similar in their technical essence, 'different countries may view them differently according to their own economic development levels, culture and education traditions and political systems, and thus may portray different images of technology, education, teachers and students, set different goals, and propose different approaches in achieving their goals' (Zhao *et al.*, 2006: 3). The Saudi educationalist Mehana (2009) recommends that the impact of generic technologies 'should be monitored within the local social environment to which it is applied' (p. 91). She warns against merely transferring generic technologies from foreign contexts 'without paying attention to the social setting or to the local recipient culture' (*ibid.*). Bearing this in mind, it is reasonable to advise Saudi academic commentators, analysts and researchers to be more sensitive to 'the dynamics in play as [generic technologies] are translated from a general or commercial organisational context to a specific [setting]' (Cornford and Pollock, 2003: 81).

IV) Manipulating the natural environment (Focused Code)

What this focused code explains is that existing social relationships appeared to have manipulated the environment so as to reinforce themselves. As shown in the graphic below, it also came from one initial code: social relations versus the physical environment.

Table 10: Manipulating the Natural Environment (Focused Code)



Analysis of the data points towards a relationship between human power and space, with the former using 'architecture as a political technology' (Low and Lawrence-Zúñiga, 2002: 30) for working out certain concerns. To cite an example here, the University's leadership exploited architecture for the establishment of the CCTV-based and glass-wall structures so as to maintain certain components of the social structure. Likewise, the two-tier theatre structure is the outcome of a consciously informed architectural rearrangement. The male and female campuses, similarly, were constructed by reorganising the architecture to fit particular social patterns and relations. These technological structures can be characterised as 'technologically defined geographic and social spaces' (in Pfaffenberger's terminology, 1992: 291). They refer to both the 'culturisation' of the space and the 'spatialisation' of the culture (Pellow, 2002; Webster, 2005). Setting up these structures buttresses the view that

'places are socially constructed by the people who live in them and know them' (Low and Lawrence-Zúñiga, 2002: 15). Pellow (2002) expects the spatial organisation of constructions to match their occupants' lifestyles. Weisman (1992) takes a parallel line, seeing the spatial configuration of buildings and communities as both reflecting and maintaining the surrounding societal and cultural values and arrangements. Rodman (2002: 205) is of the same opinion, stating that places 'are politicised, culturally relative, historically specific, local and multiple constructions.'

The male and female campuses and CCTV-based, glass-wall and theatre-like structures should thus be seen as political *in themselves*, consciously constructed to be compatible with particular cultural configurations and social relationships. It might therefore be sensible to assume that some educational spaces and technologies '*in themselves* have political properties' (Winner, 1986: 122: original emphasis). The structural features of these spaces provide users with limited flexibility, which means that to adopt these structures is to unavoidably adopt a particular type of political life (*ibid.*). The formation of these architectural structures suggests that the surroundings and the environment can be 'twisted' by contextual norms to generate a certain social-educational 'ritual' (in Pfaffenberger's terms, 1992: 285) and that architectural technologies might embody and 'exemplify social life' (Pellow, 2002: 178).

The formation of these architectural structures implies that an architectural technology should not be perceived as simply an inventive assembly of objects, but rather as a space being produced by and also reinforcing certain social relations. This shows how educational technologies can be constituted to fit within pre-existing societal configurations, thereby 'reinforcing established, stable patterns' (Burkhardt

and Brass, 1990: 104). It also demonstrates how a culture can express its values through architecture, for example inscribing the value of gender separation into these architectural technologies, thus granting solidity to the value and imposing it on practitioners, some of whom (be they students or staff) reported finding themselves obligated to accept it as an integral part of their educational or professional practice. Keeping these observations in mind, it would be unwise to interpretively analyse and critically reflect on architectural technologies in the higher education sector independently of contextual factors. Researchers must instead provide 'context-rich' (rather than 'context-free') analyses of technology constitution in higher education (Selwyn, 2010).

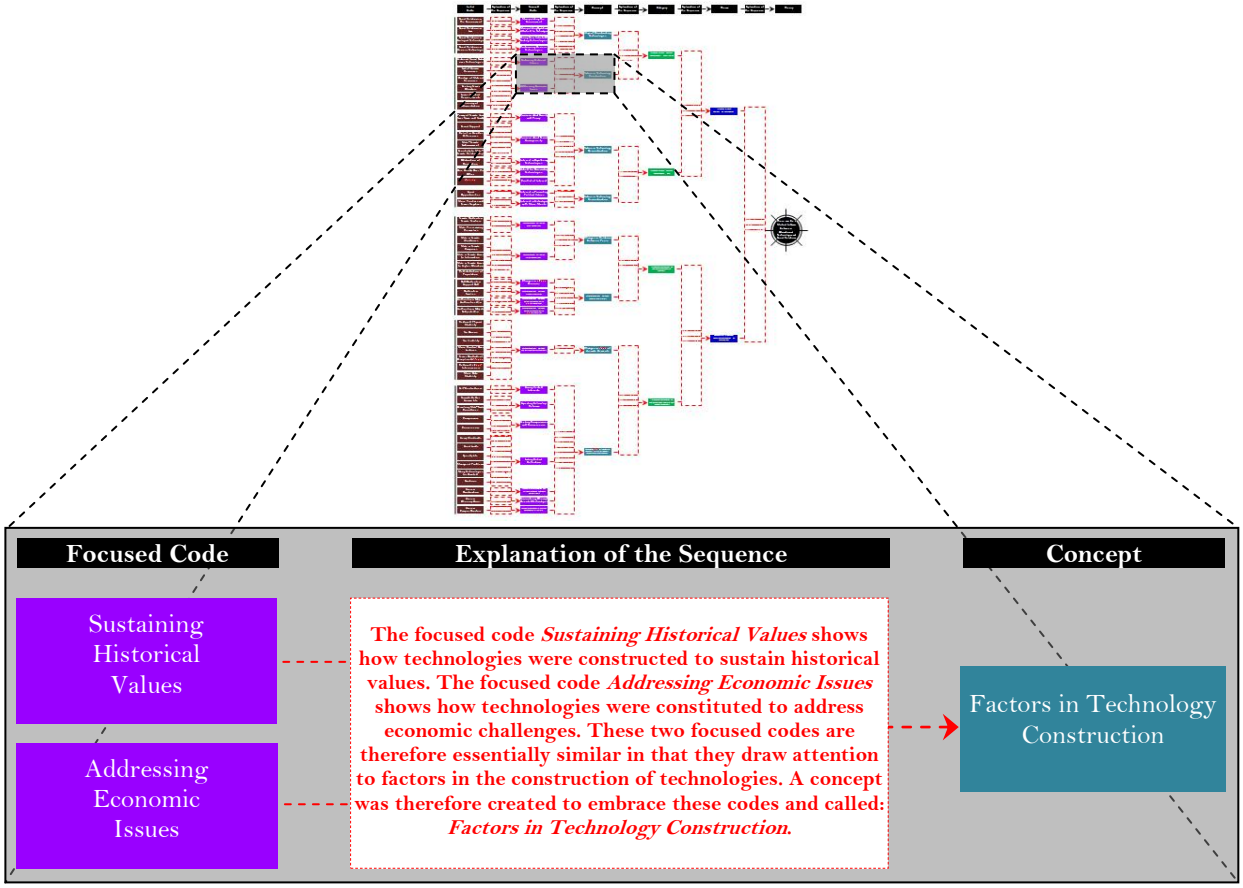
The establishment of these architecture-mediated structures shows that a society can interact politically with the environment, the former shaping the latter for its own advantage. It demonstrates clearly how human beings make sense of what they have experienced in a way that fits within local social patterns. It reflects our capacity to adjust and manipulate the environment for our own needs. This provides support for the contention made in the literature review that, whereas non-human animals act simply in response to the objective requirements of living, humans have the ability to manipulate nature to serve their own needs, values and interests. Yet one might argue that humans are not actually the only toolmakers with the ability to control their environments. Other animals (e.g. birds) utilise ecological resources (twigs and grass) to adapt and rework their environments (building nests), although their work is not as complicated and sophisticated as that of humans, blessed with cerebral cortex, thumbs and fingers (Nye, 2007). Indeed, lower animals such as ants and bees 'build complex

communities that include a division of labour and food storage' (*ibid.*: 1). Seen in this light, *Homo sapiens* is not the only organism that undertakes the business of making its environment agreeable to its requirements and interests (Kelly, 1995). If, therefore, some humans imply that they have the capacity to rework their environments while other creatures do not, 'a little modesty would be welcome' (to use Castells' phrase, 2004: 41).

5.2.2. Factors in Technology Construction (Concept)

This concept turns our attention to factors in the construction of educational technologies at the institutional level, which include sustaining historical values and addressing economic issues. Each of these acts as a focused code, illustrated in the following table and unpacked afterwards.

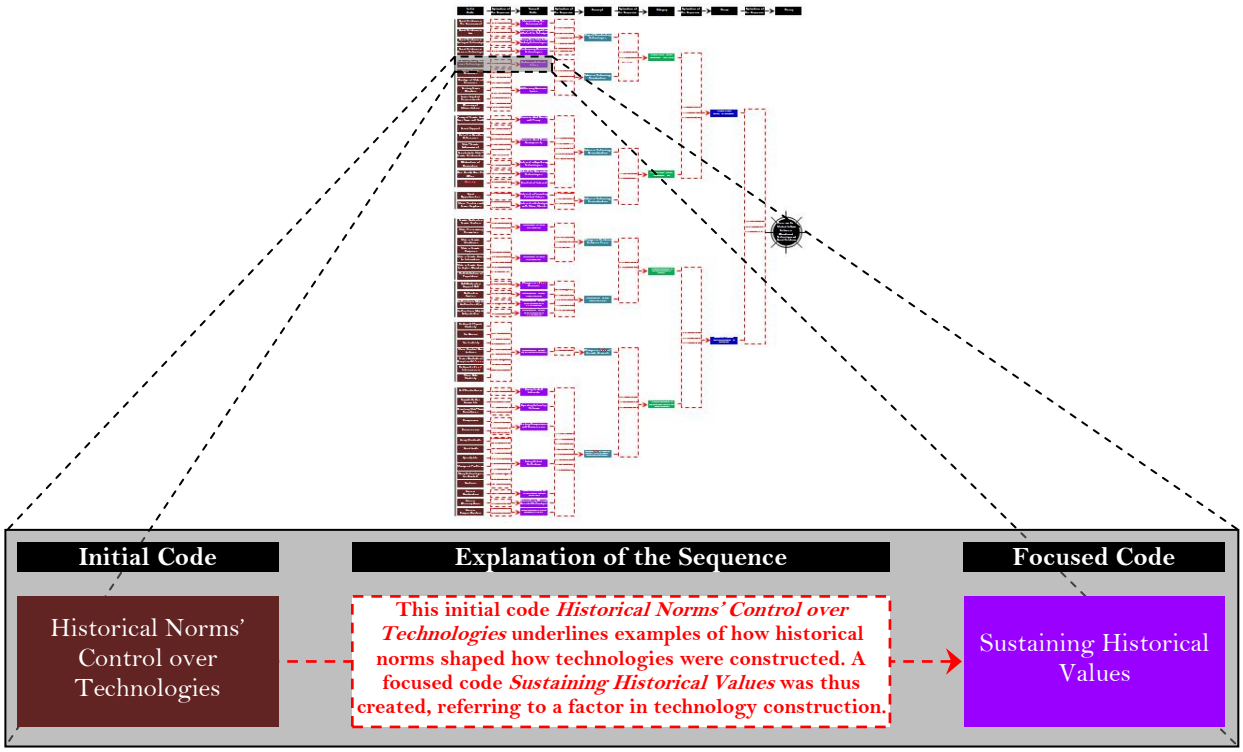
Table 11: Factors in Technology Construction (Concept)



I) Sustaining historical values (Focused Code)

What this focused code demonstrates is that educational technologies were constructed to sustain historical values, pointing towards the impact of such values upon such technologies. As explained in the table below, it originates from an initial code: historical norms' control over technologies.

Table 12: Sustaining Historical Values (Focused Code)



Examination of the data demonstrates how historical values influenced how educational technologies were constructed at the institutional level. The historically entrenched national culture of Saudi Arabia has influenced the way that educational technologies have been constituted. As a consequence of this politically protected entrenchment, concerted social efforts have been made to mould technologies to keep male and female campuses firmly apart, notwithstanding the organisational difficulties involved. This gender separation persists in spite of the fact that, were cultural norms to be overturned, the two campuses could simply be merged into one, thus 'making our life easier' (Male Academic 14), achieving efficiency and eliminating the logistical complexity inherent in gender separation. Thus, the entrenched distribution of power relations and social divisions within the country has affected how educational

technologies are constituted. In this vein, Thomas (1996a) contends that technologies 'can reflect and perhaps reinforce divisions in society' (p. 13).

Yet the teaching and learning structure and infrastructure of the higher education system as a global concept is also well established and politically protected, acting as 'one of the most stable institutions in our civilization, surviving for a millennium through wars and plagues and technological change with its values and roles largely intact' (Duderstadt *et al.*, 2002: 1). Because of this politically sheltered establishment, the university system was observed to have attempted to shape digital technologies (i.e. the videoconferencing system) to fit within traditional class activities instead of reforming traditional class activities so that they would better exploit the potential of digital technologies. As stated by the policy, 'in the videoconferencing environment, the students can participate live in the class and practise all *traditional* class activities electronically' (Document 8: emphasis added). Thus, an effort is being made here 'to build the virtual university from *within* the constraints and limitations of the traditional university and the issue for them is whether to continue to work with, and try to fit these new online courses and seminars into, existing concepts, arrangements and infrastructures' (Cornford and Pollock, 2003: 36: original emphasis). An additional example is the fact that the integration of information and communications technologies (e.g. email, PowerPoint, word processing and Web resources) into academia has not fundamentally affected the essential nature of the teaching and learning process. Such technologies have become commonplace, but in a way that serves as a complement to existing instructional tools, i.e. 'in a way that only gradually is stretching traditional on-campus practices' (Collis and van der Wende, 2002: 62).

Collis and van der Wende (2002) conclude their international comparative study by suggesting 'that higher education institutions do not expect revolutionary change as a result from or related to the use of [information and communications technologies]' (p. 61). That said, such institutions do change their procedures and practices, yet this change is usually slow and consistent with the 'spirit' of the existing system, evolving alongside the 'back-to-basics' approach, so remaining somehow within conventional protocols (*ibid.*). Thus, the dynamics of change in the higher education sector seems essentially similar to those occurring in the national culture, where 'those campaigning for liberalisation do not challenge the existing social-cultural system, but work within it' (Al Lily, 2011: 120).

In consequence, *cultural* tensions have occurred between the historically deep-rooted higher education system and the historically ingrained national culture. These tensions were found to have played a role in influencing how educational technologies have been constructed. The CCTV-based, glass-wall and theatre-like technological structures seem to be compromises resulting from these tensions, in the sense that these structures have aided Saudi culture to sustain its norm of gender separation, while also enabling the higher education structure to somehow protect its conventional socio-spatial organisation of the classroom structure. This shows how educational technologies can lie at the intersection of an ongoing negotiation between different organisational and cultural elements. What is clear here is that educational technologies could receive credit for helping the apparently 'conservative' forces of the higher education system and the national culture to reach a compromise, yet they

could also be criticised for helping to sustain traditional values and norms, thus impeding 'progress.'

However, Saudi culture and its society seem in some ways, from the currently available data, to have exerted more influence over the conventions of the higher education system. A number of examples from the data support this observation. One is that, although a considerable part of female on-campus education is delivered electronically through the CCTV-based and glass-wall structures, this education is officially treated as if taking place in face-to-face settings, even though it may seem closer to distance education. Similarly, although the male supervision of women takes place entirely at a distance, it is recognised by the University as on-campus education, which entails a considerable modification in the traditional model of residential higher education, whereby 'students must come physically to a campus that operates within a recognised geographic service area and within a specific local cultural context' (Hanna, 1998: 69).

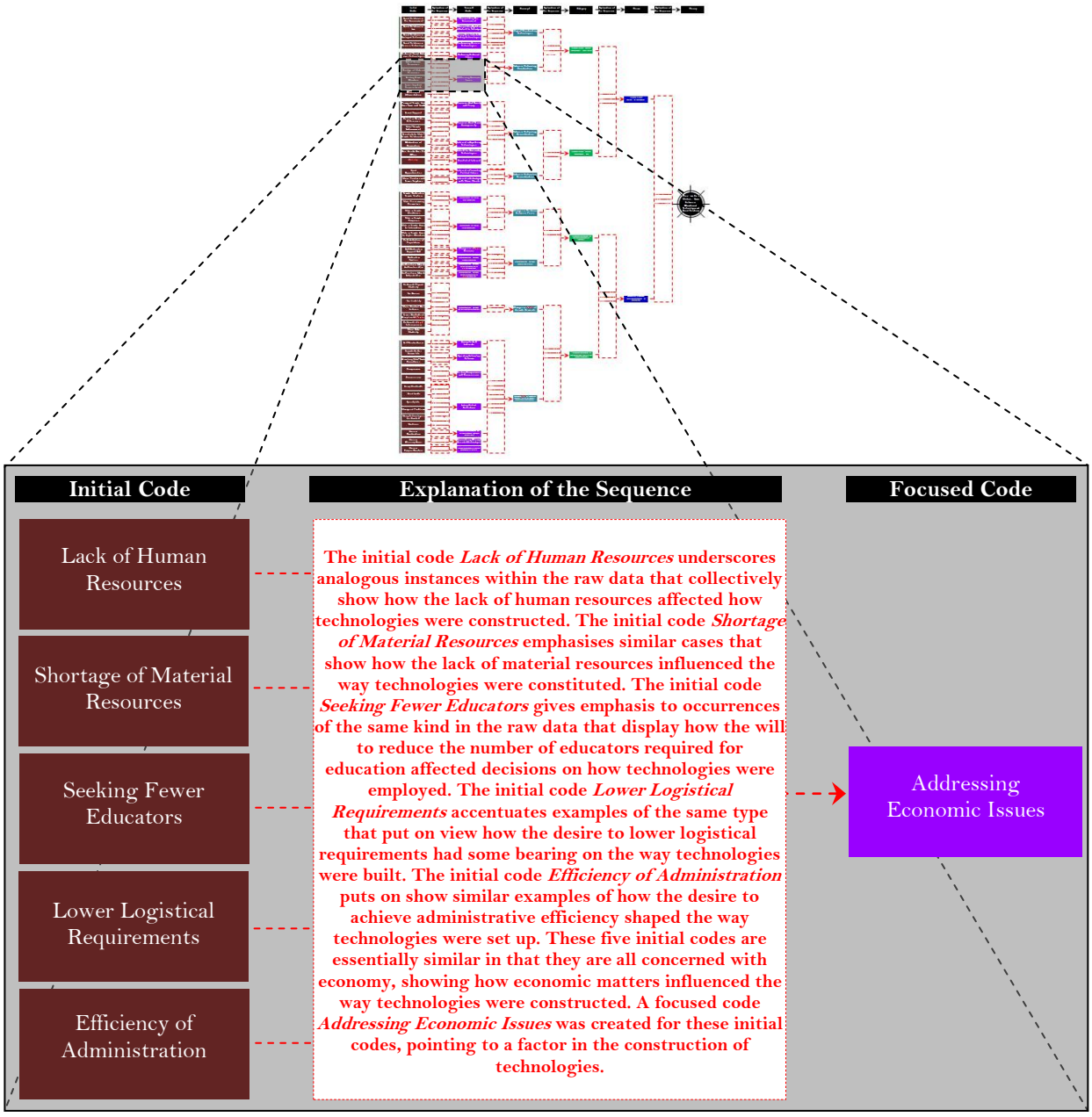
To take an additional example, the University was reportedly negotiating with a British university regarding the possibility of developing a new programme enabling female faculty members of the University lacking a master's or doctoral degree to pursue postgraduate studies in the British university without the residency requirement, given that social and family difficulties prevented these members from living abroad. The proposal was that two supervisors would be assigned to each supervisee, one from the University and the other from the British university, with the academic in Britain acting as the main supervisor. Communication between the supervisee and the main supervisor would take place through communications technologies, such as videoconferencing, telephone and email. The main supervisor

would be required to visit the University twice a year, while the supervisee would have to visit the British university once a year. This proposed supervision would be recognised as on-campus education and the qualification would be awarded by the British university. Such a proposal has reportedly been implemented recently by some Saudi universities, representing a considerable modification in the traditional model of residential higher education.

II) Addressing economic issues (Focused Code)

This second focused code shows how educational technologies were constructed to address economic matters, referring to the influence of such matters on technologies in the higher education sector. The illustration below explains that this focused code originated from five initial codes: lack of human resources, shortage of material resources, seeking fewer educators, lower logistical requirements and efficiency of administration.

Table 13: Addressing Economic Issues (Focused Code)



The dearth of human and material resources was found to have influenced the constitution of educational technologies at the institutional level. The lack of female academics, along with the necessity of separating the genders, encouraged the leadership to employ technologies to enable men to teach women electronically while maintaining physical separation. Similarly, the overall dearth of academics again

combined with the need for gender separation to drive the University to utilise technologies to connect male and female classes electronically while keeping the two genders physically apart. A further example is that the computer-based distance education programme was introduced because the diffusion of on-campus higher education across the country was logistically challenging, the population being widely spread throughout the desert.

A further relevant item of data is that a multiple-choice marking system was adopted as part of the online distance education programme to enable the electronic marking of exams, in response to the very high number of off-campus students and the scarcity of teachers. Seen through this lens, it can be said that educational technologies can at times offer novel solutions to the challenges that a society faces (see Toffler, 1970). This in turn suggests that the existence of a social demand can encourage creativity, making possible the formation of an appropriate technology (see Mackay, 1996). Indeed, it is difficult to imagine in what form Saudi culture and its social norms would have survived the demands of higher education without the assistance of technologies.

From a sifting of the data, it seems that the rising number of higher education beneficiaries also influenced the construction of educational technologies at the institutional level. The rapid demographic growth in the country and the increasing number of citizens wanting to pursue higher education have reportedly placed pressure on the higher education sector to accept more students than it can properly cope with. The leadership has thus taken three technology-facilitated actions in response. It has connected the male and female classes electronically, via CCTV, thereby increasing the number of students per class and in turn allowing increased

university admissions. It has also opened an online distance education programme, with the capacity to enrol a larger number of students. Finally, it has transferred some of the on-campus classes to online classes, thereby enabling more on-campus students to register for the course and ultimately also boosting admissions. These three technology-based actions have been taken because it was felt at the higher levels that technologies could help 'fulfil a certain need, accomplish a certain task [and] achieve a certain goal within a given set of circumstances' (Johnson and Wetmore, 2009: xiii). Taking these technology-meditated actions suggests that educational technologies are not constructed at random and can respond to certain contextual values, interests and needs, emerging as products of 'particular social processes, within a particular social, political and historical context' (Agalianos, 1996: 5). Yet, since technologies here have been integrated into higher education activity mainly for non-educational (i.e. economic) reasons, they cannot be expected to enhance education and may, in fact, turn out to impede it (see Selwyn, 2011a). One should ask here who has really gained from the use of these technologies in higher education.

It was clear from the data that efficiency gains influenced the way educational technologies were planned and developed. An example of this is that the higher costs incurred through the necessity of separating the genders has encouraged the University to apply technologies to connect the male and female classes electronically, thus reducing logistical requirements and the number of teachers needed. Male Academic-Manager 2 illustrated the point, explaining that 'the teaching hours of a faculty member are precise, and if these hours increase, he will get a supplement. ...so, since the connecting of male and female classes reduces the workload of the faculty

member by 50%, the University can save all those supplements.' Thus, 'just as their use in the business world enables firms to produce more with fewer employees, it is hoped that [the use of technologies] in the educational world will enable more learning to happen without hiring more teachers' (Bromley, 1995: 97).

The leadership is actually in the process of replacing the CCTV-based classroom structure with the glass-wall alternative in order to reduce costs, given that, in the glass-wall structure, the teacher's and students' voices pass through the partition without the need for microphones and speakers. Thus, this arrangement is more efficient than the CCTV-based one, requiring less equipment and accordingly costing less to run. Another instance of efficiency gains being found to matter when planning technologies is that the CCTV system incorporates a video recorder, used to record lectures for retransmission to other groups of students. Similarly, lectures in the online distance education programme are recorded and reused year upon year, with the teacher being paid only for the first recording.

The University, as mentioned in the previous chapter, has developed various technologies to enhance the spread of higher education and information and the efficiency of administration across and beyond its male and female campuses. The University explicitly states that it has a 'mission to constantly empower the University to achieve its objectives *efficiently* by making information and automated tools available without spatial and temporal limitations' (Policy: emphasis added). Its vision is for the University to become 'respected and recognised as one of the premier institutions in the region, enabling growth, service excellence and *operational efficiency* through organised, optimised and energised information and communications technologies,

resources and capabilities' (Policy: emphasis added). One of its objectives is 'the consistent accomplishment of customer service levels, based on best practices and *cost-efficiency*, with quality management of all support operations' (Policy: emphasis added). The University, through information and communications technologies, 'aims to develop distance education and learning programs that serve students regionally, nationally and internationally and to make educational processes available without spatial and temporal limits' (Policy). Considering these citations from the University's policy document, the leadership clearly sees modern information and communications technologies as holding out the promise of efficiency gains, as such technologies 'not only enable the effort of teachers, researchers and administrators to be spread over larger bodies of students, thereby allowing lucrative niche markets (e.g., in relation to overseas students and mature students) to be reached cost effectively but also drive internal efficiency through more streamlined workflows and administrative processes' (Cornford and Pollock, 2003: 5).

This concern regarding efficiency on the part of the leadership is consistent with something of a new nationwide trend towards efficiency and rationality gains. The word 'efficiency' appears many times in the Saudi National Communications and Information Technology Plan, which aims to raise 'the efficiency of education and training systems through the employment of information and communication technology' (Saudi National Communications and Information Technology Plan, 2005: 4). If efficiency gains are truly to be given top priority in the Saudi higher education sector, then any innovation should be treated as a positive development only if it fulfils its purpose more efficiently, with no other values being permitted to affect this

judgement (see Ellul, 1964; Staudenmaier, 1985). Yet achieving full efficiency in Saudi higher education activities is unlikely, since such activities are driven by the culture and some cultural issues can hardly be justified rationally. Put simply, if efficiency and rationality were to be given the highest priority in the Saudi higher education sector, then the male and female campus would have to be merged, in order to save the costs of gender separation. But this is not possible; therefore it could be argued that efficiency, rationality and other 'science-oriented norms' are being socially shaped here, with social relations being consciously allowed to limit the scope of application of science.

A look at the data suggests that the concept of efficiency has, as emphasised above, become a major feature of University and national policies. The anticipation here is that this enthusiasm for technology-facilitated efficiency might evolve to embrace the attempted automation of teaching and learning. The transformation of teaching and learning into a set of mechanisms and techniques was rendered possible by the existence of 'instructional design', a methodology explicitly intended to 'industrialise' teaching and learning by reducing them to a series of steps and components, much as a production line does for the once artisanal craft of producing a motor car or a box of biscuits. The University's policy was found to explicitly consider education to be an '*instructional* process' (Document 128: original emphasis).

Indeed, the University has a 'Department of Instructional Technologies.' The use of the term 'instructional' here would seem to entail either that the University really does intend to 'instructionalise' education, or merely that it is rather careless in its terminology. If the former is the case, then there are corporations which will help it to

realise this intention. Such firms aim to analyse what academics and students do, breaking their work down into a series of job descriptors with separate tasks, examining what components can be automated, standardised and outsourced (see Noble, 1998). They seek to separate 'conception from execution' (Apple and Bascom, 1994: n.p.). All this represents something of a starting point for the technological structuration and 'instructionalisation' of teaching and learning; the taking up of Blackboard and the e-marking system can be seen as indicators of this starting point.

Mechanisms were noticed to be increasingly 'colonising' (in the terminology of Habermas, 1984; 1987) many professional and social lives, with the effect that 'technique has taken over all of man's [sic] activities' (Ellul, 1964: 3). This outcome has been facilitated perhaps by people's tendency to see themselves increasingly as 'devices regulated by medical, psychological, athletic, and other functional disciplines' (Feenberg, 2003: n.p.) In bookshops, one 'can find the equivalent of operating manuals for every aspect of life: love, sex, raising children, eating, exercise, making money, having fun, and so on and so forth' (*ibid.*). Thus, higher education actors might not actually object to the transformation of teaching and learning into a set of mechanisms and techniques to be captured in technologies, since they have been coached into such an expectation by the wider context within which they exist and live. This transformation is made possible by the modern conception of literacy as one of the 'survival skills necessary to function in society' (Warschauer, 1999: 2). The teaching of literacy has come to involve 'programmed instruction, learning packages with teachers as facilitator, and mastery of learning of a common set of objectives' (*ibid.*: 3). The

literacy curriculum, therefore, is 'based on de-contextualised sub-skills of literate competence' (*ibid.*).

The data indicate that the transformation of teaching and learning into a set of mechanisms and techniques to be captured in technologies had been made possible by the emergence of a generation of students, academics and managers who believed in technology as a means of facilitating progress, overcoming time and space limitations, widening access to higher education, reducing subjectivity, enhancing quality, efficiency and rationalisation, promoting standardisation and thus re-organising and developing their educational and professional environments. This is exemplified by the assertion that 'technological change is always progress, and we must be with progress' (Male Academic 7). Thus, one possible eventual outcome of this progressive technological shift by the University would be for the roles of all contributors to its activities to be 're-engineered' (Brown, 2002), becoming functional mechanisms that fit within the efficient technological structure of the University (see Ellul, 1964; Holt and Segrave, 2003). Since students and academics are the most important contributors, we can surmise that their roles might perhaps also be subjected to this 'engineering' sooner or later. In an enthusiastic comment on the multiple-choice e-marking system, for instance, Male Academic 10 said:

> We have benefited a lot from technology in marking. I used to sit down to mark for an entire week. This requires effort and time and it can be difficult to read students' handwriting. But today we have reduced all this. We have reduced the effort. We have reduced even the impact on our health. And we have started marking using technology. There is now some justice. When

> you mark using technology, the student becomes 100% satisfied and the mark is 100% accurate. We have dreamt of such efficiency for a long time.

The transformation of teaching and learning into a set of mechanisms and techniques was observed to be likely, given that the language that University policy documents have used since the foundation of the Faculty of E-Learning and Distance Education has been obviously informed by business and corporate culture. This language has explicitly defined students as 'products' (Document 33) and academics as 'producers' and 'makers' (*ibid.*). As the policy formulates it:

> The Faculty of E-Learning and Distance Education is aimed at three main categories: 1) Students, who are the *products* which the University produces for the community and through which the University acquires its reputation and status; 2) Faculty members, who are the *producers* and *makers* that use their creativity and the tools, technologies and e-learning systems provided to them by the University to produce educational materials of high quality that are commensurate with the reputation of the university and its scholarly status amongst students and community members; 3) The community, which the University serves through the development of educational programmes and training programmes.
>
> (Emphasis added)

Much of the language cited in this subsection underpins the belief that the new generation of university leadership seems to have been recruited predominantly from

business rather than academia. In interviews, some managers explicitly used the business term 'outsourcing' (Male Academic-Manager 2). The wider literature records that some enthusiasts for a mechanistic approach, as reported by Kerr (1996), hold the belief that 'the world of the student, the classroom, the [university is] a machine (perhaps a computer), needing only the right program to run smoothly' (p. 113). Consequently, exam questions in the online distance education programme have had to be reshaped to fit within the functionality of the multiple-choice marking system, even if this has resulted in reducing the critical and intellectual capacities of students by limiting them to choosing among predetermined items. The multiple-choice marking system, moreover, was reported to have forced academics to teach in a way enabling their students (i.e. 'the consumers of university services,' in Ritzer's (2009: 236) terminology) to eventually choose the 'right' items in the exam, so as to achieve higher grades. In a similar vein, although medical practice is characterised as highly professional, the findings indicate that medical students had to take some of their exams through simulation software, which consisted of a set of predetermined functional mechanisms. Thus, students' performance was measured by how slavishly they followed these mechanisms, discouraging and denying the dynamism and free thinking needed in a medical context.

The University's leaders appeared to believe that technologies could do a better job than animate elements, aiming to 'automate the administrative procedures and regulations and make information and communications technologies the backbone of every management process' (Policy). Echoing this belief, the University was in the process of moving 'Towards an E-Campus', a phrase splashed across the front page of

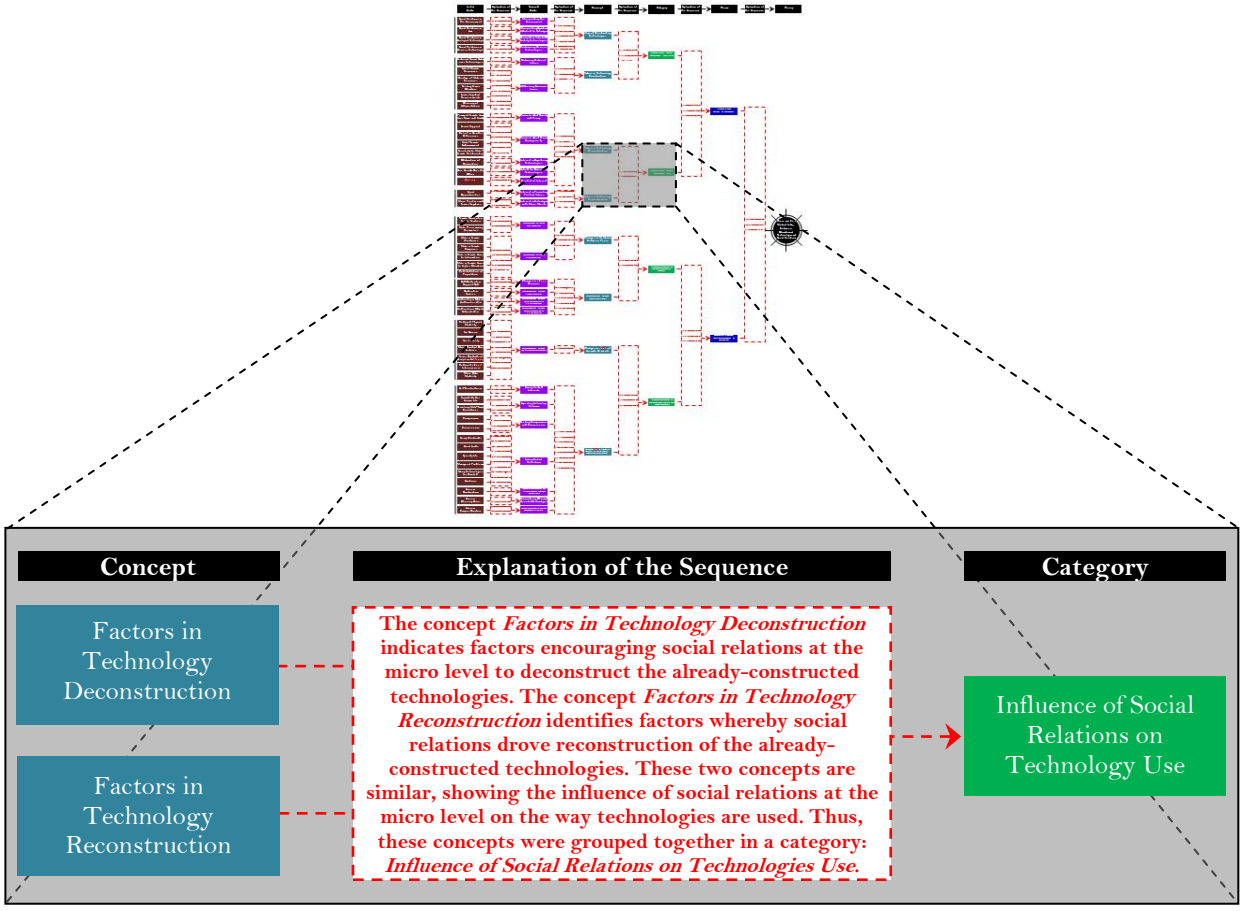
the University website. It was also planning to become 'An Example of the E-University' (Document 109). A key issue, therefore, is what learning, teaching and indeed social values (including the gender separation value) will look like in this promised e-university. The anticipation here is that social values will continue struggling to sustain themselves as much as they can in such a virtual university, by manipulating the regulations and mechanisms attached to technologies, giving new values to ecological technologies, customising generic technologies and manipulating the natural environment.

5.3. Influence of Social Relations on Technology Use (Category)

Examination of the raw data adds force to the slogan 'the personal is political' (Bromley, 1995: 20), meaning here the capacity of individuals to connect biography with history and to link personal experience with social structure. It shows that, whereas some users learn how to be directed by the new technology at hand, others learn how to direct it (*ibid.*). It affirms the supposition that, once a new technology is put into practice, pre-existing social forces at the user level may begin to find ways to reassert themselves by exploiting it (Agalianos, 1996). Hence, what follows is an examination of the 'lived' experience of educational technologies. The challenge to this part of the analysis was that almost every individual was found to have experienced the technologies and responded to them in his/her own particular way, a uniqueness of experience which uncovered the difficulties in comprehending the social world (see also Dubos, 1970). Investigating technology use was found not to be an easy task, given that different people or even the same people at different times perceived and

made sense of technologies in diverse ways (see also Vyas *et al.*, 2006). Besides, researching technology use was found to necessitate delving into what users do with, around and through technologies (see also Hutchby, 2001). The following analysis addresses the second category of the current theme, showing that existing social relations at the micro level (i.e. on the ground) affected how the already constructed technologies were used, just as existing social relations at the institutional level influenced how technologies were constructed. This category demonstrates some factors encouraging users to challenge the technologies at hand. The table below shows that this category emerged from two concepts: factors in technology deconstruction and factors in technology reconstruction. These two concepts, unlike the previous two, which were informed mainly by analysis of documents and observations of daily activities, draw intensively on the analysis of actors' voices; they are also discussed with reference to the existing academic literature.

Table 14: Influence of Social Relations on Technology Use (Category)



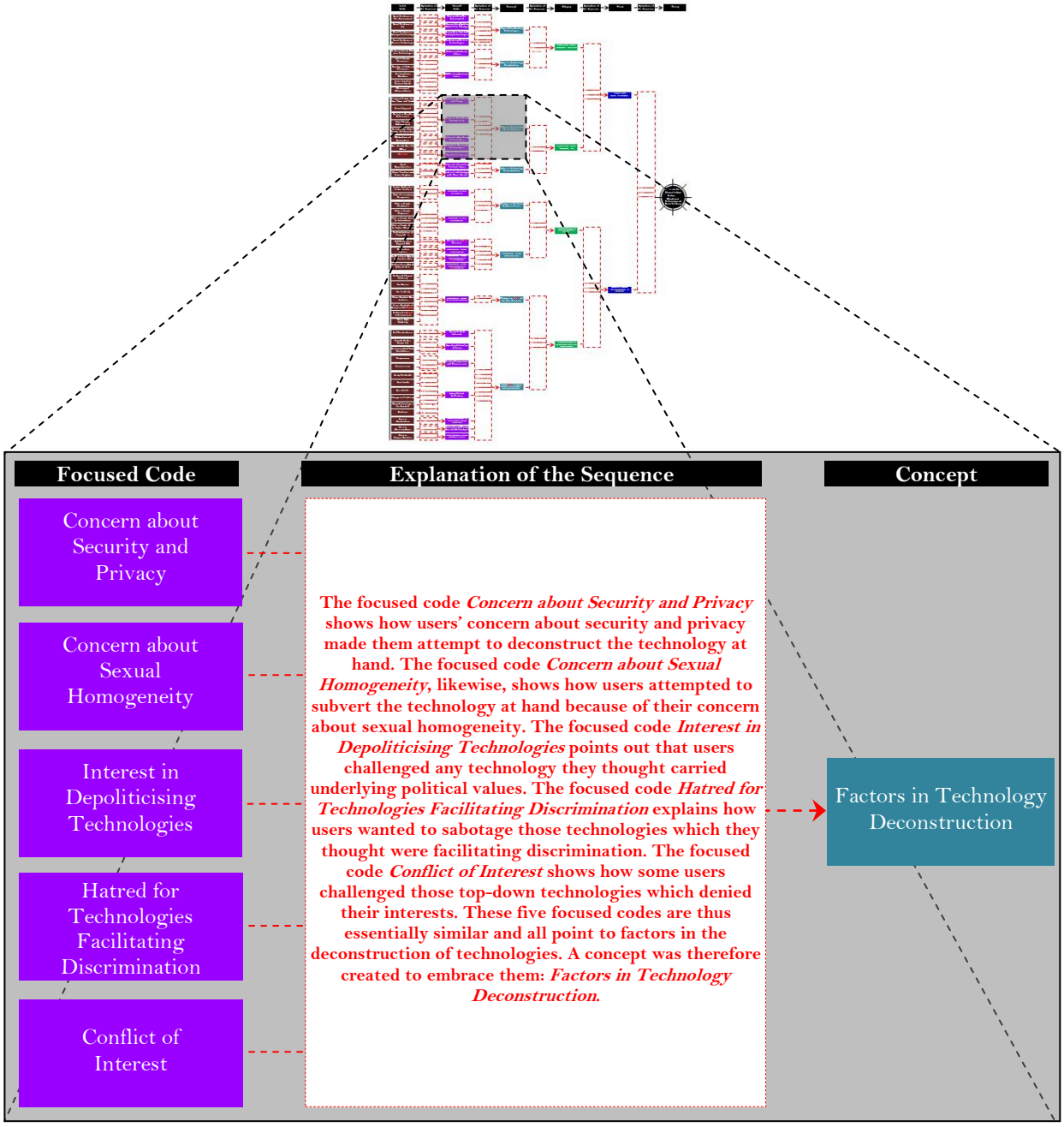
5.3.1. Factors in Technology Deconstruction (Concept)

The data offered consistent evidence that users would sometimes put up resistance to the technology at hand. During the study and the analysis of its data, it seemed to me that this resistance might represent nothing more than laziness, the habits of nit-picking and going against anything new, or 'an excuse of some kind' (Gitlin and Margonis, 1995: 392). On the other hand, it was found sometimes to have been informed by political insights. Yet those resistors with political intentions reported finding themselves in a situation where they had to acquiesce, as it could be politically

dangerous and socially embarrassing to step outside the *status quo* and the hegemonic context so as to act against it (see also Bromley, 1995).

Despite the difficulties, some users proceeded and, whether covertly or overtly, attempted to subvert the technology being imposed, thus frustrating the intentions of the implementers (see also Dutton *et al.*, 2004). Some analysts, as reported by Webb (2008), have observed that 'micro-political resistance could be a legitimate way to protect against overwhelming (and uncoordinated) macro-political interests' (p. 129). It was found that, whereas some users passively avoided the technology at hand, others actively resisted it (see also Wyatt *et al.*, 2002). Feenberg (2005) is confident that, as masses of individuals are enrolled in technology-based environments, micro-political resistance will certainly occur. Bauer (1997) reports that resistance has been portrayed by students of science and technology as 'a "force" that shapes technology which requires an adequate analysis' (p. 1). What follows, therefore, is an attempt at such an analysis, clarifying, in line with the table below, some factors (i.e. focused codes) that were found to have encouraged some users to resist the technologies in place.

Table 15: Factors in Technology Deconstruction (Concept)

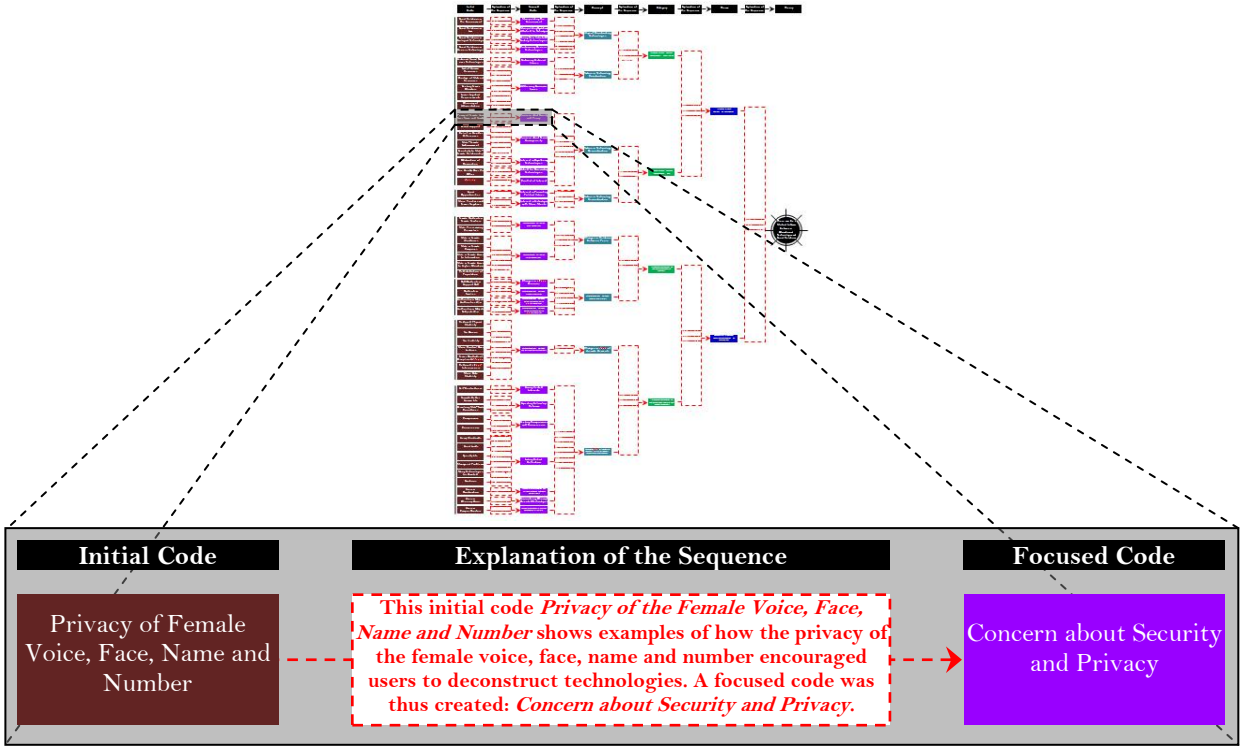


I) Concern about security and privacy (Focused Code)

This focused code speaks of a factor in the deconstruction of technologies, demonstrating how some users challenged the technology at hand because of their

concern about female privacy and security. It originates, as the table below explains, from one initial code: privacy of female voice, face, name and number.

Table 16: Concern about Security and Privacy (Focused Code)



It was obvious from the data analysis that the concern about female privacy and security encouraged some users to challenge the technological structures at hand. Some female students, for example, attempted to subvert the glass-wall classroom structure because they thought that the teacher could see them through the partition. In like fashion, although off-campus students were allowed to participate in videoconferencing classes in writing and speech, some expressed a preference for writing alone, so as to respect the privacy of their voices and thus to avoid the opposition of their families. They also thought that the use of writing alone would better serve the purpose and be clearer than speaking. Other female students, however,

approved of both writing and speech, agreeing with the University in wholeheartedly rejecting the use of video. They thought that video would cause embarrassment for them, discouraging or even preventing some of them from taking part in online education. They also thought that video would make women concerned about their appearance and behaviour. They simply saw no need for video, since writing and speaking alone were sufficient to deliver and exchange information and knowledge.

Another instance is that some female users of the University Facebook page intentionally did not use photographs of their faces for their profile pictures, thus subverting an essential feature of Facebook, which is to display one's face. Likewise, some female users have used nicknames for their Facebook accounts, making themselves unidentifiable and therefore turning Facebook into an anonymous online social environment, despite its having been conceived as a fundamentally 'nonymous environment' (Zhao *et al.*, 2008: 1816). Thus, although Facebook is a generic de-contextualised template, certain users contextualised it to make it fit their own social context and norms. Individual cultures and ways of life seem to struggle to survive amidst the growing Internet society, which seeks in turn to challenge these cultures and lifestyles. Although Facebook seems to seek the homogenisation of cultures, the users here manifested not merely acceptance or rejection but institutionalisation and 'appropriation' (Pfaffenberger, 1992: 300). In other words, they went further than either accepting or rejecting Facebook, discarding those features which they perceived as unwanted (see Orlikowski, 2000). For good or ill, exercising such appropriation could be seen to indicate a critically reflective ability and political alertness on the part of these users. It seems that, although technologies (here, Facebook) 'have impacts, the

nature of these is not built in to the technology, but varies from one culture to another, depending on a broad range of social, political and economic factors' (Mackay, 1996: 41). Furthermore, although a technology 'has certain properties that inscribe in it the designers' assumptions (these are the structures of technology), the way in which these properties [are] used is not something that can be pre-determined, and it depends on what people do with the technology in a particular situation' (Vyas *et al.*, 2006: 3). For Kopytoff (1992: 67), 'what is significant about the adoption of alien objects – as of alien ideas – is not the fact that they are adopted, but the way they are culturally redefined and put to use.'

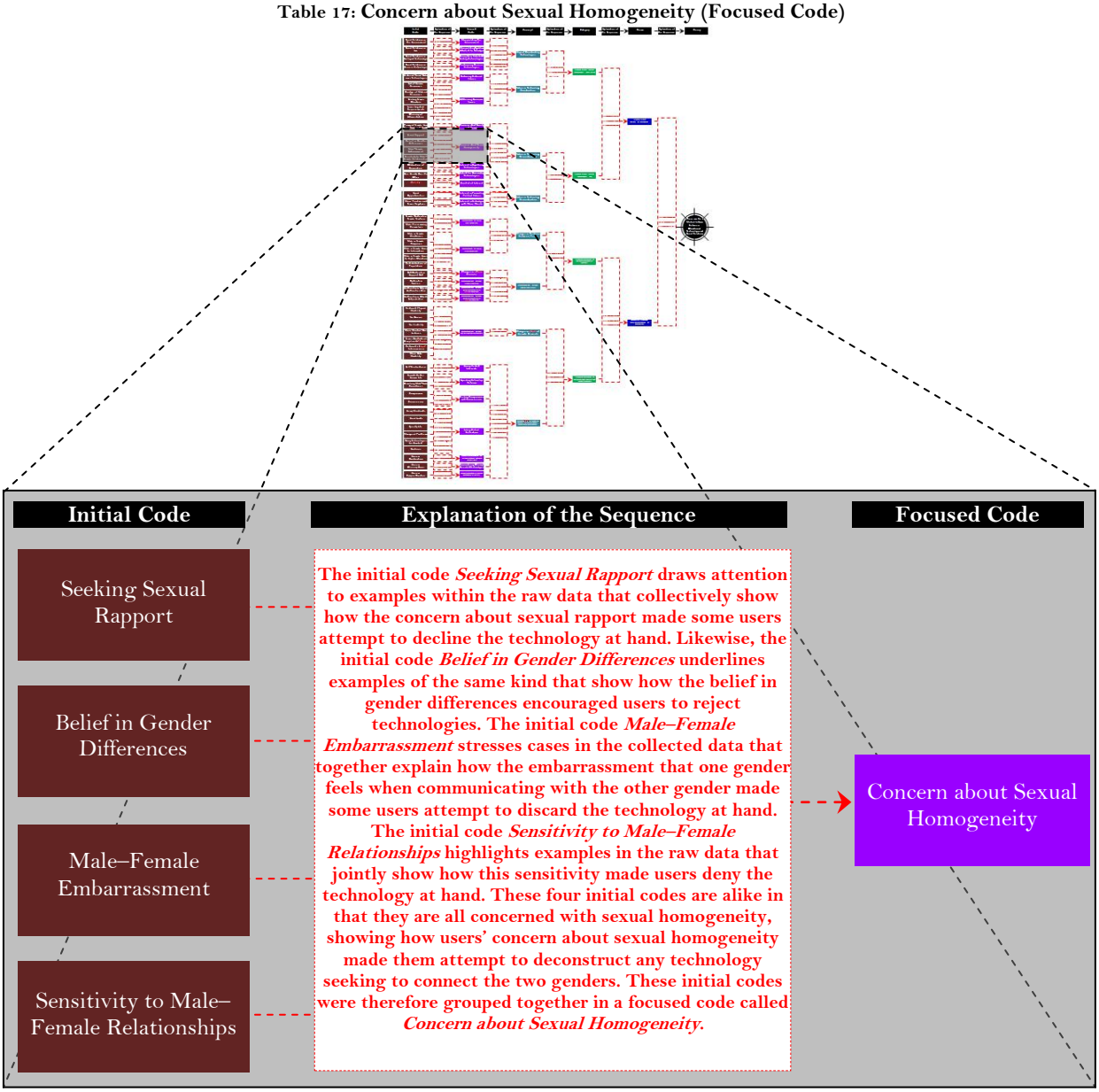
This appropriation of Facebook reminds us of the notion of 'the domestication of technology,' which, as stated in the literature review, argues that generic technologies can be subjected to localisation to suit specific cultures and values. Thus, beyond mere acquisition 'lies a process of domestication' (Russell and Williams, 2002: 70). The aforementioned users' act of hiding their names and faces means domesticating the innovation of Facebook, 'transforming it from being an external, *alien* element to a familiar one, embedded in social symbolic practices' (Sørensen, 2002: 23: original emphasis). The data revealed additional supporting evidence in this respect. Some interviewees reported being scared of webcams, being anxious that hackers might somehow access the webcams built into their laptops. They therefore decided to cover the webcam hole with tape. This again suggests a kind of user agency, showing how generic technologies might be transformed and contextualised to address certain local and personal concerns, with users achieving functions through generic technologies (see Caron and Caronia, 2001; Lally, 2002).

To cite a further instance, the University, as mentioned earlier, developed an SMS system which enabled staff to send text informative messages to students, individually or in groups; but some female students reported not giving the University their mobile phone numbers, thus challenging this initiative, because they considered mobile phone numbers to be protected by the norms of female privacy. However, these interviewees were aware of the importance of the initiative, so compromised by substituting the number of their male guardian (i.e. father, brother, son or husband). This gives credence to the contention that Saudi nationals do not strike at the foundations of existing cultural patterns and norms but are nevertheless well capable of finding alternatives and compromises within them (Shokri, 1979; Doumato, 2000).

II) Concern about sexual homogeneity (Focused Code)

This focused code reflects the fact that some users objected to the technologies at hand because of their concern about sexual homogeneity. It is derived from various initial codes, namely: seeking sexual rapport, belief in gender differences, male–female embarrassment and sensitivity to male–female relationships. Each of these codes is explored in some detail below.

Table 17: Concern about Sexual Homogeneity (Focused Code)



What stuck out in the analysis of the data was that the concern about gender homogeneity encouraged some users to destabilise the technological structures at hand. A case in point is that, in the discussion of the online distance education and CCTV-based structures, some interviewees demanded that women should be educated only by women, asserting that this would help to boost the rapport between the educator and the educated. Some female students thought of female academics as 'easy

to deal with since they are females like me' (Off-Campus Female Undergraduate 5). They felt that the involvement of male teachers in their education ruptured the internal homogeneity of the female class, causing embarrassment and discouraging students from posing questions or taking part in class activities. On-Campus Female Postgraduate 14 believed that 'female students are sometimes discouraged from discussing things with the male teacher, especially if the debate lasts for a long time and there starts to be some give and take.'

Other students backed this up, believing that 'some questions are embarrassing or private, preventing women from posing them if the teacher is male' (On-Campus Female Postgraduate 6). In the experience of On-Campus Female Postgraduate 1, 'communication with the same sex is easier and breaks the barrier of female shyness,' while On-Campus Female Postgraduate 19 expressed the view that 'female teachers can easily understand female circumstances, as they must have experienced them before.' She added that she did not intend 'to detract from men, but those who have heard about female circumstances are not like those who have actually experienced them.' Some female students protested that some subjects specific to women were taught to them by men, thus inhibiting the students from discussing them with the teacher. Although On-Campus Female Undergraduate 51 was usually active in glass-wall classes, 'when the subject was Islamic rulings on the menstrual cycle and the kinds of blood coming out of women, neither I nor any of the other female students uttered a single word.'

The suggestion that only women should educate women was seen by some interviewees as feasible, given the increasingly large number of qualified female

academics in the labour market (especially in the fields of education and the arts), who could now replace those male academics assigned on an ostensibly temporary basis to teach women owing to the lack of qualified female academics (Governmental Statistics). Other participants, however, remarked that while one reason for appointing men to teach women may have been to counter the dearth of qualified female academics, another purpose was to sustain female dependence on males. Some interviewees thought that this argument made more sense when considering that men educated women but not the other way round. Besides, these interviewees added, a large number of female candidates who applied to work at the University were rejected, although their grade point averages matched or even exceeded those of some male candidates who were accepted. Other interviewees responded that the employment rate of both male and female Saudi academics was low anyway and that there were much deeper reasons for this than a simple matter of gender discrimination. This response was supported by other participants who complained that, despite the 'Saudisation' scheme (i.e. the belief in the importance of replacing the non-Saudi with a Saudi workforce), there were still many qualified Saudis in the employment market (especially in the fields of education and the arts) who could easily replace the large number of foreign academics in the Saudi higher education sector, i.e. 37% in 2008 (Governmental Statistics).

To move on to another reason for users' rejection of certain technologies, some interviewees based their rejection of the connecting of male and female classes, seminars, symposiums and conferences on the belief that the two genders were different in terms of circumstances, learning styles, ways of thinking, lifestyles,

academic interests and social and cultural requirements. Some interviewees from the Department of Educational Management were not keen on any kind of male–female connection in classes, seminars, symposiums and conferences, referring to the fundamental difference between the academic concerns of men and of women, with male students focusing on the male school system and female students on the female school system. Such essentialism was seen in other forms too, with students being of the opinion that 'males rely on understanding whereas females rely on memorising and recovery' (On-Campus Male Postgraduate 6). On-Campus Male Postgraduate 1, moreover, protested that 'the status of women (e.g. menstrual periods and pregnancy) has resulted in certain administrative regulations being imposed on both genders in the male–female class, and therefore male students have turned out to be victims of these regulations.' On-Campus Male Postgraduate 12 began to believe that women 'seek boring detailed explanation and ask so many sub-questions, in a way that may give rise to resentment or criticism by male students.' Irrespective of whether such beliefs were informed by sound or arbitrary judgements, they appear to have influenced how users assessed the educational technology at hand. Hence, it could be contended that users' beliefs merit careful attention when carrying out research on the relationship between educational technologies and human factors.

In the debate over the use of CCTV-based systems, some interviewees of both genders showed resistance to the idea of connecting men and women, based on their belief that, since each gender had been accustomed to a single-gender community since childhood, activities across gender lines caused embarrassment for both. They remarked that sexual heterogeneity could cause embarrassment, discouraging one from participating

in class activities – or even in higher education itself. Some female students felt that 'the presence of men on the other side makes me more careful and embarrassed about participating and expressing my opinions, thereby restricting my freedom' (On-Campus Female Postgraduate 13). Male students experienced such embarrassment too, with On-Campus Male Postgraduate 2 complaining that, 'when women share classes with us, we do not feel comfortable, as we cannot freely chat with the lecturer, laugh with him and make jokes.' He added that 'there also exists formality on the part of men and women.' This mutual embarrassment between the two genders explains the reason why, 'when I teach women alone, I find that they interact more, raise questions and respond to questions' (Male Academic 23). Moreover, it underpins the belief that, in Saudi society, the two genders are known for their shyness and embarrassment when dealing with each other. Such shyness could be said to be not only a consequence of their unfamiliarity and lack of dealings with one another, but also because 'a lack of shyness may attract negative political attention' (Firth and Mellor, 2005: 230). While other societies may consider assertiveness to be a positive trait, in Saudi Arabia shyness can be seen as a virtue, stopping people from misbehaving and acting as a mechanism to regulate behaviour (Al-Saggaf, 2004; Firth and Mellor, 2005; Mehana, 2009; Al-Saggaf, 2012). It would seem, then, that the way in which wider society is configured (here, as regards gender separation and therefore male–female shyness) might influence educational experience (here, learner–learner interaction).

Turning to another factor in users' negative responses to certain technologies, some complained about the social and moral sensitivity to male–female relationships, with a

number of male academics putting up stiff resistance to the CCTV-based and glass-wall classroom structures, thinking that education across gender lines might cause them embarrassment, draw sarcastic comments from their relatives, and/or evoke jealousy on the part of their wives or of their students' husbands. Male Academic 1 stated that 'communication between the sexes is extremely sensitive; I sometimes hesitate to call my female supervisee, and she hesitates to call me.' He added that 'the husband of the supervisee is sometimes sensitive about her continuing communication with me, which may lead to the breakdown of her married life' (Male Academic 9). He would 'sometimes hesitate to call her because I am more considerate of the feelings of her husband, who might be jealous' (*ibid.*). Other male supervisors were likewise nervous that the jealousy of a female supervisee's relatives might lead them to assault the supervisor in the event of any moral suspicion.

In the discussion of the male–female technological structures, some male academics reported not being happy to be involved with female education, as 'female society involves so much gossip, fuss, shame and revenge against male professors' (Male Academic 3). In other words, gossip, fuss, shame and revenge were seen as political contrivances used by female students, whether premeditatedly or spontaneously, to place pressure on their teachers and on the authorities in general. Some academic commentators, as reported by Ball (1987), see 'gossip as a powerful but informal vehicle of social control' (p. 217). Although gossip, on one hand, may carry no explicit political intentions and be an innocent way to pass the time, on the other hand it can 'be a devastating weapon in the hands of an unscrupulous opponent' (*ibid.*: 218).

Given male–female sensitivity, men's teaching and supervision of women were believed by some male academics to be under observation by different social forces (e.g. some parts of the leadership, families, female students and the social authorities), making male teachers and supervisors self-conscious, exhausted and uncomfortable, impeding their performance and limiting their academic freedom and autonomy. In this climate of fear and suspicion, Male Academic 1 felt that, 'if I teach men, the flow of teaching and talking will be good, but if I teach women, I become extremely cautious and careful about every word and about the way in which I speak.' Some academics expressed concerns that the social authorities were monitoring men's teaching and supervision of women, reporting any suspicions of impropriety to the judicature. Besides, there was a complaint that some female students were hyper-conscious of and sensitive about the behaviour of their male teachers: 'sometimes a spontaneous word or some behaviour by the male teacher can be misinterpreted badly by female students' (Male Academic 19). Some members of the University leadership also appeared to be sensitive about the relationship between the male teacher and his female students. Male Academic-Manager 6 reported a case which had concerned him as a person in authority:

> A female student texted a male teacher during the day, apologising for something. He texted her back at 4 am. He texted her at 4 am! How can we interpret this? How can we interpret this thing? Of course, it is a lure, especially if the person has no fixed moral scruples.

Some male academics showed concern that individual e-communication with a female student, even during office hours, might get them into trouble with her family and might affect their social and therefore professional reputation. Male Academic 5 illustrated the point: 'This contact raises the jealousy of female students' relatives, who regard their female family members as "women of honour;" and for this reason, they might beat the teacher and subject him to humiliation for any suspicion, as the jealousy of the male Arab is historical.' Male Academic 12 was anxious that 'any relationship between the male teacher and female student can be interpreted as the student giving the teacher sexual bribery to pass exams or to get a higher mark.' Hence, some male academics were against any one-to-one e-communication between themselves and their female students outside the class. They suggested as an alternative that, if female students wanted to contact their male teachers individually, they could do so by submitting a hard-copy letter to the female coordinating assistant, who would pass it to the teacher. What can be seen here is that, although the promise of communications technologies is to open up new ways of more convenient communication (see Steuer, 1992; Biocca, 1992), the actors mentioned above purposely and knowingly closed off these opportunities as a result of certain motivations, concerns and beliefs, which went beyond and indeed against educational considerations. This is not to blame these actors, who should rather be praised for being critically reflective and politically wary. Indeed, Ajzen and Fishbein (2005) contend that users' behaviour 'follows reasonably from their beliefs, attitudes and intentions' (p. 174); what can be seen here is that the beliefs of the said interviewees, whether well founded or exaggerated, challenged the way educational technologies were used.

Moving on to another factor in users' dismissal of certain technologies, some male teachers deliberately did not show their faces on the CCTV screen, in the belief that the male face could also be provocative for women and/or because of the sexual harassment committed by some female students against them. Male Academic 13 told 'the story of a handsome professor whom female students were harassing during the lectures, with the result that he asked the operator to remove the camera from his face.' For these reasons, some academics showed only half of their face or displayed a bunch of flowers in its place. Thus, it could be contended that users can and do challenge educational technologies based on certain values and motives, such as by ignoring some properties and structural components (see also Orlikowski, 2000). Users may not 'only use the technology as given as it was designed (with the structures embedded within) but they might ignore some properties[,] working around, inventing new properties[,] sometimes even contradicting designers' expectations' (Vyas *et al.*, 2006: 3).

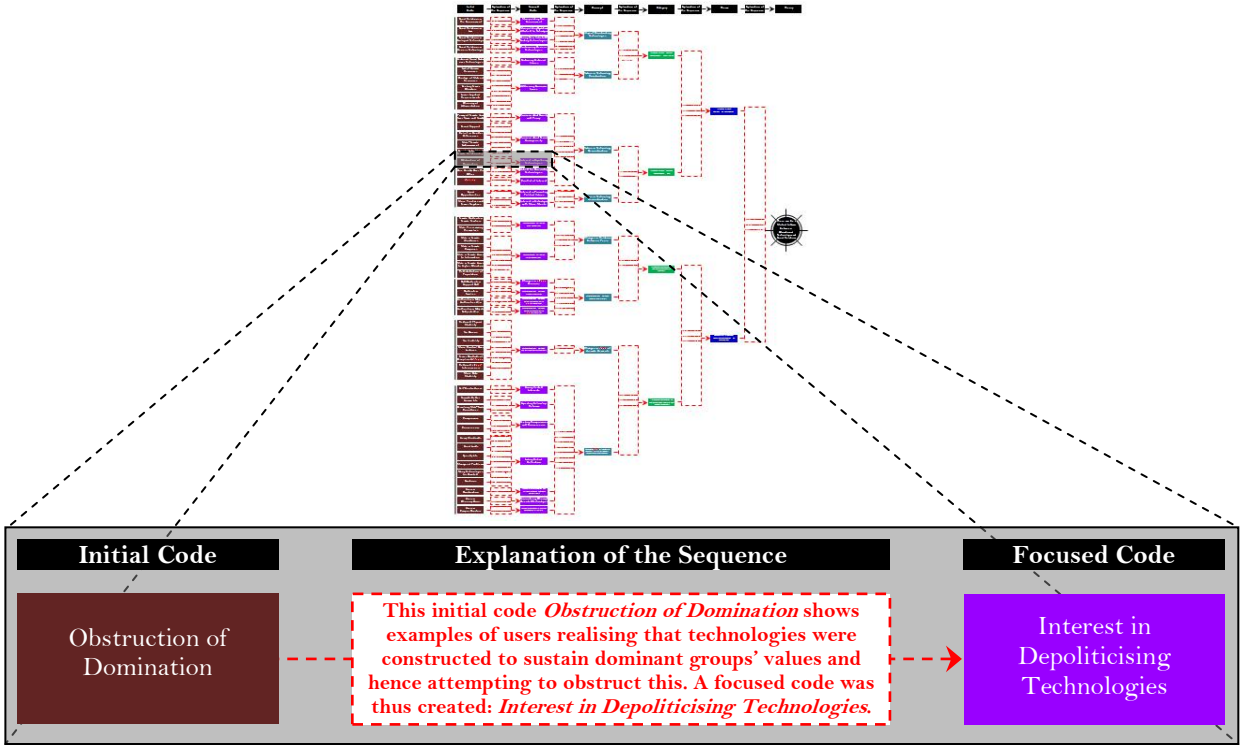
Although some interviewees referred to themselves as 'liberal' and 'open-minded' (by showing that they did not mind physically mixing the two genders in all academic and social activities and events, inside and outside academia), they remarked that Saudi society was not yet ready for any kind of connection between the two genders, even via technology, because of the social sensitivity to male–female relationships. Male Academic 5 illustrated the point: 'One day, I was giving a conference presentation jointly with a female professor through technology and, while giving the talk, I made a normal joke and the female co-presenter laughed.' He went on: 'Because I had

unintentionally made a woman laugh, the audience (including outstanding figures) were staring at me and hated me for this "misbehaviour.'"

III) Interest in depoliticising technologies (Focused Code)

This focused code offers another reason for the deconstruction of technologies, demonstrating how some users attempted to obstruct the technology at hand because they thought that it was irrational, politicised and/or dominating. As the table shows, it originates from an initial code named 'obstruction of domination.'

Table 18: Interest in Depoliticising Technologies (Focused Code)



The data analysis found signs that users were keen to obstruct some of the University's technological structures, thinking of them as politicised. Some attempted to destabilise the CCTV-based, glass-wall and theatre-like structures, seeing them as

having been constructed by dominant groups to preserve their belief in gender separation. They disapproved of these structures, believing that technology here was being misused to sustain social 'complications' (in the language of some interviewees). Male Academic 5 expressed a sense of frustration, complaining that 'our problem is that we use technology to support our complications,' although technology is theoretically expected to 'decrease rather than increase complexity' (Evans, 1979: 67) and to 'modernise traditional societies' (McIsaac, 1993: 229). Seen though this lens, although educational technologies can sometimes be part of the solution, at other times they can be part of the problem (Apple, 2003). By the same token, such technologies could be used by a society not necessarily only to create but also to damage 'civilisations' (Kast and Rosenzweig, 1979). One danger is that the 'wrong' thing is standardised through technology (see Agre, 2000).

Some resistors of the CCTV-based and glass-wall structures wondered: 'Why do we not just go straight to the point and allow men to teach women face to face?' (Male Academic 17). This question, from a certain perspective, suggests a sense of rationality, implying that resistance could 'signify a political form of good sense' (Gitlin and Margonis, 1995: 393). This, however, is not to claim that 'resistance always signifies good sense' (*ibid.*). Seen from a particular vantage point, the resistors here sought to problematise what they felt was the meaninglessness of what they had experienced as part of their professional practice; they attempted to 'rationalise' the educational technology in use. Thus, resistance here arguably appears to present the 'right' way of handing technologies (Bauer, 1997). Sometimes, the user is right to

resist educational technologies, which are not value-free and convey ideology (Yeaman, 1993).

The abovementioned complaint about the influence on technology constitution of those dominant groups who believed in the necessity of physically separating the two genders suggests that educational technologies could 'belong to the group that shares the dominant values and symbols of a society' (Staudenmaier, 1989: 154, cited in Pfaffenberger, 1992: 283). Hård agrees that technologies could be 'governed by the interests and ideas of certain groups in society' (1993: 409). With this domination in mind, there could therefore be 'winners and losers' as a result of the introduction of an educational technology (Dutton *et al.*, 2004: 70). Apple (1995: 141) contends that organisational domination 'is not naturally preordained [but] is something that is won or lost in particular conflicts and struggles.' Playing devil's advocate, such behaviour by the dominant groups could be defended, since it is in the end part of a social-political game and, after all, 'the master's tools will never dismantle the master's house' (Lorde, 1980: 6). Any social formation, almost naturally, 'contains people who dominate and people who are dominated' (Bourdieu, 1998: 40). Under such a view, the ones to be blamed are actually the subordinate groups, for being politically inert and revolutionarily inactive. Yet their inactivity could also be defended, considering the strictness of the ideological values and beliefs of the dominant groups, which reportedly suppress violently any oppositional political action taken by the subordinate groups, thus making the socio-political game ethically distasteful and morally abominable.

Despite this strictness in the ideological values of the dominant groups, some users, whether openly or secretly, directed firm criticisms against the CCTV-based, glass-wall and theatre-like structures in particular and the University's leadership in general. This underpins the belief that 'those subject to the power of dominant groups themselves are knowledgeable agents, who [might] resist, blunt or actively alter conditions of life that others seek to thrust upon them' (Giddens, 1981: 172). Some interviewees blamed the leadership for letting the dominant groups determine the planning and development of educational technology, whereas others argued in defence of the leadership, some members of which reported having found themselves under pressure to change what should or could not be changed. That is, the female campus was supposed both to remain sheltered and separate from the male campus and yet also to be connected to it and to the public domain. In the same way, the leadership wanted to achieve efficiency within the higher costs incurred through the necessity of separating the two genders, while maintaining the conventional basic teaching and learning structure and infrastructure.

The challenge here seems to be that the leadership had been left with two contradictory sets of intentions, simultaneously making and yet not really making the female campus a part of everything. Put another way, the leadership was supposed to integrate and yet not really integrate women into the activities of the male campus. This indicates how educational experience can be political, with others deciding for students what their educational lives should be like, based on explicit and implicit values and interests. One might argue that many of the challenges within the University and wider society are challenges just because they have been turned into

challenges and because they are exaggerated by the culture that generates them. This is perhaps why some interviewees wondered why the society did not simply go straight to the point by enabling the two genders to be physically mixed. They suggested physically mixing male and female activities, just as 'is the case in other countries' (Male Academic 17). They wondered why Saudi Arabia was the only country applying strict gender separation.

Yet this proposal was a source of concern for some female students, who stated that 'physical mixing of male and female classes will obligate women to be veiled and to carefully watch their behaviour, thereby limiting their freedom, discouraging them from participation and causing embarrassment, stress and anxiety for them' (On-Campus Female Postgraduate 8). This physical mixing was thought of as 'opening a gate into flirtation, wider sex-mixing and what follows' (On-Campus Female Postgraduate 17). On-Campus Female Postgraduate 20 mentioned the apparent inability of Saudi men to handle gender mixing, citing their 'shameful behaviour when travelling to the Gulf States or Egypt, which is evidence of their lack of maturity.'

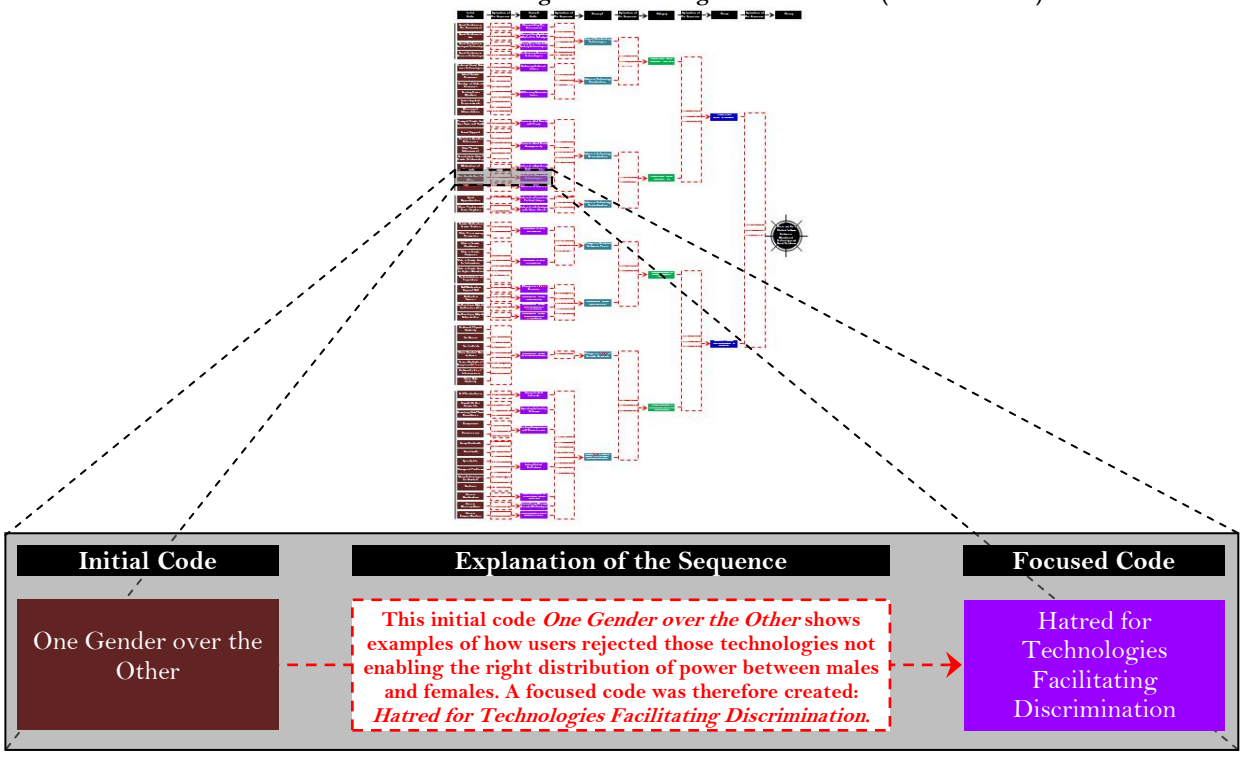
Some interviewees supported neither the proposal to completely integrate the two genders, nor the practice of electronically connecting them, suggesting the alternative that the two genders should occupy the same place on the condition that it be divided into two gender-based sections, with one gender on the right and the other on the left, or men at the front and women at the back. On-Campus Female Postgraduate 16 believed that such a suggestion was consistent with Islamic teachings, citing the historical belief that 'Muslims, both men and women, used to gather in the mosque to listen to the speech of the Prophet Muhammad, peace be upon Him.' This gathering,

she added, 'was divided into male and female blocks, with females being located behind males.' On-Campus Female Postgraduate 21 agreed, but advised her colleagues to 'avoid gazing at the other gender, talking softly and being in a "khalwa" [a socially unacceptable and legally proscribed situation in which two people, who could at any point in their lives marry each other, meet *alone* for whatever reason].'

IV) Hatred for technologies facilitating discrimination (Focused Code)

The next focused code shifts attention to another factor in the deconstruction of educational technologies, showing some users to have challenged the technology at hand because they thought that it was discriminatory. It originates from an initial code named 'one gender over the other.'

Table 19: Hatred for Technologies Facilitating Discrimination (Focused Code)



What emerged from the data here was that some users challenged some of the technological structures because they wanted to ensure what they felt to be a fair distribution of power and control between the two sexes. Some off-campus female students did not like the online distance education structure, feeling frustrated at having to rely on men as the gatekeepers of their education, given that only males taught online. They deplored the fact that, in the online distance education programme, 'there are no female teachers, and therefore we are forced into having male teachers' (Off-Campus Female Undergraduate 32). Accordingly, there was a demand that 'women must share the online teaching task with men to overcome the monopoly' (Off-Campus Female Undergraduate 6). Yet Off-Campus Female Undergraduate 10 responded to this demand in the following terms: 'What? Come on! You are kidding me! How can women teach online? Impossible! I do not accept that! Where has jealousy gone?' This furious response chimed with those believing that 'female teachers actually will not accept this idea, as the majority will say that the female voice is provocative, private and things like this' (Off-Campus Female Undergraduate 12). Off-Campus Female Undergraduate 34 believed that 'it is difficult in our society for women to appear on the Internet, which enables men to see them, considering that the woman is not to be seen by men because she is valuable like a protected jewel.' Others rejected this objectification of women as jewels, maintaining that there was nothing wrong with women teaching online if veiled and behaving modestly, to which Off-Campus Female Undergraduate 27 retorted that 'the female voice is still provocative, even if the woman is dressed modestly!' Some female students were concerned that being taught by a woman, whose face would have to remain

private, would mean that the only channel of communication would be the voice of the teacher, which would restrict their understanding.

Some interviewees were against the idea of connecting the activities of the two campuses, feeling concerned that a possible reason for this connection might be to preserve the dependence of females on males. This way of thinking seems plausible when considering the imbalanced use of technologies to enable men to teach women but not the other way round. Besides, whereas any male candidate for a post or an academic programme is interviewed only by a face-to-face panel of male academics, any female candidate is interviewed both by a face-to-face board of female interviewers and by a remote panel of male interviewers through the CCTV network. Also, although there seems no longer to be a lack of female academics within the Saudi employment market (at least in the fields of education and the arts), male academics, who it was claimed were initially authorised to teach women only because of the dearth of qualified female academics, continue to teach women.

Some male students protested against the male–female CCTV-based classroom structure on the grounds of a perception that male teachers were more sympathetic towards women than towards them, while some female students, conversely, complained that the teacher paid attention to male students and neglected females. A broad defence against such complaints offered by teachers was that this technological structure overstretched their capacity, so that they struggled to handle two classes, one face to face and the other remote. More specifically, those who admitted focusing on the remote class defended themselves by analogy with parents caring more about those of their children who are away from home. Conversely, a bias towards the face-

to-face group was defended by the argument that 'male students gain priority ... by virtue of their face-to-face presence, considering the proverb: out of sight, out of mind' (Male Academic 9). Similarly, Male Academic 3 accepted that, 'because the male students are in front of me, I care about them more. In some lectures, I may not even feel that there are female students listening to me.' Koole (2003: 23) defends such teachers, stating that, in higher education, 'inclusion in and exclusion from participation in classroom interaction and classroom learning is not imposed by teachers as selecting agents and does not result directly from teachers' perceptions of their students.' He continues by arguing that, 'in the first place, the interactive process of participation is brought about by all interlocutors, and not imposed by one party to the interaction.' What Koole seems to be saying here is that adult participation in classroom interaction and classroom learning should be seen essentially as a 'political' process, with interlocutors struggling with one another to ensure that they have a fair share of interaction and learning. Accordingly, the role of the teacher is reduced to that of a mediator, trying to manage any possible political conflict and helping interlocutors to reach negotiated settlements.

Some male students were worried that the involvement of female students in their education might affect the admissions policy, given women's superior grades. This concern seems justifiable in light of the following experience. The strategy of some departments had been to offer an equal number of postgraduate places to each gender and when there was an attempt to modify this strategy by disregarding gender and instead giving priority to the grade point average, the outcome was that all the available places went to women. Indeed, women's superiority in grades has helped to

enable them to occupy more places in higher education than males. Some interviewees speculated on context-specific factors explaining this higher attainment by women, suggesting, for example, that men tended to be occupied with earning a living and acting as family breadwinners. Similarly, others argued that, since men were involved with the public domain, they tended to be busy meeting social (outdoor) requirements, purchasing supplies and driving or accompanying women. In comparison, these interviewees remarked that females' limited social mobility gave them more time to spend on their academic work. A factor suggested by some women was that they strove particularly hard to prove themselves after being historically deprived of formal education until very recently. These women reported learning a lesson from their mothers and grandmothers regarding the value of education. On-Campus Female Undergraduate 57 said that she had always cried 'when seeing my mother bemoaning her illiteracy and cursing her grandfather for preventing her from being educated.' She added: 'My mother is in her mid-40s and always feels depressed and excluded, simply because she does not have the ability to write or read [Crying Face].'

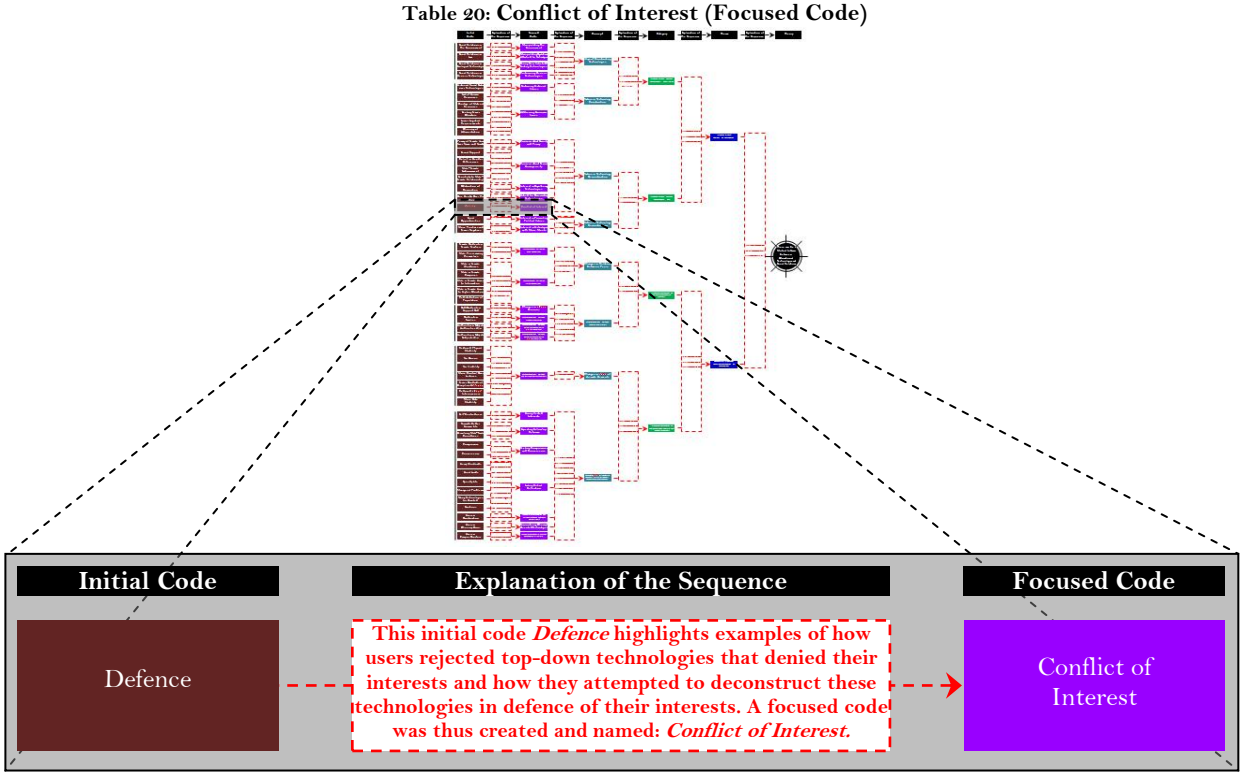
Some interviewees complained that the CCTV system enshrined certain social inequalities, with the male students receiving a face-to-face education and their female peers acquiring a technology-based one. They also mentioned a related aspect of this inequality, that the teacher is physically present in the male classroom and physically absent from the female classroom, which they saw as accentuating the risk of reinforcing social discrimination and political differences through technology. With such a potential risk in mind, the concern is that the higher education sector becomes a formal location where the cultural drama of social inequalities has an effect and where

activities are both gendered and gendering (Monahan, 2004; Al Qathami, 2009). Thomas (1996b) contends that technologies can 'confirm or reinforce existing inequalities [and] create new inequalities' (p. 91). Thus, although educational technologies, as mentioned in the literature review, can be used as depoliticising and liberating media that transcend political differences, decentralise political power and empower the individual, they can also be utilised to 'reinforce race and gender bias' (Johnson and Wetmore, 2009: xiv). Thus, educational technologies are better portrayed as politically double-edged swords, rather than simple apolitical tools.

V) Conflict of interest (Focused Code)

This focused code illuminates an additional factor in the deconstruction of educational technologies. It demonstrates how some users challenged the technology at hand because they saw it as carrying top-down interests inconsistent with their own interests. As shown below, it originates from the initial code of 'defence'.

Table 20: Conflict of Interest (Focused Code)



The University, through e-learning and online distance education, aims to 'make education and learning more flexible and liberate them from complex spatial and temporal constraints' (Policy). Yet some female students did not interpret these initiatives as compassionate attempts to make their educational experiences and lives flexible, hinting instead that e-learning, online distance education and indeed other electronic services such as e-government and e-business could be abused as further instruments of control to push female citizens back into their traditional domestic domain. In 2011, the percentage of off-campus male students (65%) was much higher than that of their female peers (35%), whereas the proportions were reversed among on-campus students (Governmental Statistics). This contrast is explained partially by some female students seeing campus study as an 'outlet' (Off-Campus Female Undergraduate 4), allowing them to get out of the house. They thought of the campus

as a distinct place where Saudi women could make friends from outside the family, spend more time with their girlfriends and dress up in public, albeit inside a sheltered and private female space. They saw the campus as the only public and relatively liberal space accessible to Saudi women. This implies that females actually also have a 'public sphere' of their own, which explains why some female students believed that the University should have permitted them to wear jeans and other informal clothing inside their *own* campus. Clearly then, some students undertook higher education not necessarily for educational purposes alone, but also for political, social and entertainment reasons and because of vested interests. The data include further examples supporting this claim. A case in point is that, despite marriage and even pregnancy, some on-campus students did not delay their studies and thus failed to pass examinations, simply because they did not want to forego the monthly allowance.

Another instance of the conflict between meso and micro interests is that in order to cope with the increasing number of higher education learners and the higher costs incurred by having to separate the two genders, the leadership, as mentioned previously, took three main actions. First, it opened up the online distance education courses to a larger number of students. It also transferred some on-campus classes online, thus enabling more on-campus students to register for the courses concerned and enhancing university admissions. Finally, it connected the male and female classes electronically, thereby maximising the number of students per class and again increasing admissions. However, some students did not interpret these three schemes as benevolent efforts to enhance admissions despite social, cultural and economic constraints, but as proof of 'stinginess' (On-Campus Male Undergraduate 23), leading

to a drop in educational values and to overcrowding in classes. On-Campus Female Postgraduate 15, for example, complained that connecting male and female classes had 'increased the number of students and, in turn, reduced the time allocated to each student.' These students therefore wondered just what had prevented the University from employing more teachers. On-Campus Male Undergraduate 52 similarly protested that, 'since a normal lecture consists of 50 or 60 students, the total of both male and female classes will be 100, which is stinginess towards the students in time and in money.' He thought that there was 'no justification for this action, which does not happen even in poor African countries.' What can be seen here is that students based their educational ambitions and expectations on the wider economic status of the state, which was thought of as wealthy thanks to revenues from the sale of hydrocarbons. What is more important is that the conflict between the interests of leaders and led seemed to have affected the way a technological structure was perceived, experienced and made sense of.

The data analysis uncovered a further example of the conflict between the interests of the authorities and those of the students. The University's online forum imposed certain terms and conditions with which some members were unhappy. They therefore 'worked around' these (Gasser, 1986: 216), collaborating to develop their own unofficial forum, with their own radically different terms and conditions, thus 'wresting control back from the technology and the institution' (Pollock, 2009: 424). The informal space was dissimilar to the formal one in that it did not ban the use of real names and images containing photos of women (Document 30). A further dissimilarity was that the informal area did not restrict registration to student ID

holders (Document 30). Thus, the resistors and interest groups here replaced the formal forum with an informal one that 'decomposed' (in Pfaffenberger' terms, 1992: 300) those values and meanings entrenched in the official one. They engaged in a kind of 'radical politics', which in the widest sense means 'pursuing change at the "root"' (Youdell, 2010: 33). This revolutionary action was found to have posed a challenge to the leadership of the formal forum. One way of dealing with it was to counter-attack the resistive communities, to disarm them and mute their revolutionary potential. A co-founder of the informal forum related how 'the University blocked our forum on campus, so I tried to communicate with the President of the University by both writing a letter to His Excellency and trying to talk to him in person.' However, 'all my attempts failed because the letters were not delivered to him, but rather to other managers.' The co-founder then reported feeling disappointed when he 'found it difficult to communicate with those managers, especially given their misconception of our goal.' He started to think that 'the University deals with us according to the saying: If you are not with me, you are against me.' He remarked that, 'despite all the things that happened and in spite of all the psychological and emotional damage that this injustice caused for me, I worked with the supervisors of our forum like a candle which burns to illuminate the path of those male and female students lost in the corridors of the University.' He concluded by saying, 'Thankfully, we have had many achievements recently, and there are male and female students who have graduated from the University gratefully wishing us luck and success.'

This story can be taken as suggesting that not only may institutional politics grant micro-political movements no official recognition; it may also seek to dysfunctionalise

and suppress them. It hints, moreover, that 'any ideas concerned with radical social change are at risk of not just being marginalised and derided, but of being constituted as a terrorist threat or even a terrorist act' (Youdell, 2010: 33). It suggests that students may be well able to resist, negotiate and even 'go above' the set of structures, roles and control mechanisms imposed upon their educational and social interaction when they wish to. A recommendation here is that, since political activity can be found 'in every human system, more or less' (Mintzberg, 1989: 236), institutional politics should not have dysfunctionalised micro-level politics, but rather managed and directed it. Another implication to be drawn from the story is that the Internet, through its empowering free or cheap services and ready-to-use templates, seems to have trained users in the skills necessary for rebellion and revolt. The Internet and its social domains thus seem to challenge the continued validity of Hunt's (1990) observation that 'students constitute the most numerous group involved in [education] but they are also weak in the exercise of influence, and might well be neglected if significance of influence is taken as a major criterion of inclusion for consideration' (p. 45). The emergence of online social domains, indeed, seems to have enabled students to exercise some bottom-up influence.

The raw data include an additional instance of the conflict between the interests of leaders and led. The dim lighting behind the glass wall of the partitioned classroom was reported to have prevented the students from taking notes and made them feel drowsy and even prone to falling asleep. Thus, although there was a notice warning students not to switch on the lights, to prevent the teacher from seeing them, some 'wayward students' (in Misa's terminology, 1992: 109) rebelliously did so. In response

to this misconduct, the authorities had the light switches protected by a lock. However, this did not deter the students, who strove to overcome the darkness of their classroom by using the lights of their mobile phone screens. What can be seen here is that the students were manoeuvring within the imposed structure so as to meet their needs anyway, to protect their own interests and to 'make do' (de Certeau, 1988: 30). By deploying effort and skill, they were attempting to cope with what they felt a structural 'misfit' (Gasser, 1986: 214), to overcome a difficulty or constraint imposed by the technology (Pollock, 2009). This manoeuvring can be seen to speak of 'the active role of the subject in determining the conditions of his or her experience' (Mackay and Gillespie, 1992: 691).

Such manoeuvring (i.e. users' response to the influence of official technologies upon their actions) suggests the existence of power relations between users and technologies – and indeed between users and the authorities. Thus, when faced with a technology that limits them in some form, users may find a work-around, adjusting it to meet their own needs (see Pollock, 2005). The data include another example illustrating this inference. In the CCTV-based system, although the male classroom is provided with speakers through which male students would be able to hear the voices of their female peers, the teacher has headphones which he is supposed to wear, disconnecting these speakers. Some students supported this practice in favour of the privacy of the female voice, whereas others saw it as stifling discussion between male and female students. As a compromise between these conflicting views, some teachers acted as go-betweens, delivering the contributions of one class to the other. Other teachers, however, went further, unplugging their headphones and therefore enabling

male students to hear female students' voices. This was said to cause two difficulties. First, it discouraged some female students from participating; second, male students were not provided with microphones, so the female class could not hear them, meaning that the teacher had to do the delivery anyway. It was thus suggested by some interviewees that male students should have been supplied with microphones, facilitating smooth discussion and efficient exchange of ideas.

It can be seen from the above that, although the educational and professional activities of human actors appeared to be already technologically semi-structured, these actors did not simply surrender to this structuration. Rather, they contrived to make sense of their own experience by finding alternatives, making compromises or even overriding the existing configurations. The students and teachers here appeared to be 'struggling with each other over control of classroom interactions, while tacitly collaborating to accommodate the conditions imposed by the larger setting' (Garrison and Bromley, 2004: 607). They tried to make changes in societal, cultural and organisational arrangements so as to maximise their own sense of control over their environments, 'by manoeuvring to preserve—through subterfuge if necessary—a space affording them some autonomy' (*ibid.*: 608). Schofield (1995: 6) contends that, although the ways in which technologies are utilised 'are undoubtedly influenced by the ongoing context into which they are introduced, it is also reasonable to expect that their use will in turn influence that context, again often in unanticipated ways.' Some users were found to merely accept the technology at hand, whilst others acted as 'figurative hands' (Bijker and Law, 1992: 8), not simply operating the technology, but rather attempting to make sense of it, developing *ad hoc* alternatives and inventive solutions to the

constraints it caused (Wenger, 1998). Some of these local solutions and micro-level initiatives challenged the institutional interests and formal ideologies embedded in technological structures. Such challenges were interpreted by the authorities as essentially political problems and one way of defending against such problem-causers was to oppress them (see Whitworth, 2009a).

That said, there is nonetheless a hope that the micro-level initiatives and experiences of localised adaptation of educational technologies might eventually spread beyond the environment in which they are developed (Bates, 2000; McPherson and Whitworth, 2008). Such small-scale initiatives may even eventually come under discussion at the policy level and engender changes in wider society, considering the Darwinist theory that the constant iteration of innumerable minuscule changes at the microscopic level eventually brings about sea changes in the wider system (Whitworth, 2009a). Bromley (1995) believes that, while top-down decisions limit the behaviour of users, the responses of the users to these decisions are nevertheless likely to somehow affect future top-down decisions, in an iterative manner. In consideration of these arguments, it can be contended that organisational innovation and change may in the final reckoning come up from the bottom, in just the same way that they come down from the top (McPherson and Whitworth, 2008).

There are some suggestions that appreciate the innovative capacity of the user. One is the democratisation of the constitution and development of technology, with all categories of actors coming together to relate their experiences and to share their thoughts and ideas (see Cervero and Wilson, 1994; 1998). Besides, given users' inventive capability, academic freedom and anonymity, all those in higher education

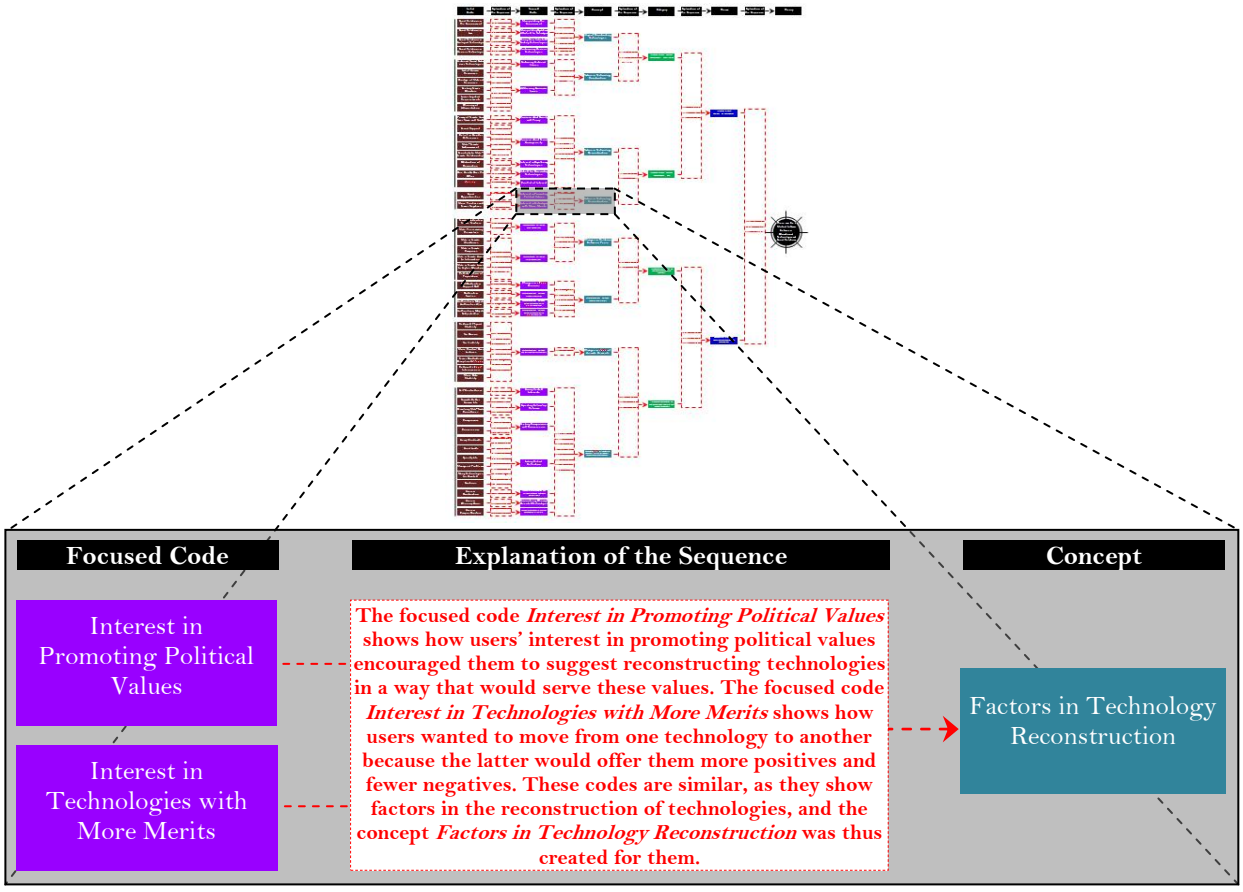
(be they staff or students) are encouraged to look beyond those technologies that are made officially available to them, discovering, as part of their professional or educational practice, the limitless options available in 'the ecology of resources,' i.e. from environmental resources including freeware, templates, objects and devices (Luckin, 2008). The Saudi National Centre for E-Learning and Distance Learning seems, to some extent, to be aware of such arguments, setting up competitions for innovation in the field of educational technology. The Saudi National Communications and Information Technology Plan encourages such initiatives, stating that 'the Saudi population is characterised by a large percentage of youths who are quite ambitious, innovative and unique in the way that they think and develop ideas' (Plan, 2005: 74); hence the Plan emphasises the importance of 'encouraging these youths to innovate in the area of information and communications technology' (*ibid.*).

5.3.2. Factors in Technology Reconstruction (Concept)

The outcome of the data analysis is in keeping with the idea of Grosvenor *et al.* (2000) and Goodson *et al.* (2002) that, as living institutions, higher education institutions entail continuing tensions between what is constituted, on one hand, and on the other the performance of unplanned, ill-fitting and disorganised responses to the structures as constituted. Even with firmly constructed technologies, there seem still to be 'fluid, contested, disrupted, subverted, and appropriated—in short, diverted—responses to a greater or lesser extent' (Goodson *et al.*, 2002: 7). This happens perhaps because organisations are internally fragmented by different 'cognitive cultures' (Whitworth, 2007), i.e. 'different interests, values, procedures and "ways of seeing" activities which are indigenous to particular stakeholder groups' (Benson and Whitworth, 2007: 79).

Echoing the findings of the study, formally configured education and teaching are best viewed essentially as 'jobs,' which as such may involve struggles, negotiations, tensions, conflict, artifice, trickery and even 'scuffles' (see Al-Abdullehay, *Sabaq Newspaper*, 3 March 2011; see also Al-Adesani, 2010, Selwyn, 2011a; 2011b). With this argument in mind, the use, abuse, non-use or reconstruction of institutional technologies can be regarded as part of students' and academics' continuing negotiation of their daily professional or educational lives, duties and constitutional rights (see Selwyn, 2011a; 2011b). This final substantive subsection of the chapter therefore discusses two focused codes, whose position in the analytical framework is shown the following table, each designating a factor which encouraged users to negotiate and argue for the importance of reconstructing the technologies in operation.

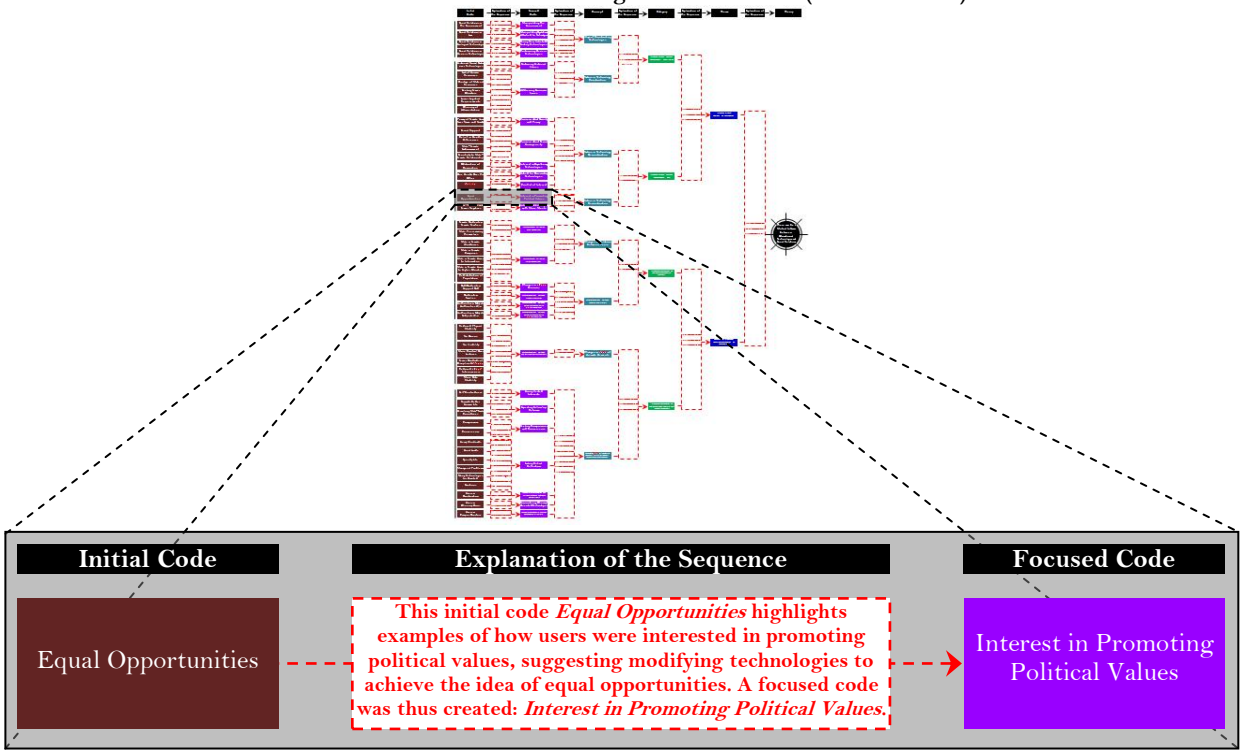
Table 21: Factors in Technology Reconstruction (Concept)



I) Interest in promoting political values (Focused Code)

This focused code sheds light on a factor in the reconstruction of educational technologies, demonstrating how some users suggested new ways of configuring technologies in an attempt to promote certain social and political values. It originates from one initial code: equal opportunities.

Table 22: Interest in Promoting Political Values (Focused Code)



Some users suggested improvements to the existing technological structures to ensure social homogeneity and equality within academic circles. They proposed that women should be authorised to teach online, thus equalising the opportunities between male and female academics, defeating the male monopoly and improving levels of female employment. This equality was, moreover, believed to help with the enrichment of male students' educational experiences, which would then be informed by the experience of both male and female teachers. Besides, it was thought that online teaching, which could be done from home, would help female academics to circumvent the mobility constraints placed on women. This last point indicates that the women sought solutions *within* the societal restrictions and cultural constraints imposed upon them, rather than campaigning for radical change. This underpins some interviewees'

belief that Saudis do not (indeed cannot) challenge the existing social configurations, choosing instead to work resourcefully within them.

That being said, not all women were eager for equal opportunities in online teaching, which would involve broadcasting the image of the teacher, thus conflicting with their female privacy and secrecy. In the words of Female Academic 1, 'we do not accept that a woman is videoed, showing her face and voice teaching and arguing. ... We do not agree that her video image is spread throughout the Internet, as this would cause temptation and attraction, especially if she reveals her face and hair and dresses up.' She expected that 'male students would not pay as much attention to the class as to her appearance, image and voice.' She therefore rejected the idea, 'so as to shut the door to potential negatives.' Other female academics, however, said that they would be willing to take part in online teaching under certain conditions. One was that women must be given the options to be veiled, to teach only within gender lines and not to teach online at all – in short, there must be 'no force' (Female Academic 4). Female Academic 3 stated categorically that, 'if this idea necessitates me leaving my face uncovered, I will absolutely say that I refuse.' Female Academic-Manager 3 was anxious that this mode of teaching might lead 'to the emergence of unveiled and uncovered women, whose images and voices can consequently be exploited very badly.' It was thus suggested 'that a woman must teach online only through writing, and that she must not show her face or reveal her voice' (Female Academic 16). This condition, however, was not welcomed by those students who believed that writing-based or even voice-based teaching would limit their comprehension. That said, other students did support the use of writing alone, which, for them, would be socially more

acceptable and serve the purpose. We can see here how educational technologies and the regulations involved can stand as a scene of negotiation between the actors concerned, a negotiation that should be allowed and encouraged to take effect at 'the planning table of technologies' (to borrow a metaphor from Cervero and Wilson, 2005).

Another subject of negotiation was the idea that, since men were allowed to supervise women, women should also be authorised to supervise men. Some male supervisees did not object to this proposal, whereas others perceived it as impractical and undesirable. It was felt to be impractical because of the shortage of female supervisors and undesirable in that 'the male supervisee will not be convinced by the views of his female supervisor, because his views, unlike hers, are informed by daily outdoor social experiences and by his easy access to libraries and information sources' (On-Campus Male Postgraduate 10). Some male supervisees felt that the supervision of men by women would be educationally ineffective because the norm of gender separation would prevent face-to-face communication between the parties, impairing the supervision experience. On-Campus Male Postgraduate 9 commented that 'the completion of a thesis requires face-to-face communication and direct contact between the supervisee and supervisor.' He added that 'female supervisors would impose too many restrictions on this communication and contact.'

Some interviewees, similarly, suggested that women should be authorised to teach men, just as men were authorised to teach women. Yet the idea of women educating men was identified as socially unacceptable on account of the Arab perception of status and rank, whereby 'the male Arab does not accept that a female teaches, rules and runs

his life' (On-Campus Male Postgraduate 4). Some other students too raised objections to this suggestion on account of the gender hierarchy in Saudi society, in which women are perceived to be lower than men. Such perceptions suggest that the social configurations of wider society may play a role in shaping the arrangements of academic society. There was also a belief that Saudi society enshrined male–female separateness, which was seen by some interviewees to mean that, if a female academic were assigned to educate male students, it would be as if she had been pushed into another culture, which she would be unable to handle well. Finally, the idea of women educating men was seen by some as frightening, because, as On-Campus Male Postgraduate 8 put it, 'since the woman is authoritarian in relation to her female counterpart, she is likely to be authoritarian towards a man as well.' He feared that she would be 'even more authoritarian towards him so as to take revenge on maleness and masculinity,' or even that she might 'procrastinate in letting him graduate, so as to boast that she is supervising a male.' In the opinion of some interviewees, women could be politically clever and therefore 'dangerous – and their snare is mighty' (On-Campus Male Postgraduate 11); thus, one way of handling them would be to 'marginalise them' (Male Academic 20) and keep them sheltered, undermining and neutralising their political potential.

Recognising the political resistance of some male students to the idea of women educating them, some managers argued that it could be overcome by imposing a top-down decision. They repeated the belief that, 'in a country such as ours, changes are to be made by force' (Male Academic-Manager 1), suggesting, from another perspective, the suppression of the voices and perceptions of students, who, it should be noted, are

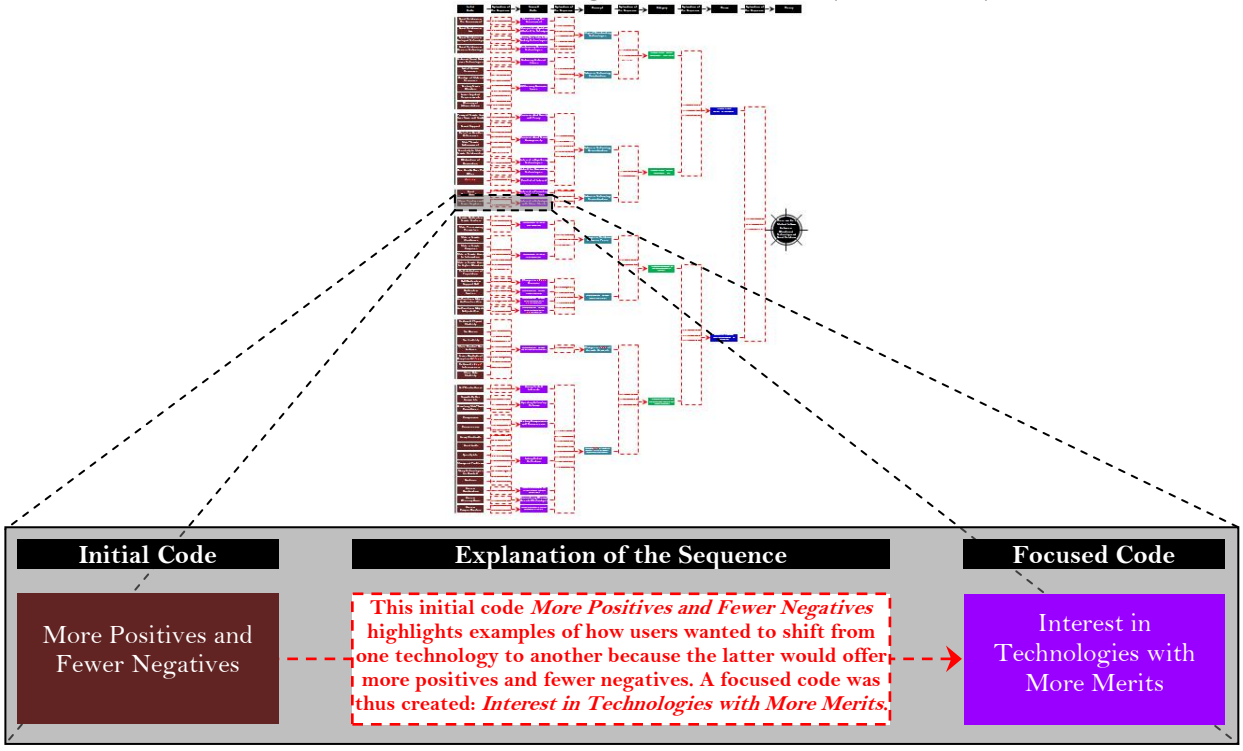
those most affected by such a decision and whom the institution was theoretically founded to serve. These managers did not view such a top-down approach as suppression, however, arguing instead that individual citizens and wider society lacked knowledge about organisation, progress and development and therefore needed experts to lead them by the hand, especially given that 'Saudi Arabia belongs to the third world, so change has to come from above' (Male Academic-Manager 1). It is not the intention of the current study to pronounce as to whether women should educate men. Rather, it aims to show whether a society has the levels of agency needed to manipulate the progress of educational technologies and to control the extent to which they can influence the pre-existing societal and cultural values, beliefs and norms. In the current case, educational technologies were found to have been directed to enable men to educate women, but not the other way round, which means that existing social relations are here assimilating educational technologies to sustain themselves – and therefore not allowing the reverse to take place.

That said, other female academics did not want to educate men, expressing concerns that they might not be able to handle male students and that teaching a group of men might cause them embarrassment. Female Academic 13, for example, anticipated that, 'although women can be strong, some male students are still disorderly and might hurt female teachers and embarrass them in front of the other male students.' Female Academic 12, likewise, declared herself to be 'afraid of men because of their hard nature.' Furthermore, some managers referred to the impracticality of women teaching men, again raising the widely held notion of there being a dearth of qualified female academics.

II) Interest in technologies with more merits (Focused Code)

This last focused code to be examined in this chapter continues the discussion of factors in the reconstruction of educational technologies, showing how some users moved from one technological structure to another because the new one offered them more positives and fewer negatives. It originates from the initial code 'more positives and fewer negatives.'

Table 23: Interest in Technologies with More Merits (Focused Code)



The analysis of the data showed some users to have assessed the technological structures according to their 'relative advantage' (Rogers and Shoemaker, 1971; Rogers, 2001), i.e. the extent to which a new technological structure was seen by the user to offer more merits than the structure it would replace. A case in point is that some female students reported preferring to contact their male teachers by email to

avoid the embarrassment of using the telephone, since Saudi women are not accustomed to talking with men who are not their immediate relatives. Moreover, email communication was thought to be socially less objectionable, preserving the privacy of the female voice. The potential embarrassment, they commented, would increase considerably if the person being contacted was a man in authority, such as a teacher. In the words of Off-Campus Female Undergraduate 17, 'I imagine myself calling the male teacher to ask about something, and when he picks up the phone, the question flies out of my head, owing to my extreme shyness.' Email, moreover, 'does not consume time and can be done without limitation of time' (On-Campus Female Postgraduate 4).

Some male teachers, likewise, preferred their female students to contact them by email rather than by telephone, because email communication was thought of as culturally more acceptable and safer. Some academics said that as email did not involve the female voice, it avoided potential moral problems, temptation and attraction. Male Academic 17 tried to explain why the female voice is regarded as private and influential in the Saudi context. In his words, 'in the West, electronic contact between men and women does not matter, because they have other ways of contacting women.' He added that 'they can go to a nightclub or onto the street and talk to a woman, but in Saudi Arabia, there is no face-to-face contact in any place.' He added that, 'if a man in Saudi Arabia talks to a woman on the street, extremely violent action will be taken against him.' He then drew the conclusion that, 'because electronic contact is the only way of contacting women, it is possible for a man to fall in love with a woman just because of her voice alone, since this is the only way of communicating.'

Some male academics, moreover, preferred their female students to communicate with them through their official University email addresses, 'so as to avoid any possible suspicion and gossip about why he has given his female students his personal, informal email address' (Male Academic 11). Thus, a decision to use, or not to use, a certain educational technology can, as here, go far beyond educational and technical concerns. Other male teachers reported preferring to communicate with their female students via Blackboard instead of by telephone or email, explaining that students tended to have similar enquiries, so addressing them collectively through Blackboard would save time, as the teacher would not have to repeat the same answer to each enquirer. They also thought that an answer to an enquiry from one student could benefit others. Finally, since Blackboard allowed collective communication between male teachers and female students, they saw it as culturally less objectionable.

5.4. Concluding Remarks

This chapter has offered answers to the first research sub-question, inquiring into the extent to which social relations have influenced how educational technologies are constituted and used so as to sustain themselves. The point is made that, as part of the social and political dynamics of an organisation, the planning and development of educational technologies at the institutional level can be influenced by the social relations that characterise everyday life. This influence can be informed by a range of explicit and implicit organisational, historical, economic and political factors which may go above, beyond and against often educationally, pedagogically and technologically oriented considerations. Once the constituted technologies are put to

use, they can accordingly be once again shaped (i.e. *de*constructed and *re*constructed) by the social relations that already exist at the micro level on the ground, an influence that can be inspired by overt and covert cultural, organisational, economic and political factors which may exceed habitual educational, pedagogical and technological concerns.

This chapter is underpinned by the belief that educational technologies are 'social in their origins as well as in their effects' (Mackay, 1996: 42–3), showing the intense social and political activity surrounding the construction of such technologies at the institutional level and their operation at the micro level. It has suggested that an educational technology as a 'cultural product' (in Apple's terminology, 1991) and as a symbol, embodies and serves the interests of those behind it and of those who benefit from its existence (see also Muffoletto, 1993). It has looked at ways in which the evident social structures of Saudi society have clearly influenced the patterns of adoption of educational technologies, showing this society to be struggling to hold onto what it already has. It has argued that, in Saudi Arabia, technologies simply cannot be permitted to challenge the social order. Their potential and affordances have been assimilated by the existing structures and used to perpetuate divisions (principally of gender) rather than challenging them. Thus, we can see here social relations shaping technologies but not the other way around, at least not in any sense beyond a limited one. The chapter has suggested that Saudis might use technologies of non-Saudi origin 'not only in a fashion compatible with their traditions and beliefs but also to enforce their cultural values' (Al-Saggaf, 2012: 18).

Chapter 6: Discussion of Findings on Theme 2

The Concomitant Influence of Technologies on Social Relations

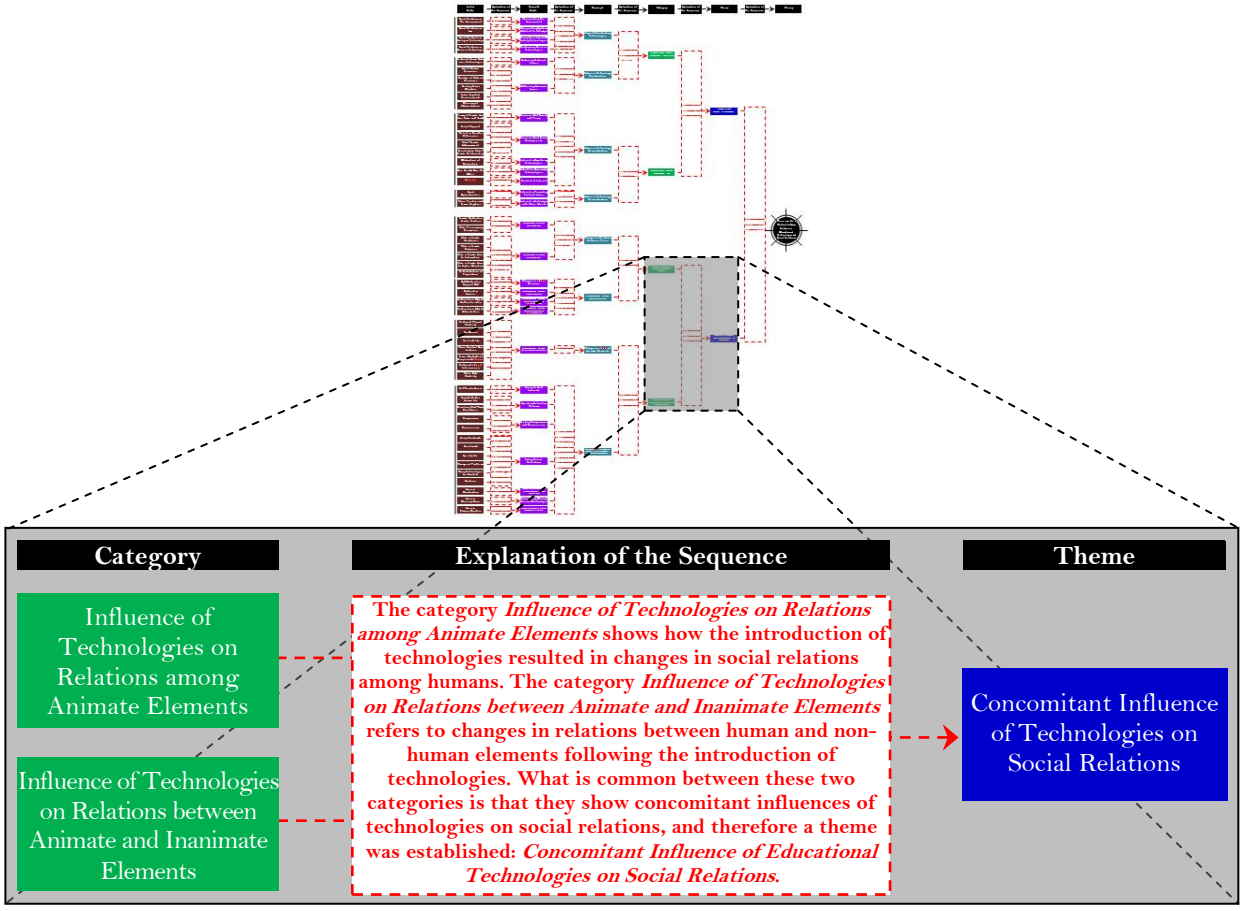
(Social Relations ← Technologies)

6.1. Guide to the Chapter

The current chapter addresses the second research sub-question: What concomitant influence has the introduction of educational technologies intended to sustain certain social relations had on other aspects of the social structure? It elucidates the second theme emerging from the data analysis, i.e. the parallel influence of those educational technologies introduced essentially to maintain certain social relations upon other aspects of the societal structure. It shows that those innovations constituted particularly to preserve certain components of the social configuration have gone beyond, above or even against their initial aim, affecting other social relations, establishing new social relations and recasting or even curtailing old relations. It demonstrates that a certain society can turn out to be technologically shaped in the

sense that the introduction of an educational technology into a higher education institution can, in turn, engender intended and unintended changes in interactional patterns and relations. It reveals that, while certain technologies were constituted essentially to cope with the obligation to separate the genders and with the costs of this separation, their full ramifications and their eventual influence on other aspects and components of the social and organisational structure could hardly have been anticipated and are difficult to capture theoretically. The current theme, as illustrated below, emerged from two categories: the influence of technologies on relations among animate elements and the influence of technologies upon relations between animate and inanimate elements. As throughout the preceding chapter, this table highlights the relevant elements in Appendix 1, which systematically maps the sequence of the entire analytical process.

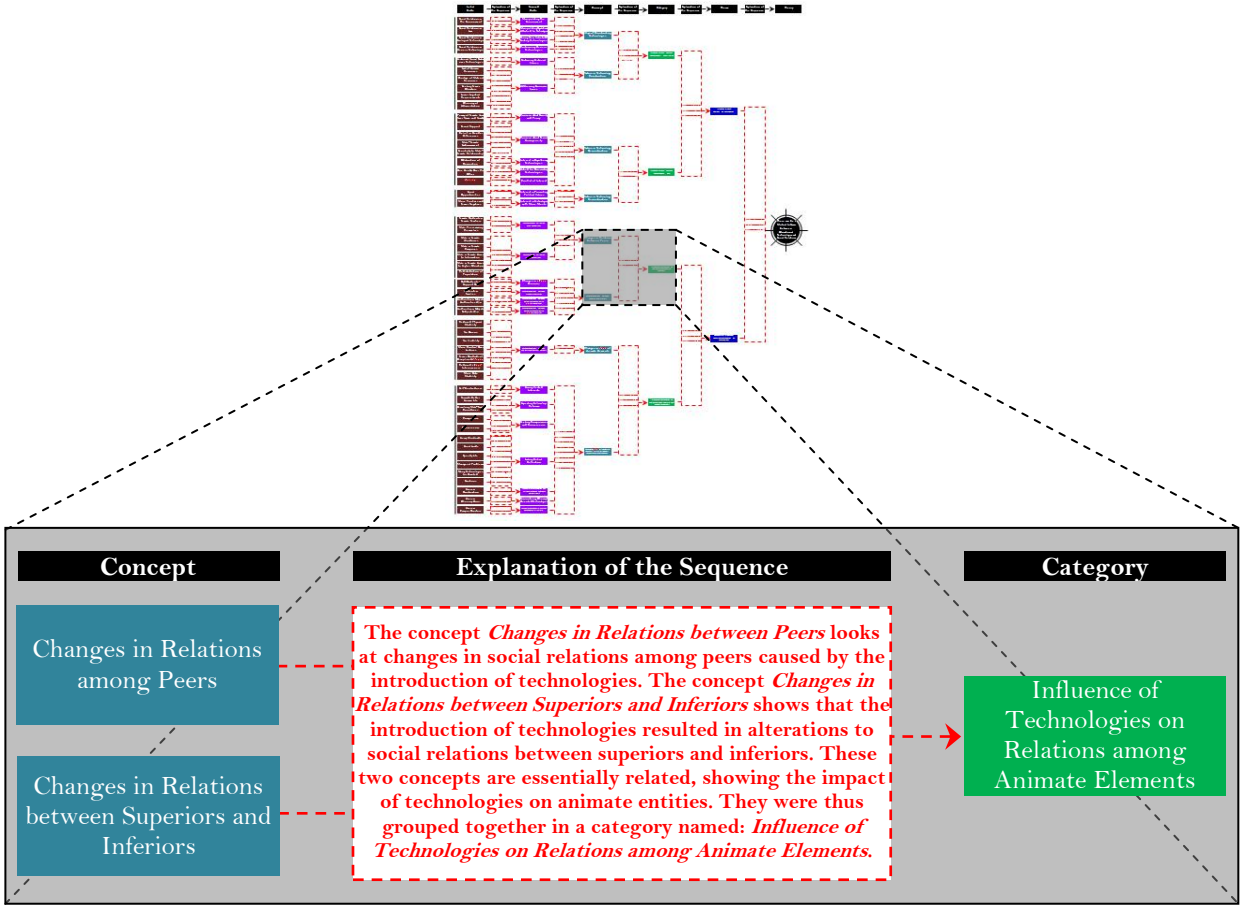
Table 24: Concomitant Influence of Technologies on Social Relations (Theme)



6.2. Influence of Technologies on Relations among Animate Elements (Category)

While analysing the raw data, I noticed that the introduction of technologies for particular purposes had had the side effect of engendering changes in social relations among animate entities. This finding represents the first category in the current theme, a category which, as the table explains, emerged from two concepts: changes in relations among peers and changes in relations between superiors and inferiors.

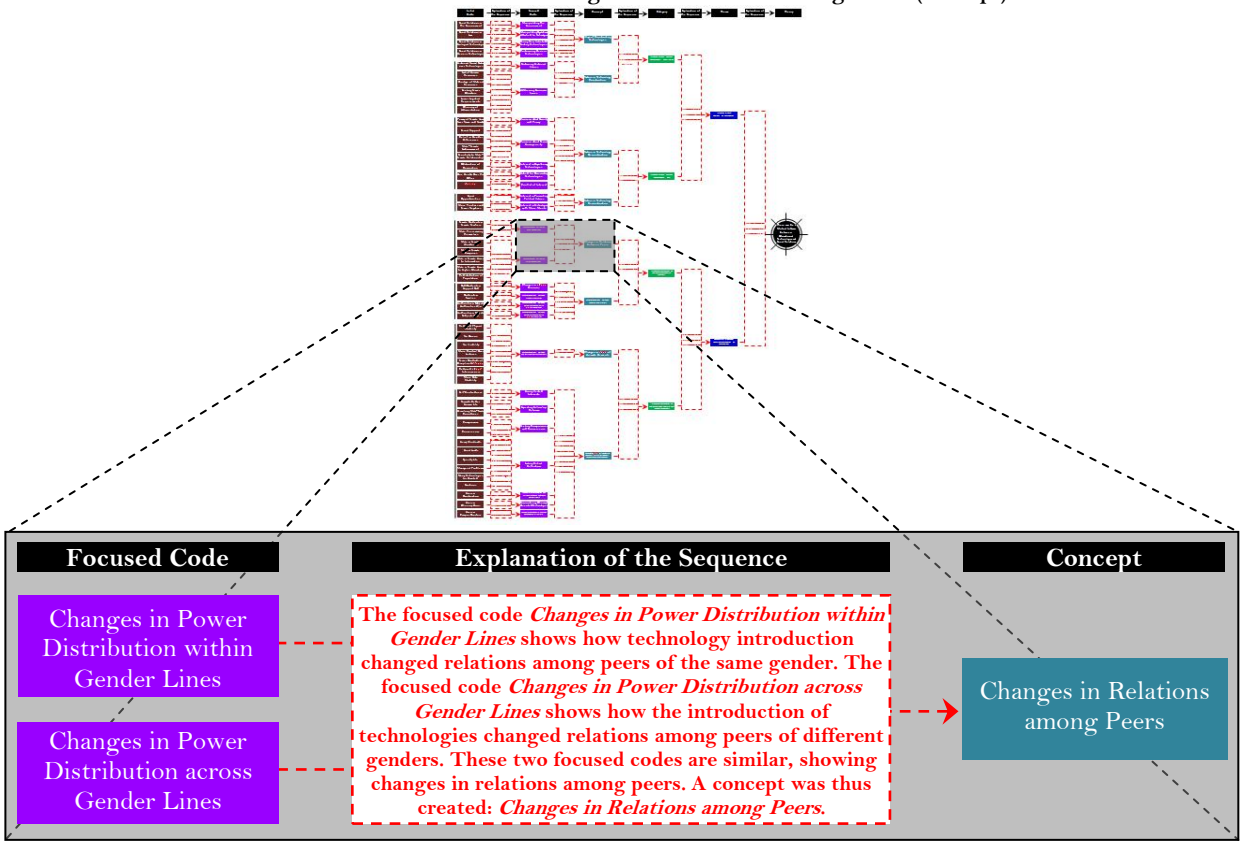
Table 25: Influence of Technologies on Relations among Animate Elements (Category)



6.2.1. Changes in Relations among Peers (Concept)

The analysis of the data revealed that the introduction of technologies into the higher education sector had had the side effect of causing changes in relations amongst peers. This finding is the first concept in the current category, a concept which, as shown below, arose from two focused codes: changes in power distribution within gender lines and changes in power distribution across gender lines.

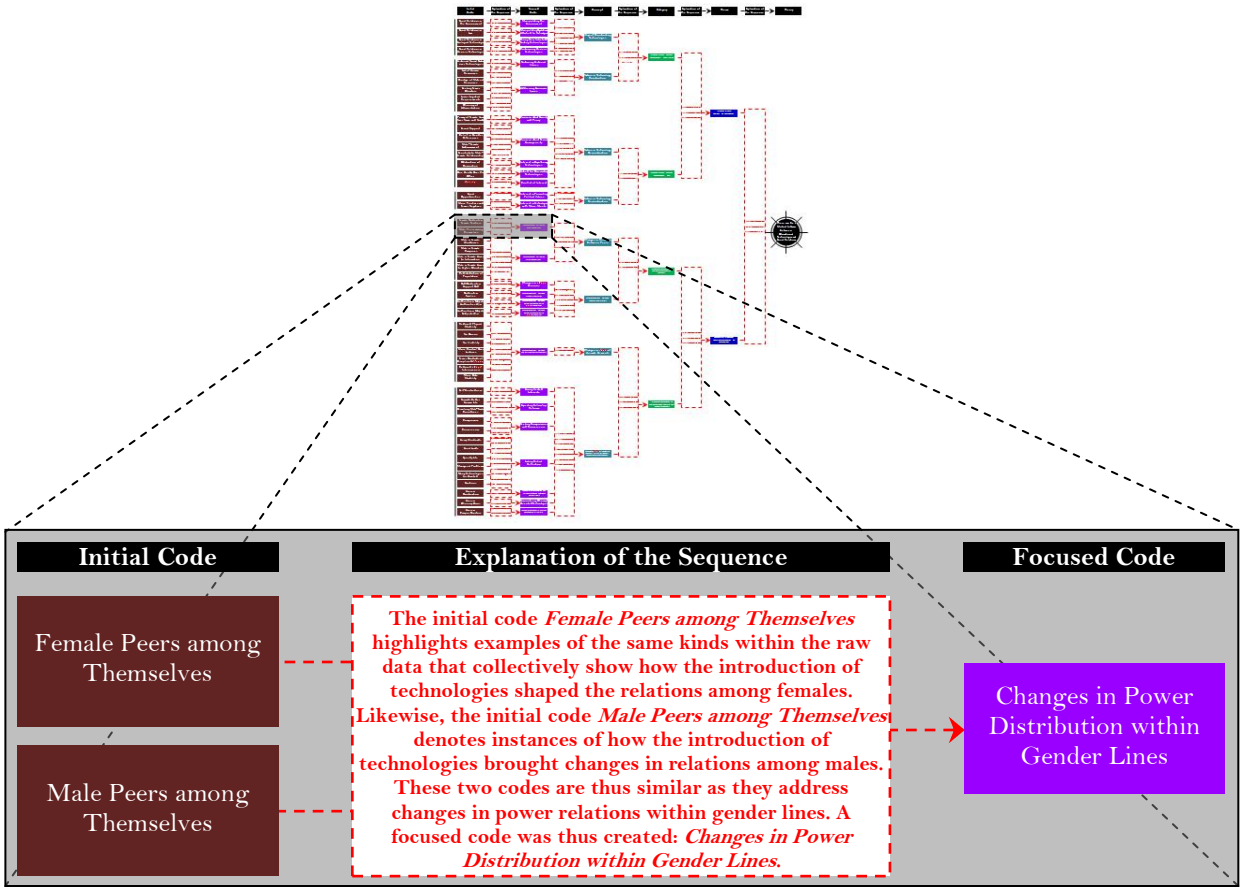
Table 26: Influence of Technologies on Relations among Peers (Concept)



I) Changes in power distribution within gender lines (Focused Code)

This focused code points to a secondary effect of the introduction of educational technologies in the form of changes in power distribution within gender lines. It arose from two initial codes: female peers among themselves and male peers among themselves.

Table 27: Changes in Power Distribution within Gender Lines (Focused Code)



One finding to emerge from the data analysis was that, following the introduction of educational technologies, changes occurred in the relationship between people of the same gender. Some male student interviewees felt concerned that growing inter-gender collaboration was diminishing intra-gender collaboration, as some men were now beginning to concentrate on offering a great deal of assistance to their female colleagues and paying correspondingly less attention to helping and collaborating with their male peers. Moreover, they thought that male–female collaboration was aggravating conflict amongst men, with some male members of the University online forums and Facebook group adopting a hard attitude to their male peers in an attempt

to validate their existence and thus attract the attention of female members. Online Male Undergraduate 35 illustrated this point:

> Let's say we have two male members of the forums, Ahmad and Salem. Ahmad suggests a good exam schedule. Salem, though, objects strongly, raising many questions and causing problems. This overreaction is to prove his existence, to attract attention and to show off in front of female members.

The data analysis refers to tensions between peers of the same gender, which was found, however, to have been lessened by collaboration across gender lines. To illustrate this point, some female academics valued this inter-gender collaboration as a relief, believing that their colleagues of the same gender were sometimes unkind to them as a consequence of the tension occurring between women. Some male academics, likewise, believed that collaboration across gender lines helped them to avoid 'cock-fights' (Male Academic 4), reducing disagreements between male counterparts. In the words of Male Academic 11: 'we worked in a team to plan a master's degree programme, and I have not experienced any difficulties due to a gender difference, or a lack of face-to-face communication.' Conversely, he remarked, 'I have had many disagreements with my male colleagues!'

Some female students praised the CCTV and glass-wall systems, which exposed them to male academics who they felt showed more cooperation, understanding and sympathy than female teachers had in their experience. Such claims, if accurate, suggest that the connection of male teachers with female students helped female

inferiors to traverse gender lines and therefore to liberate themselves from repression by those women in stations above them. This has implications for educational experience, considering that the educator–learner rapport could open up more opportunities for mentorship and enhance obedience, engagement and thus attainment. Thus, it may be that female academics should rethink their relationships with their subordinates for the sake of a better educational experience. Moreover, if this perceived superiority of male teaching is accurate, it would be reasonable to suppose that the association of male academics with female education would work to the advantage of female students, helping them to access better teaching and thus to reach a higher level of education. But the validity of this notion of male superiority can be questioned, as we will see below.

To enlarge upon this finding, some female students felt that their male academics 'write easier exam questions and are more generous in terms of grades' (On-Campus Female Undergraduate 23), compared with their female counterparts, who acted as 'picky assessors and whose exam questions are about small details' (On-Campus Female Undergraduate 1). In other modes of interpretation and playing the role of devil's advocate once again, this preference by the students suggests that they were beginning to understand academia as a game (or, to put it another way, were figuring out *the* game of academia), exploiting and taking advantage of male academics to serve their ultimate aim of 'getting the certificate anyway' (On-Campus Female Undergraduate 20). This is an example of the 'job' of attending university and also illustrates some aspects of the 'drama' of academia. What can certainly be seen from the above is that some students were interested in easier exam questions, grades and

eventually certificates – not in education and learning *per se*. Such a perspective, in other modes of argument, seems to have some merit, as 'adults will manage to learn, with or without books, visual aids, inspiring trainers, or classrooms' (Sims and Sims, 1995: 2). In adulthood, learning is essentially 'under the control of the learners' (Moon, 2000: 23), especially given that digital information and communications technologies are increasingly enabling the learner to have 'just-in-time access' (Wagner, 2007: 8) to the 'information revolution' as and when needed, thus democratising learning. Some commentators, as reported by Lewis *et al.* (2005), view 'the notion of a democratised, student-centred learning model as breaking down the boundaries between university learning and learning in so-called "real-world" settings' (p. 66). Blackmore (2001) assumes that the student is a 'self-managing learner conceptualised as flexible, adaptable, self-motivated, independent and capable of making choices in order to maximise personal benefits—a discriminating consumer' (pp. 362-3).

The accuracy of the abovementioned generalised claims in favour of male academics can be questioned in one way or another. One might say that my interviewees reported considering male academics to be superior just because the interviewer was a male academic; they tried to answer my questions in ways that they felt would satisfy me. Following the idea of Social Desirability Bias, there can be 'a desire of participants, particularly from the opposite gender, to try to please the researcher with their answers' (Al Saggaf, 2012: 212). Denscombe (2007) contends that 'people respond differently depending on how they perceive the person asking the questions' (p. 184). Despite all this, there may have been a political interest underlying the female students' preference for male teachers. These students perhaps wanted to take revenge

on female academics, whom they thought to be harder on them, through vilification. They may have been responding to 'the tension that usually occurs between a woman and her female counterpart' (Off-Campus Female Undergraduate 20). Such a motivation could be seen in the way Off-Campus Female Undergraduate 19 expressed her feelings towards (or, rather, against) female academics and managers. In her words, 'if a woman has power in her hands, she becomes merciless and deliberately goes against our will.' Off-Campus Female Undergraduate 36 made a similar complaint, saying that 'female professors have honestly been an obstacle for us.' Some female students believed that female academics 'always destroy us, saying that we are not diligent and comparing our curriculum to those of other universities' (Off-Campus Female Undergraduate 22). Off-Campus Female Undergraduate 24 wondered 'whether this is jealousy, extreme strictness or intolerance.' Off-Campus Female Undergraduate 11 saw 'men as more merciful than women in one thing, which is teaching.'

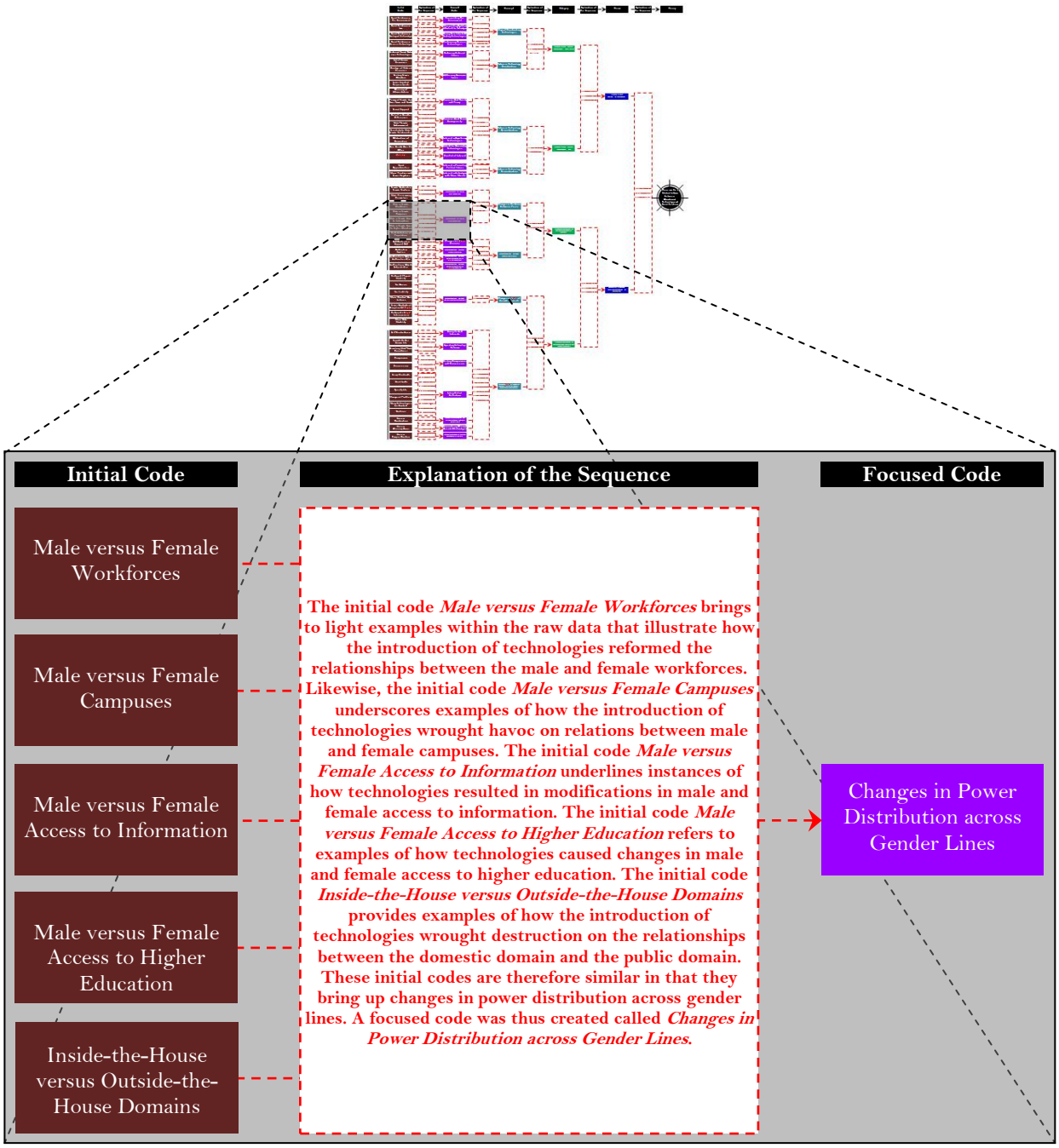
Some parts of the University's leadership appeared to have been influenced by such claims against female academics. Male Academic-Manager 6 opined that 'male teaching tends to be stronger than female teaching.' This superiority, he claimed, was 'observed by female students themselves.' He stressed that 'we are not judging ourselves.' These gender stereotypes at the managerial level may have resulted in some kind of sexual discrimination in favour of male employment. That said, some leaders thought that the reasons why female academics were not as good at organisational management and class management as they should be were not necessarily related to gender. Rather, the explanation might be that the nation's women were new in the field of management and in the public domain in general, so

had not 'understood the game yet' (Male Academic 2). Some leaders advised this new generation of Saudi Arabian female academics and managers to consider the flexibility and 'spirit of the law' (Male Academic-Manager 7).

II) Changes in power distribution across gender lines (Focused Code)

As this focused code shows, having been introduced to sustain certain aspects of the social relationship between males and females, educational technologies acted in return on other aspects of this relationship, causing changes in power distribution across gender lines. This focused code, as explained in the illustration below, emerged from five initial codes: male versus female workforces, male versus female campuses, male versus female access to information, male versus female access to higher education and inside-the-house versus outside-the-house domains.

Table 28: Changes in Power Distribution across Gender Lines (Focused Code)



Looking at the raw data, it can be said that the introduction of technologies encouraged modifications in the distribution of power and control between the genders. For example, the establishment of the online distance education programme recast the relations between male and female academics, with the former included and

the latter excluded, thereby privileging male academics as the gatekeepers of online distance education. That said, although not allowing females to lecture online, the University leadership was found to have assigned male academics' pre-recorded lectures, course contents and course design to female academics, who were asked merely to deliver them and to assess any relevant assignments. This was perceived by some interviewees as an acceptable compromise, enabling female academics to become involved with the online distance education programme without revealing their voices or faces on the Internet. One might argue, however, that such a compromise served to harden the stratification of online teaching, with female teachers being routinely considered second-class academics. Obliging female academics to deliver unaltered the materials provided by male academics can also be seen as challenging female freedom and undermining women's professional characteristics, creativity and reflexivity. This stratification of online teaching thus brings about a new 'social division of labour' (to import a phrase from Cornford and Pollock, 2003: 112) between male and female faculty members. Nevertheless, although some interviewees were aware of the drawbacks of this stratification, they supported it, thinking of it as a step towards the familiarisation of Saudi society with the idea of women becoming involved with online teaching, perhaps eventually leading to a social acceptance of women teaching online.

Although women are, theoretically, to be taught only by women, technologies have been used to enable them to be educated by men, thereby founding 'e-tutorship' between the genders. In like fashion, despite gender separation, the ways in which the academic, managerial and administrative activities of the male and female staff and students had been electronically connected was found to have created a sense of male–

female 'e-colleagueship' and 'e-peership,' a relationship which like any other has involved collaboration but also tension, conflict and compromise. An example of this tension is that some male students were beginning to perceive disadvantages of the kind that women would routinely cope with as more of a problem for them, which perhaps illustrates an important issue: the lack of political sophistication bred within a highly structured and directed society. To cite an example, On-Campus Male Postgraduate 16 accused some female students of 'not choosing polite words in response to the inputs of male students, trying to attack their views in hurtful ways.' Another illustration is that some academics reportedly began to 'tease' (On-Campus Male Undergraduate 7) their male students by telling them that their female peers were academically more committed and that women's academic attainment was superior. Some male students reported being unhappy with this comparison, which they felt to be unfair, considering the differences between the genders as regards social and cultural requirements. On-Campus Male Undergraduate 42 insisted that 'we always go out and are required to be responsible for our families, while they just sit at home doing nothing except study, so they are bound to be better than us in terms of studying and grades.' Some women rejected this analysis; for example:

> In our society, we are accustomed to this thought. In other countries, there is competition between the two sexes. Our society thinks that when a girl gets a grade of 92% and a boy gets the grade of 92%, the boy has done better. I think that these are the standards that society has set for itself. It is the opposite: we have always learnt that man's mentality is bigger than woman's ability.
>
> On-Campus Female Undergraduate 16

Despite such conflict, some students commended technologies (the CCTV-based, glass-wall and theatre-like structures and the University web-based social domains) for connecting the genders, which they felt let them get to know one another, undermined the male–female hierarchical structure, weakened the psychological divide between the genders and opened each to the perspectives of the other, thus enriching everyone's social and educational experiences and broadening their horizons, especially given that they had all grown up in a single-gender society and been taught at school only by people of the same gender. They also felt that competition between the genders had enhanced their engagement in activities and that the connections between them had enhanced social unity at institutional and national levels. On-Campus Female Postgraduate 2 illustrated the point thus: 'Men are unknown to most Saudi women, as they exist in their lives only as husbands, brothers or fathers, so it is nice if women learn how to deal with other men, with whom they can converse intellectually, under the umbrella of a regulated system such as education'. On-Campus Female Postgraduate 7 concurred, stating that, 'in a closed society like ours, it is useful if the sexes are given the chance to know each other, exchange ideas and benefit from gender-specific ways of thinking, under the umbrella of an officially permitted system such as education.' These two quotations illustrate the notion that the higher education system has given citizens opportunities not open to them in wider society, such as enabling the two genders to get to know, deal with and converse with each other. The data showed various examples of such potential in the higher education system. At the micro level, for example, a student typically declared herself 'thankful for the education system, as otherwise I would not have been allowed to even touch the Internet' (Off-Campus Female Undergraduate 28). At the macro level, the

University has officially built communication structures between the two genders, bringing about a historic change in the country. All such 'liberal' experiences within the higher education system may eventually diffuse into wider society, given that this system produces graduates who are likely to hold influential positions and whose actions may be influenced by their university experiences. This could be taken as suggesting that the higher education system is gradually breaking down some of the present societal and cultural boundaries, acting as an agent for change (Corbyn, *Times Higher Education*, 5 November 2009), although this change may be limited and moderated by the conservative and sheltered nature of the national culture and society. This argument is compatible with Kerr's (1996) belief that 'educational institutions are increasingly seen as one of the few places where society can exert leverage to bring about desired changes in the social and economic order' (p. 117).

Moving on to another technology-facilitated change in the distribution of power and control between the genders, although there were separate libraries for the male and female campuses, an e-catalogue had been developed to enable all members to search for resources across the two libraries and to request materials from the other library when they were unavailable in their own. In addition, members were provided with free access to electronic resources, such as e-articles, e-books, e-dissertations and e-theses. This equality of access to information sources was seen by some interviewees to be of great consequence, given the traditional configuration of Saudi culture, whereby female students and staff are frequently relegated to unequal opportunities, facilities and information resources. These e-initiatives thus represent a change in the configuration of male and female access to information.

Some female academics saw the male–female e-sharing of meetings as an opportunity to adjust the attitude of men towards women. Male Academic-Manager 4 noted that 'some women in male–female meetings have deliberately over-performed, as the stereotype of the woman has made them enthusiastic about preparing well, therefore addressing the subject well and speaking better than their male colleagues.' This male–female sharing of meetings seems to have dramatised some aspects of academic life, with the employees of each campus attempting to use their behaviour, appearance and manner to manipulate the impression given by and to the labour force of the other campus, as if they were actors in a play. These theatrical aspects of Saudi academia remind us of the argument of Goffman (1959: 166) that, 'when two teams present themselves to each other for purpose of interaction, the members of each team tend to maintain the line that they are what they claim to be: they tend to stay in character.' The data included additional examples of this characteristic of Saudi academia. In male–female activities, some male students reported not being able to 'talk [freely] in the presence of women, fearing that I may make a mistake in front of the other sex' (On-Campus Male Postgraduate 5). On-Campus Male Postgraduate 13 pointed out that, in male–female activities, 'there is formality on the part of men and women.' Some male academics were observed to be more formal when teaching women than when teaching men. Some female students, moreover, as mentioned previously, found male–female activities to provide the opportunity to react against their considerable disadvantages. On-Campus Male Postgraduate 3 noticed that 'women sometimes try to prove their presence using impolite means, shouting and raising their voices.'

Although men were authorised to train women, albeit via technology, women did not train men. This was reported to be partly because Saudi society was still unfamiliar with the idea of women training men. That said, the training structure set up externally by the Saudi National Commission for Academic Accreditation and Assessment has enabled both male and female trainers to collaborate in preparing and giving joint training sessions to a mixed-gender audience. In this case, the female co-trainer and female trainees are in one room and the male co-trainer is in another with the male trainees, the two being connected through the CCTV network. That said, the Commission has not adopted a structure allowing a solo female trainer to give a training session to a group of men. Some interviewees interpreted the Commission's initiative as a methodological and tactical attempt to familiarise Saudi society with the idea of women training men, steadily undermining the social male–female hierarchy in this respect so that it can eventually allow solo female trainers to train men. If this interpretation is accurate, it suggests that a technological structure might carry hidden long-term political intentions and tactical visions.

Technologies were found to have facilitated private, individual collaboration between male and female students, which sometimes became a 'benefit exchange', whereby students would offer a service to their peers of the other gender, in return for another service. Some male students, by way of illustration, reported having received academic assistance from female students whose academic attainment and commitment were perceived as superior. Online Male Undergraduate 2, for instance, stated that 'female students deserve to take the credit for helping me to understand the curriculum; without God and them, I would understand nothing.' He added that 'they have helped

us so much, therefore thanks go to them.' In return for this academic assistance, these female students received physical help with outdoor assignments from the male students, thus circumventing the constraints on their mobility and access to the outside world. In the experience of Online Female Undergraduate 14, 'we sometimes have urgent questions and need an answer from one of the male University managers, so male students volunteer to go and get the answer for us.' Online Female Undergraduate 29 similarly reported that it was 'sometimes difficult for the female student to get a copy of a booklet, so a male student travels to her city to leave a copy in a bookshop.' Some students believed that this collaboration generated 'a spirit of siblinghood' in Saudi academia. It could be argued that the emergence of this concept of siblinghood indicates the vital role which educational technologies are playing in the reconfiguration of traditional male–female relationships within Saudi society, away from the established pattern exemplified by the following metaphor: 'If a man meets a woman, he automatically turns into a wolf and the woman into a sheep to be eaten by the wolf' (Male Academic 20).

Technologies were also found to have facilitated private collaboration between male and female academics. Given the lack of face-to-face communication, some individual academics reported relying on communications technologies to collaborate, formally or otherwise, on joint research projects with academics of the other gender, whether from the same university or even from other Saudi or non-Saudi universities. Male Academic 23 stated that there had been 'a number of academic projects between male and female faculty members.' He commented that 'this cooperation has been constructive and successful' and stressed that he had himself 'benefited greatly from

this academic communication.' Male Academic-Manager 8 found this collaboration an 'outstanding experience, because the views of women differ from the views of men, which leads to integration.' In the experience of Female Academic-Manager 1, 'I have benefited from male academics, and I have benefited them.' Thus, educational technologies can be seen to have provided academics with 'access to resources and collegial support beyond the limitations of their immediate circumstances' (Selwyn, 2011a: 18).

Some academics found male–female individual collaboration useful in various ways. It reportedly helped to enrich data analysis, given the differences between men and women in how they analyse the data, in ways informed by their different social, cultural and psychological backgrounds. It was also reported to help with the conduct of naturalistic research across the two genders, with men interviewing men and observing male activities, while women would interview women and observe female environments. Male Academic 10 reported being involved in 'a male–female joint study on male students. ... I was in charge of carrying out fieldwork since the target group was men, whereas the female co-researcher was responsible for indoor tasks, such as data analysis and administrative tasks.' This citation illustrates how tasks were assigned to researchers in line with their societal and cultural status and possibilities. Similarly, some academics reported contacting academics of the other gender, from inside or outside the University, for help. Male Academic 7 said that he had emailed some female researchers asking them if they would mind sending him certain academic works of theirs and had found them cooperative. Similarly, Male Academic 10 sent emails to some female researchers asking them if they would be interested in

informally reviewing his articles. Keeping these examples in mind, it can be said that institutional dynamics in general and technological structures in particular can not only be informed and shaped by top-down configurations, but also be directed and formed by micro-level initiatives on the part of practitioners. It seems from the data that the taking of initiatives at the micro level depends on various factors, including practitioners' creativity, autonomy, 'technological fluency' (Lin, 2000), political literacy and courage in going beyond existing organisational and social configurations.

Moving on to another point, i.e. changes in male and female access to higher education, we should recall from the literature review that it was only as recently as the 1970s that Saudi women came to be included in the formal higher education system at all, with men being educated only by men and women only by women – in theory, at least. Yet the successive technologies enabling female students to be (remotely) educated by male academics mean that the educational opportunities for women have grown to exceed those for men, since men are educated only by men, whereas women have potential access to all teachers of both genders. This is perhaps why in 2011 female students so heavily outnumbered male students at the University (by 65% to 35%). Thus, with the assistance of educational technologies, women have moved in less than four decades from being totally excluded from formal state education to occupying two-thirds of places at the University. This indicates a sea change in the distribution of power between males and females in terms of access to higher education.

Shifting focus to the national level, although men are considered to belong to the public domain and women to the domestic one, the web-based social spaces of the

University have enabled women to make strides (albeit electronically) into the social and political arenas at the local, national and international levels, exposing them to many more learning opportunities and to 'the ecology of global ideologies.' The proportion of women participating in the online forums was reported to be in the region of 85%, with only 15% for men. These e-spaces, moreover, have granted women considerable managerial power outside their domestic domain, with females holding most managerial positions there. All the supervisors of the forum were actually women, except for the overall director, and while the University's Facebook page was run by both male and female administrators, its general director was a woman. This may be seen to represent an historic change in the dissemination of power and control between the domestic and public domains. Besides, the virtual world has authorised female members to exercise power publicly over male members and wider society, allowing them to climb the status ladder, hence disrupting and subverting somewhat the hierarchical social order. Saudi women, with the assistance of educational technologies, thus seem to be enjoying the distinctive learning experience of engaging in public discourse and leadership, which may well in turn encourage a new generation of Saudi female activists and leaders.

We can see, then, that digital technologies have created openings and 'new ways for disenfranchised persons to increase their own power' (Bromley, 1995: 4). They have enabled a certain social group to step out of its socially legitimated domain. They have multiplied options for challenging gender-based restrictions, 'allowing people "to break out" of proscribed roles and limited spheres of action' (Hopkins, 2009: 200). They have provided 'the opportunities for social groups to change their status' (Kerr,

1996: 136). Thus, although technologies can, as was argued in the preceding chapter, be used to reinforce certain social configurations (e.g. the preservation of gender separation through the CCTV-based, glass-wall, theatre-like and videoconferencing structures), they may in return challenge other social patterns, 'permitting activities which cross restrictive cultural, social, ethical and interpersonal boundaries, expanding one's movement, social scope and access to information' (*ibid.*: 200–1). This shows how the maintenance of a cultural tradition can at times be facilitated and at other times challenged by the same educational technologies. Bromley (1995) believes that, 'for the most part, social relations in the world of electronic communications replicate those of everyday life, [but] exceptions do exist' (p. 180). The situation in Saudi Arabia could be seen as such an exception, with such technologies altering the dissemination of power and control between the domestic and public domains. Some female interviewees reported not being accompanied by a man when going online, unlike the physical world, where Saudi women are always accompanied by a man when entering the public domain. Thus, with the assistance of educational communications technologies, Saudi women have gained unprecedented independent access to the outside world, enjoying a reportedly rich, curious, exploratory learning experience.

A key issue here is whether this advantageous position for women in the technology-based academic world is gradually shaping and transforming their situation and rank in academia generally and in the wider physical world. Further analysis of the data suggests that this advantageous position is the result of the innovation of 'e-writing,' which appears to be compatible with Saudi women's social patterns, enabling them to access the public domain while remaining at home, veiled, unembarrassed and

preserving the five components of female privacy: place, name, voice, face and phone number. This innovation has actually granted women the freedom to transcend mobility constraints, to skirt round socio-cultural restrictions, to reconstruct their social status and to express themselves anonymously, casually and thus freely, with or without the consent of their families and guardians. This implies that the innovation of e-writing has opened Saudi women to a new horizon of experiences and thus of learning. Moreover, through the Internet, Saudi women have come to talk among themselves on a much wider scale than before, not being limited each to her own house, and the mass of women are consequently able to influence the wider culture.

Electronic networks have offered Saudi women (and men) new possibilities not only for local and national but also for global information exchange. Broadening the contact of Saudi society with the outside world through technologies means modifying its internal communicative infrastructure, providing foreign perspectives through greater transparency and permitting competing opinions to challenge the static rhetoric of the culture. Such an argument lies at the core of the work of Schütz (1944), who points out that anyone born or reared within a certain society takes certain 'ready-made' societal and cultural values as an unquestioned and unquestionable guide for all situations arising within the social world. Schütz argues that such values, handed down to members by ancestors, teachers and authorities, carry their evidence within themselves and are likely to be taken for granted until evidence to the contrary emerges. The Internet can be seen to provide such evidence, the awareness of which can therefore interrupt the flow of habit and lead in turn to what Mezirow (1990, 1991) calls 'perspective transformation' (see also Schütz, 1944; Al Salem, 2005). The

enactment of 'e-peership' between local and international students through online distance education can also allow the emergence of such evidence.

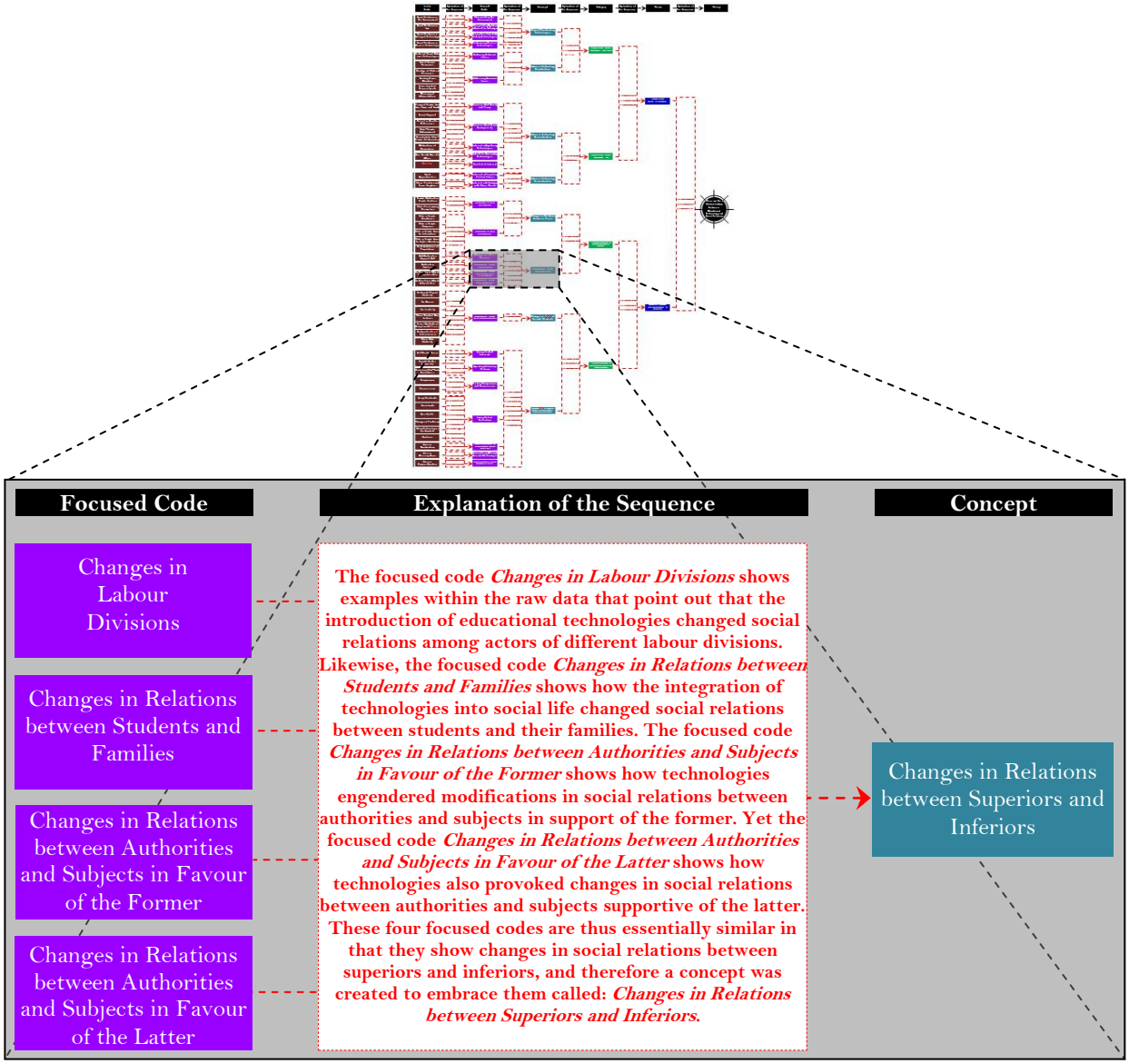
Further analysis of the data speaks of other changes in the social and spatial boundaries within Saudi academic and wider societies. To consider an example, the web-based social domains of the University are publically available, meaning that University activities are open to inspection by the public, that is, by 'the great tribunal committee of the world' (to borrow a phrase from Foucault, 1991: 207). Anyone can visit these domains to see for him/herself how the University operates and to record how its members interact with one another. Thus, whereas in the real world the University campuses are enclosed by long walls guarded by a gatekeeper, its 'virtual campus' is metaphorically unenclosed, revealing 'backstage settings' (in Goffman's terms, 1959) and consequently contradicting the sheltered and private nature of the Saudi female population. Another result of the fact that the web-based social domains of the University are open to the public is the production of new social relations between and amongst local and other external communities. Some users admired the way these domains expanded the University community beyond the two campuses to include prospective students, students of other universities, school students and alumni. Some members of these domains worked together to address academic and administrative enquiries. They shared news about admissions, mailing lists, online communities, seminars, conferences, exhibitions, training sessions, events, workshops, symposiums, University achievements, graduation ceremonies, job opportunities and research competitions. Some members exchanged academic tips, social tips (e.g. about health), new ideas, innovations, lectures notes and academic websites, in addition to

reminders about forthcoming events. In these domains, there was also an emotional content, with members wishing each other luck in examinations and exchanging appropriate greetings for the new academic year, the new calendar year and national celebrations.

6.2.2. Changes in Relations between Superiors and Inferiors (Concept)

This concept demonstrates that 'by-products' of the introduction of technologies included changes in relations between superiors and inferiors. As the table below shows, it was generated from four focused codes: changes in labour divisions, changes in relations between students and families, changes in relations between authorities and subjects in favour of the former, and changes in relations between authorities and subjects in favour of the latter.

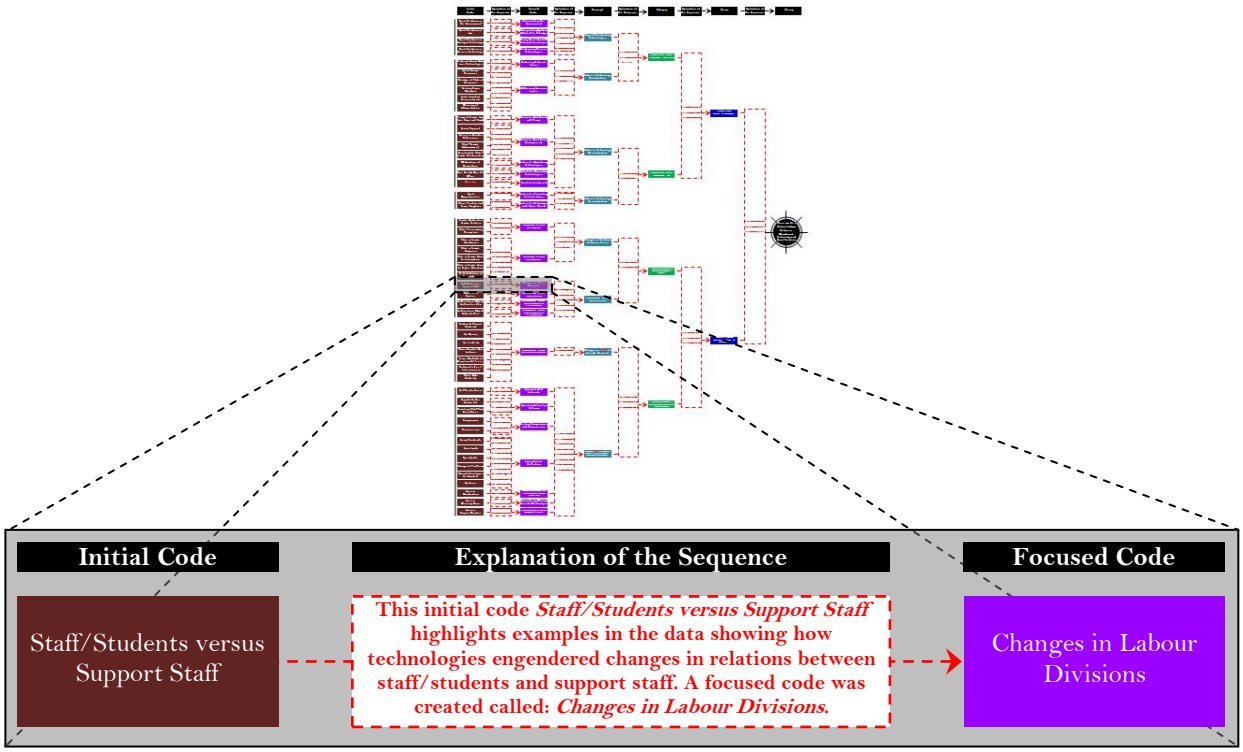
Table 29: Changes in Relations between Superiors and Inferiors (Concept)



I) Changes in labour divisions (Focused Code)

Some evidence was found in the data that the introduction of technologies had incidentally modified the division of labour amongst categories of higher education actors. This finding represents a focused code that is derived from an initial code called 'staff/students versus support staff.'

Table 30: Changes in Labour Divisions (Focused Code)



In the CCTV-based and glass-wall classroom structures, a female coordinating assistant is present in the student area, helping the teacher to manage the class. Her tasks include noting the names of those students present and ensuring that they are quiet and engaged in the class. She also conveys messages between the teacher and students and supervises students during exams. Employing such an assistant introduces a new actor into the relationship between teachers and their students, thus founding new social and power relations between the teacher and the assistant and between the students and the assistant. In terms of the power relations between the teacher and the assistant, some teachers criticised their assistants for being undisciplined, sometimes being absent or late, or leaving the class early. Such criticisms were sometimes even delivered during the class and in the presence of students, which was thought by some interviewees to undermine the authority of the

assistant and enhance students' disrespect for her. Some teachers remarked that many assistants lacked both teaching qualifications and classroom management skills. This suggests that professional developers should pay more attention to the assistants, especially given their important role in facilitating lectures, a role that some male teachers explicitly recognised. Regarding power relations between students and the assistant, some students, as mentioned earlier, were reported to show no respect for the assistants. Male Academic-Manager 4 speculated on the reason for this disrespect: 'the coordinating assistant is often the same age as the students and sometimes younger, which makes them disrespect her.' He added, 'I always need to emphasise that they must respect her.' In order to ensure due respect, it was suggested that older assistants should be employed and should also be given some authority over undisciplined students.

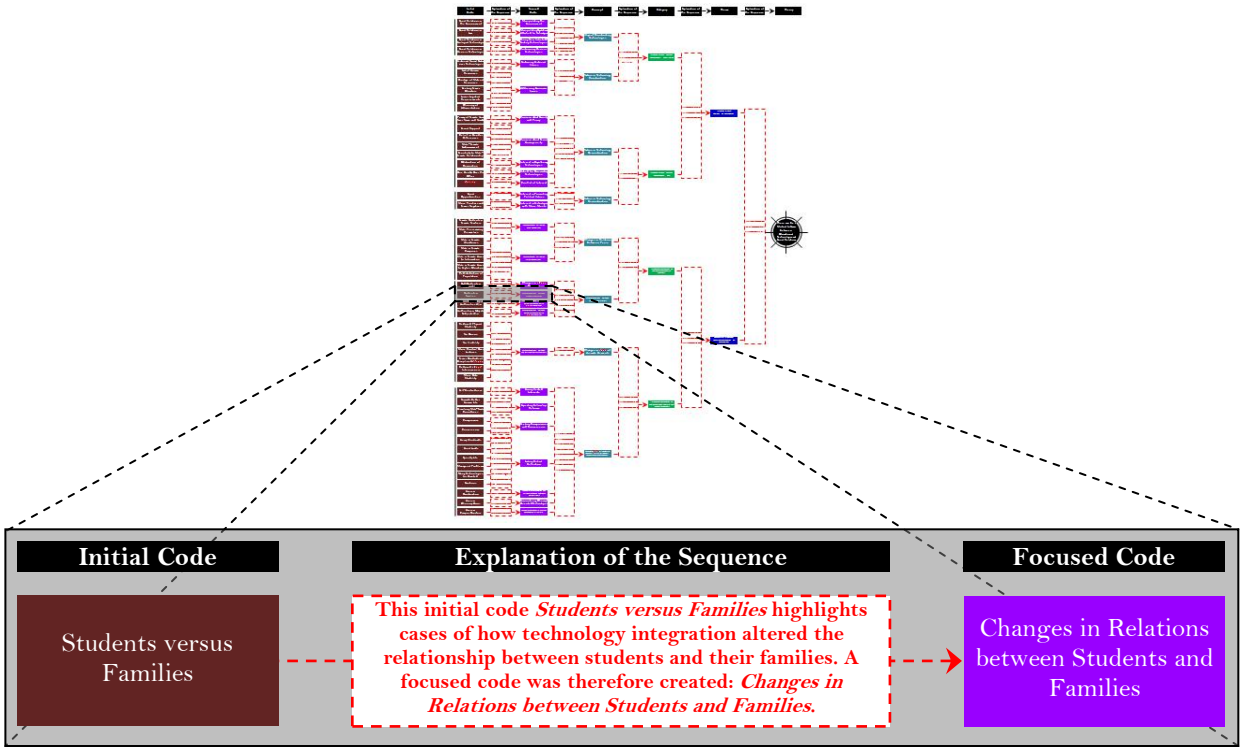
An additional aspect of the influence of technologies upon the division of labour between higher education actors is that many administrative tasks were put in teachers and students' hands (see Cornford and Pollock, 2003). The administrative technologies empowered students and academics to manage their own records actively and to take on responsibility for administrative tasks that were previously assigned to administrators (e.g. inputting, modifying and updating data). Students and academics were emailed a step-by-step illustrative technical guide, showing them how to use the administrative systems and to conduct their own administration (Document 18). This meant transforming the students and academics from passive objects of administration to active users. From the opposite standpoint, this transformation modified their roles, assigning technical (i.e. non-academic or non-professional) work to learners and

teaching staff. Thus, students not only took on data-inputting tasks, but also became responsible for the timeliness and accuracy of the data contained in their student record (see Cornford and Pollock, 2003).

II) Changes in relations between students and families (Focused Code)

This focused code points to some social effects of the introduction of technologies, i.e. modifications in the relationships between students and their families. As the table below indicates, it stems from one initial code: students versus families.

Table 31: Changes in Relations between Students and Families (Focused Code)



Although the family continues to be a key point of reference for the formation of the identity of each new Saudi generation (see Yamani, 2010), some students reported having communicated electronically with their peers of the other gender despite the

disapproval of their family, thanks to the individualist orientation of the Internet, where people can remain anonymous. Although some families were reported to 'reject one-to-one male–female e-communication and insist on this rejection, no matter how qualified and sophisticated the two are' (On-Campus Female Postgraduate 15), this did not necessarily mean that students submitted to their will. Some students indeed communicated personally and privately with their peers of the other gender by telephone, email, instant messaging, Skype and Second Life, although 'my family might deprive me of university or even slaughter me if they knew' (Off-Campus Male Undergraduate 4). Bin Ladin (2005), in a critical reflection on her own experience of Saudi culture, reports learning that, 'if a child flouts the harsh customs and conventions, the patriarch might even put that child to death' (p. 69). Off-Campus Male Undergraduate 1, likewise, believed that, 'if my wife knew about my academic contact with my female peers, the consequences would be disastrous, which could possibly amount to a divorce.' Off-Campus Female Undergraduate 25 stressed that her family was 'of course unaware of my communication with male students, because they fear for me.'

We can see that these students engaged in 'risk-taking activities' of a kind which 'allow the self to develop in ways that are restricted by an individual's everyday environment' (Hope, 2007: 89). Although such 'risk-takers' (in Hope's terminology) were individually in contact with the other gender, they were 'keen to hide this communication from our families and other colleagues, because we are scared of the rumours that may arise and in turn harm the reputation of the woman' (On-Campus Female Postgraduate 12). On-Campus Female Postgraduate 9 showed concern that

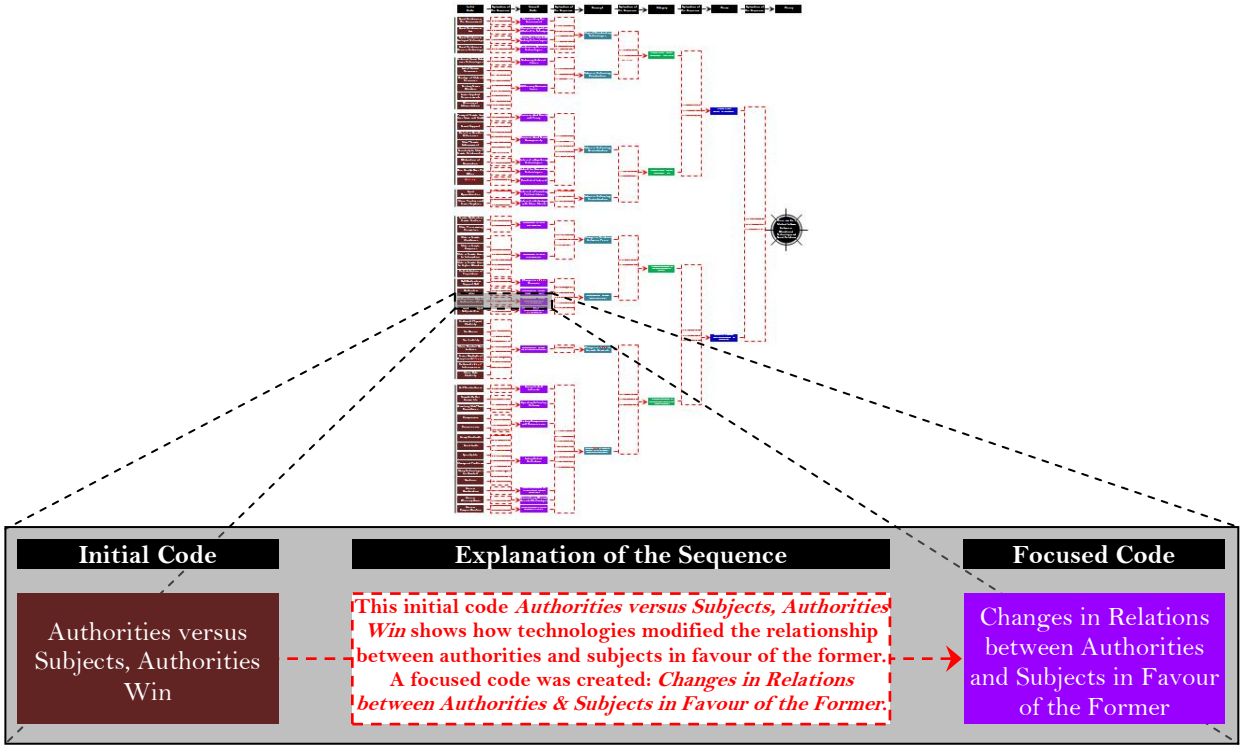
'this communication may be used by bad people to promote rumours, to lie about the other party and to exploit and blackmail the woman.' She anticipated that her husband 'would completely reject me if he knew about this communication' and added that, 'I will try to persuade him, but I am sure that I will comply with his wish if he insists, because my husband, my children and my home are always at the forefront of my interests.' On-Campus Male Postgraduate 33 reported that, 'when female colleagues contact me, they caution me not to tell anyone (including our peers) about this communication.'

Not all students, however, would risk the disapproval of their families by communicating with peers of the other gender, preferring to employ a 'go-between' (a relative of the other gender whom they could never marry, such as a spouse, sibling or parent) to carry messages to and from the other campus. This entails the creation of new social and power relations between the go-between and the students communicating through him or her. Such third-party involvement was criticised by some students as ineffective and impractical. These critics believed that the go-between would be unlikely to be able to deliver messages accurately, especially when they involved specialist information. They also argued that the core communicating parties might be unable to defend themselves and negotiate properly if this defence and negotiation were done through a mediator. On-Campus Male Postgraduate 14 referred to an additional challenge, which was that 'there are messages that the two core communicating parties may not want the mediator to know.'

III) Changes in relations between authorities and subjects in favour of the former (Focused Code)

This focused code casts light on some changes in power distribution between the University authorities and members derived from the introduction of technology into higher education and favouring the former. The roots are to be found in one initial code: authorities versus subjects, authorities win.

Table 32: Changes in Relations between Authorities and Subjects in Favour of the Former (Focused Code)



As part of the online distance education programme, the leadership has taken the following actions: recording lectures, purchasing their copyright from the lecturers, archiving teaching activities in Blackboard and placing exam questions in a bank of multiple-choice resources. These actions can be argued to risk taking course contents and course-design skills out of academics' possession and into the hands of the employer, who might then claim ownership and peddle them elsewhere and/or employ

less skilled (thus cheaper) tutors to merely deliver these digitally archived courses (see Noble, 1998). Selwyn (2007) shares this concern, arguing that the digitalisation of teaching activity, at least theoretically, provides the employer with an inheritance of electronic resources that are indefinitely replicable, scalable and saleable. Indeed, as mentioned before, the University leadership has taken pre-recorded lectures, course content and design skills out of male academics' hands and assigned them to female academics, who have been asked to merely deliver them and to assess any relevant assignments.

Enhancement of monitoring and surveillance was an offshoot of technology introduction. The whole CCTV network is connected to external TV monitors, speakers and video recorders located in a central operations room, making it possible for a third party to hear, see and record teachers' and students' words and actions. This kind of surveillance seems 'the perfect disciplinary apparatus, [which] makes it possible for a single gaze to see everything constantly' (Foucault, 1977: 173). In other words, the external third party can watch all the classes in operation at the same time from a single place. This CCTV-based surveillance can be interpreted negatively as instilling into teachers and students 'a state of conscious and permanent visibility that assures the automatic functioning of power' (*ibid.*: 201). Thus, surveillance is permanent in its effects, even if discontinuous in its application (*ibid.*), and indicates an extension in the authorities' power over members of the University. Integrating permanent surveillance into educational technologies means encouraging them gradually to accept it as a fact and as an integral part of the University culture,

progressively diminishing their ability to reflect on it critically and therefore to challenge it.

Thus, while the CCTV system was initially introduced to enable men to teach women, it has enabled the organisational control of teachers. This is not to deny that CCTV has played a role in overcoming the dearth of female academics, thereby enhancing females' educational opportunities, but rather to suggest that a 'function creep' (Hope, 2009: 893) has taken place in regard to this technology, as the University has gone beyond its initial purpose in using it for surveillance. This raises the question of whether such surveillance is ethically acceptable if carried out without the knowledge of all of the subjects. Indeed, questions remain as to its acceptability even if it happens with the (implied) knowledge of all users. One might therefore argue for a solution which parallels research ethics, whereby consent is negotiated continuously and can be withdrawn at any time by the subjects. This suggestion is hardly likely to be adopted, however, as surveillance seems from the data to take place with no one necessarily being fully aware of its ramifications. Some managers revealed that they were logging in to Blackboard to view the contents uploaded by tutors and also to monitor the communication amongst students and between students and their tutors, so as to ensure a certain level of quality assurance. For these managers, the notion of quality assurance is of the essence, as it has become a focal concern locally and nationally, with leaderships establishing a quality assurance office in each university faculty. Seen through this lens, there has been a trade-off between the notion of quality assurance and the privacy of the subject, with the former being given priority over the latter.

The motive for technological innovation might be power not over teaching and learning but rather over teachers and learners. Some tutors reported that Blackboard allowed them to monitor the learning activity of students by facilitating access to their browsing history. Male Academic 7 revealed that he could 'find out whether the student is active or not active through the browsing history and whether he studies daily, how many times he logs in on a daily basis, what things the student visits, and so on.' Thus, whereas in the past students could study in their own time without recourse to technology, interactions within the University's technological structure can now be logged and traced. Yet if it is accepted that a subtle presentation of institutional political ideas (here, surveillance through Blackboard) takes place in educational environments through educational technologies, then it can similarly be argued that certain values may be tacitly and tactically embedded by users in the use of these technologies (see Hope, 2009). To support this claim with evidence from the data, some students were conscious of the abovementioned surveillance by tutors, stating, for example, 'I have tried to take advantage of this monitoring by leaving my Blackboard browser open most of the day even if I was away, just to pretend I was working exceptionally hard!' (Off-Campus Female Undergraduate 13). This 'trickery' clearly demonstrates an example of the 'technological drama' of academia. It suggests that students can be aware of organisational politics – perhaps sometimes more than their teachers are. It also suggests that 'users are actively participating in the interaction with the artefact and continuously interpreting the situation and constructing and rebuilding meanings about the artefact' (Vyas *et al.*, 2006: 1). An appropriate example here is that of Male Academic 44, who asserted, 'I do not use my University email address, because I am absolutely sure that managers and

administrators go over it again and again.' This monitoring, if it actually takes place, underpins the belief that 'employers increasingly snoop in the email of employees, looking for stuff they deem improper' (Lessig, 1999: 145).

An additional example of how surveillance seems to occur with not everyone necessarily being entirely conscious of its implications is that, at the national level, the National Centre for E-Learning and Distance Learning has gone into partnership with individual post-secondary education institutions, exerting an external influence on their use of educational technologies. It has offered its partners, including the University, a learning management system similar to Blackboard, allowing 'the teacher to manage students' data, to schedule the course and syllabus, to follow up the performance of students, to conduct electronic exams and to process and save grades' (Centre Document). Such data are stored on a central server at the Centre, meaning that the Centre now has access to a considerable amount of detailed information about its partners' local activities and business. This entails considerable changes in the balance of power between the Centre (i.e. the Ministry of Higher Education) and individual higher education institutions.

Of course, surveillance should not be portrayed as something new, considering that authorities 'have been conducting surveillance for thousands of years' (Johnson and Wetmore, 2009: 537). However, technologies are permitting authorities to gather new kinds of information in new places (*ibid.*) – in our case, inside the classroom through the CCTV system and Blackboard. Indeed, cameras have been placed in some common areas of the (male) campus of the University, with 24/7 live recording, and feeds of this broadcast have moreover been made available on the University's website, with

anyone from the public being able to visit the website and watch the social dynamics of the University and its members. Although this online 24/7 live broadcasting shows a high level of transparency and confidence on the part of the leadership, it also demonstrates a low level of security and presents possible risks to subjects, given that it could be exploited for criminal and terrorist purposes. This brings up again the issue of whether such broadcasting is ethically acceptable without the explicit informed consent of all subjects. Another point of note is that, in the Saudi context, when the political norm of surveillance comes into opposition with the social norm of female privacy, the latter prevails, as shown by the fact that no such live broadcasting is done from the female campus. The raw data include an additional example of how female privacy seems to be a serious and non-negotiable business in Saudi Arabia: the University's website displays no photographs of any Saudi women whatsoever.

The monitoring and surveillance described above indicate the intensity of the motivation for implementing educational technologies, underpinning the belief that organisational technologies could be used as 'instruments in power games played by local governments' (Danziger and Kraemer, 1986: 35, cited in Kerr, 1996: 120). This monitoring and surveillance, some of which is apparently performed silently, secretly and skilfully, does not subject the University's members to any measure of coercion and is not written into the law. This indicates the possibility of the gradual extension of technology-mediated mechanisms of discipline, power and surveillance throughout the University, with these mechanisms becoming progressively normalised elements of lived reality (see Foucault, 1977). In this respect, there seems to be a need for guilds of students and teachers to protect their rights against the political intentions of the

authorities. Besides, there is a need for all the parties concerned to hold this surveillance at the forefront of their minds and to explicitly negotiate its mechanisms and regulations.

Monitoring and surveillance can be exercised not only for managerial purposes such as quality assurance, but also for social reasons and in response to a lack of moral trust. In this regard, Male Academic-Manager 8 asserted, 'with all due respect and appreciation,' that 'academics are not the elite of the society, in terms of ethical and behavioural faithfulness.' Some male academics themselves questioned the ethics of their male colleagues. Male Academic 16 indicated that 'sometimes some faculty members, especially those who are not mature, build a relationship with female students.' Male Academic 10, likewise, reported that 'it has happened a lot that a faculty member flirts with a girl because she wants to flirt with him.' Thus, Baarda (1994) seems right to argue that 'monitoring of work is an employment practice based on mistrust' (p. 17). Thus, surveillance here seems to involve monitoring both the work and the worker, i.e. quality assurance and teacher morality.

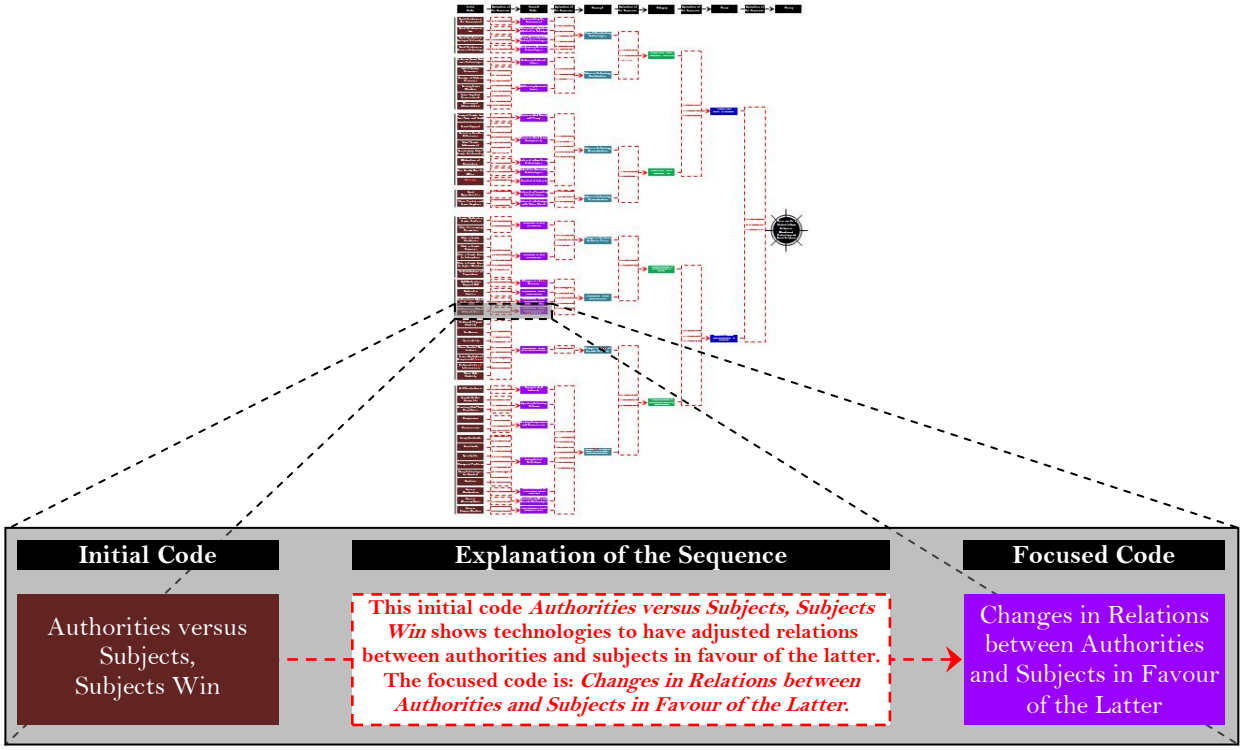
Some teachers did not hold such surveillance and its ramifications in the forefront of their minds, whereas others had reflected on it and felt that the introduction of Big Brother was not an issue for them. Although this unconcern reflects considerable confidence on the part of these academics, it also suggests a deficient level of 'political literacy' (Cassel and Lo, 1997) and a lack of awareness regarding organisational politics. Some, moreover, might believe that the entire Saudi society is Big Brother, with everyone being under 'military-like observation' (Al Qator, 2011: 339), citing the filtering of the media, for example. Al Qator (2011: 721) quotes Al Rayas (2004: 284)

as describing the all-pervasiveness of control: 'there is control over print media on the Earth, visual media in space and audio media in the air.' The national policy states that, 'for the purpose of protecting Saudi Society from harmful Internet content, and to ensure the provision of good Internet content to end users, the Commission of Communications and Information Technology provides an Internet filtering service to users in the Kingdom, through developing Internet filtering measures and requirements' (Commission Document). One might read such a filtering system as treating the entire Saudi population, irrespective of age, maturity and education level, as perpetual legal minors who do not know what is good or bad for them when going online. Indeed, the Commission, through this national filtering, which covers almost all public domains, has focused on the higher education sector, imposing defined limits on how far higher education actors (students, academics, leaders, researchers, foreign visiting scholars or whoever) can go when using the Internet. Thus, the introduction of the Internet into academic circles has entailed the intervention of a new actor (the Commission) into the existing power network, shaping the power relations between the higher education sector and other organisations. It should be remarked that the action of filtering Internet content is arguably not completely repugnant, as every society screens technical innovations in some way 'before putting them to widespread use' (Toffler, 1970: 390). Nonetheless, it is of great moment here that the parameters of this filtering need to be democratically decided by all stakeholders, or at least their representatives.

IV) Changes in relations between authorities and subjects in favour of the latter (Focused Code)

This focused code refers to adjustments in the relations between subjects and authorities arising from the introduction of technology and supporting the subjects. It derives from one initial code: authorities versus subjects, subjects win.

Table 33: Changes in Relations between Authorities and Subjects in Favour of the Latter (Focused Code)



A Saudi local newspaper reported receiving complaints from some students and families who thought that male teachers could see female students through the glass wall of the classroom. A team from the newspaper therefore carried out a field visit to the University, reporting that the teacher could not in fact see through it at all. However, the newspaper later twice reported receiving renewed complaints, showing that students and their families remained unconvinced. Some managers stated that, if such complaints continued, the University would eradicate the structure. This shows

how society here gave a distinct meaning to the communications technology of the newspaper, using it to communicate with and to place pressure on the higher education authorities. Indeed, further pressure was exerted through other technologies, including the University's online forums and Facebook group. We can conclude that the communications technologies of newspapers, web-based forums and Facebook groups engendered critical revisions in the power distribution between subjects and authorities in the higher education sector.

To complete the above narrative, the students and families went further, reporting the 'vice' (On-Campus Female Undergraduate 38) of transparency to the social authorities, stating, 'we always wonder throughout the class whether the professor sees us' (On-Campus Female Undergraduate 36). In response, the authorities arranged a visit to the University to settle the dispute. Male Academic-Manager 1 recounts that 'the social authorities came to check and saw nothing.' This sequence of events reveals that, in Saudi Arabia, students can and do impose themselves on the authorities, exerting significant power. The family, likewise, is an influential actor, 'determining the social-moral structure through which Saudi society can evolve' (Yamani, 2010: 143–4). Indeed, the Saudi Constitution itself states that the family 'is the nucleus of Saudi society' (Article 9, Basic Principles, the Saudi Constitution, dated 2 March 1992). Other powerful elements include the social authorities and the media (in this case, local newspapers and their journalists), which were able to exert pressure on the University leadership. These social actors should thus be taken into account when analysing the Saudi higher education sector.

Although such social pressures were found to be a source of concern to some leaders, this does not mean that the leadership always necessarily submitted to such pressures. Instead, the leadership at times faced these social pressures with managerial 'counter-pressures,' defining cultural boundaries through the imposition of top-down decisions. Male Academic-Manager 1 declared bluntly that, 'if families are not happy with what we do, they must keep their daughters at home. ... I am sure that they will eventually submit.' Despite such forceful language, however, the leadership seemed to be seriously considering the abandonment of the glass-wall structure in response to the continuing social protest against it. Thus, 'social change is often commenced by episodes of resistance' (McFarland, 2004: 1311). If glass partitions were to be abandoned, this would mean that it was the leadership which had eventually submitted, wasting all the money and effort that had been put into the establishment of the structure.

Just as in the previous chapter, the two forces of the higher education sector and of national culture were noted as being politically engaged in a 'push–pull cycle' (in the terminology of Gitlin and Margonis, 1995: 377), with the higher education sector pushing for changes which the national culture challenged, leaving some aspects of the Saudi higher education system fundamentally unchanged or at best slowly evolving, if not 'going backwards' (Bin Ladin, 2005: 120; see also Al-Sharif, *Out of Darkness, Into Light Conference*, 8 May 2012). This 'cycled movement' disappointed some interviewees and made them wonder: 'when are we going to progress and move forward?' (On-Campus Male Postgraduate 7). That said, the political tension and conflict between the forces of higher education and national culture can be said to have enhanced creativity

within the university system, resulting in a variety of novel technological structures (one-way CCTV links, glass partitions, etc) that are apparently exclusive to Saudi Arabia (see Nakshabandi, 1993). This gives some credence to Kast's and Rosenzweig's belief in 'the constructive and positive role of conflict in fostering creativity and innovation' (1979: 301). These two writers, moreover, see some friction between members as 'a condition for the generation of fresh ideas' (*ibid.*).

Taking another example of how technologies occasioned modifications in power relations between subjects and authorities in favour of the former, some University members exploited technologies to strengthen their bottom-up power. In the absence of unions allowing face-to-face contact, students and staff of both genders developed, whether at the study-group, departmental, institutional or national levels, their own unofficial (male–female) online organisations and communities using social technologies such as online forums, mailing lists and social networks. These organisations were formed despite the disapproval of the authorities, which seemed not to permit any informal organisational assembly (see also Makatham, *Asharq Al-Awsat Newspaper*, 23 March 2007). Such 'disobedience' by subjects shows digital technologies to have enabled them to exceed the official boundaries of permitted action. The technologies that they employed seem to have enabled inferiors to bypass formal limits on the means of communication available to them, reconfiguring their power and control relationships with the authorities.

Analysis of the collected data confirms the belief of Wajcman (2004) that 'virtual reality is a new space for undermining old social relations, a place of freedom and liberation' (p. 3). In Saudi Arabia, whereas in face-to-face gatherings one senior person

reportedly still dominates the conversation for discriminatory reasons, the anonymity of members in the online social spaces has helped to transcend hierarchical structures, political differences, sexual discrimination, ethnic divisions and censorship. Consequently, individuals, no matter who they are, have begun to have more of a voice. On-Campus Female Undergraduate 9 told a relevant story in the words of a friend of hers: 'In our house, it is impossible for my voice to be heard or my point of view adopted, as I am female and the youngest.' The story continued: 'My father and oldest brother treat me as female, so they do not value what I say, and my older sisters treat me as younger, so they do not pay attention to me. ... I got my confidence back only when I started writing in the forums, where my voice is heard and my views are considered.'

Thus, while the technology of online forums has been integrated into the University partly to sustain certain aspects of gender relations (specifically, to preserve the pattern of gender separation by offering alternative electronic channels of communication), this technology has, in return, affected other aspects of gender relations (particularly their hierarchical nature) and, moreover, influenced social relations of other kinds, such as between the young and the old. This outcome was made possible partly because online members were pseudonymous 'to an extent which makes it difficult to distinguish between male and female members' (Off-Campus Female Undergraduate 18). Such anonymity has the potential to undermine political differences, to facilitate considerable freedom and to enable one, paradoxically, to unmask one's true self (Goffman, 1959: 54). This anonymity seemed to some interviewees to have stripped away the gendered part of human beings (and, indeed,

other ethnic hierarchies such as tribal structures: see Samin, 2008), leaving their intellectual capacity to be symbolised in writing and 'enabling a communication between minds' (Al-Saggaf, 2012: 103). For this reason, 'although it is difficult for a woman to make people respect her in the real world, she can easily make people respect her in online forums' (Off-Campus Female Undergraduate 31). The issue is therefore whether such anonymity is 'closing the gender gap' (to borrow the title of Arnot *et al.*, 1999). Yet some interviewees questioned this idea of gender anonymity, arguing that, even in the forum, one could ascertain the gender of an anonymous participant through the gendered ways users have of expressing themselves in writing.

Closer analysis of the raw data suggests that the Internet, through its empowering free or cheap services and ready-to-use templates, had furnished users with the skills necessary for going above and beyond the power and domination of the existing authorities. To explain, although there are official mailing lists of male and female students managed by tutors, this has not stopped students from creating their own informal mailing lists. Off-Campus Male Undergraduate 5 referred to his positive experience here: 'I subscribed to a Yahoo mailing list, which brings together all boys and girls.' This group 'is aimed at revision, benefit and learning' and 'involves laughs that dispel those worries resulting from study.' In short, it 'has enhanced the spirit of siblinghood.' This is similar to the informal Facebook groups managed by students themselves and mentioned in the previous chapter. These groups enable members 'to share the experiences and difficulties that the students face, so all can help one another' (Policy of Group). Furthermore, as also mentioned previously, because the University forum imposed certain terms and conditions with which some members were unhappy,

these students collaborated to develop their own unofficial forum, with their own radically different terms and conditions.

An aspect of technology use perceived negatively by respondents is that some female students were reported to have contacted their male teachers through their personal mobile phones, both within and outside working hours, which was said to have vexed some teachers. Male Academic-Manager 7 shook his head in annoyance, complaining that 'female students feel free to call me on my mobile phone at any time, be it in the late afternoon, in the early evening or in the late evening.' He added that 'the woman is based in the house, and whenever a question comes to her mind, she picks up the phone and calls.' What he found 'unacceptable' was that 'some female students have no reservations and therefore call at any time, which is really annoying, because sometimes you are relaxing, sitting next to your wife, then you start receiving calls from women.' Thus, with the spread of communications technologies including mobile phones, email, Blackboard, Facebook and Twitter throughout academia, teachers' 'office hours' seem to be expanding to occupy more and more of their private lives.

Such penetration of one's career into one's social and private life through digital communications technologies can be taken as an indication of the former 'colonising' (to import a word from Wajcman, 2008: 68) the latter. That said, digital technologies were also found to have enabled the private life to spill over into work, given that some academics began to tweet or check their Facebook accounts and personal emails during working hours, using their laptops or mobile phones. The literature notes that the broad spread of digital technologies has put many individual employees permanently 'on call' (Wajcman, 2008: 68) both to their careers and to their family

lives, thereby dissolving the boundary and upsetting the balance between the two. The literature speculates that such a shift in the career–family interface is likely to intensify distress and reduce family satisfaction (Chesley, 2005; Wajcman, 2008). According to my data, family dissatisfaction seems to have increased considerably when there was individual communication (i.e. outside working hours on a personal mobile phone) between a male teacher and his female students, owing to the jealousy of his wife (or wives) towards such women and the sensitivity of their husbands towards him.

Female students' behaviour in contacting their male teachers through their mobile phones and outside working hours was interpreted by some of the teachers as denying their right to privacy, occupying them and gradually transforming them from professionals into mere administrators. Male Academic-Manager 8 complained that 'we do not teach just one or two female students, but a large group of female students; in each semester I teach no less than 1,000 students.' Therefore, he wondered, 'if I permit them to call me on my mobile, how can I respond to the calls of 1,000 students? I will become like an operator.' Thus, digital technologies, which enable individual students to access teachers easily, seem to have created easily accessed communication channels between organisationally incompatible elements, thereby presenting challenges to superiors (i.e. teachers) while opening up opportunities to inferiors (i.e. students). Thus, it can be said that a considerable change in the distribution of power might occur following the introduction of new technologies (see Burkhardt and Brass, 1990). As educational technologies take root, 'some people find that their power, prestige, or wealth is enhanced, whereas others find or believe that they lose in some way' (Pfaffenberger, 1992: 296). Thus, educational technologies can at times have an

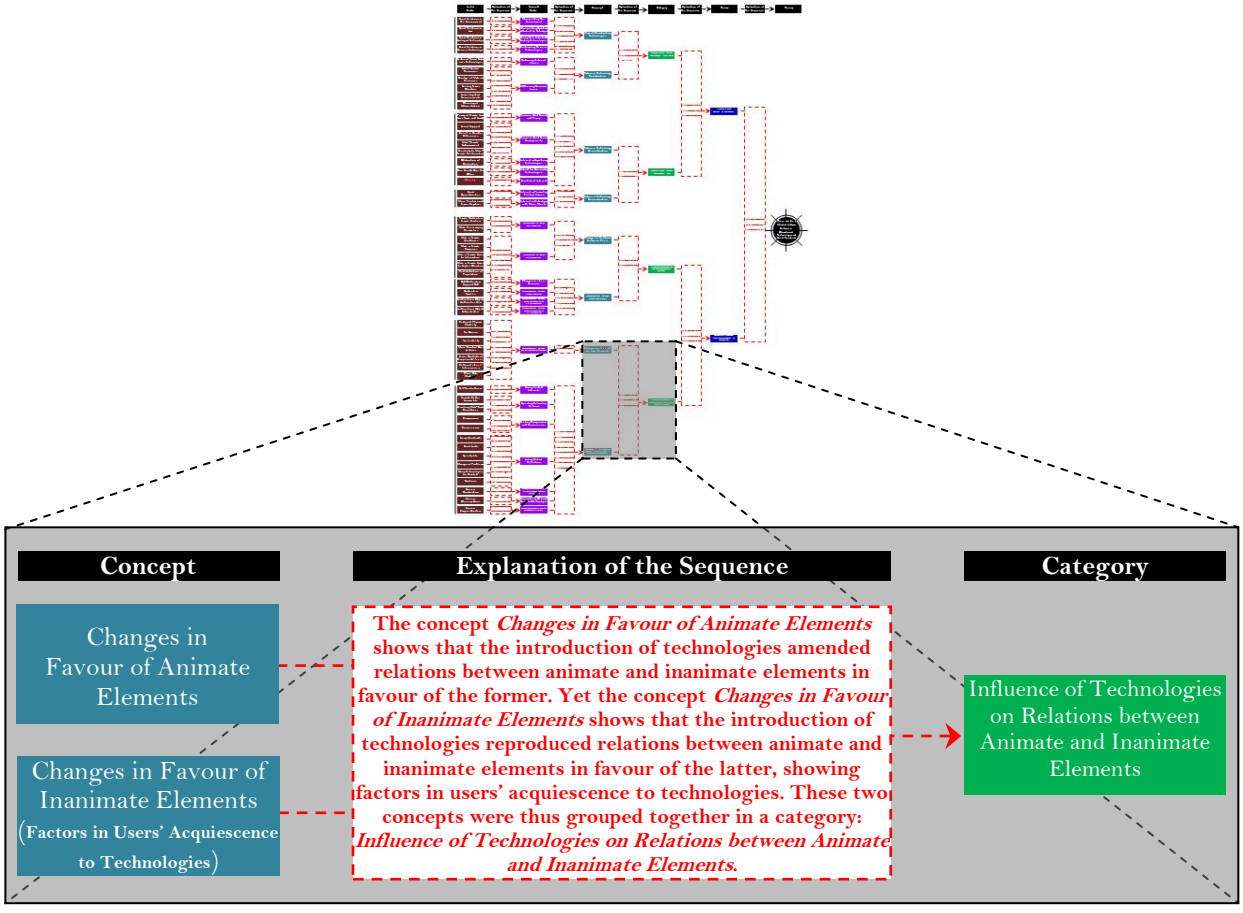
equalising effect and bring about organisational 'shocks' (in the language of Barley, 1986: 80). That said, those in power sought to perpetuate their power advantage, suggesting the enactment of regulations governing electronic communications between teachers and students outside the classroom.

It can be seen clearly from the above that what teachers expected from students outside the classroom was different from what students expected from teachers, resulting in a kind of 'conflict of expectations' (in Kerr's terms, 1996). Yet since there were no regulations governing this conflict, these expectations were subject to a kind of negotiation between the two parties, especially at the very beginning of a course. That is, some teachers reported providing students with a handout at the beginning of each course unit, listing their office telephone extension and email address as the only communication channels permitted outside the classroom and warning that no other channel (e.g. the mobile phone) was allowed. This suggests the existence of a kind of political dynamics at the micro level, wherein users constantly seek to impose what they feel is the right distribution of control and power within any emerging technology-mediated settings. Thus, educational technologies, which can modify control and power distribution, may be subject to ongoing negotiation between the parties concerned, so as to avoid the interruption of power flow.

6.3. Influence of Technologies on Relations between Animate and Inanimate Elements (Category)

While analysing the raw data, I noticed that the introduction of educational technologies had the consequence of engendering modifications in relationships between human and non-human elements. This discovery relates to a category which, as the table below illustrates, emerged from two main concepts: changes in favour of animate elements and changes in favour of inanimate elements (i.e. factors in users' acquiescence to technologies).

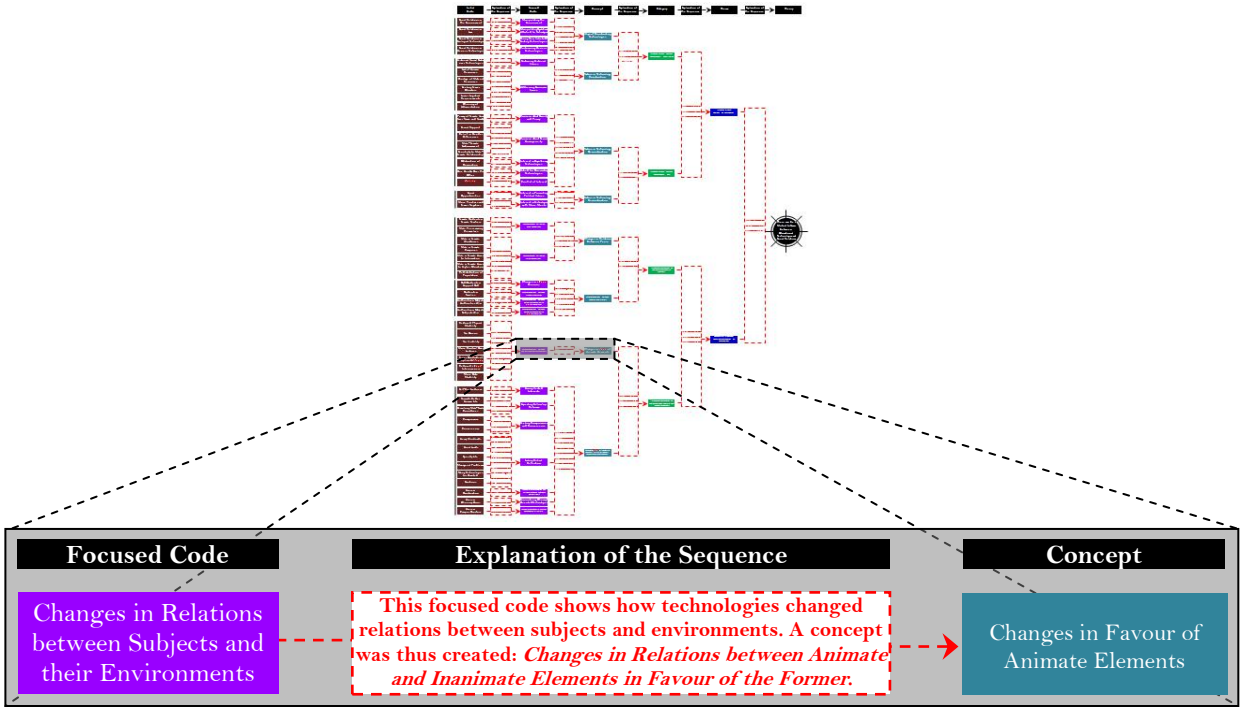
Table 34: Influence of Technologies on Relations between Animate and Inanimate Elements (Category)



6.3.1. Changes in Favour of Animate Elements (Concept)

Analysis of the data, as this category demonstrates, highlights technology-derived modifications in relationships between human and non-human elements favouring the former. This category, as illustrated in the table below, arose from one focused code: changes in relations between subjects and their environments.

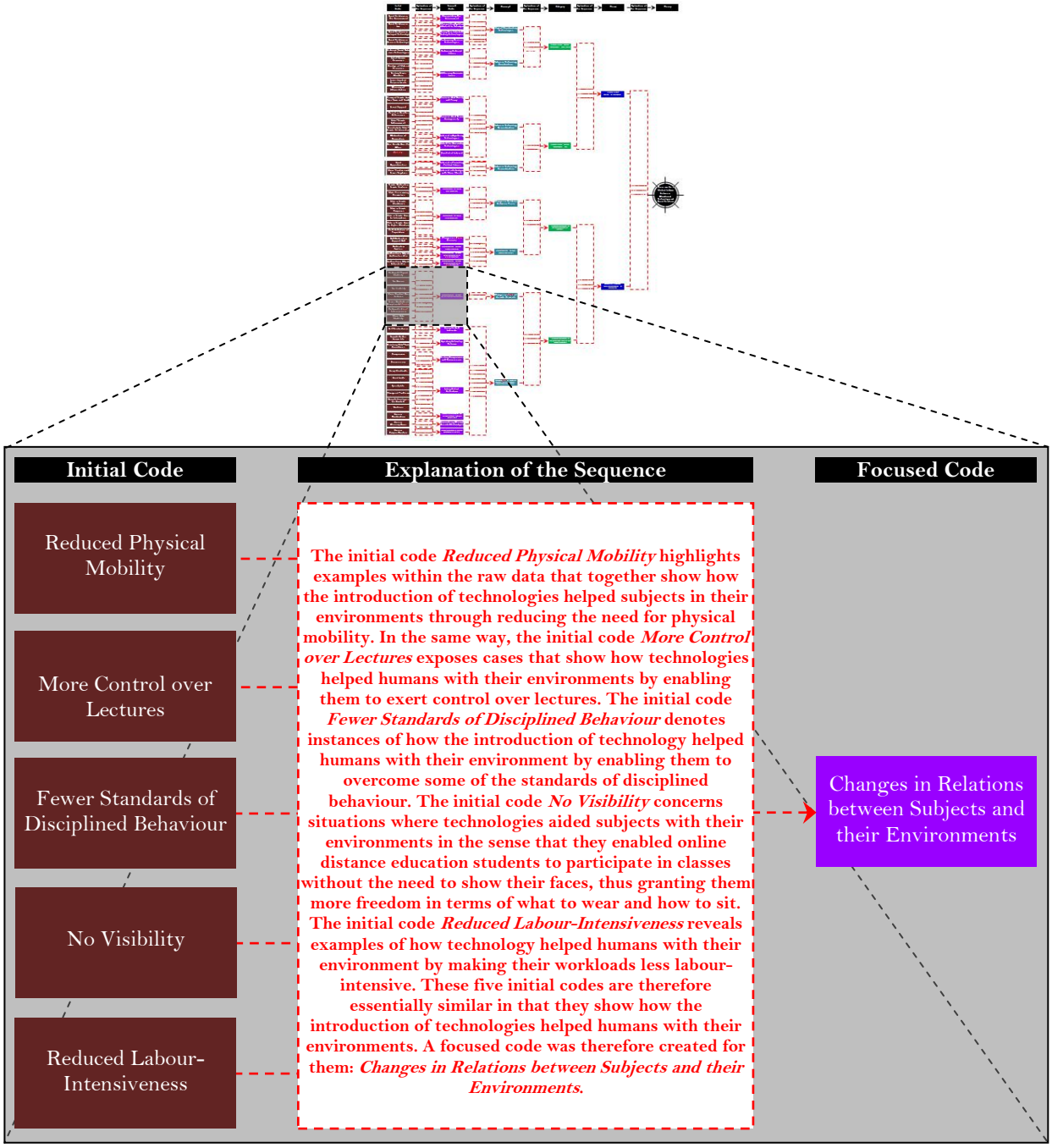
Table 35: Changes in Favour of Animate Elements (Concept)



I) Changes in relations between subjects and their environments (Focused Code)

The first focused code in this category relates to changes in relationships between subjects and their environments consequent upon the introduction of educational technologies. It was derived from five initial codes: reduced physical mobility, more control over lectures, fewer standards of disciplined behaviour, no visibility and reduced labour-intensiveness.

Table 36: Changes in Relations between Subjects and their Environments (Focused Code)



It is evident from the data analysis that the ways in which people interact with their environments can be affected by the introduction of technologies. The establishment of the technologies linking male and female campuses enabled male academics to move from one campus to the other by electronic means, thus enhancing convenience and

helping them to overcome any possible physical constraints. Supporting evidence in this respect is that, with self-service technologies, students were no longer obligated to queue for hours in large halls to complete paperwork that could be completed elsewhere through a computer on campus or even at home over the Internet before travelling to the University (see also Cornford and Pollock, 2003).

During data analysis, it was noticeable that some of the technological structures enabled users to exert control and influence over their environments. As a case in point, some students pointed out that having access to recorded lectures enabled them to pause and repeat the material, to search within a lecture for a particular piece of information and to avoid the distraction and annoyance normally caused by other students in the typical classroom. They were also able to 'attend' lectures (albeit virtually) without temporal and spatial limitations. Off-Campus Female Undergraduate 23 reported listening 'to the lecture more than once in order to increase assimilation.' Some students stated that recorded lectures allowed them to assert control over the atmosphere of the classroom by reducing disturbance. In the experience of Off-Campus Female Undergraduate 15, 'these lectures have helped me to focus better, as, in the real classroom, there will be so much disturbance by other students, which will lead to distraction.' The fact that recorded lectures could be paused and repeated was seen to be important to those having problems with information processing and concentration. Online distance education seemed to have facilitated the spread of a new cultural practice empowering citizens to learn anywhere and at any time. This empowerment is illuminated by the following analogy:

> Suppose there are people who feel that being in a bathroom is the only time and place that they should sing. Then, we can imagine new cultural practices that might empower them to sing more freely—just as new cultural practices might be designed that liberate people to do their shopping at 4 a.m.
>
> (Crook and Light, 2002: 155)

Another finding of the research is that the introduction of technologies into the University undermined some societal standards of disciplined behaviour. It seemed from various observations that Saudi academia maintained certain structures of disciplined behaviour, with students using formal titles to address their teachers and asking for permission to enter or leave the classroom. They would also sit in a way that showed great respect to the teacher, not eating or drinking inside the classroom and attending classes in traditional Saudi clothing. Such disciplinary structures encouraged some female students to express a preference for CCTV-based classes, where they reported enjoying more freedom in their behaviour, such as coming and going without permission, eating in class, making telephone calls, browsing the Internet, bringing their children and suckling their infants. In short, 'in CCTV-based classes, I do not feel that I am watched' (On-Campus Female Undergraduate 5). On-Campus Female Undergraduate 41 declared that, in these classes, 'I enjoy a high degree of freedom in my movements and sitting, since the professor cannot see me, compared to the face-to-face class, which requires a high degree of self-discipline'. The use of the term 'self-discipline' here can be seen to show the existence of a kind of 'intrapersonal power relation,' whereby one tries hard to assert control over one's own behaviour, especially in the public domain and in the presence of the authorities (see

Goffman, 1959). Yet, perhaps counter-intuitively, the CCTV-based structure enabled students to relax this control. An additional supporting example here is that the act of preventing off-campus students from using webcams in the videoconferencing class meant that the students were not visible to the tutor, thus leaving them free to wear whatever clothes they wanted and to sit in whatever position suited them.

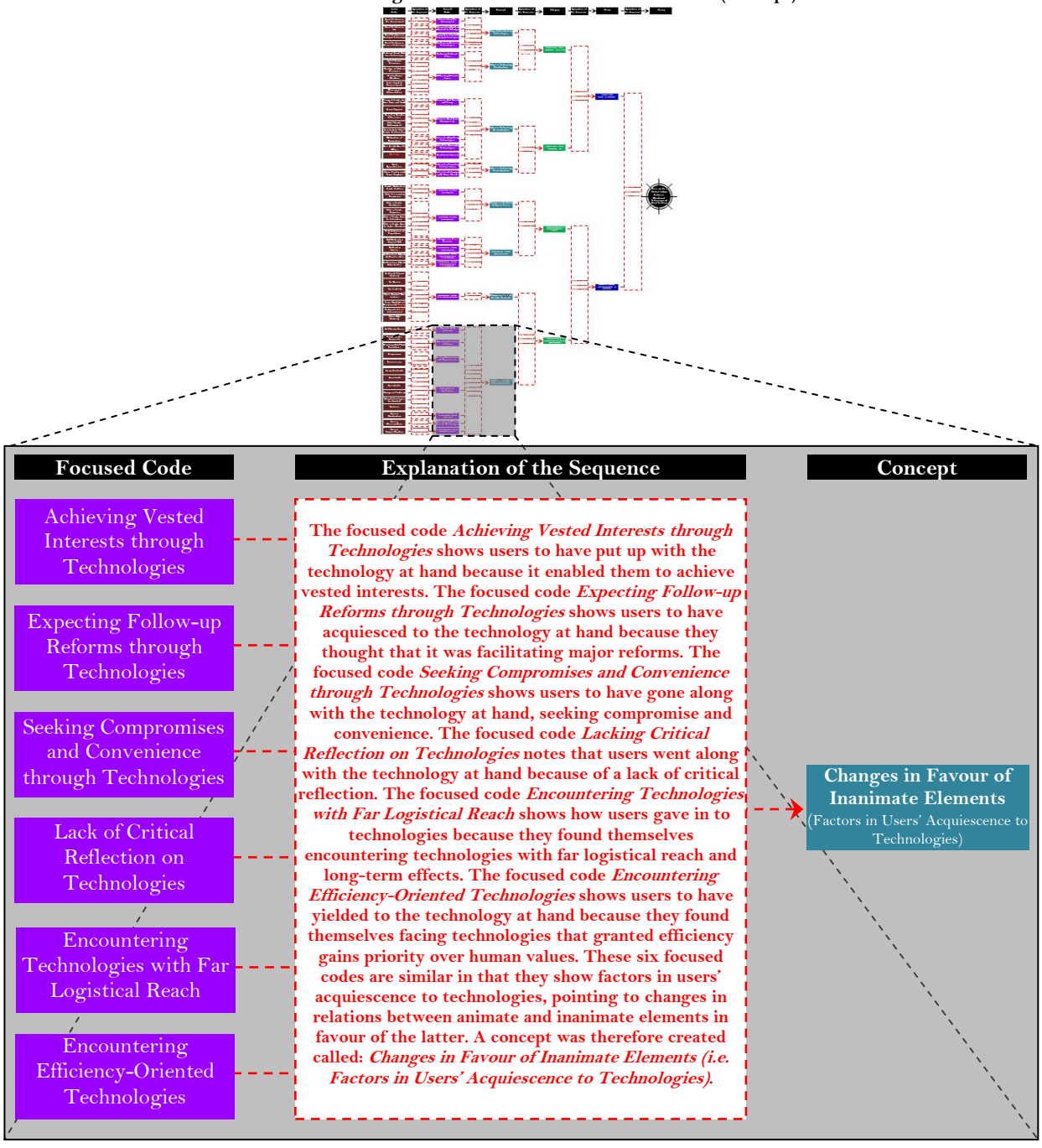
Further analysis of the data suggests that administrative technologies gave rise to new divisions of labour between animate and inanimate entities, undertaking much of the laborious work of compilation, storage, distribution and the like (see also Cornford and Pollock, 2003). To cite an earlier example, the e-marking system was reported by some teachers to have made the setting and marking of examinations much easier and they welcomed it as a result. Another instance is that the introduction of administrative technologies enhanced data mobility (with data being automatically transferred from one technological system to another), thus reducing the role of animate elements in this respect.

6.3.2. Changes in Favour of Inanimate Elements (Concept)

While analysing the raw data, it struck me that there were hard-to-notice factors that made users acquiesce, and at other times led them to choose to acquiesce, to the technology at hand. These factors were sometimes technological, with technologies existing as dominant forces placing the user in a situation where s/he had to submit to them. At other times, they were organisational, cultural, economic and political. What follows, corresponding to the following table, sheds light on these factors, which are: having vested interests, expecting follow-up reforms, seeking compromises and

convenience, lacking critical reflection, encountering technologies with far logistical reach and encountering efficiency-oriented technologies. The six factors, acting as focused codes, are grouped together in a category entitled 'changes in favour of inanimate elements (factors in users' acquiescence to technologies)'.

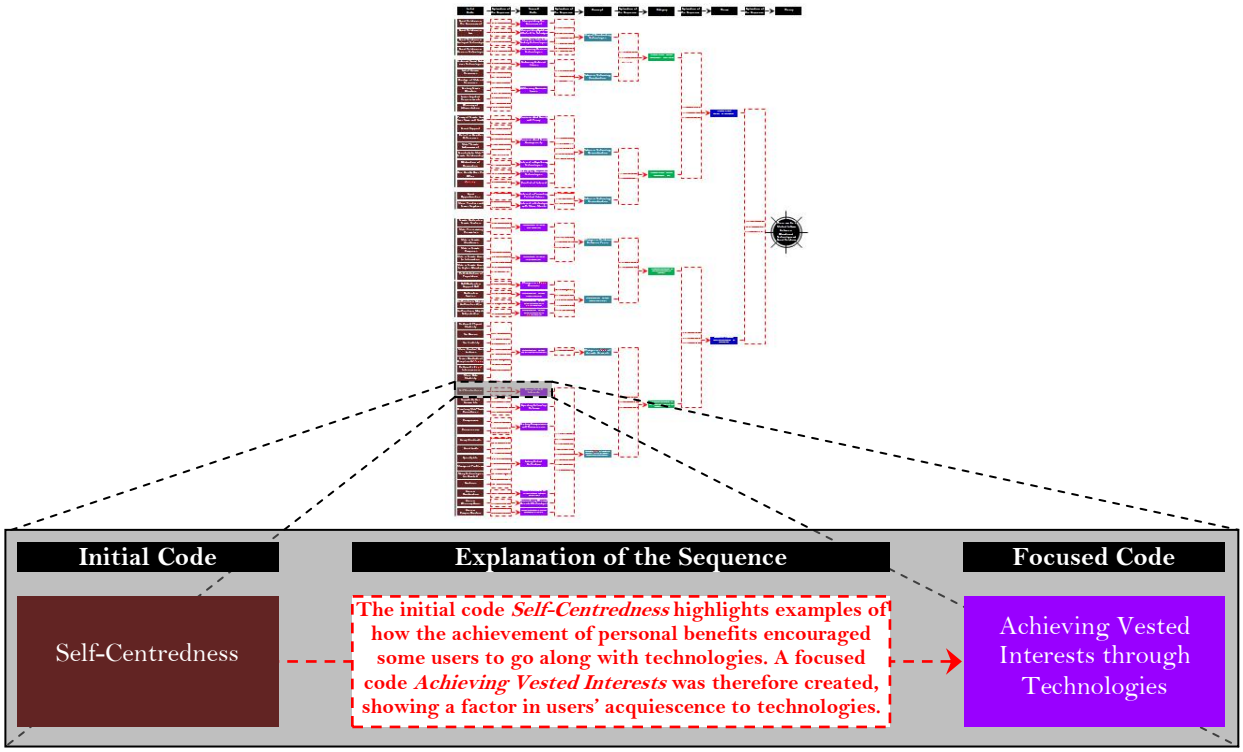
Table 37: Changes in Favour of Inanimate Elements (Concept)



I) Achieving vested interests through technologies (Focused Code)

This focused code, which presents evidence that the achievement of personal benefits encouraged some users to put up with the technologies at hand, derives from one initial code: self-centredness.

Table 38: Achieving Vested Interests through Technologies (Focused Code)



Although some academics were convinced of the ineffectiveness of the CCTV-based classroom structures, they accommodated them simply because these structures enhanced physical mobility within the University, enabling them to move from the male to the female campus by electronic means, thus freeing them from the need to expose themselves to the harsh Saudi weather. As further evidence, although some teachers were aware of the negative influence of the multiple-choice e-marking system on the critical ability of students, they nevertheless embraced it just because it made

the setting and marking of examinations less labour-intensive, thus saving them time, reducing their workload and alleviating the detrimental effects of large-scale marking on their health.

Another example is that, although some academics initially refused to teach mixed gender CCTV-based classes because of their educational and pedagogical limitations, they were persuaded by their heads of department, who told them that they would be considered to be teaching two separate classes, thereby reducing their teaching hours. Thus, in order for leaders to counter resistance, some incentives (here, reducing workloads) were used to encourage cooperation and discourage disagreement. This means that subjective interests were given priority over educational considerations, considerations in need of explicit powerful advocates such as local and national students' unions, which however do not officially exist in Saudi Arabia. The implication here is that technological structures 'on the ground' could be shaped by vested interests and contextual factors beyond learning, teaching and technical concerns, in just the same way as such structures could be influenced by non-educational factors in the course of being constituted at the higher level.

Some users went along with the technology at hand because they were interested in the rewards involved. One kind of reward was symbolic and 'relates primarily to prestige and esteem or love and acceptance' (Kast and Rosenzweig, 1979: 315). As an example, although some academics held that the CCTV-based and glass-wall classroom structures were educationally and pedagogically ineffective, they accepted them just to maintain good relationships with their heads of department. Some heads, on the other hand, reported not imposing these structures upon their subordinates

because they also wanted to maintain good relationships with members of the department, who might one day take over its headship (see Al-Adesani, 2010). This shows how an educational technology can exist 'as a site of ongoing negotiation' (Selwyn, 2010: 70), a process informed by implicit and explicit agendas.

Another kind of reward was material, such as financial benefits and promotion (see Kast and Rosenzweig, 1979). For example, although some academics did not want to use Blackboard, thinking that it would add to their already heavy workloads, they made use of it simply to gain the associated reward. To unpack this example, in anticipation of potential non-cooperation, the implementers of Blackboard offered a free laptop to any academic using the system. The use of Blackboard was also one of the criteria for applying for what is called 'the monthly allowance for the use of a computer,' an extra 20–25% on the salary. In the event, some academics claimed to use Blackboard although they did not, or did so minimally, in order to acquire these benefits. Thus, although such a managerial strategy can play a role in speeding up the rate of innovation adoption (Rogers, 2003), it may also encourage potential adopters to interpret the situation as 'change without change' (Knight and Trowler, 2000: 69) or to resort to trickery.

Some users accommodated certain technological structures just to help them sustain their habits. To illustrate, some students approved of the glass-wall structure because the darkness of the classroom enabled them to 'sleeeeeep' (Female On-Campus Undergraduate 39). It can be argued that such 'anti-educational' behaviour on the part of these students did not necessarily result uniquely from the low light, but perhaps also from the teaching style. Some teachers actually admitted that the partition system

discouraged or even prevented them from applying any teaching method and style but lecturing, formal authority and conventional assessment. This system, which 'marginalises women behind the veil of technology' (Male Academic 20), can thus be seen to have undermined female education and downgraded the complexity of educational settings, apparently resulting in naivety on the part of female students. Male Academic 16 reported observing such naivety, for example, in the calls from female students during office hours:

> They only seem to call to say things like: 'Why have you given me this mark? Why have you not passed me? You should have passed me, because I deserve to pass. I could not attend the class, because I have diabetes. I suffer from high blood pressure.' The faculty member does not want to engage in such speech, which is closer to rhetoric and polemics and of little benefit.

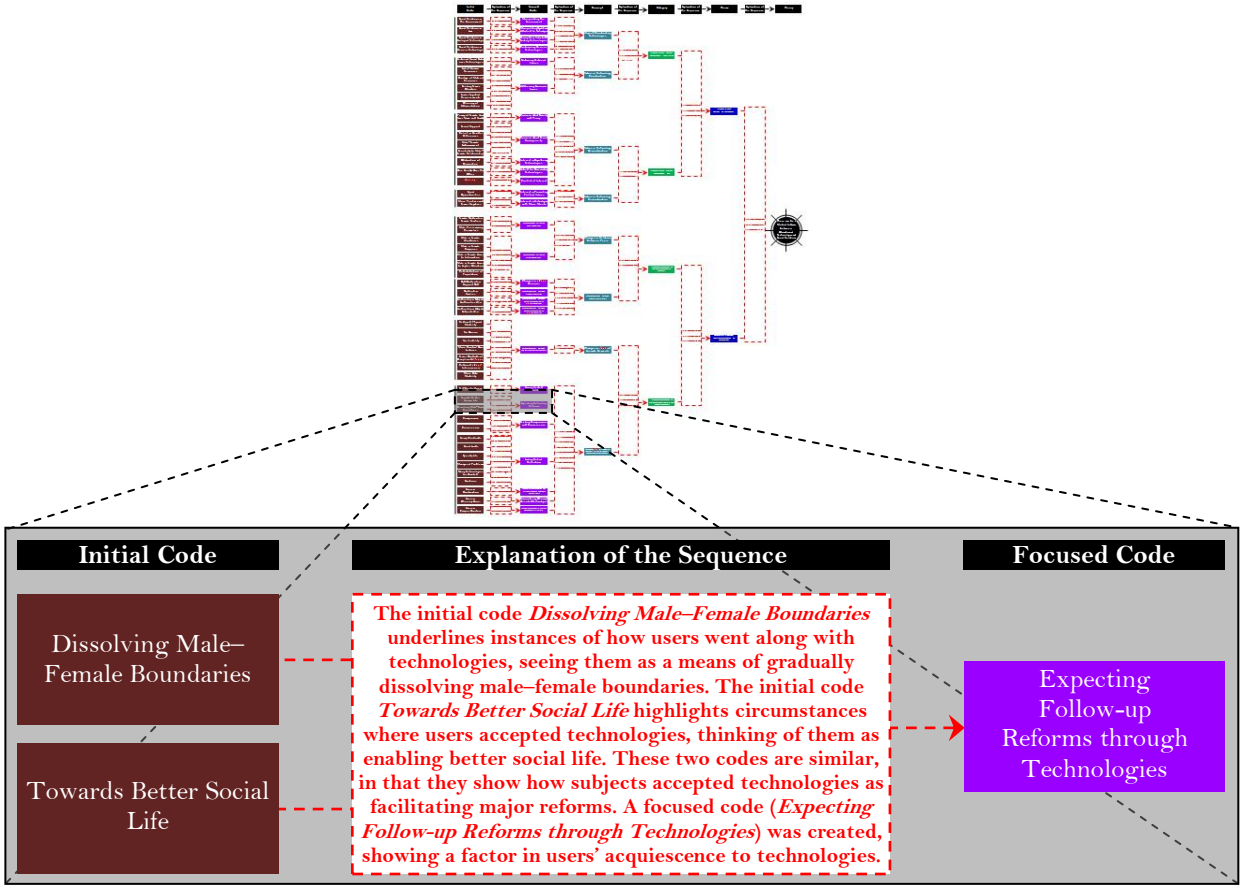
Some academics perceived such lack of sophistication as undermining them and their social and professional prestige. This situation, moreover, necessarily influences how seriously teachers take women's education, classes, evaluation and assessment. This explains why some male teachers reportedly gave female students easier exam questions than those given to male students: they thought that what female students could achieve academically behind the veil of technology was limited, so they compassionately set them easier exams. Some interviewees argued that, whilst this kind of technology-based education prepared women to be literate mothers, it did not help them to be politically literate citizens in an increasingly 'civil society'

(Governmental Document) or to be sophisticated employees in a competitive labour market. Thus, if there is any promise of the enhancement of female citizenship and employment in Saudi Arabia, it should be accompanied by a rethinking of how women receive their higher education behind the veil of technology.

II) Expecting follow-up reforms through technologies (Focused Code)

This focused code shows that, although some users did not like a particular technological structure, they nevertheless adjusted to it in the hope that it would facilitate desirable major reforms. It emerged from two initial codes: dissolving male–female boundaries and towards better social life.

Table 39: Expecting Follow-up Reforms through Technologies (Focused Code)



Despite their dissatisfaction with the male–female CCTV-based structures, some interviewees reported accommodating them, keeping their fingers crossed that this electronically enabled connection of the genders might serve to dissolve the social, cultural and psychological boundaries between the two parties – and eventually perhaps the physical ones. These interviewees thought that technological connection between the two genders might be acting (or be intended to act) merely as an interim step, preparing Saudi society for a historic transformation into a culture that will allow face-to-face communication between males and females. They argued that the fact that the genders had been separated for generations meant that they were kept apart not only physically, socially and culturally but also psychologically, yet the electronic connection of the male and female classes appeared to be bridging these gaps, chipping away at the Saudi gender-based social hierarchy and division. Some female managers believed that the electronic connection of male and female activities was putting female society increasingly closely in touch with male society, thereby making women progressively more familiar with men and vice versa. They thought that the participation of female students in male–female activities from behind the veil of technology was progressively providing women with the courage to communicate with men. The data analysis points to uncertainty among some interviewees as to whether this electronic connection was, 'on the sly,' proceeding towards and preparing society for physically mixed-gender education. Male Academic 22 appeared to be uncertain about where technologies were leading Saudi society, stating: 'I do not know, as perhaps it is just a matter of time, and then physically mixed-gender education will eventually take place.' Male Academic-Manager 5 was also hesitant, thinking that 'physically mixed-gender education might happen with the passage of

time.' Nevertheless, it seems from the data that there has increasingly been a realisation amongst some decision-makers, analysts and members of the elite that the pattern of gender separation, which was initially informed by values treating it as the prudent and safest way, has proved to be unmanageable and 'dangerous' (Al Qator, 2011: 308), becoming an integrated part of the country's political and societal systems, leading to increasingly unnecessary and exaggerated segregation and moreover influencing subsequent decisions and technological structures.

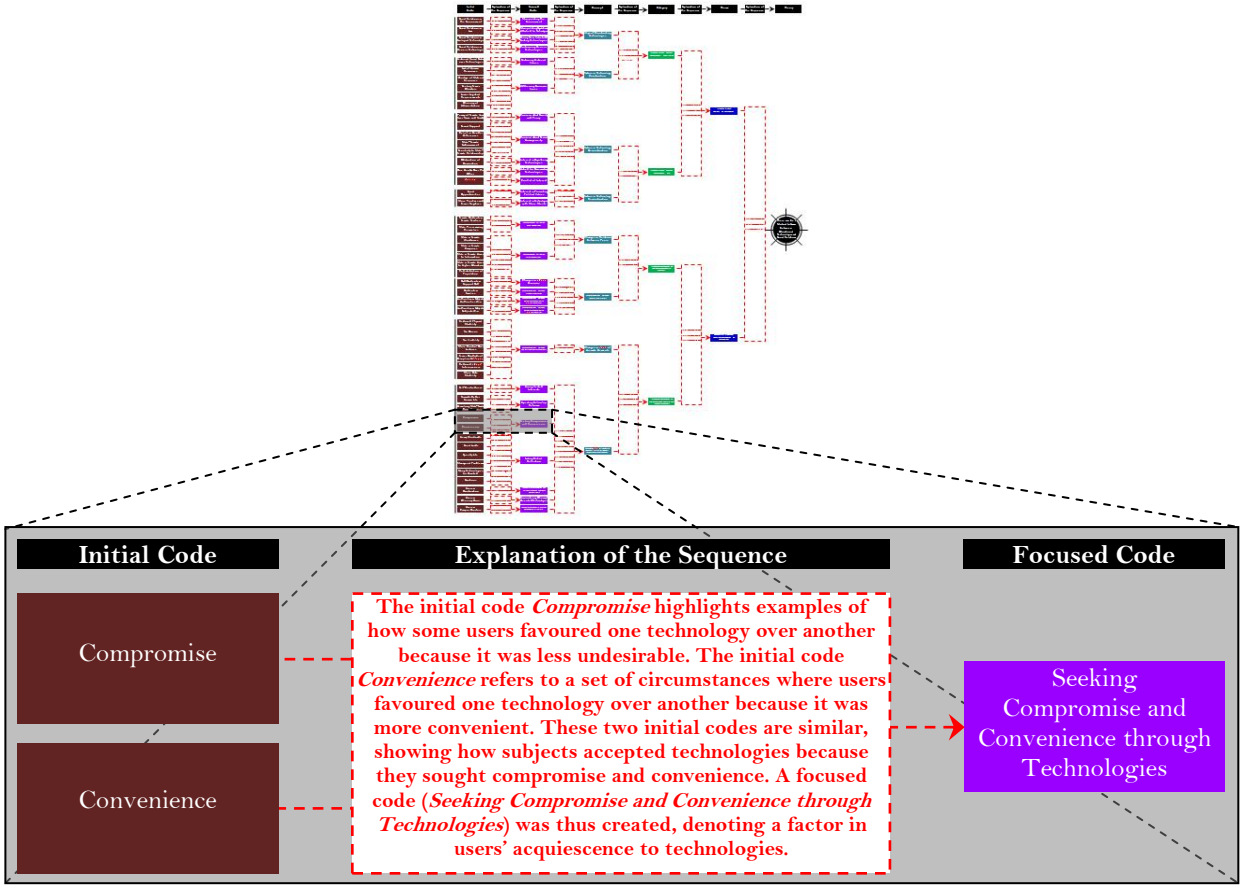
Some interviewees adjusted to digital technologies in the hope that these could promote the idea of good human life and enhance the profile of well-being, reciting the mantra that 'all technologies are positive, having no disadvantages, therefore we must adjust to the requirements and consequences of technology' (Male Academic 10). Following these views, the scope for public policy is to be limited to merely 'predicting and monitoring the progress of technology along its inevitable trajectory, finding ways of speeding it up by providing the required resources and removing obstacles, and promoting the smooth adaptation of society to the changes it demands' (Russell and Williams, 2002: 39). These views can be seen to imply that some enthusiastically conceive of the integration of digital technologies into higher education activity as an absolutely desirable phenomenon, an attitude which can promote an uncritical view of digital technologies as a panacea. However, overenthusiasm may lead one to overlook negative evidence or the desirability of adjustments in processes of change. Acknowledgment of technology integration as a phenomenon subject to constant and reflective critical review would provide a more balanced and nuanced appreciation of its implementation and application.

Some interviewees approved of the CCTV and glass partition structures because of their contribution to the nationalistic notion of Saudisation. To explain, the shortage of Saudi female academics has required both the employment of non-Saudi female academics to teach female students face to face and the assigning of Saudi male academics to teach them through these structures. However, in order to advance the notion of Saudisation, some interviewees suggested the increased use of these technologies to facilitate the replacement of the non-Saudi female academics with Saudi males. Others disagreed, seeing Saudisation as having reinforced the closed nature of Saudi culture. This 'closedness' could be said to result from official censorship, from the filtering of the media and from the strong loyalty of some citizens towards their 'distinctive culture' (Male Academic 23). It also seems to be attributable to 'the fact that the country never underwent colonialism and has hence stayed culturally closed' (Mehana, 2009: 90). The employment of non-Saudis, therefore, must have been seen to have allowed the surreptitious introduction of different backgrounds and cultures into the Saudi context, thus challenging the homogeneity of Saudi culture (Al-Tawil, 2001). This perceived surreptitiousness seemed to be a cause of concern for some interviewees, who reported being annoyed by non-Saudi female academics discussing with female students certain ideas and thoughts deemed to be incompatible with the country's culture. Similar concerns seem to have existed at the managerial level. A case in point is a letter sent by a former university president to the social authorities, expressing concern that 'those who are brought from abroad cannot be fully trusted, especially those non-Muslims whose religion and morals are different from our own in this secure country' (Social Authorities Document).

III) Seeking compromise and convenience through technologies (Focused Code)

This focused code turns to the issue of some users favouring one technological structure over others not necessarily because it entirely satisfied their needs, but because it was the least unacceptable, the easiest or indeed the only option available. It sprang from two initial codes: compromise and convenience.

Table 40: Seeking Compromise and Convenience through Technologies (Focused Code)



Some teachers agreed with neither the glass-wall nor the CCTV-based classroom structure, yet they remarked that, if these two structures were the only options available to them, they would opt for the former because of its fewer negatives. They explained that, whereas the CCTV-based structure provided them with a limited space

(i.e. the space of the camera lens) and negatively influenced their ability to manage the class, the glass-wall structure gave them more space to move around and enabled them to exercise more control over the class. They pointed out that the glass-wall structure helped them to feel students leaving and entering the classroom. Some teachers (and students) reported that, in the glass-wall structure, they felt the physical presence of the two parties within the classroom, thus helping them to be more engaged. In the experience of On-Campus Female Undergraduate 31, 'with the glass-wall class, we can interact with the professor's gestures, emotions and movements.' She added, 'we do not feel that there is a spatial distance.'

In another compromise position, some male academics accepted the telephone and email services as means of communication between themselves and their female students during office hours, just because they thought that these were the only ways in which students could reach them, given that female students could not come in person. In the words of Male Academic-Manager 7, 'the reason for focusing on the office telephone and even mobile phone of the male professor is because the woman cannot come to his office and discuss things with him face to face.' He commented that, 'as a result, they compensate for this limitation by using communications technologies.' This kind of contact was even seen by some academics as 'a right of each female student' (Male Academic-Manager 8), given that this was 'the only way through which female students can access their male teacher outside the classroom and benefit from his office hours' (Male Academic-Manager 4). Thus, the two parties here seem to have reached a kind of negotiated agreement within the existing social and cultural constraints. This again underpins the belief that Saudi nationals cannot and do

not challenge certain existing social systems and therefore find themselves obligated to work within them (Shokri, 1979; Doumato, 2000).

Although some female supervisees were not happy with e-supervision across gender lines, they acquiesced to the structure just because, if it were not accepted that men were able to supervise them, it would be difficult for women to find supervisors, given the supposed lack of female academics. As a result, most female postgraduates have been supervised (electronically) by males. Educational technologies can be seen here to have opened the door for Saudi women to access more supervision opportunities despite logistical (and social) challenges. Yet the majority of the female postgraduates whom I interviewed were dissatisfied with this kind of supervision, for two main reasons: it involved men, thereby making them nervous and uncomfortable, and it did not allow for face-to-face communication, which was seen to be more efficient in explaining and conveying ideas, thus reducing the time required to complete a dissertation or thesis. Despite this dissatisfaction with e-supervision across gender lines, however, some female supervisees acquiesced to it because 'if we do not accept that men educate women, how can women be educated?' (On-Campus Female Postgraduate 11). Thus, although users here were not pleased with the imposed structure, they had to compromise by submitting to it, making 'the best of a bad job' (On-Campus Female Postgraduate 10).

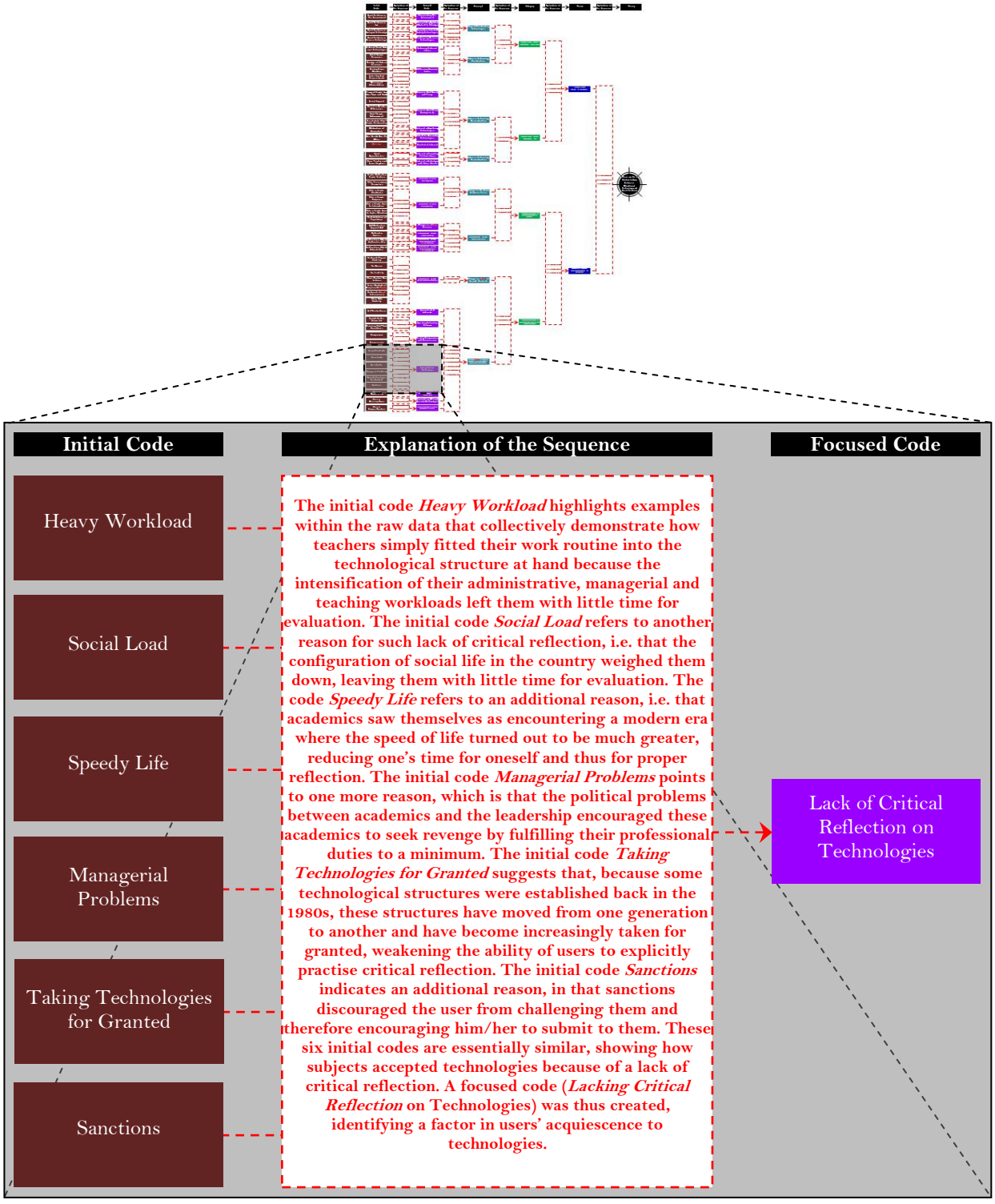
Some interviewees adapted to the CCTV-based structures, describing them as convenient and 'serving the purpose'. Some saw no need for the two parties to be present in the same place, given that face-to-face communication is no longer of the essence in the digital age. Echoing biological and sociocultural evolutionism, one

might argue that the increasing spread of technology-mediated communication, networking and telepresence is bringing about an evolutionary change in the way the new generation values the concept of face-to-face interaction. This possibility was supported by some academics who considered that, although the absence of face-to-face communication was once an issue, it no longer seemed to be of great consequence. From the standpoint of Male Academic 15, 'the innovations of the CCTV network and videoconferencing systems were criticised in the old days for the lack of face-to-face communication, but, in the current era, such innovations have become more and more acceptable, given the development of the idea of networks.' He then presented an example to support his argument: 'Nowadays, CCTV networks and videoconferencing software are everywhere and used by large and multinational companies (e.g. Saudi Aramco) to run distance meetings and workshops, and employees are happy with such innovation and convenience.' For him, 'it is no longer important that employees sit with each other, and a face-to-face meeting has become unimportant as technology serves the purpose.' Moreover, he stressed that, 'as long as technology serves the purpose, this should be enough.' These quotations may be said to raise various issues. One is that the replacement of face-to-face interaction with mediated communication seemed to some of the interviewees to have become a marker of modernisation and civilisation. Moreover, they seemed to believe that the new generation was experiencing 'attitude adjustment' with regard to the value of face-to-face communication. Rosa (2003) backs this up, hinting that technological acceleration has affected the structural, societal, cultural, spatial and temporal configuration and evolution of contemporary society.

IV) Lack of critical reflection on technologies (Focused Code)

It was apparent that some academics adjusted unthinkingly to technological structures; hence this focused code. These academics simply fitted their work routine into the technological structure in hand, accommodating their work patterns to it without explicit and critical reflection on whether there might be a better structure and without seeking possible improvements. The table below outlines reasons (i.e. initial codes) for this lack of critical reflection: heavy workloads, social loads, speedy life, managerial problems, taking technologies for granted and sanctions.

Table 41: Lack of Critical Reflection on Technologies (Focused Code)



To begin with, the intensification of academics' administrative, managerial and teaching workloads was found to have left them with little time for evaluation,

resulting in teacher attrition. Extra teaching hours had been assigned to academics, in return for financial gain. In terms of managerial workload, Saudi academics were found to have come under pressure to take up managerial positions, owing to the new Higher Education Council and Universities System requiring the replacement of non-Saudi managers with natives (Royal Decree, No. M/8 Dated 19 November 1993, Higher Education Council and Universities System, Article 44; see Al Abas, 2011). Some heads of department complained that they had no secretarial staff so had to do all the administrative tasks themselves. In the words of Male Academic-Manager 3: 'I am a head of department, with no secretary, scribe or anything, which means that I have had to act as a secretary, scribe, correspondent and even cleaner sometimes, thus meaning no productivity.' Due to the dearth of qualified academics, teaching has been assigned to teaching fellows, who have then been exploited by heads of department as secretaries. Thus, these fellows, who have the right to ask the University for master's and doctoral sponsorships abroad, have been weighed down by their administrative and teaching workloads and by the pressure to learn English, to gain acceptance from a university abroad and to go through all the 'bureaucratic and complicated procedures for applying for the due sponsorships' (Male Academic 24).

Another reason for the observed lack of critical reflection was that some academics conceived of teaching as not being their main professional duty and even as conflicting with their essential role as researchers. This way of thinking can be seen to have its own logic when considering the heavy teaching, administrative and managerial workloads of academics, which reportedly made it difficult for them to effectively meet other more important criteria for applying for promotion. According to Act 25:

12457/b/7, academics are promoted in line with the following criteria: '60% for scholarly production, 25% for teaching and 15% for serving the University and the public.' In this view, teaching is not as important as research. The high publishing demands of the promotion system, alongside their intensive administrative and managerial workloads, were reported by some interviewees to have obligated academics to assign less time to teaching than was desirable for them or their students (see Ritzer, 2009). Although serving the University and the public has the lowest value in the promotion assessment, it was found to be a major current concern of the University's leadership, which began to label itself as 'leadership in community partnership' (Policy). This label was interpreted by some interviewees as a warning against a further increase in the workload of academics. This interpretation seems sensible when considering that, to achieve better community partnership, the leadership was, for instance, presently establishing its own TV channel, with academics being expected and encouraged to show cooperation.

Furthermore, the configuration of social life in the country was found to weigh down academics, who reported finding themselves obligated through social pressure to respond to the large number of invitations to social and family events and occasions. In addition, because women do not drive and because men are supposed to accompany their female family members in the public domain, some male academics reported finding themselves too busy helping their wives, daughters and aunts to focus properly on their work.

The next reason is that some academics saw themselves at odds with the high speed of modern life, feeling increasingly harried, with too little time for themselves and thus

for proper reflection. Wajcman (2008) concurs that the intervention of information and communications technologies means that 'culture and life more generally is speeding up to an unprecedented degree, leaving little time for creative action' (p. 60). Rosa agrees that individuals might have begun to feel that they stand on 'slippery slopes,' in the sense that 'taking a prolonged break means becoming old-fashioned, out-dated, anachronistic in one's experience and knowledge, in one's equipment and clothing as well as in one's orientations and even in one's language' (2003: 11). That said, one might equally argue the opposite: 'since technological acceleration means that less time is needed, time should become *abundant*' (*ibid.*: 9, original emphasis). While this may be true, the challenge remains that 'the world always seems to have more to offer than can be experienced in a single lifetime' (*ibid.*). In such increasingly busy social and professional environments, critical reflection – or, as Moon (2000: 44) calls it, 'the activity of stop and think' – is more likely to be weak and limited. It is like 'Edward Bear coming downstairs bumping on the back of his head, thinking that "there is a better way," if only he could stop bumping a moment to consider it' (Johns, 2000: 37). In such a demanding workplace and social life, 'it may be difficult to find this space to stop bumping, to consider more appropriate and less painful ways of doing things' (*ibid.*). Winner (1977) agrees that 'the changes and disruptions that an evolving technology repeatedly caused in modern life were accepted as given or inevitable simply because no one bothered to ask whether there were other possibilities' (p. 6).

A fourth reason for lack of critical reflection was that their political differences with the leadership led some academics to seek revenge by barely fulfilling their professional duties, doing the minimum of teaching regardless of their dissatisfaction

with the mediated technological structures. Some academics accommodated the CCTV-based and glass-wall structures directly without engaging in explicit critical reflection, not because they did not have the reflective ability, but rather because they had no sense of belonging to their departments and therefore wanted 'to just get the teaching done anyway' (Male Academic 2). Some did not want to engage in critical reflection on their teaching practice owing to their lack of loyalty towards the University, which was reported to be caused by limited financial rewards, unnecessary bureaucracy and the irresponsibility of some of the support staff. For Male Academic 8, 'unfortunately, my hatred towards the University grows every day, because of the complexity of the procedures I have been experiencing and because of inaction and irresponsibility.' He added: 'the University has made us tired and overworked.' With these citations in mind, it could be said that wider institutional problems and issues might negatively affect academics' engagement with their teaching practice in general and with educational technologies in particular.

A further reason is that some of the CCTV-based structures were established in the 1980s and each successive generation appears to have taken them increasingly for granted, weakening the ability of users and wider society to explicitly practise critical reflection and thus encouraging users to accept them unquestioningly (see Schütz, 1944). Hence, teaching about the history of Saudi educational technologies is vital, encouraging students to become more conscious of and to realise the evidence of the past in their educational milieu (see Cunningham, 1997). Such teaching could be expected to raise these technological structures to conscious awareness, 'making the familiar strange' (Whitworth, 2009a: 164). That said, such teaching would certainly be

socially and culturally unwelcome, given that Saudi society and culture are 'allergic' to the scrutiny of a critically reflective microscope (see Bin Ladin, 2005). The data analysis suggests that some users came to be almost uncritical of technologies which they knew to be undesirable but to which they had become tolerant through continued exposure (see also Dubos, 1970).

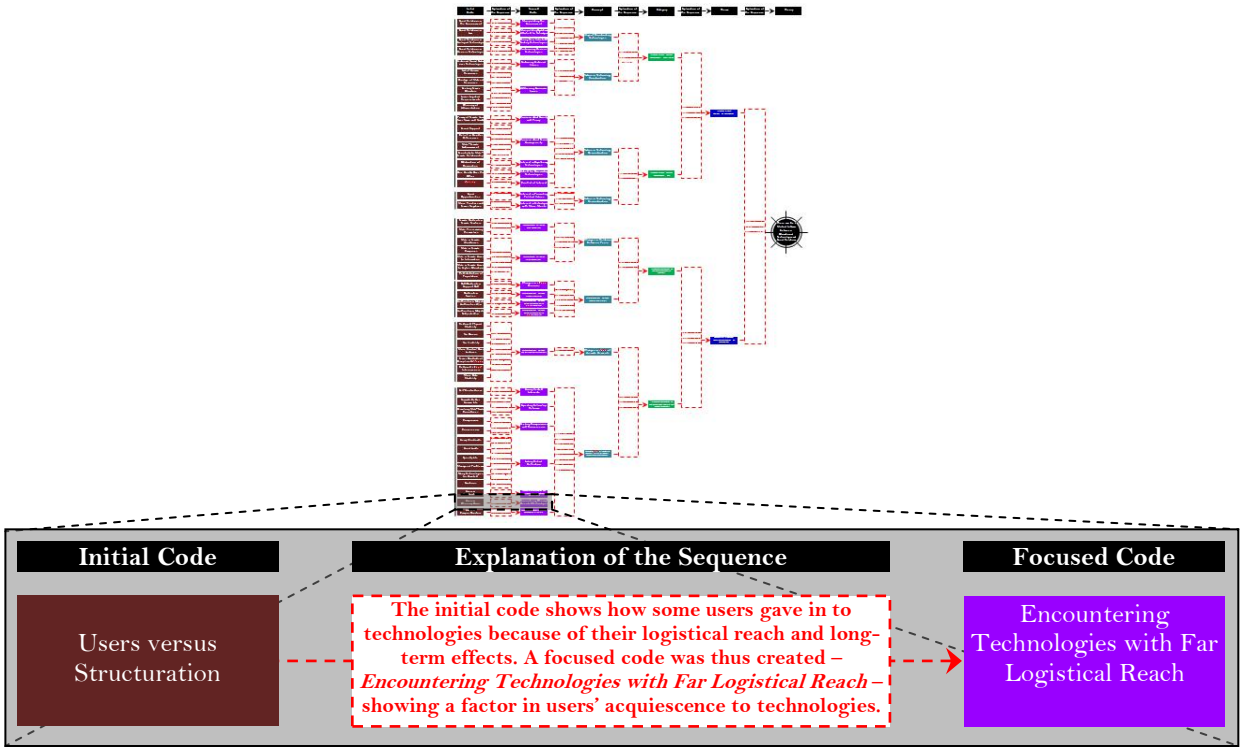
To move on to the last reason, the data analysis uncovered some evidence that sanctions could affect the use of educational technologies, discouraging the user from challenging them and therefore encouraging him/her to submit to them. Some users reported being concerned that any attempt to challenge the values integral to the official technological structures might result in them losing their managerial positions or even their jobs. Some academics showed a kind of obedience in relation to the University's technological structures just because, 'I work for a governmental university and I do not want to jeopardise my job' (Male Academic 11). Male Academic-Manager 1 referred to the threat of losing his managerial position arising from a departure from convention within the Saudi context: 'My managerial period is almost over, so I do not mind taking the risk of trying new ideas inconsistent with the country's culture.' Likewise, some teachers reported avoiding criticism of the CCTV-based classroom structure for fear that it could be misinterpreted by society as an implicit attempt to justify the need for change, allowing men to teach women face to face. Despite sanctions, one academic took the risk and subverted some of those values embedded in the University's technological structures, with disastrous repercussions. Male Academic 21 recounted how 'a female supervisee and male supervisor had a supervision meeting in a cafe and were caught by the social authorities. The supervisor

was sentenced to imprisonment, whereas the woman was released so as not to ruin her moral reputation'.

V) Encountering technologies with far logistical reach (Focused Code)

This focused code continues consideration of the factors in users' acquiescence to technologies, showing how users accepted them just because they found themselves facing technologies with a long logistical reach. As the table shows, it came from one initial code: users versus structuration.

Table 42: Encountering Technologies with Far Logistical Reach (Focused Code)



Some on-campus female students, as reported earlier, resisted the CCTV-based and glass-wall structures, thinking of them as reinforcing their reliance on men as gatekeepers of their on-campus higher education. Despite their dissatisfaction, this

reliance may be expected to be long lasting, at least in the fields of education and the arts, for a range of reasons. One is that 'Saudi female higher education relies heavily on non-Saudi female academic contract-holders, who cannot stay in Saudi Arabia for a long time because their male guardians have work elsewhere outside the country. Therefore, female education needs Saudi male academics' (Male Academic 23). Besides, the proportion of female students in the fields of education and the arts is too large to be handled by female academics alone. Male Academic-Manager 6 clarifies the point: 'The majority of secondary-school graduates go to the faculties of Education and Arts by virtue of our customs, traditions and conventions, perhaps because the other subjects are incompatible with the nature of women.' He therefore wondered: 'Who teaches this large number of female students? Women cannot teach this huge number of female students on their own, and there is therefore an ongoing need for males to teach women.'

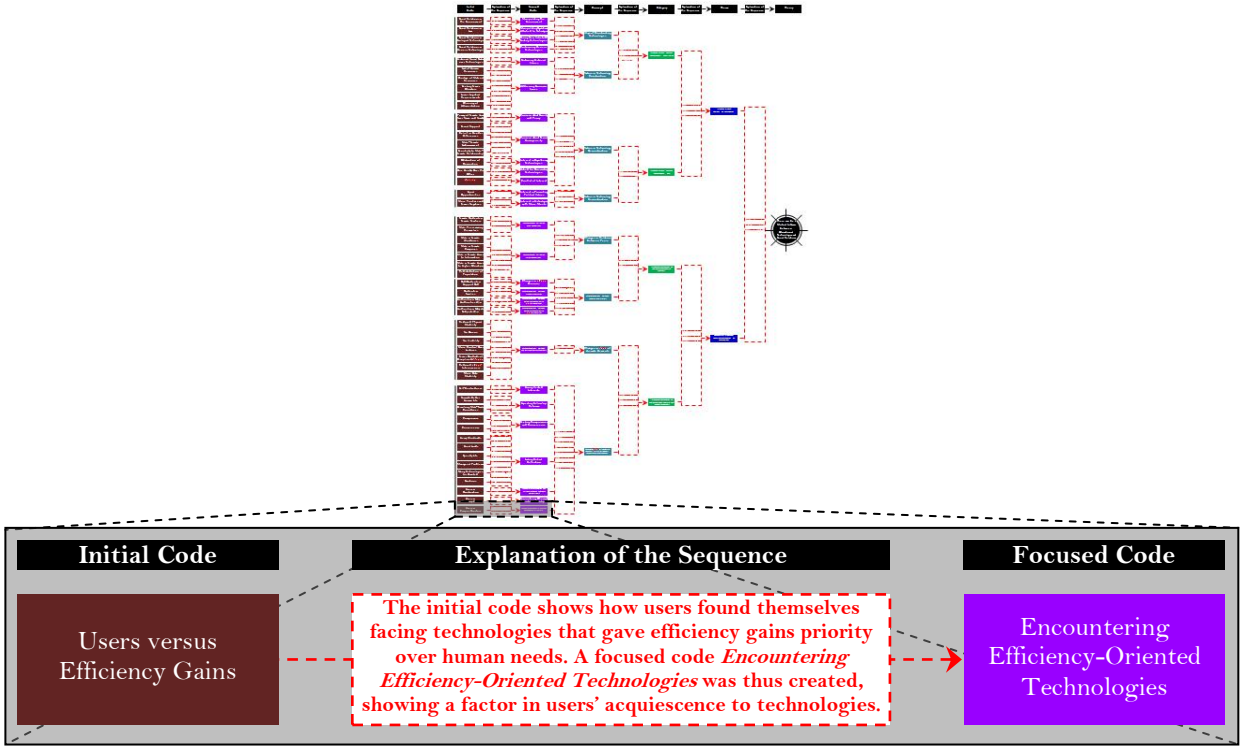
Even more pertinently, the dependence of female education on male teachers was expected to continue for a long time because the University was constrained by the logistics involved in the association of male academics with female education (e.g. permanent employees, equipment and long-term contracts). Indeed, if at an unspecified point in the future the University decides to restrict male academics to teaching their own gender, the leadership is likely to find it difficult to remove such constraints. Thus, technological structures necessarily exist together with substantial logistical systems, making it difficult for any major reform to happen, and it is reasonable to hypothesise that inanimate elements such as technological structures and their logistics exert, in themselves, a kind of power over animate beings and other inanimate

elements, such as subsequent decisions. It is therefore advisable for decisions on technological structures to be well planned, because of their logistical reach and long-term effects, as well as because present structures influence later evolution (Whitworth, 2009a). Toffler (1970) recommends that 'we must anticipate [technology's] indirect effects over great distances in both time and space' (p. 387). In the same vein, Johnson and Wetmore (2009) contend that the technological structures that are constituted and used today 'constrain and constitute tomorrow's social relationships, social institutions and cultural and political notions' (p. 441).

VI) Encountering efficiency-oriented technologies (Focused Code)

This last focused code closes the chapter, showing how some users accepted technologies because they found themselves facing technologies that gave priority to efficiency gains over human values. It stems from one initial code: users versus efficiency gains.

Table 43: Encountering Efficiency-Oriented Technologies (Focused Code)



A look at the data suggests that the concept of efficiency has, as emphasised in the preceding chapter, become a major aim of the University's policies and those of the state. Yet in an efficiency-oriented university, humans are theoretically likely to cease to be regarded as holding value in themselves, being seen rather to have value only in regard to their functional inputs into the overall campus structure (Ellul, 1964; Staudenmaier, 1985). This means redefining the roles of all actors to make them fit within the overall functionality. It might consequently be sensible to assume that the more technological the University becomes, the greater is the danger to human values and social roles (see Speer, 1970).

6.4. Concluding Remarks

This chapter has addressed in detail the second research sub-question, regarding what concomitant influence the introduction of educational technologies to sustain certain social relations has had on other aspects of the social structure. It has shown that those technologies constituted to preserve certain social relations have gone beyond, above or even against their initial aims, influencing other relations, establishing new ones and recasting or even curtailing old ones. The chapter has demonstrated that, although social relations influenced the way in which educational technologies were developed and used, with the political purpose of sustaining themselves, the technologies as developed and used nevertheless had concomitant influences on other aspects of the social structure. It has investigated numerous unintended changes resulting from the role of technologies in human experience and affairs, showing technological interventions to be unpredictable. It has further suggested that educational technologies not only affect education, but may go beyond their initial educational aims, affecting the entire social fabric (see also McIsaac, 1993).

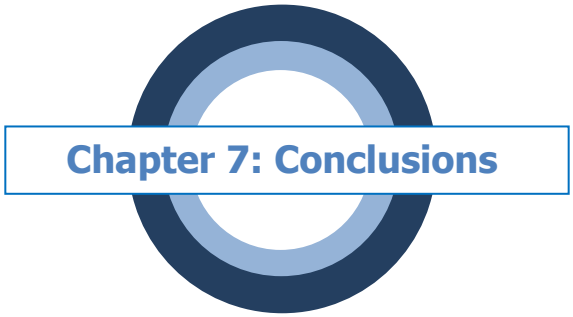
The chapter has shown that the introduction of technologies into a higher education institution can have complex, pervasive influences that may spread through social and organisational structures and go beyond the original purpose that these technologies were meant to serve. Educational technologies should therefore be well planned and constituted so as to lessen unwanted concomitant influence. Echoing the findings in this chapter, one might contend that a society can be technologically shaped, in the sense that the introduction of educational technologies, whether through invitation or invasion and for good or ill, can modify relations amongst animate elements (i.e.

between peers and between superiors and inferiors) and between animate and inanimate elements, at times in favour of the former and at other times of the latter. The chapter has shown that, although the adoption of educational technologies can set in motion changes in the distribution of power and control that are purposely intended by those who constituted them, these technologies may have unintentional consequences, which those affected may then choose to tolerate (see Johnson and Wetmore, 2009).

It is too soon to anticipate with certainty what may be the concomitant influence of educational technologies on Saudi society, its social structures and its higher education sector, given the complexity of social and technological settings and that, as the speed of technological innovation quickens, it becomes more and more 'difficult to predict the effects that a given innovation will have' (*ibid.*: 3). The effect of educational technologies on Saudi society has arguably not reached its peak; indeed, it will in all likelihood continue indefinitely. For now, this chapter has demonstrated that educational technologies have turned out to challenge (or even damage) some aspects of a social structure which it was their original aim to reinforce or even advance (see also Al-Saggaf, 2012).

Indeed, educational technology is not the only factor acting as a source of influence upon Saudi Arabian social structures and relations. Others include the enlargement of urbanisation, civilisation, modernisation, internationalisation and globalisation, bound up with the expansion of the so-called Saudi Liberal Tendency (see Dekmejian, 2003; Al Qathami, 2005; Al-Nabulsi, *Al-Watan Newspaper*, 4 July 2009, 11 July 2009), in addition to the worldwide emphasis on women's rights (see Deif, 2008) and the

emergence of a new generation of educated Saudi women. That said, some commentators (e.g. Al Qator, 2011) have pronounced themselves amazed at how the social authorities have handled these various influential factors, at times diplomatically and at other times in an authoritarian manner, whether to great or slight effect.



Chapter 7: Conclusions

7.1. Guide to the Chapter

This last chapter covers the following:

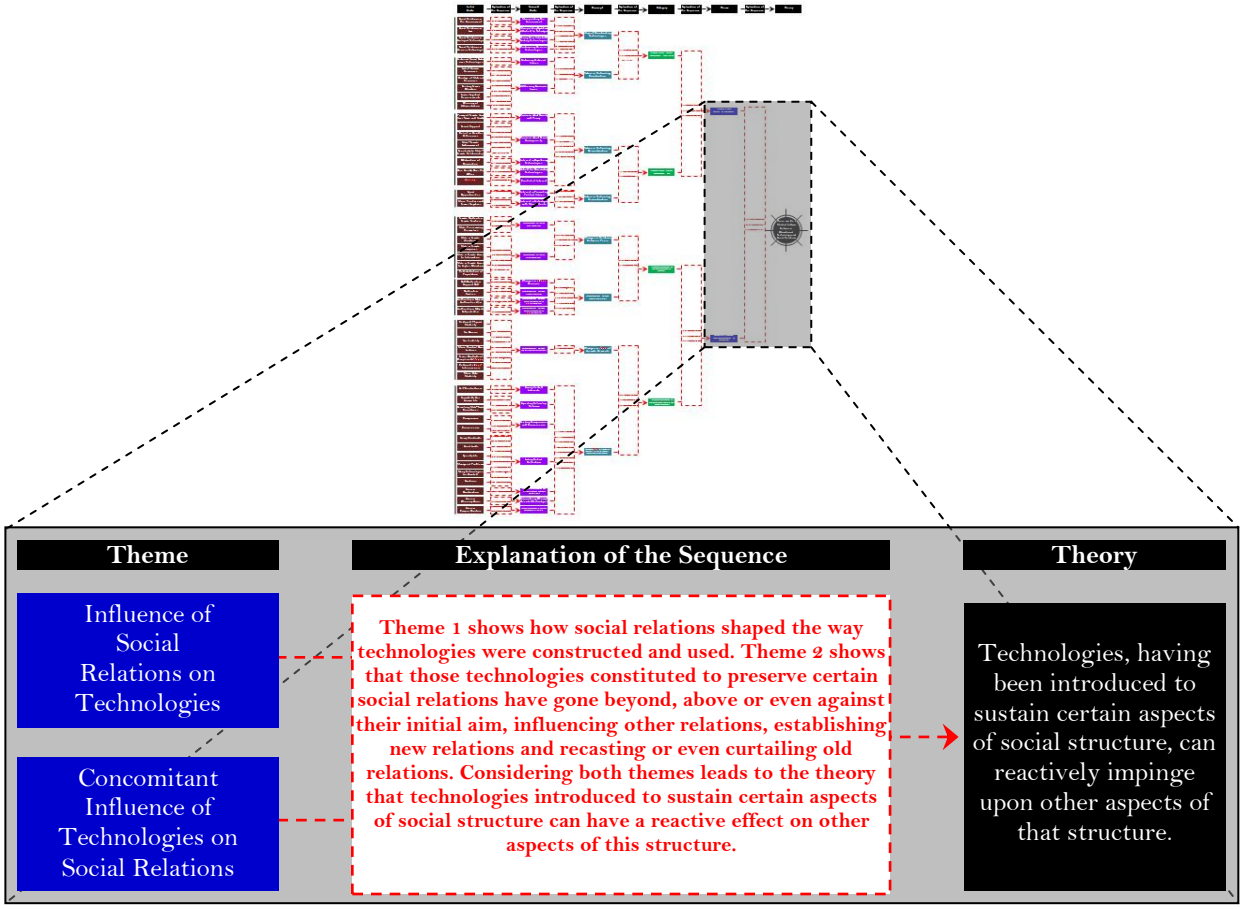
- **Emerging Theoretical Propositions**
- **Recommendations for Policy Action**
- **Recommendations for the Academic Community**
- **Strengths, Limitations and Further Research Projects**
- **Concluding Remarks**

7.2. Emerging Theoretical Propositions

The data analysis has pointed towards two themes: the influence of social relations upon the way educational technologies are developed and used so as to reassert themselves; and conversely, the concurrent influence of the technologies as developed and used upon other social relations. Consideration of these themes leads to a theoretical proposition that educational technologies, having been successfully introduced to sustain certain aspects of the social structure, could also have a reactive

effect, whether willingly or grudgingly, for good or ill, upon other aspects of the social structure. This theoretical proposition, as illustrated below, emerges from a long and complex analytical process, informed mainly by the grounded theory technique.

Table 44: The Main Emerging Theoretical Proposition



To relate this emerging theoretical proposition to the literature reviewed in Chapter 2, the review first made the claim that technologies varied in the extent of their influence over individuals, communities and societies. It then supported a complementary claim that individuals, communities and societies also differ in the extent of their power and their ability to exert influence over educational technologies. The review concluded that there can be an interface between educational technologies and social structures.

The current study, however, showed that such a mutual influence between educational technologies and social relations will not necessarily be symmetrical: at times, one is likely to be more influential than the other, and this may change with the context and over time. In some places and at certain times the relationship may be relatively well balanced, whereas a more one-sided influence will sometimes be exerted by one entity over the other, as is the case in the Saudi context, where the influence of social relations over educational technologies tends to be dominant, for a variety of reasons. A key factor here is that existing social relations here seem pervasive and ingrained, and Saudi society appears to locate its values consciously in the forefront of its mind, thinking carefully, resourcefully and reflectively about how to preserve them. Besides, the country and its higher education sector are wealthy enough to constitute their own educational technologies and to request certain modifications to generic technologies. The petro-state of Saudi Arabia has proved to be capable of 'making the idea of mechanically separating the genders successful (no matter what the cost is), countering this complex issue with money and money' (Al Qator, 2011: 287). Oil wealth seemed from the available raw data to be capable of helping build environments in ways that fitted perfectly within certain patterns, models and templates (see Al-Sharif, *Out of Darkness, Into Light Conference*, 8 May 2012). Karl (1999: 34) contends that 'oil wealth molds institutions more dramatically than development specialists ever imagined or even seem to understand.'

A corresponding theoretical proposition that can be derived from the various findings of the present research concerns how social relations shape themselves and other existing and future social relations, whether deliberately by the introduction of

technologies or inadvertently via the secondary effects of technology use. Such shaping is likely to come about because particular values and configurations of social relations can, as pointed out in relation to Theme 1, be embedded into the campus technological structure and infrastructure and therefore become firmed up and objectified, penetrating the social fabric on an almost permanent basis. With the passage of time, however, these values, being 'wrapped up' in the surrounding technological structure and infrastructure, eventually become integral to the wider social culture, thus influencing subsequent decisions and becoming normalised and harder to question or even to see. This eventually leads to the insertion of newcomers into the existing social order. Robins and Webster (1988: 49) give credence to the belief that values, once subsumed into technologies, become mechanical and ultimately invisible. Certain social relations, as again demonstrated in Theme 1, can construct technologies in certain ways to reinforce themselves, and since these relations, as explained in regard to Theme 2, cannot have full control over how these technologies develop and cannot predict or have foreknowledge of all their ramifications, the technologies may eventually exert a reactive effect on the social relations that constructed them in the first place. Thus, social relations may unintentionally reshape themselves through technologies, contrary to their purpose in introducing them, which was to reinforce themselves.

Thus, the academic community should consider how social relations can shape themselves and other existing and latent social relations, especially the kinds of shaping that are done through and imposed by technologies. What might also be worth consideration, as Theme 2 in particular shows, is the technologies' shaping of

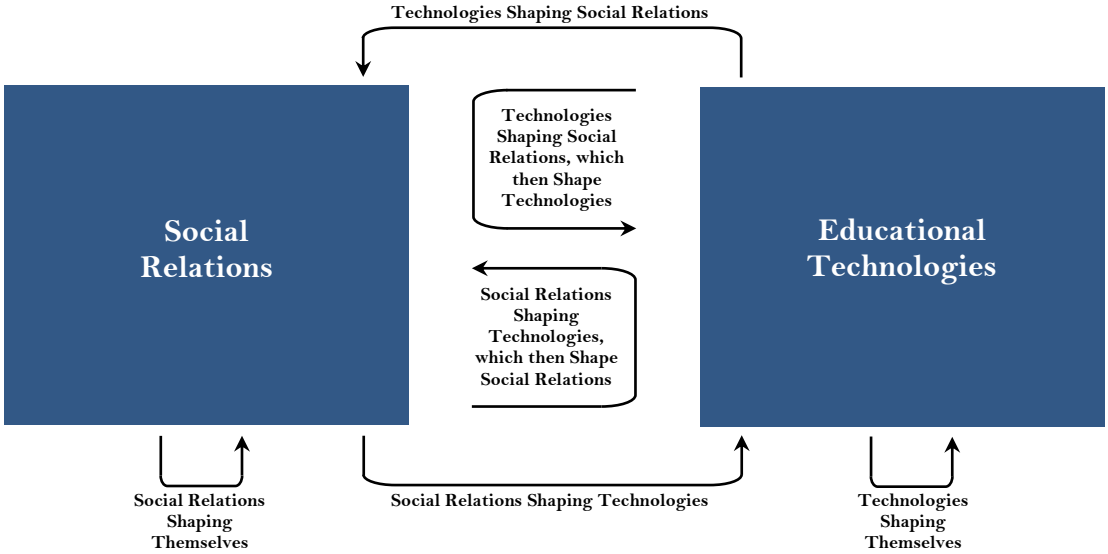
themselves and other existing and subsequent technologies. Underlying both themes 1 and 2 is the belief that, notwithstanding the different pressures which diverse societies and communities exert on the direction in which technologies evolve, technologies sometimes appear to have a power and a life of their own, exploiting and abusing human beings in order to reproduce themselves (Heilbroner, 2009; Johnson and Wetmore, 2009). Technologies appear, at times, to feed on themselves, making more technologies possible (Toffler, 1970). In this fashion, technologies shape technologies (see MacKenzie and Wajcman, 1999: 7). This suggests the technological shaping of technologies, a political process in which technologies are influenced by one another (see Graça, 2010). Apparently, the enactment of one technology might hold back, disrupt or conflict with the possibility of enacting others (see also Ball, 1993). Williams and Edge (1996b) point out that 'technologies, once developed and implemented, not only react back upon their environments to generate new forms of technology, but also generate new environments' (p. 15). Marx observed long ago that 'the worker puts his [sic] life into the object, but now his life belongs no longer to him but to the object' (1964: 13). In other words, 'the alienation of the worker in his product means not only that his labour becomes an object, an external existence, but that it exists outside him, independently, as something alien to him, and that it becomes a power on its own confronting him' (*ibid.*). The 'common neglect of the power exercised by objects is not surprising given that when technical systems are completely integrated into the social fabric, they become "naturalised," disappearing into the landscape' (Wajcman, 2004: 40).

This study, particularly Theme 2, has offered various examples of the technological shaping of technologies. To consider additional observations, the technological structuration of the University was noticed to be progressively turning the institution into a technologically connected network. The University's policy lays emphasis on the potential of technological structuration to electronically improve data mobility amongst technological systems, members and institutional units. The e-marking system was linked to Blackboard and other information systems at the University, making it possible to transfer grades from one system to another. Yet this linking should not be interpreted simply as a matter of a new technological system connected to existing ones. It should rather be analysed as a new technological structure influencing and being influenced by existing technological structures (see also Toffler, 1970). Simply put, a technological system may require another new system in order for the two to achieve their purposes more effectively. Connecting technological systems with one another suggests that decisions on a technological structure can affect and be affected by preceding and subsequent decisions on other structures, with later adopters influencing and being influenced by the values and practices of previous adopters (DeSanctis and Poole, 1994). New technological systems obligate their implementers to link them to other technological systems and applications – not least to the Internet. Thus, as mentioned earlier, technologies appear at times to have a power and a life of their own, exploiting and obligating human beings to make more technological applications, to design new technologies in certain ways and to adjust to the requirements of technologically defined paths. This justifies the belief that, while technologies do not actually make themselves and are socially constituted by human beings, these people may not afterwards have full freedom to determine how they

grow. Edge (1996) contends that 'the consequences that a technology has (or might have) often influence future technical decisions' (p. 18).

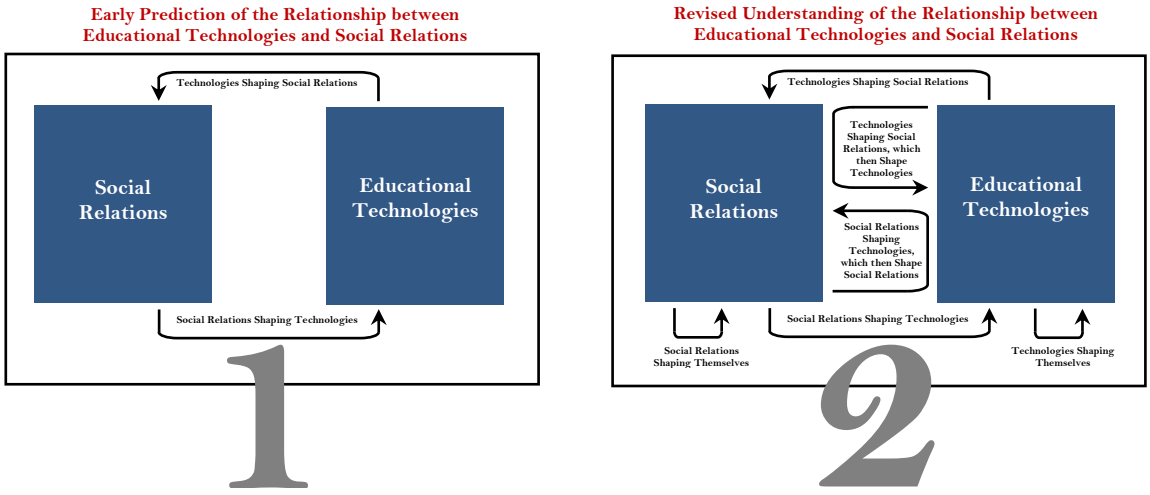
To sum up, the main theoretical proposition to be drawn from the study's findings is that educational technologies may be introduced to reassert certain aspects of social structure, although the technologies, once introduced, may have unplanned reactive effects on other aspects of that social structure. A complementary theoretical proposition is that social relations may shape themselves and other existing and subsequent social relations, whether deliberately by the introduction of technologies or as an unplanned consequence of their use. There is concurrently the possibility of technologies shaping themselves and other existing and subsequent technologies. Such potential political relationships amongst social relations and educational technologies are illustrated in the diagram below, which is essentially informed by the data analysis.

Figure 12: Possible Relationships among Social Relations and Technologies



In the discussion of the above explanatory framework, it must be acknowledged that, although I anticipated at an early stage the possibilities of social relations shaping educational technologies and vice versa, it became increasingly apparent during the processes of analysing and explicating the data that social relations can become reconfigured with or without the intervention of educational technologies and that educational technologies can go through processes of development without the shaping of social relations. The diagram below illustrates this development in my theoretical stance. In this diagram, Box 1 on the left shows my early prediction, at an initial phase of the research, of the nature of the relationship between educational technologies and social relations. Box 2 on the right, however, shows my revised understanding, at an advanced stage of the research, of the nature of this relationship.

Figure 13: How My Theoretical Stance Developed as the Research Progressed



This new understanding of the relationship between educational technologies and social relations suggests therefore that, any further research in this area should take

into account the possibility that both social relations and educational technologies can undergo transformations that are not dependent on one another.

What can be seen from this final version of the study's theoretical framework is the complex interaction between and amongst educational technologies and social relations, a complexity that seems to be captured to a degree by Actor Network Theory. This theory argues for the existence of a common influence between and among human actors and 'non-human actors' (i.e. rules and resources) (Latour, 2005). That is, for Actor Network Theory, there seem to be three types of relationships: relations among humans, relations amongst non-humans and relations between humans and non-humans. This implies that educational technologies, as non-human actors, exist as part of a complex power network of human and non-human elements (Cornford and Pollock, 2003; see also Bracken and Lombard, 2004). The planning and development of an educational technology should thus be seen and analysed 'in terms of the relationships formed between human and non-human elements of [the] "actor network"' (Mackay, 1996: 43). Williams and Edge (1996b) believe that technologies are inclusive phenomena in that 'their development proceeds by interaction of various social and technical elements' (p. 15). They add that 'these different components cannot be separated from one another, or treated as distinct variables; they are in constant mutual tension' (*ibid.*). Some thinkers, as reported by Wajcman (2004), believe that technologies and societies 'are bound together inextricably, and the traffic between the two is reciprocal' (pp. 38–9). These arguments underscore the dynamic and iterative nature of the relationship among social relations (i.e. human elements)

and educational technologies (as non-human elements). Wajcman (2004: 38–9) holds the belief that:

> Since the widespread adoption of "actor-network theory", technology and society are no longer seen as separate spheres, influencing each other. [This argument] conveys the view that technology and society are mutually constitutive: both are made of the same stuff – networks linking human beings and non-human entities. The technological, instead of being a sphere separate from society, is part of what makes large-scale society possible. [...] The conception of the non-human as actant serves as a corrective to a rigid conception of social structure. It involves a view of society as a doing rather than a being. The construction of technologies is also a moving, relational process achieved in daily social interactions: entities achieve their form as a consequence of their relations with other entities.

An essential implication of Actor Network Theory, noted by Wajcman (2010: 149), is that 'objects and artefacts are no longer seen as separate from society, but as part of the social fabric that holds society together; they are never merely technical or social.' In another publication, Wajcman (2004) contends that 'what we call "the social" is bound together as much by the technical as by the social' (p. 39). She adds that 'society itself is built along with objects and artefacts' (*ibid.*). Bracken and Lombard (2004) hint that societies and technologies can 'socially' (p. 22) interact with one another. This

may be taken to suggest the existence of 'social' relations between human and non-human entities, just as these relations take place among human elements.

Yet one might criticise the Actor Network Theory, arguing that non-humans are actually neither actors nor social elements, since they are not conscious and cannot think for themselves (see Evans, 1979). This argument seems logical, although it is also sensible to argue that it is not only humans that are active participants in the network of interactions that make a situation. Non-humans do impose power and constraints and therefore deserve to be recognised as actors, at least in theoretical terms (Giddens, 1984). This recognition is likely to carry substantial weight for research, facilitating deeper analysis and comprehension of situations where both humans and non-humans interact and act as 'partners of interactions' (Caron and Caronia, 2001: 43). Thus, echoing Actor Network Theory, analysts do well to scrutinise how an educational technology, 'when added to the mix' (Kerr, 1996: 136), interacts with the other human and non-human 'ingredients' of a society.

As well as Actor Network Theory, the study's two themes can be seen to support Hutchby's (2001) idea that a technology could *frame* (if not necessarily determine) the possibilities for action that users could take. Both themes showed that such framing, while allowing different possibilities for action, did constrain the way a technology could be used. In this respect, it could be argued that a technological structure might act simultaneously to enable and constrain human activity and action (see Giddens, 1984). The previous two chapters spoke of an interplay between technological structure (which frames the activity of individuals/societies) and agency (i.e. the capacity of individuals/societies to perform independently, make their own free choices

and make sense of what frames their activity) (see Chris, 2003). Acknowledging the 'sense-making' capability of individuals/societies versus the 'framing' capability of the technology suggests the existence of some kind of political relationship between the two (see Pollock, 2005). Yet while this power relationship can at times be balanced somehow (with educational technologies and users exerting an almost equal influence on one another), it can at other times be imbalanced, either as technologies determine their users or as the users largely subvert the technologies at hand.

7.3. Recommendations for Policy Action

'So what?' (Bereiter, 2002: xi). Some, according to Winner (1977), wonder: 'What good are analyses, criticisms and perspectives [...] unless they point to positive courses of action?' (p. 325). Thus, having considered the study's findings, a political recommendation for policy action is now made. To wit, considering the potential of social relations to shape technologies and so to reinforce themselves, the planning and development of technologies should be more participatory: actors of all categories should come together to express their feelings, articulate their needs and negotiate their interests, with the purpose of ensuring that certain social relations do not construct a technology to preserve themselves and thus that 'the weakest do not become victims of the strongest' (Berding, 2002, p. 253, cited in Masschelein and Quaghebeur, 2005: 53). Such communicative participation might, likewise, help to ensure that, when educational technologies are planned, power and control are fairly distributed amongst all actors, thereby helping develop a democratically informed

academic society 'that values equity, equal opportunities and equal treatment under the law' (Kerr, 1996: 125).

A complementary recommendation for policy action is that, considering the potential of educational technologies to influence a society in unintentional ways, the development of educational technologies should be participatory, with the intention of ensuring that such technologies do not turn out to constrain and oppress the affected people. Such participation might help to overcome the problem that 'sometimes the [technologies] we make improve our lives, and sometimes they make our lives worse' (Tripathi, 2008: 2). Toffler (1970: 388–90) protests that 'we can no longer afford to let such secondary social effects just "happen"' and argues that societies should try to anticipate such effects in advance, 'estimating, to the degree possible, their nature, strength and timing.' He stresses that 'where these effects are likely to be seriously damaging we must also be prepared to block the new technology.' Toffler concludes that technologies cannot be permitted to run amok through society, which should not be afraid of exercising social control over them.

Yet one may express reservations about the suggestion of bottom-up participation, arguing that actors who lack intimate and practical comprehension of organisations, or indeed the technologies involved, must not be supplied with power, as they may lead organisations over a cliff (see Mintzberg, 1989; Bresson, 2007). This seems sensible, to an extent, but the democratic participation suggested here is not necessarily meant to grant actors the power to modify the campus technological structure freely. Rather, it may be meant to act as a window through which decision-makers and analysts can access actors' discourses, thereby making decisions which are better informed, both

from above and from below. Besides, democratic participation might encourage actors to examine continuously and critically the surrounding technological structure, fostering amongst them a culture of critical reflection and political alertness and helping them to become habitually politically active citizens. Such critical and political skills should be instilled in graduates if we wish to ensure that they do not merely observe and adapt to the technological and information revolutions, but also participate in them (see Lin, 2000; Reffell and Whitworth, 2002).

Winner (1977) believed that one major shortcoming in technologies was that 'those touched by their presence have little or no control over their design or operation.' He therefore recommended, 'to as great an extent as possible, [that] processes of technological planning, construction and control ought to be opened to those destined to experience the final products and full range of social consequences' (p. 326). It could be argued that democratic participation in the constitution of educational technologies would help the leadership to arrive at a fuller understanding of the needs and interests of users, thus overcoming whatever limits and oppresses them. This 'communicative mode of organisation' (to adapt a phrase from Habermas, 1984; 1987) could be assumed to enhance understanding, acceptance, ownership, responsibility and thus a sense of citizenship on the part of users (Adams, 1986). Whitworth (2009b) backs this up, believing that 'decentralised, democratic and communicative forms of organisation can empower participants, provoke energy and creativity and result in problem definitions and solutions towards which all involved feel a sense of ownership' (p. 30). Democratic forms of organisation may promote transparency, helping the leadership to counter the criticism that the constitution of its technologies was based on

improvisation, on the interests of individuals and merely on 'showing off' (Male Academic-Manager 5).

So, a mixture of top-down and bottom-up constitution of educational technologies might help to ensure that all interests, including those represented by both genders, are taken into account. This representation may be seen as particularly important to Saudi women, not only because they constitute a majority of University students (Governmental Statistics), but also because the nature of Saudi culture means that female students and academics are more often than not relegated to unequal choices and facilities. Some women complained that the male campus essentially controlled technological facilities at the University. In the experience of On-Campus Female Undergraduate 25, 'all the services and main technical support are at the male section of the Faculty of Information and Communications Technologies.' Although the democratic suggestion of equal options for female nationals once appeared impractical, it now seems increasingly feasible, given the new attitude of the authorities at the national level towards women, through which they appear to be gaining the same status as their male peers. The following historical account explains some aspects of this newly revised attitude.

As of 1 August 2001, Saudi Arabia was recorded as one of those states that 'signed, ratified, acceded or succeeded to the Convention on the Elimination of all Forms of Discrimination against Women' (United Nations, General Assembly, A/56/328, 31 August 2001: 7–11). In 2002, a royal decree (No. A/2 dated 24 March 2002) was issued to transfer responsibility for all girls' schools from the General Presidency of Girls' Education to the Ministry of Education. This decree was followed by another

(No. A/2 dated 27 April 2003) appointing a woman as the deputy minister of girls' schooling; she was 'Saudi Arabia's first woman to hold ministerial rank' (Lacey, 2009: 239). In 2003, the state established a centre for national dialogue, seeking to 'create a new environment that facilitates dialogue among various sections of the society, including both males and females, with the aim of promoting public interest and consolidating national unity' (Governmental Document). In his 2011 annual speech, the Saudi monarch announced that the nation's women would gain the right to be members of the formal advisory body of the country and also to vote and run as candidates in the nationwide municipal elections (Record of the Speech, *BBC*, 25 September 2011). In essence, this means 'the recognition of the Saudi woman as a being involved in politics' (Hassan, *Sabq Newspaper*, 28 September 2011). With this national political change in favour of women, it is more likely that female interests will come to play a key role when the planning and development processes of educational technologies become more participatory.

The participatory constitution of educational technologies means losing 'faith in the potential of *a priori* privileging in the design process some groups of [actors] over others' (Sørensen, 2002: 31); for this reason, such participation cannot be expected to be welcomed by the dominant groups. A similar challenge is whether the Saudi context is especially conducive to democratic participation, i.e. whether males and females, Saudis and non-Saudis, managers, academics and students can really all come together. The leadership actually seemed to be aware, to some extent, of the usefulness of such democracy, establishing web-based and face-to-face forums where students, academics, managers and the public can gather together to discuss common interests

and issues. The University has also encouraged its members to complete an online survey of their views on its technological structure and infrastructure, with a space at the end where members can write comments. The results of this survey are open to the public, meaning that anyone can see the statistics and read the comments.

Some interviewees in the current study agreed with the importance of enhancing democratic participation within the University. Others, however, questioned the practicality of such democracy, complaining that the 'democratic' channels of the survey and the online and face-to-face forums had had no influence on actual decision-making processes. A similar complaint was that, despite this 'democracy,' the planning and development of the University's technological structures were eventually based on improvisation, on the interests of certain individuals and on the purposes of national and international competition. Male Academic 21 expressed a sense of frustration, complaining that 'genuine democratic decisions are impossible to accomplish within the Saudi context, which is ruled by the authoritarian forces of the social authorities and families.' Some students were also frustrated by the hierarchical nature of Saudi academic society, whereby 'professors and managers do not really accept criticisms and look down on students from a high tower' (On-Campus Male Undergraduate 31).

Although some interviewees supported democratic participation in academia, they were divided over whether this democracy should be achieved through direct participation via referenda or through the representative features of a parliament. Some saw no need for representative participation, suggesting that 'the responsible committee should rather come down to the real world and see departments and colleges and do surveys' (On-Campus Male Undergraduate 16). They thought that a

representative would 'feel inhibited about talking, inhibited about defending the opinions that he represents, because all the members of the committee are older than him – so, to show respect, he will be passively present' (On-Campus Male Undergraduate 22). Others, on the other hand, argued that, 'when the committee comes down to the coalface, they will see only the ideal things – when a committee comes to visit us, we always change our behaviour to show them the best of ourselves' (On-Campus Male Undergraduate 28). It was also remarked that, 'when there is a representative that has lived with us, he will better deliver our voice, especially if he is well chosen and elected' (On-Campus Male Undergraduate 6). Going beyond the either/or mentality, both of these positions seem valid, so there should be a balance between them, perhaps through what have been called 'today's semi-direct democracies' (Frey *et al.*, 2001), which are basically a mixture of direct and representative democratic participation. The leadership was apparently attempting to establish some aspects of these semi-direct democracies.

Nevertheless, effective participatory decisions can be hard to achieve, requiring the expenditure of resources of some kind, whether directly, usually in the form of time, or indirectly, in building up the critically reflective thinking skills of the wider population, on which effective democracy really depends (see Woods, 2005). Being a critically reflective thinker is not a matter of merely following the mechanisms and regulations attached to the technology at hand. Rather, it is about becoming 'politically literate' (Al Lily, 2008: 22), having the ability to question why one does what one does and to understand how one shapes and is shaped by animate and inanimate elements of one's environment. It is also a matter of problematising

personal, institutional and wider practices, realising the consequences of those practices and envisioning more effective ways of organising the educational environment or workplace (see Brookfield, 1987; Nicholls, 2001). People who fail to be critically reflective may end up as 'victims of fate', entangled in the outcome of politicised decisions and top-down preferences (Brookfield, 1995). They may also leave themselves open to exploitation by politics in 'the game of higher education' (Selwyn, 2007: 90) and to merely embracing and consuming ideas, techniques and methodologies coming from 'above,' thereby undermining and denying their own creative and thinking capability and agency (Brookfield, 1995). Webb (2008) agrees, protesting that 'the idea that educators act unconsciously most of the time doesn't suggest that they must act that way' (p. 139). Educators should make sure that, when a technology 'enters the classroom, it is there for politically, economically and educationally wise reasons, not because powerful groups may be redefining [...] educational goals in their own image' (Apple, 1986: 174). Hence, it is essential that academics, as part of their continuing professional development, should begin to realise the importance of holding their practices consciously in the forefront of their minds, perhaps by undertaking 'action research' (see Coghlan and Brannick, 2005).

Training University members in organisational politics is of the essence, given that some of those at the bottom and indeed at the top of the University hierarchy appeared to lack awareness of the explicit and implicit political and legal consequences and dimensions of the introduction of technology into educational activities. Male Academic-Manager 8 contended that 'those people in charge of making decisions on technologies are not qualified, technically, managerially, legally and administratively.'

This claim seemed from the data to be fair, considering, for example, that when I asked a vice-dean of a faculty about who owned the copyright of content put on Blackboard (whether the leadership or the teacher), he reacted to the question as if he had not thought about it and as if he should have negotiated this issue with academics. Likewise, when I directed this question to an academic well known for his intensive use of Blackboard, he had the same reaction. It can be argued that this issue of copyright over contents would have been better dealt with if the University had worked in partnership with the corporate publishing sector, which is apparently advanced and sophisticated in relation to such matters.

Democratic participation means bringing together conscious agents and heterogeneous interests, thus possibly awakening dormant quarrels and fomenting conflict. Conflict, whether intra-group or inter-group (see Kast and Rosenzweig, 1979), refers to any action within a social relationship 'oriented intentionally to carrying out the actor's own will against the resistance of the other party or parties' (Weber, 1964: 132). Conflict develops from the social and political dynamics of organisations, which are disjointed internally by diverse values, interests, 'mentalities' (Masschelein and Quaghebeur, 2005: 54) and ways of thinking peculiar to certain stakeholder groups (Benson and Whitworth, 2007). Such values and interests consequently compete to influence the technological structure and infrastructure of organisations and the organisations themselves (Morgan, 1999). Bromley (1995) states that conflict is 'historically primary in some sense' (p. 10). For Ball (2003), 'complex organisations like schools and universities are multifaceted and diverse, indeed they are sometimes contested and often contradictory' (p. 224). Ball (2012), in another

publication, asserts that educational institutions 'are sites of ideological struggle and also arenas of competition and contest over material advantage and vested interest' (p. 279). From an extreme perspective, an organisation should be 'a heterogeneous entity' (Hård, 1993: 417). Yet the coordination of this heterogeneity is a political challenge, for this is what politics is, i.e. 'the art of joint decision-making' (see Raiffa *et al.*, 2002). Of course, there are a number of solutions to such a challenge within the domain of politics, including not only democracy but also bureaucracy and autocracy.

With these beliefs in mind, organisations, at least in practice, should not (nor can they) simply be turned into a 'dysfunctional political battleground' (McPherson and Whitworth, 2008: 415). Such 'dysfunctionalisation' is by definition unhealthy if we believe that 'the less consensus there is within society, the less conventionalist the legitimating principles of society are' (Rosa, 2003: 23). Negotiations between conflicting groups can be said to be an organisational learning process (Cervero and Wilson, 2005; Whitworth, 2009b). Conflict seems to be a mechanism for spreading a culture of creativity and reflexivity throughout the organisation. In the words of Whitworth (2005), 'without conflict, there would be no creativity, and hence no innovation' (p. 690). Kast and Rosenzweig (1979) agree that conflict 'can have a positive impact on creativity, innovation and process[, as] a conflict-free organisation is likely to be static and sterile and without much challenge for group members' (p. 302). With this belief in mind, technology users are encouraged to 'agree to disagree and get onto the politics' (to borrow a phrase from Amin and Thrift, 2005: 237). When groups are in conflict, they sincerely play their roles as 'purposeful agents' (Hård, 1993: 417), given that the existence of conflicts implies, first, 'that there is some degree

of cooperation and understanding within each group and, second, that conflicting groups share some values, norms, and presuppositions' (*ibid.*).

That said, conflict can also lead to power relations distorting the ability of innovative practices to take root; indeed, in the University's case, power relations seemed entrenched. Unhealthy conflict can result in childish behaviour and set in motion anger, hostility and even physical violence, such as the 'scuffles' reported in the Saudi media (Al-Abdullehay, *Sabaq Newspaper*, 3 March 2011), thereby compromising the soul of the institution and making academia ethically repugnant. Healthy conflict, on the other hand, is a beneficial kind of competition, in so far as it is 'a formally peaceful attempt to attain control over opportunities and advantages which are also desired by others' (Weber and Eisenstadt, 1968: 8). Learning about the methods and stratagems that help to handle conflicts is an indication of being an adult, leaving behind a childhood in which one thinks of oneself as the centre of the world and where one always expects victory (Whitworth, 2009a). This learning is 'one link from the individual into their communities' (*ibid.*: 13). Civilised citizens, therefore, should understand that conflict 'is argumentative and competing but avoids hostility and aggression' (Youdell, 2010: 30).

Despite their problems, higher education institutions remain models of the democratic system in some ways, as they at least still grant their core professionals a reasonably high level of autonomy. It is when decision-making has to be coordinated (democratically or otherwise) beyond small teams that the real struggle seems to occur. Although Cohen and March (1974) were writing in the 1970s in a non-Saudi context, their words seem to be applicable to Saudi higher education institutions today:

'anything that requires the coordinated effort of the organisation in order to start is unlikely to be started, and anything that requires a co-ordinated effort of the organisation in order to be stopped is unlikely to be stopped' (1974: 206). That is not to say that higher education institutions are unskilled in creating knowledge, but rather that they are unable to transform their own practices by drawing on their knowledge (Garvin, 1993). Although they are places that the outside world needs for expertise, they are 'notoriously weak in applying advanced knowledge to their own organisation and procedures' (Hammond *et al.*, 1992: 161). For Cornford and Pollock (2003), one common problem is that, organisationally, higher education institutions 'do know themselves well enough' (p. 110). Thus, the higher education sector needs 'to learn about learning' (to borrow a phrase from Schön, 1971: 30). To survive and evolve, then, this sector must in the end learn how to learn from the knowledge that it generates.

7.4. Recommendations for the Academic Community

Having addressed the relevance of the current research to policy makers, I now move on to consider its relevance to educational researchers. The study has proposed that, while educational technologies can be constituted to preserve particular components of social configuration, the constituted technologies may reactively modify (sometimes detrimentally) other components of this configuration. This suggests the possibility of there being a 'political' relationship between technologies and societies. Given such a political relationship, the recommendation for the Saudi Arabian academic community is that naturalistic researchers in the field of educational technologies be encouraged

(and indeed taught as part of their academic, professional and personal training programmes) to be politically literate, with the ability to see and grasp (i.e. to hold at the forefront of their attention, to analyse, to interpret and to discuss) the politically intertwined and complex relationship between these two politically active elements: educational technologies and societies. Such politically knowledgeable researchers should, moreover, be capable of comprehending the other political relationships discussed earlier, whereby technologies influence themselves and other existing and future technologies and whereby, through technologies, social relations shape themselves and other current and subsequent social relations.

I hope that the current study has challenged a worldview of educational technologies that presents realities and social relationships as abstract concepts, where 'concerns over human interest and power never surface' (Muffoletto and Knupfer, 1993: 5; see also Selwyn, 2010). It has also attempted to demonstrate how the Saudi Arabian social system, which has historically been based on power and control and which is strongly structured and directed, has influenced how educational technologies are constituted and used. Thus, a recommendation for the Saudi academic community is that the notion that educational technologies can be socially influenced should encourage researchers, research students and research centres to consider issues of control over power, benefits, effects and knowledge when investigating such technologies (see Muffoletto and Knupfer, 1993). Likewise, considering that educational technologies are 'social through and through' (in the words of Feenberg, 2003: 75), qualitative investigators should treat them as having the possibility of being socially influenced.

An essential idea that this study seeks to convey to the educational technology audience is that educational, technological and social settings can be responsive to one another. Accordingly, the educational technology writing of the 2010s and beyond would be enriched considerably if researchers were to hold in the forefront of their minds the strength and complexity of the social setting where an educational technology exists (see also Kerr, 1996). More importantly, educational technologies should be analysed, interpreted and discussed as more than an essentially technical issue of aligning mind and machine, but rather as an intensely societal, cultural, economic and political concern (see also Selwyn, 2010). This matters, since the current study raised the possibility that the planning and development of educational technologies were constructed not according to their technical merits alone but through negotiation informed by substantial societal, historical, economic and political agendas (see also Agalianos, 1996). Thus, thinkers are encouraged to move beyond the narrow examination of educational technologies based solely on technological, pedagogical and educational concerns (Dutton *et al.*, 2004). Agalianos (1996) emphasises the importance of viewing educational technologies as a predominantly social phenomenon, positioning them within their neglected social context. The constitution and reconstitution of technologies seem from the previous two chapters to be a 'seamless web' (Agalianos, 1996: 4) in which the educational and the technological are interwoven with the organisational, the historical, the economic and the political. Thus, educational technology '*is* a social practice' (Bromley, 1995: 4, original emphasis), standing within various factors which may go beyond, above and even against habitual considerations.

To broaden the focus, education, as a whole, should thus be delineated as acting as 'a complex assemblage of interrelations between social structures, economic conditions, power/knowledge relations, architectural and spatial arrangements' (Tamboukou, 2008: 369). A higher education institution should be analysed as 'a complex assemblage of people, texts, objects and machines, brought together within the spatial scale of everyday life and coordinated in time' (Cornford and Pollock, 2003: 42). Thus, it could be argued that anything that takes place in educational settings should be considered an educational matter and as such should attract the attention of educational analysts. By the same token, any technology used within the higher education sector should be seen, in loose terminology, as educational technology. With this argument in mind, educational technologies can be discussed under two main headings: academic and administrative. Yet there is no 'complete separation between academic and administrative technologies[, as] they are interacting and can be in conflict' (Kast and Rosenzweig, 1979: 521). They collectively shape educational life and activity, thus constituting the so-called educational technologies. Arguably, administrative technologies should be analysed as an integral part of educational activity and so as educational technologies, given the role which administration plays in shaping educational life and activity. Any mistake in administrative processes risks upsetting educational dynamics. Cornford and Pollock (2003) believe that 'the university is a multitasking organisation in which teaching, scholarship, research and "community service" are all important goals and in which the administration (or, increasingly, management), required to balance, sustain and support those roles, is a critical component' (p. 10). Kast and Rosenzweig (1979: 522) take this argument further:

> A university is more than a professor and a student sitting at opposite ends of a log. Who provides the log? How do we ensure that the student and professor meet at the appropriate time? How are the library resources necessary for an intellectual dialogue accumulated? Who feeds and houses students and takes care of their medical needs? Who provides the parking facilities for the automobiles each of them wants to drive as close as possible to the log? Who records the number of sessions and the professor's evaluation of the student? How is the professor paid? These are a few of the functions necessary to support the primary technical tasks of teaching and research.

A crucial idea embedded in this passage is that administrative technologies work closely with academic technologies to make educational objectives achievable and even possible.

In terms of the implications of the current research, it is important to consider the issue of self-reflexivity as it applies to a Saudi male attempting to view the issue of gender relations with sufficient objectivity. I have been thinking about this question for a long time, not least because I work for the Saudi Arabian government and am likely to work, as part of this job, on education policy in the near future and therefore need to have a clear view on this issue. Although it seems, politically speaking, rather unwise to reveal my own personal view on such a sensitive matter, I am, however, quite uncertain about the eventual effect of educational technologies upon the gender separation pattern, as it is possible to argue two quite contradictory positions.

On one hand, I sense that the electronically enabled connection of the genders seems to be dissolving the social, cultural and psychological borders between the two parties – and eventually perhaps the physical ones. At other times, however, I come to realise that the gender separation norm and the equipment used to sustain it sometimes appear to be increasingly unmanageable, becoming an embedded component of the country's political and societal systems and thus resulting in increasingly unnecessary and exaggerated segregation and, moreover, influencing subsequent decisions and technological structures, increasing the solidity of the gender separation pattern.

From my own perspective, I am aware that it was not likely to be a straightforward matter for me to be fully aware of the preconceptions about gender issues that might possibly colour my own interpretation of these issues. Nonetheless, I am confident that over the course of this study I have made considerable progress in terms of recognising the cultural assumptions that might have potentially restricted my perceptions as a researcher. It is my hope that the methods of data collection, analysis and interpretation used in this study have enabled me to maintain a fair degree of distance between long-established assumptions and the more analytic viewpoint necessary for successful research.

The conducting of the current study does suggest that there are political constraints that might have affected people's abilities to speak openly. One is that it is likely to be difficult and embarrassing for one to go against a monolith so tightly structured as Saudi Arabian culture. Similarly, it seems dangerous to destabilise a stable culture that is politically so protected and sheltered. The media and literature, as mentioned already, refer to many events where Saudi society has resisted firmly any socially

deviant trend in behaviour or belief, making it so heavily protected that even those campaigning for change from within do not challenge existing patterns but rather attempt to work within them.

In addition, surveillance might also have discouraged some people from expressing themselves freely. I could sense that some of my interviewees perceived me as a spy and therefore, for example, did not allow me to record the interview or explicitly stated that, 'it seems you want to put me in trouble.' Another possible factor discouraging some citizens from speaking openly is the belief that individuals are to act and speak as representatives of their national culture and therefore to express their views in a way compatible with its existing values. Similarly, it seems that Saudi society is a collective community wherein individuals ensure that they express themselves in a way that reflects and does not upset this sense of collectivity. It appears, likewise, that Saudi society makes any citizen critical of the national culture feel not welcomed by the wider national community and therefore lose a sense of belonging. Any citizen critical of the national culture, moreover, is likely to be marginalised and certainly not granted managerial-level power.

During the course of the study, I could not help but wonder why some Saudi people were so protective of their culture. It seems that some Saudis protect their culture because they feel this culture has been subject to ongoing, harsh and unfair criticisms by the outside world. In response, Saudis have naturally become defensive, attempting to protect their values against such an attack even if they know these values might not be of the essence or even valid any longer. More fundamentally, one might believe that some Saudis are sensitive when it comes to their culture because they see themselves

as the main protectors of Islam, given that the land of Saudi Arabia is the place where Islam began and where the two holy mosques are located. They, it seems, will thus examine carefully any emerging issue to ensure its compatibility with the existing ideological system and will stand against any values thought to bring damage to this system, even if this damage is felt to be minor. This, some might argue, explains why some Saudis seem to over-analyse any emerging cultural and societal issues and exaggerate and focus mainly on any negatives involved. This is also perhaps why some Saudis hold the belief that preventing negatives has priority over bringing positives.

A further main reason why some Saudis uncritically follow their history is that they believe that this history is hierarchical, with the values of previous generations necessarily being superior to those of subsequent generations, meaning descendants are not to challenge and depart from what their ancestors did. Saudis, perhaps like others, as mentioned earlier, have grown up within an ideological context that has taught them societal and cultural values as an integral, intensive and sacred part of their education, in a patriarchal and authoritarian way. For this reason, they can hardly be independent of these values and, rather, are likely to become protective of them. Numerous school courses, if not most of them, are culture-oriented and culture-promoting.

One might further hold the belief that some Saudis are resistant to any fundamental change in their culture because change can be scary and the status quo comforting, as the consequences of change can hardly be predicted and because gains cannot be guaranteed. One might even contend that some Saudis are protective of the culture because it enables them to achieve vested interests and because any change may result

in them losing some of (or even all) their power and privilege. For instance, if Saudi Arabia loses its essential cultural patterns and values then many Saudis might lose their jobs, given that many Saudis are qualified in cultural studies and many existing jobs are culture-oriented. Some might make the case that the Saudi authorities grant cultural figures a great deal of prestige, privilege and funding, such that, if the system loses its cultural dimension, these people may therefore lose all this. Thus, these people will, politically speaking, naturally do their best to refuse to give in to any attempt to 'de-culturalise' the national system, not for the good of society and progress but for the good of themselves.

What could be seen here is that Saudis, like other human beings, at least in theory, are, as previously discussed, not naive but rather politically sophisticated, having the ability to examine what their society experiences, attempting to shape it in their interests and for their benefits and advantage. This ability of Saudis, however, some might claim, is exercised within an ideologically oriented 'black box.' That is, Saudis have brought a culture from previous times to the modern age and have attempted to implement it, work within its parameters and politically and defensively maintain its values.

7.5. Strengths, Limitations and Suggestions for Further Research

This thesis has taken the reader on a long academic journey to a conclusion that is actually a beginning, i.e. a conclusion in the form of a theoretical proposition. What one does at a beginning is to begin. As the research question and sub-questions were answered, a host of others revealed themselves. The research situation of the current

study is 'ultimately about a particular researcher in interaction with a particular subject in a particular context' (Sandelowski, 1986: 31); therefore its ultimate aim is to offer only theoretical propositions, which other researchers may choose to consider when analysing a multitude of situations of concern, taking the emerging theoretical proposition of the current study beyond the specifics of the present case and the Saudi context. This might, in turn, help to build and enrich the global literature on the complex interface between the wider milieu and the particular content of educational technologies, thus 'allowing comparisons between results from different cultures to be made' (Al-Saggaf, 2012: 11). The suggestion of using the theoretical propositions of the current study to look into other contexts should not be intended merely to either confirm or reject these propositions, but rather to question them, to problematise them and to illuminate them with challenging insights. In doing so, a 'wild' international literature on educational technologies could be built up, offering its readers opportunities to challenge their own ideas, thus disturbing their intellectual comfort and encouraging them to become politically literate.

A limitation of the research question and sub-questions is that any answer to them cannot be definitive and permanent but rather must remain tentative and provisional, given the complexity and indeterminacy of the social and the technological (see Wessels, 2009). In other words, research on the 'inter-relatedness' (Rappert, 2003: 574) of educational technologies and social processes should permanently be seen as 'an enquiry into enquiry' (Bromley, 1995: 20), given that technology, in its array of vast and complicated forms, 'continually surprises us and baffles our attempts at comprehension[, emerging] as a source of genuine perplexity' (Winner, 1977: 5).

Thus, ongoing research should be carried out to undertake social analysis of higher education institutions under conditions of technological change, partly because technologies change in themselves and partly because their expansion can, as demonstrated in Theme 2, generate other kinds of technological and social changes (*ibid.*). What adds to this complexity is that social relations, which construct technologies to sustain themselves, can also change in themselves and alter themselves unintentionally and unconsciously through the implementation of technologies.

The study puts forward the theoretical proposition that, although educational technologies may have been introduced to sustain certain aspects of social structure, once introduced they may act in unexpected ways upon other aspects of that social structure. The testability of this proposition is limited by difficulties in establishing which comes first, the social or the technological change (see Kast and Rosenzweig, 1979). To circumvent this chicken–egg impasse, one might see them as co-determinant forces (*ibid.*). Educational technologies and social relations appear to be both co-produced and co-producers. When investigating the implementation of technologies within organisations, 'technology' and 'organisation' should not be seen and analysed as denoting completely separate entities, since organisational 'locales' shape technologies just as much as vice versa (Williams and Edge, 1996a; 1996b).

Indeed, the current study is far from having illuminated comprehensively all aspects of the relationship between educational technologies and Saudi society, partially because changes that accompany technological innovations touch a wider range of visible and invisible aspects of a society, including customs, habits, attitudes, ideas and social and political rituals (Winner, 1977). I did not intend in this thesis to speculate about

educational technologies in the future. Rather, I wanted to look into those technologies which citizens have experienced. Another limitation of the current research lies in the fact that it does not draw a clear line between digital and non-digital technologies, with the former differing from the latter in their aesthetic and cultural principles and configurations (see Bolter and Grusin, 2000). Yet the increasing popularisation of digital technologies has apparently made the academic educational community preoccupied with them, thus giving less thought to non-digital technologies (see Selwyn, 2012). With this in mind, a strong point of the current study is that it pays almost equal attention to these two kinds of technology.

A further limitation is that the study ignores certain variables within the data, including age, income and marital status. This limitation should not be seen as fundamental, however, because the study is not quantitative in its methods and because the investigation of the data in terms of these variables is not essentially related to the central aim of the study, its research questions and its sampling techniques. Berg (2009) believes that the qualitative researcher should 'never assume the analytic relevance of any traditional variable such as age, sex, social class, and so on until the data show it to be relevant' (p. 355). Educational technologies are multi-layered, in the sense that they encompass the micro, the institutional, the national, the international (relations between nations), the trans-national (beyond national boundaries) and the global (covering the world as a whole). Thus, another limitation of the current research is that it is predominantly concerned with educational technologies at the micro and institutional levels. Further research is needed into how major external and internal forces interact with each other when it comes to

educational technologies at the level of the higher education sector. It would also be fruitful to investigate the macro-level relationship between science and society in terms of the shaping of educational technologies (see Bacon, 1660; Bromley, 1995; Edgerton, 2008).

A strong point of the present study is that it addresses the social influence of something (i.e. technology) that has become 'the most influential element in civilised life' (Winner, 1977: 118). One might wonder whether the study deviated from its planned course. Although the definition of the issue of concern shifted repeatedly throughout the study, it was clear during that time that the essential focus of the study lay at the intersection of education, technology and society. I hope, however, that if the reader spots any fault lines, s/he does not see this shifting as a weakness but rather as an integral and important part of the doctoral learning process and qualitative research dynamics. Another thing to mention is that I realised, while analysing and discussing the raw data, that the analysis and discussion were moving increasingly towards feminism and gender studies. I therefore had to redress this shift in the focus, as the study was actually not conducted from the perspective of gender studies, a field that is strongly contested, beyond my scope of knowledge and certainly outside my main academic and professional interests. I would argue that while the first expectation that one might have when reading the title of the study is that it had been conducted essentially from the viewpoint of gender studies, the fact that the study itself then confounds this expectation should be seen as proof of an innovative approach and thus a strength. That said, the current study would undoubtedly benefit from being re-conducted in the future through the lens of gender theory.

Admittedly, because the study adopts a qualitative approach and is informed by a single setting, its findings are somewhat limited, notwithstanding my efforts to apply the quality techniques of member-checking, peer-reviewing and chains of evidence. Thus, in terms of the direction in which the present investigation should be taken, each finding should be expanded through independent qualitative and quantitative studies in different settings. Further limitations of the study are that I am still young, being in my 20s, and lack any professional experience with the workplace in general and with the higher education sector in particular. In this respect, what Cat Stevens writes in his song *Father and Son* seems to be well applicable to my situation: 'You're still young, that's your fault, there's so much you have to know, there's so much you have to go through.' Thus, my current analyses, interpretations and discussions of the data collected might change in the near and/or farther future as I become older and start gaining professional experience within the higher education sector.

It is argued that 'the work of academic writers and researchers needs to be as inclusive and engaging as possible' (Selwyn, 2012: 2). With this in mind, the study would have been enhanced if more categories of actors (in addition to students, academics and managers) had been involved in the research into educational technologies, making it a better-informed investigation. This would, moreover, have helped to give some 'publicity' (*ibid.*: 2) to educational technology research, introducing its academic parameters and ethical protocols to a wider public. The study could also usefully have been conducted from the perspective of non-Saudis, who were excluded from the study sample and whose views are likely to be informed by their experiences in other countries, thus again enriching the data. To extend the scope in another dimension,

similar studies should be carried out in different Saudi universities, faculties and schools, with the intention of building up a Saudi-specific literature on the political relationship between educational technologies and Saudi society.

I wish that I could have interviewed families, since they were found to be influential actors in Saudi academic circles, but I found it difficult and complicated to reach them, meaning that their views had to be examined through students, who thus acted in part as informants of their family's opinions. This is not enough to fully and accurately conceptualise the views of families, however, so further careful research is needed to elucidate the opinions and experiences of families regarding educational technologies in the higher education sector. Nevertheless, one strength of this study remains that, unlike most Saudi studies on educational technologies in the higher education sector, it did at least try to incorporate the views of families. Despite the value of understanding the opinions of families (and students), who are those most closely affected by any changes within Saudi academia, most research on educational communications technologies in the Kingdom has tended to be informed predominantly from above by 'key players' (in Denscombe's terminology, 2007: 201), i.e. by managers, technologists and faculty members (see, for example, Al Khamdi, 2002; Al Saadat, 2002; Omar, 2002; Al Mubarak, 2005).

A crucial issue here is that as an enquirer into Saudi society I am an insider and consequently not free (nor can I be free) of its values. There is nothing special about this of course: like everyone else, I grew up within an ideological context and can never be completely independent of it (see Al Qathami, 2009). However, if an outsider had conducted this study, the analysis, interpretation and discussion of its findings

would have been different to a greater or lesser extent and perhaps potentially more sophisticated. Thus, it might be useful for a similar study to be conducted by a researcher from outside the Saudi context, although it should be noted once again that researching Saudi society as an outsider (whether male or female) remains challenging (see the experience of Al-Turki, 1987). Bin Ladin (2005), as a foreigner, found Saudi Arabia to be 'perhaps the most unwelcoming country on the planet' (p. 62). Another challenge facing foreign researchers is that deciphering the internal organisational, cultural and political structure of Saudi Arabia has proved to be 'a difficult task for outsiders' (Al Qator, 2011: 35). This difficulty arises partly because of the complexity of its culture, and party because the country is treading an unusual path, having reached the intersection of development, where it is diagnosed as having the developmental symptoms and manifestations of a developed country but still the diseases of a developing one (Al Romaihi, 1995). Saudi culture combines 'two phenomena: historical retardation of the highest degree yet huge financial revolution' (Al Qator, 2011: 47). Although this culture is a good consumer of modern technologies, these technologies are then exploited to sustain traditional values (Bin Ladin, 2005). A useful example here is that Saudi society made intensively use of the innovation of sound recording for the purposes of preaching, encouraging citizens to commit themselves to cultural values (see Al Qator, 2011).

The pattern of gender separation prevented me from observing female environments and activities, so I had to seek some help in analysing the female context, with female interviewees acting as informants and other women as data collectors. This separation also obliged me to interview women by exchanging emails or letters, with the help of

the data collectors. This and the fact that my sponsors stipulated a maximum of three months for fieldwork prevented me from taking other methodological approaches, such as ethnography. Thus, future studies would benefit from the adoption of alternative methodological approaches. Furthermore, one might argue that the quality of the study would have been improved if male and female researchers had conducted it jointly, each researching the gender-appropriate campus. This argument seems sensible not only because of the gender separation pattern but also because a person researching people of the same gender might be expected to establish a stronger rapport as a result of shared experiences, especially within the Saudi context, where one is likely to feel inhibited and uncomfortable about communicating across gender lines. Moreover, such collaboration between male and female investigators might enrich the interpretation and discussion of the data. Yet the nature of a doctoral study, I felt, required me to carry out the research on my own, which is not to say that being a solo researcher is a fundamental weakness, being likely to improve consistency in data collection and analysis while helping to avoid problems such as peer conflict and tension.

I am, as mentioned in the methodology chapter, an outsider in relation to the Saudi female population. This can be seen as a strong point of the study, granting me the ability to analyse this population dispassionately and from a distance. On the other hand, it may have diminished my ability to deeply understand the needs, requirements and interests of Saudi women and the culture of the Saudi female campus. Such externality implies very limited lived experience of the setting; therefore there is a danger that the study may have failed to 'get it right' (Mabry, 2009: 220). Hence, it

might be useful for current study to be re-analysed in the future from the perspective of a female researcher. Nonetheless, a strength of the current study remains that, despite being an outsider in gender terms, I did eventually manage to research this 'extremely hard-to-reach and isolated population of Saudi women' (Al-Kahtani *et al.*, 2006: 227; see also the experience of Al-Turki, 1987).

Saudi women are encouraged to follow the initiative of their peer Al-Shehab (2010), by writing, whether academically or non-academically, critically or descriptively, about their own current or previous experiences as students being educated over the CCTV network. Al Qator (2011) stresses the importance of Saudi female students, staff and support staff writing down their social-educational experiences and stories. Such women might take a phenomenological approach, exploring what it means, for example, to be educated, whether partly or wholly, through educational technologies. An additional strength of the current study is that, unlike many Saudi studies, it sought the perspectives of both men and women in a single study, enabling the pollination of their views and thus enriching the discussion. The methodological part of the thesis is in itself a strength, addressing some of the issues that can emerge when investigating the uninvestigable, in this case, when a male researcher naturalistically researches the female population in the Saudi Arabian context.

A strong point of such an interdisciplinary study (see Selwyn, 2012) is that it emphasises not only the educational and technological aspects of educational technologies but also their social ones. The combination of the educational, the technological and the social appears not to have constituted a major component of the theoretical worldview of educational technologies (Selwyn, 2010). There seems little

reason for these three fields not to be in harmony, given that academia – an arena in which technologies play a key role – is essentially a human social activity. Viewing an educational technology free of its social component can be said to be the same as viewing a chess piece independently of the game, ignoring the other 31 pieces, the players, board and regulations (Johnson and Wetmore, 2009). The opinion of Wajcman (2010) is that 'the fate of a technology depends on the social context and cannot simply be read off fixed sets of power arrangements' (p. 150). To switch attention to the institutional level, some analysts argue that educational institutions 'must be understood in the larger context of the society and social relations in which they exist' (Levinson and Sadovnik, 2002: 1).

7.6. Concluding Remarks

This chapter first demonstrated that the data analysis has pointed towards two partly contrasting themes: the influence of social relations on how educational technologies are developed and used; and the concurrent reactive influence of these technologies upon other social relations. It then drew on these two themes to put forward a theoretical proposition, that while educational technologies could be set up to maintain certain components of social structure, these technologies could then, whether intentionally or not, for better or worse, affect other components of the same structure. It then relied on these findings to make a political recommendation for policy action: considering the potential of social relations to influence technologies in order to reinforce themselves, the planning and development of educational technologies should be more participatory, with actors of all different categories combining to

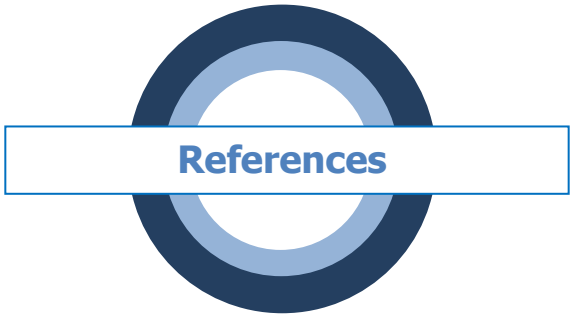
express their feelings, articulate their needs and negotiate their interests in order to ensure that certain social relationships do not construct a technology to preserve themselves. It then proposed a complementary recommendation for policy action: considering the potential of educational technologies to influence a society in unintended ways, the development of educational technologies should be more participatory with the intention of ensuring that such technologies do not turn out to constrain and oppress the people affected. The chapter went on to make a specific recommendation for the academic community: given the 'political' relationship between technologies and societies, qualitative researchers should be trained to be politically literate and thus better able to understand this complex politically oriented relationship. Following Yin's (2009: 3) suggestion that researchers 'should understand and openly acknowledge the strengths and limitations of case study research,' the chapter concluded by assessing the main strengths and weaknesses of the study, while making suggestions for further academic research.

The essential and final message this research wishes to convey to Saudi educational developers and researchers is that analysis of educational technologies should be achieved from a 'post-modernist' perspective, at least as much as it has actually been intensively done from a modernist view. Whereas 'modernism emphasized universality, generalizations, simplification, permanence, stability, wholeness, rationality, regularity, homogeneity, and sufficiency, [post-modernism, however,] has shifted emphases to localities, partialities, positionalities, complications, tenuousness, instabilities, irregularities, contradictions, heterogeneities, situatedness, and fragmentation—complexities' (Clarke, 2005: 555). A post-modernist approach to

educational technologies therefore means viewing them – as the current study has sought to do – as essentially complex elements, with a complexity that can and should be looked into through naturalistic (i.e. qualitative) research in local settings. Such an approach entails seeing educational technologies as a locale in which complexity is itself a value and in which complex dimensions have value in their own right. Recognising the complex nature of educational technologies means the enquirer struggling to read and make sense of them, analysing, interpreting and discussing the data collected concerning them. A post-modernist attitude towards educational technologies means researching them locally, focusing attention on what happens in precise realms of organisational life. Such an attitude necessitates viewing, as this study has tried to, educational technologies more than simply as an educational and technological matter but considering their political, cultural and societal dimensions. One practical way of conceptualising the complexity of educational technologies can be to establish local and national magazines, academic journals, seminars and conferences where researchers, practitioners or anyone academically concerned can discuss findings resulting from their own investigation into and experiences with such technologies. This therefore suggests, for example, the importance of training such practitioners (i.e. teachers and academics) in action research, whereby they research educational technologies as an integral part of their professional practice and development.

The study is hoped to have made various theoretical, methodological, analytical, cultural and organisational contributions to Saudi society, eventually feeding into the larger international literature. A theoretical contribution is the attempt to synthesise

education, technology and society, hoping to encourage the Saudi Arabian academic community to consider more the societal dimension of educational technologies. The study, moreover, puts forward an explanatory framework seeking to illustrate the dynamic and iterative nature of the relationship among social relations and educational technologies. A methodological contribution is the promotion of naturalistic enquiry into Saudi Arabian society, finding roundabout solutions to any constraint involved (e.g. researching across gender lines). An analytical contribution is the promotion of belief in the importance of going beyond the educational and technological aspects of educational technologies, considering their cultural, societal and political components. This is besides encouragement to view Saudi educational technologies from a critical perspective, discussing some political, cultural and societal reasons why such a perspective can hardly be applied in the Saudi context. Yet an analytical limitation is that the use of Grounded Theory made me focus my energies on conceptualisation and theoretical matters, thereby paying less attention to participants' narrative accounts. Nevertheless, a cultural contribution is that the research has drawn attention to the possibilities of educational technologies affecting cultural norms in unintended, unnoticeable, culturally unwanted ways. Moreover, an organisational contribution is that the study has found some reasons for the importance of the planning and development of educational technologies in a participatory way.



Aba-Btain, A.F.A. (2010). *Adalat Tahreem Al-Ekhtalat wa Khashf Shobah Dowatah* 'Evidence of the Prohibition of Sex-Mixing, and Rebutting the Suspicions Spread by its Advocates.' Riyadh: Khaled Bin Al-Waleed Institution.

Abdullah, A.S. (1973). *Tareek Al-taaleem fi Makkah Al-Mukaramah* 'The History of Education in Mecca.' Damascus: Dar Al-Fakar.

Abu-Zaid, B.A. (2005). *Herasat Al-Fateelah* 'Guarding the Virtue.' Riyadh: Dar Alasimah. Available at: http://www.islamhouse.com/d/files/ar/ih_books/single3/ar_guarding_the_virtue.pdf (accessed 06/12/2012).

Adams, G.A. (1986). Computer technology: Its impact on nursing practice. *Nursing Administration Quarterly*, **10** (2), 21–33.

Agalianos, A.S. (1996). Towards a sociology of educational computing. Paper presented at the annual conference of the *American Educational Research Association Conference*, New York. Available at: http://eric.ed.gov/PDFS/ED409004.pdf (accessed 06/12/2012).

Agar, J., Green, S. and Harvey, P. (2002). 'Cotton to computers: From industrial to information revolutions.' *In*: S. Woolgar (eds.) *Virtual Society? Technology, Cyberbole, Reality*. Oxford: Oxford University Press.

Agre, P. (2000). Infrastructure and institutional change in the networked university. *Information, Communication and Society*, **3** (4), 494–507.

Ajzen, I. and Fishbein, M. (2005). 'The influence of attitudes on behaviour.' *In*: D. Albarracin, B.T. Johnson and M.P. Zanna (eds.) *The Handbook of Attitudes*. Mahwah, NJ: Erlbaum. Available at: http://web.psych.utoronto.ca/psy320/Required%20readings_files/4-1.pdf (accessed 06/12/2012).

Al Abas, H.A. (2011). Al-entajayah al-alamayah le aataah hayat al-tadrees al-Saudeyeen bi Jamaat Al_malaq Abdulaziz Bi Jaddeh bi Al-Mamelaqah Al-Arabiyah Al-Saudiyah 'Scientific productivity of the Saudi faculty members at King Abdul Aziz University in Jeddah, Saudi Arabia.' *Journal of King Fahad National Library*, **17** (1), 101–50. Available at: http://www.kfnl.org.sa/idarat/KFNL_JOURNAL/17-1/pdf/5.pdf (accessed 06/12/2012).

Al Bdah, A.A. (2010). *Tahreem Al-Ekhtelat wa Al-Rad ala man Abahah* 'Forbidding Sex-Mixing and

Rebutting the Opposite Opinion.' Riyadh: Dar Al-Tawheed.

Al Eadi, S.M.A. (2009). *Doaat Al-Ekhetelat fi Al-Majetama min Mantoor Al-Faqar Al-Eselami Al-Muwasar* 'Advocates of Gender-Mixing in the Society from the Perspective of Modern Islamic Thought.' Riyadh: Dar Al-Mowayad.

Al Khamdi, S. (2002). *Al-Hajah ela Ansha Jamiaah Maftoohah fi al-Mamlakah al-Arabyah al-Saudyah min Wajhat Nadar Aadah Hayaat al-Tadrees Baljameaat al-Saudyah* 'The Need to Establish an Open University in Saudi Arabia from the Perspective of Faculty Members in Saudi Universities,' Unpublished MA Dissertation, King Saud University.

Al Lily, A.E.A. (2008). *The Importance of Fostering a Culture of Critical Reflection concerning Information and Communication Technology among Academics*, Unpublished MA Dissertation, The University of Manchester.

Al Lily, A.E.A. (2011a). On line and under veil: Technology-facilitated communication and Saudi female experience within academia. *Technology in Society*, **33** (1–2), 119–27.

Al Lily, A.E.A. (2011b). 'Teaching across gender lines: A Saudi technological innovation.' *In*: N. Selwyn, M. Oliver and R. Eynon (eds.) *Learning, Media and Technology: Doctoral Research Conference*. 4 July, London Knowledge Lab, UK.

Al Lily, A.E.A. (in press). Social change and educational technologies: By invitation or invasion. *Journal of Organizational Transformation and Social Change*. x(xxx) x–x.

Al Manaa, A. (1981). *Economic Development and its Impact on the Status of Women in Saudi Arabia*, Unpublished PhD Thesis, The University of Colorado.

Al Mubarak, A. (2005). *Althar al-Tadrees Bastikhdam al-Fusool al-Eftratiyah aabra al-Shabakah al-Aalamiyah al-Enternet aala tahseel tulab kulyat al-Tarbyah fi Taqnyat al-Taaleem wal al-Etisal Bijamaat al-maleek Saud* 'The Influence of Teaching Using Virtual Classes via the World Wide Web on Students' Attainment from the Faculty of Education in Educational Technology and Communication at King Saud University,' Unpublished PhD Thesis, King Saud University.

Al Munajjed, M. (1997). *Women in Saudi Arabia Today*. London: Macmillan.

Al Qathami, A.M. (2005). *Heqayat Al-hadathah fi Al-mamelaqah Al-arabeyah Al-saudeyah* 'The Story of Modernisation in Saudi Arabia.' Morocco: Al-Dar Al Bayeda.

Al Qathami, A.M. (2009).*Al-Qabeelah wa Al-Qabaayel aw Hawayat Mabaad Al-Hadathah* 'Tribes and Tribism or Identities of Post-Modernisation.' Morocco: Al-Dar Al Bayeda.

Al Qator, A. (2011). *Al-Saudiah: Serat Dawlah wa Mojetamah* 'Saudi Arabia: Biography of State and Society.' 2nd edition. London: Al-Shabaqah Al-Arabyah.

Al Rawaf, H.S. and Simmons, C. (1991). Distance higher education for women in Saudi Arabia: Present and proposed. *Distance Education*, **13** (1), 65–80.

Al Rayas, R.N. (2000). *Reyah Al-Shamal* 'Winds of the North.' Beirut: Reyadh Al Rass.

Al Romaihi, M. (1995). *Al-Qaleeq Layesa Niftan: Darawah Eshqalayah Al-Tanemeyah wa Al-Wahedah* 'Gulf Is not just Oil: A Study in Development and Unity.' Kuwait: Qatemah.

Al Saadat, K. (2002). Ensha Markaz leltaleem an boud fo jamaat al-malak Saoud min wajhat natar aada hayat al-tadrees 'The establishment of a center for distance education at King Saud University from the perspective of faculty members.' *Risalat Al-Tarbyah wa Alm Al-Nafs*, (18), 90–155.

Al Saleh, B.A. (2007). Mutatalabat damej al-taaleem al-elaqetarooni aan boud fi al-jameaat al-Saudiyah min wajahat natar khobara al-majal 'Requirements for the integration of e-learning in Saudi universities from the perspective of experts.' *Rasalat Al-Tarebayah wa Aal Al-Nafes*, (29). Available at: http://www.gesten.org.sa/portal/index.php?option=com_p7oth&task=show&catid=53&showid=77&Itemid=57 (accessed 06/12/2012).

Al Salem, A.A. (2005). *The Impact of the Internet on Saudi Arabian EFL Females' Self-image and Social Attitudes*, Unpublished PhD Thesis, Indiana University of Pennsylvania. Available at: http://dspace.iup.edu/handle/2069/21 (accessed 06/12/2012).

Al Shae, A.I. (2007). Education for all programmes in the Kingdom of Saudi Arabia. Background paper prepared for the *Education for All Global Monitoring Report 2008 Education for All by 2015: Will We Make it.* Available at: http://unesdoc.unesco.org/images/0015/001554/155498e.pdf (accessed 06/12/2012).

Al Shawairaq, F.A. (2001). Al-ekhetelat fi al-taaleem: Mafased akhlaqeyah wa atrar tarbaweyah 'Sex-gender in education: Moral evils and social damages'. *Majalat Al-Joundi Al-Muslem*, 105. Available at: http://www.islamway.com/?iw_s=outdoor&iw_a=print_articles&article_id=5500 (accessed 06/12/2012).

Al Zaherani, S.A. (1996). Al entajeyah al alamayah li aataa hayat al tadrees al saaudyeen bi jamaat Umm Alqura: Waqaah wa abraz awaeqaha 'Scientific productivity of Saudi faculty members at Umm Alqura University: Its status and obstacles.' *Journal of King Saud University*, **9** (1), 33–84. Available at: http://digital.library.ksu.edu.sa/V9M120R2251.pdf (accessed 06/12/2012).

Al Zahrani, H.A.H. (2006). *Moneqarat Al-Entarnet Al-Ekhalaqayah wa Al-Ehetasab Alayehah* 'Moral Evils of the Internet and the Prevention of them.' Unpublished Diploma Dissertation, Umm Al-Qura University. Available at: http://www.pv.gov.sa/SiteTree/Pages/books.aspx?View=Page&PageID=7813&PageNo=1&BookID=1 (accessed 06/12/2012).

Al-Abdullehay, T. (3 March 2011). Ashtebaq belayadi bayna waqeelayn be ehda quleyat Al Dammam 'Scuffles between voice-deans of a faculty in the University of Dammam,' *Sabaq Newspaper*. Available at: http://www.sabq.org/sabq/user/news.do?section=5&id=10301 (accessed 06/12/2012).

Al-Adesani, A. (2010). *Al Saraa Al Tanteemi* 'Organisational Conflict,' Unpublished MA Dissertation, King Faisal University.

Al-Aloola, R. (2008). 'Al-Taleem qiar al-mukhetalat fi al-Saoudiyah "Single-sex education in Saudi Arabia".' *In*: Dar Qayna (ed.) *Al-Maraah fi Al-Soudiyah* 'The Woman in Saudi Arabia.' Riyadh: Dar Qayna.

Al-Aqeel, A.A. (2005). *Seyasat Al-Taaleem wa Netamah fi Al-Mamlaqah Al-Arabeyah Al-Saudiyah* 'Education Policy and System.' Riyadh: Al-Rushd.

Alaugab, A. (2007). *Benefits, Barriers and Attitudes of Saudi female Faculty and Students toward Online Learning in Higher Education*, Unpublished PhD Thesis, University of Kansas.

Al-Azraq, E.A. (2008). *Al-Ekhtelat fi Al-Taaleem: Al-Nashaa wa Al-Athar* 'Gender-Mixing in Education: Origin and Effects.' Riyadh: Al-Rushd.

Al-Bassam, I.A. (1984). Institutions of higher education for women in Saudi Arabia. *International Journal of Educational Development*, **14** (3), 255–8.

Aldurywish, A.A. (2010). *Tahadyat Altaaleem aan buad fi Moasasat Altaaleem alaali Alsaudi kama Yodrikoha Alkhada Alakahmiyeen bijamiaat Almantakah Alsharqiyah* 'Challenges of Distance Education in Higher Education Institutions as Perceived by Saudi Leaders, Academics in Eastern Province Universities,' Unpublished MA Dissertation, King Faisal University.

Alenezi, A.R., Abdul Karim, A. and Veloo, A. (2011). Institutional support and e-learning acceptance: An extension of the technology acceptance model. *International Journal of Instructional Technology and Distance Learning*, **7** (2).

Al-Ghadry, N. (1965). *Al-Tahadi Al-Qabeer* 'The Big Challenge.' Beirut: Alef Lailah wa Lailah.

Al-Habeeb, T.A. (2006). *Al-Tarbyah Al-Deenyah fi Al-Mujtamaa Al-Saudi* 'Religious Education in Saudi Society.' Riyadh: Al-Jaraisi.

Al-Harbi, K.A. (2011). E-Learning in the Saudi tertiary education: Potential and challenges. *Applied Computing and Informatics*, **9** (1), 31–46.

Ali, S.E. (1979). 'Mawqah "al-taaleem" hala khareetat al-sohof al-Saudiah' 'The location of "education" on the map of Saudi newspapers.' *In*: S.E. Ali (ed.) *Studies on Education in Saudi Arabia*. Cairo: Dar Al-Thaqafah.

Al-Jarf, R.S. (2004a). Tasawar muqetarah limoqarar fi al-thaqafah al-qawanayah letolab al-marahalatayn al-mutawasatah wa al-thanawayah be al-Mamelaqah al-Arabeyah al-Saadeyah 'A model for a global education course for Saudi junior and senior high schools.' Proceedings of *Globalization and Educational Priorities Conference*, King Saud University. Available at: http://faculty.ksu.edu.sa/aljarf/Publications/My%20Research%20Papers%20%D8%A7%D8%A8%D8%AD%D8%A7%D8%AB%D9%8A%20-%20%D9%86%D8%B5%D9%88%D8%B5%20%D9%83%D8%A7%D9%85%D9%84%D8%A9/%D8%A7%D9%84%D8%AB%D9%82%D8%A7%D9%81%D8%A9%20%D8%A7%D9%84%D9%83%D9%88%D9%86%D9%8A%D8%A9%20%D8%A7%D9%84%D8%AC%D8%AF%D9%8A%D8%AF%D8%A9.pdf (accessed 06/12/2012).

Al-Jarf, R.S. (2004b). Cross-cultural communication: Saudi, Ukrainian, and Russian students online. *Asian EFL Journal*, **8** (2). Available at: http://www.asian-efl-journal.com/June_06_rsaj.php or http://www.eric.ed.gov/PDFS/ED489964.pdf (accessed 06/12/2012).

Al-Jarf, R.S. (2006). Teachers' online discussion forums in Saudi Arabia. Paper presented at the *International Symposium on Teacher Education*, Canakkale, Turkey 4–6 May. Available at: http://faculty.ksu.edu.sa/aljarf/Publications/My%20Research%20Papers%20%D8%A7%D8%A8%D8%AD%D8%A7%D8%AB%D9%8A%20-%20%D9%86%D8%B5%D9%88%D8%B5%20%D9%83%D8%A7%D9%85%D9%84%D8%A9/Teachers'%20online%20discussion%20forums.pdf (accessed 06/12/2012).

Al-Jarf, R.S. (2007). Cultural issues in online collaborative learning in EFL. The *3rd International Online Conference on Second and Foreign Language Teaching and Research*. 2–4 March. Available at: http://www.readingmatrix.com/conference/pp/proceedings2007/aljarf.pdf (accessed 06/12/2012).

Al-Jarf, R.S. (27-30 June 2005). Videoconferencing for a segregated learning environment. Presentation at *NECC Conference*, Philadelphia, Pennsylvania. Available at: http://reemasado.tripod.com/id48.html (accessed 06/12/2012).

Al-Kahtani, N.K.M., Ryan, J.C.H. and Jefferson, T.I. (2006). How Saudi female faculty perceive internet technology usage and potential. *Information Knowledge Systems Management*, **5** (4), 227–43. Available at: http://ipac.kacst.edu.sa/eDoc/eBook/2281.pdf (accessed 06/12/2012).

Al-Khalifa, H.S. (29 October 2009). The state of distance education in Saudi Arabia. *eLearn.* **2009** (10). Available at: http://portal.acm.org/citation.cfm?id=1642193 (accessed 06/12/2012).

Al-Khalifa, H.S. (3 October 2009). Al-Riyadh tarasod waqah al-maraah al-Saudiyah fo majal taqanayat al-maaloomat 'Al-Riyadh records the reality of the Saudi woman in the field of information technology.' *Alriyadh Newspaper*. Available at: http://www.alriyadh.com/2009/10/03/article463710.html (accessed 06/12/2012).

Al-Khalifa, H.S. (30 March 2004). Altaleem be wasatat al-telfaz jooja min al-taleem al-elaqtrooni wa yaqoon behasab talab al-moshahed 'T-leanring is part of e-learning and is as requested by the viewer.' *Al-Riyadh Newspaper*. Available at: http://www.alriyadh.com/Contents/30-03-2004/RiyadhNet/COV_1243.php (accessed 06/12/2012).

Al-Mahazei, F.A. (2001). *Taleem Al-Fatah fi Al-Mantaqah Al-Sharqiyah* 'Girls Education in the Eastern Province.' Saudi Arabia: General Presidency for Girls Education.

Al-Masudi, S.B. and Tayab, A.A (2005). Tatweer al-adaa al-mehani li a-ataa hayat al-tadrees bi jamaat al-Malaq Abduleziz 'Developing professional performance of faculty members at King Abduleziz' Paper presented at *the Twelfth Annual National Conference*, Egypt, 18-19 April.

Al-Mrshad, A.M. and others (1998). *Taleem Al-Maraah fi Al-Mamelaqah Al-Arabryah Al-Saudiyah khelal Maat Aaam* (1419–1319) 'Women's Education in Saudi Arabia in a Hundred Years (1901–1998).' Saudi Arabia: General Presidency for Girls Education.

Al-Musaimri, R.M. and Al-Habdan M.A. (2010). *Al-Eqtelad bayna Al-Jansayn: Ahkamoh wa Aatharoh* 'The Mixing of the Genders: Its Rulings and Effects'. Riyadh: Dar Ebin Al-Jawzi.

Al-Nabulsi, S. (11 July 2009). Tasheelat wa okabat amam al-libralyah al-Saadyah 'Facilities and obstacles to Saudi liberalism.' *Al-Watan*. Available at: http://www.alwatan.com.sa/news/writerdetail.asp?issueno=3207&id=12829&Rname=23 (accessed 06/12/2012).

Al-Nabulsi, S. (4 July 2009). Khayf naqrah al libraliah al Saadyah 'How to read Saudi liberalism?' *Al-Watan*. Available at: http://www.alwatan.com.sa/news/writerdetail.asp?issueno=3200&id=12659&Rname=23 (accessed 06/12/2012).

Al-Osaimi. A.A. (2004). *Al-Athar Al-Ejtemaeyah lailaantarnet* 'The Social Effects of the Internet.' Riyadh: Qourtobah.

Al-Otaibi, A.N. (27 April 2011). Al-qatayah "al-muwajalah" ' "Deferred" issues.' *Al-Hayah Newspaper*. Available at: http://international.daralhayat.com/ksaarticle/260106 (accessed 06/12/2012).

Al-Owain, M.A. (2009). *Qataya Al-Maraah Al-Saudiyah* 'Saudi Woman's Issues.' Riyadh: Middle East Press.

Al-Qasim, A., Al-Lihaidan, A., Al-Mutlaq, A., Al-Turaiqi, A., Al-Sheikh, A.W., Al-Rasi, A., Al-Zunaidi, A., Al-Turayri, A., Al-Omar, A., Al-Bilaihi, I., Al-Ojaimi, K., Al-Turki, M., Al-Bishr, M., Al-Hamed, M., Al-Aql, N., Al-Sa'ad, N., Al-Otaibi, S., Al-Oudah, S. and Al-Hussain, Z. (2008). *Letter to the West: A Saudi View*. 2nd edition. Ghainaa for Publication

Al-Saadat, A. and Afifi, E. (1990). Teaching English via closed circuit television in a sex-segregated community. *British Journal of Educational Technology*, **21** (3), 175–82.

Al-Saggaf, Y. (2012). *Online Communities in Saudi Arabia: An Ethnographic Study*. Germany: LAP LAMBERT Academic Publishing.

Al-Saggaf, Y. and Weckert, J. (2004). The Effects of Participation in Online Communities on individuals in Saudi Arabia. *ACM SIGCAS Computers and Society*, **34** (1). Available at: http://delivery.acm.org/10.1145/1060000/1050307/904.html?key1=1050307&key2=7225602621&coll=GUIDE&dl=GUIDE&CFID=70175536&CFTOKEN=34039561 (accessed 06/12/2012).

Al-Saggaf, Y. and Williamson, K. (2004). Online communities in Saudi Arabia: Evaluating the impact on culture through online semi-structured interviews. *Forum: Qualitative Research (FQS)*, **5** (3).

Al-Saif, M.E. (2003). *Al-Madedkhal ela Berasat Al-Mujetamah Al-Saudi* 'The Entrance to the Study of Saudi Society.' Riyadh: Al-Khareji.

Al-Saloom, H.E. (1995). *Al-Tarbeyah wa Al-Taleem Al-Aam fi Al-Mamlakah Al-Arabeyah Al-Saudyah bayena Al-Seyasah wa Al-Tatbeeq* 'School Education in Saudi Arabia between Policy, Theory and Practice.' Maryland: International Graphics.

Al-Senbl, A.A. (2003). *Asteshraf Mustaqebal Al-Taaleem an Bowad fi Al-Mamlaqah Al-Arabeyah Al-Saudiyah* 'Anticipating the Future of Distance Education in the Kingdom of Saudi Arabia.' Riyadh: King Saudi University.

Al-Sharhan, J. A. (2002). Drasat araa aadaa hayat altadrees bikulyat al-tarbyah bi-Jamaat al-Maleek Saud fishabakat al-Enternet 'Studying the opinions faculty members at the College of Education at King Saud University on the Internet.' *Majalat Jamaat al-Maleek Saud (Al-Aloom Al-Tarbawiyah and Al-Derasat Al-Estamiyah)*, **14** (2), 551–72.

Al-Sharif, M. (8 May 2012). The drive for freedom. Presentation in *Out of Darkness, Into Light Conference*. Available at: http://www.oslofreedomforum.com/speakers/manal-al-sharif.html (accessed 06/12/2012).

Al-Shehab, M. (2010). *Al Maraa Al Saudiyah: Sawet wa Soorah* 'The Saudi Woman: Voice and Photo.' London: Tuwa.

Altameem, J. (2011). Contextual mobile learning system for Saudi Arabian universities. *International Journal of Computer Applications*, **21** (4), 21–6.

Al-Tawil, K.M. (2001). The Internet in Saudi Arabia. *Telecommunications Policy*, **25** (2001), 625–32.

Al-Turki, S. (1987). *Al-Maraah fi al-Saudiyah* 'The Woman in Saudi Arabia.' London: Highlight Publications.

Al-Washmi, A. (2009). *Fitnat al-Kawl Bitaaleem al-Banat fi al-Mamlakah al-Arabyah al-Soudyah* 'The Sedition Resulting from the Call for Education's Girl in Saudi Arabia: Religious, Political and Social Comparison.' Beirut: Al-Markaz Al-Thakafi Al-Arabi.

Al-Zahrani, J.A. (1985). *The Saudi Human*. Riyadh: King Abdul-Aziz Public Library.

Amin, A. and Thrift, N. (2005). What's left? Just the future. *Antipode*, **37** (2), 220–38.

Anderson, T. and Garrison, D.R. (1998). 'Learning in a networked world: New roles and responsibilities.' *In*: C. Gibson (ed.) *Distance Learners in Higher Education*. Madison, WI.: Atwood Publishing.

Anderson, T. and Kanuka, H. (2003). *E-Research: Methods, Strategies and Issues*. London: Allyn and Bacon.

Anfara, V.J., Brown, K. and Mangione, T. (2002). Qualitative analysis on stage: Making the research process more public. *Educational Researcher*, **31** (7), 28–38.

Angus, I. (1993). The sociology of school effectiveness. *British Journal of Sociology of Education*, **14** (3), 333–45.

Apple, M. (1979). *Ideology and Curriculum*. London: Routledge and Kegan Paul.

Apple, M. (1986). *Teachers and Texts: A Political Economy of Class and Gender Relations in Education*. New York: Routledge.

Apple, M. (1995). *Education and Power*. 2nd edition. London: Routledge and Kegan Paul.

Apple, M. (2003). Is the new technology part of the solution or part of the problem in education? In: A. Darder, M. Baltodano and R.D. Torres (eds.) *The Critical Pedagogy Reader*. London: Routledge Falmer.

Apple, M. (2004). Are we wasting money on computers in schools? *Educational Policy*, **18**, 513–22.

Apple, M.W. and Bascom, J. (1994). Computers and the deskilling of teaching. *CPSR Newsletter*, **12** (2).

Arebi, S. (1994). *Women and Words in Saudi Arabia: The Politics of Literary Discourse*. New York: Columbia University Press.

Arnot, M., David, M. and Weiner, G. (1999). *Closing the Gender Gap: Post-War Education and Social Change*. Cambridge, UK: Polity Press.

Asbar Centre for Studies, Research and Communication (2007). *Estkhdamat Al Internet fi Al Moujtamah al-Saudi* 'Internet Usage in Saudi Society.' Riyadh: Asbar Centre for Studies, Research and Communication. Available at: http://www.asbar.com/studies/study16.pdf (accessed 06/12/2012).

Avis, M. (1995). Valid arguments: A consideration of the concept of validity in establishing the credibility of research findings. *Journal of Advanced Nursing*, **22**, 1203–9.

Awon, W.M.W. (1999). Tafawaq al-mamlaqah eslameyan, wa arabiyan wa hatareyan men qelal qotradeha aala al-tafawaq al-tanmawi al-hatari wa taaleem al-shareeah al-eslameyah banasbeh lelmareah 'The superiority of the Kingdom on the Arab, Islamic and civil levels through its ability to reconcile the development of civilization and the teachings of Islamic law for women.' Paper submitted to the *Major University Symposium*, Riyadh, 16–27 October.

Baarda, C. (1994). *Computerized Performance Monitoring: Implications for Employers, Employees and Human Resource Management*. Industrial Relations Centre, Queen's University.

Bacon, R.H.F. (1660). *New Atlantis*. London: Printed for John Crooke at the Signe of the Ship in St. Pauls Church-yard.

Ball, S. (1987). *The Micro-Politics of the School: Towards a Theory of School Organization*. London: Methuen.

Ball, S. (1993). What is policy: Texts, trajectories and toolboxes. *Discourse*, **13** (2), 10–7.

Ball, S. (2003). The teacher's soul and the terrors of performativity. *Journal of Education Policy*, **18** (2), 215–28.

Ball, S. (2012). *The Micro-Politics of the School: Towards a Theory of School Organization*. Oxford: Routledge.

Barley, S. (1986). Technology as an occasion for structuring: Evidence from observations of CT scanners and the social order of radiology departments. *Administrative Science Quarterly*, **31** (1), 78–108.

Bassey, M. (1999). *Case Study Research in Educational Settings*. Maidenhead: Open University Press.

Bastos, F.M.C. (1998). Making the familiar strange: A community-based art education framework. *Green Teacher: Education for Planet Earth*, **69**, 23–8.

Bates, A.W. (2000). *Managing Technological Change: Strategies for College and University Leaders*. SanFrancisco: Jossey-Bass.

Bauer, M. (1997). *Resistance to New Technology: Nuclear Power, Information Technology and Biotechnology*. Cambridge: Cambridge University Press.

Beer, D. and Burrows, R. (2007). Sociology and, of and in Web 2.0: Some initial considerations. *Sociological Research Online*, **12** (5), 17. Available at: http://www.socresonline.org.uk/12/5/17.html (accessed 06/12/2012).

Ben-David Kolikant, Y. (2010). Digital natives, better learners? Students' beliefs about how the Internet influenced their ability to learn. *Computers in Human Behavior*, **26** (2010), 1384–91

Benson, A.D. and Whitworth, A. (2007). Technology at the planning table: Activity theory, negotiation and course management systems. *Journal of Organisational Transformation and Social Change*, **4** (10), 75–92.

Bent Al-Shateeh (1973). *Aaret Al-Moujezat: Rahelah fi Qazeerat Al-Arab* 'The Land of Miracles: Journey in the Arabian Peninsula.' 3rd edition. Egypt: Dar Al-Maaraf.

Bentley, T. (2000). Learning beyond the classroom. *Educational Management and Administration*, **28** (3), 353–64.

Bereiter, C. (2002). *Education and the Mind in the Knowledge Age*. Mahwah, NJ: Erlbaum.

Berg, B.L. (2009). *Qualitative Research Methods for the Social Sciences*. 7th edition. Boston: Allyn and Bacon.

Berg, M. (1998). The politics of technology: On bringing social theory into technological design. *Science, Technology and Human Values*, **23** (4), 456–91.

Bhaskar, R. (1989). *Reclaiming Reality: A Critical Introduction to Contemporary Philosophy*. London: Verso.

Bijker W., Hughes T. and Pinch T. (1987). *The Social Construction of Technological Systems*. Cambridge, MA: MIT Press.

Bijker, W.E. and Law, J. (1992). *Shaping Technology/Building Society: Studies in Sociotechnical Change*. Cambridge, MA: MIT Press.

Bin Ladin, C. (2005). *Inside the Kingdom: My Life in Saudi Arabia*. New York: Warner Books.

Biocca, F. (1992). Virtual reality technology: A tutorial. *Journal of Communication*, **42** (4), 23–72.

Blackmore, J. (2001). Universities in crisis? Knowledge economies, emancipatory pedagogies and the critical intellectual, *Educational Theory*, **51**, 353–67

Bolter, J. and Grusin, R. (2000). *Remediation: Understanding New Media*. Cambridge MA: MIT Press

Boshier, R. (1990). Socio-psychological factors in electronic networking. *International Journal of Lifelong Education*, **9**, 49–64.

Bourdieu, P. (1998). *On Television*. New York: The New Press.

Bracken, C.C. and Lombard, M. (2004). Social presence and children: Praise, intrinsic motivation and learning with computers. *Journal of Communication*, **54**, 22–37.

Bresson, M. (2007). *Technostructure, Knowledge, and Politics: Literature Review*. Available at: http://www.knowandpol.eu/fileadmin/KaP/content/Scientific_reports/Literature_review/Bresson_EN.pdf (accessed 06/12/2012).

Bromley, H. (1995). *Engendering Technology: The Social Practice of Educational Computing*, Unpublished PhD Thesis, University of Wisconsin.

Brookfield, S.D. (1987). *Developing Critical Thinkers: Challenging Adults to Explore Alternative Ways of Thinking and Acting*. San Francisco: Jossey-Bass Publishers.

Brown, S. (2002). Re-engineering the university, *Open Learning*, **17**, 231–44.

Bryman, A. (2008). *Social Research Methods*. 3rd edition. Oxford: Oxford University Press.

Burkhardt, M.E. and Brass, D.J. (1990). Changing patterns or patterns of change: The effects of a change in technology on social network structure and power. *Administrative Science Quarterly*, **35** (1), 104–27.

Caron, A. and Caronia, L. (2001). Active users and active objects: The mutual construction of families and communication technologies. *Convergence*, **7** (3), 38–61.

Cascio, J. (July/August 2009). Get smarter. *The Atlantic*. Available at: http://www.theatlantic.com/magazine/archive/2009/07/get-smarter/7548/ (accessed 06/12/2012).

Cassel, C.A. and Lo, C.C. (1997). Theories of political literacy. *Political Behavior*, **19** (4), 317–35.

Castells, M. (2004). 'The theory of the network society.' *In*: M. Castells (ed.) *The Network Society: A Cross-cultural Perspective*. Northampton: Edward Elgar Publishing Limited.

Cervero, R.M. and Wilson, A.L. (1994). *Planning Responsibly for Adult Education: A Guide to Negotiating Power and Interests*. San Francisco: Jossey-Bass.

Cervero, R.M. and Wilson, A.L. (1998). Working the planning table: The political practice of adult education. *Studies in Continuing Education*, **20** (1), 5–21.

Cervero, R.M. and Wilson, A.L. (2005). *Working the Planning Table: Negotiating Democratically for Adult, Continuing and Workplace Education*. San Francisco: Jossey-Bass.

Chandler, D. (1995). *Technological (or Media) Determinism*. Available at: http://waena.org/ktm/week1/TechorMediaDeterminism.pdf (accessed 06/12/2012).

Charmaz, K. (2009). 'Reconstructing grounded theory.' *In*: P. Alasuutari, L. Bickman and J. Brannen (eds.) *Handbook of Social Research*. London: Sage.

Chesley, N. (2005). Blurring boundaries? Linking technology use, spillover, individual distress and family satisfaction. *Journal of Family and Economic Issues*, **29** (1), 69–87.

Chris, B. (2003). *Cultural Studies: Theory and Practice.* London: Sage

Coghlan, D. and Brannick, T. (2005). *Doing Action Research in your Own Organization.* 2nd edition. London: Sage.

Cohen, L., Manion, L. and Morrison, K. (2003). *Research Methods in Education.* 5th edition. London: RoutledgeFalmer.

Cohen, M.D. and March, J.G. (1974). *Leadership and Ambiguity: The American College President.* New York: McGraw Hill.

Cohen, S. and Taylor, L. (1992). *Escape Attempts: The Theory and Practice of Resistance in Everyday Life.* 2nd edition. London: Routledge.

Collins, H.M. and T.J. Pinch (1982). *Frames of Meaning: The Social Construction of Extraordinary Science.* London: Routledge and Kegan Paul.

Collis, B. and van der Wende, M. (2002). *Models of Technology and Change in Higher Education : An International Comparative Survey on the Current and Future Uses of ICT in Higher Education.* University of Twente, Enschede: CHEPS.

Corbyn, Z. (5 November 2009). Oasis in the desert. *Times Higher Education.* Available at: http://www.timeshighereducation.co.uk/story.asp?storycode=408895 (accessed 06/12/2012).

Cornford, J. and Pollock, N. (2003). *Putting the University Online: Information, Technology, and Organizational Change.* Buckingham: Open University Press.

Crook, C. and Light, P. (2002). 'Virtual society and the cultural practice of study.' *In*: S. Woolgar (ed.) *Virtual Society? Technology, Cyberbole, Reality.* Oxford: Oxford University Press.

Cunningham, P. (1997). 'IT and thinking skills in humanities.' *In*: A. McFarlane (ed.) *Information Technology and Authentic Learning: Realising the Potential of Computers in the Primary Classroom.* London: Routledge.

Davis, C.P. (2008). The Internet as a source of political change in Egypt and Saudi Arabia. *Al Noor*, **2** (1), 32–77. Available at: http://www.bc.edu/clubs/alnoor/articles/pdf/Al-Noor_2008.pdf#page=32 (accessed 06/12/2012).

de Certeau, M. (1988). *The Practice of Everyday Life.* Steven Rendall, Berkeley: University of California Press.

Deaver, S. (1980). 'The contemporary Saudi women.' *In*: E. Bourguignon and contributors (ed.) *A World of Women: Anthropological Studies of Women in the Societies of the World.* New York: Praeger.

Deif, F. (2008). *Perpetual Minors: Human Rights Abuses Stemming from Male Guardianship and Sex Segregation in Saudi Arabia.* London: Human Rights Watch. Available at: http://www.hrw.org/sites/default/files/reports/saudiarabia0408webwcover.pdf (accessed 06/12/2012).

Dekmejian, R. (2003). The liberal impulse in Saudi Arabia. *Middle East Journal*, **57** (3), 400–13.

Denscombe, M. (2007). *The Good Research Guide: For Small-Scale Social Research Projects.* 3rd edition. Buckingham: Open University Press.

Denzin, N.K. (1983). 'Interpretive interactionism.' *In*: G. Morgan (ed.) *Beyond Method: Strategies for Social*

Research. London: Stage.

Denzin, N.K. and Lincoln, Y.S. (2008). *Strategies of Qualitative Inquiry*. 3rd edition. London: Sage.

Dery, K., Hall, R. and Wailes, N. (2006). ERPs as 'Technologies-in-Practice': Social construction, materiality and the role of organisational factors. *New Technology Work and Employment*. **21** (3), 229–41.

DeSanctis, G. and Poole, M.S. (1994). Capturing the complexity in advanced technology use: Adaptive structuration theory. *Organization Science*, **5** (2), 121–47.

Doumato, E. (2000). *Getting God's Ear: Women, Islam, and Healing in Saudi Arabia and the Gulf*. New York: Columbia University Press.

Dubos, R. (1970). *So Human an Animal*. New York: Scribners.

Duderstadt, J.J., Atkins, D.E. and Van Houweling, D. (2002). *Higher Education in the Digital Age: Technology Issues and Strategies for American Colleges and Universities*. Westport, CT: American Council on Education and Praeger.

Dutton, W.H., Cheong, P.H. and Park, N. (2004). The social shaping of a virtual learning environment: The case of a university-wide course management system. *Electronic Journal of e-Learning*, **2** (1), 69–80.

Edge, D. (1996). 'The social shaping of technology.' *In*: N. Heap, R. Thomas, G. Einon, R. Mason and M. Mackay (eds.) *Information Technology and Society: A Reader*. London: Sage.

Edgerton, D. (2008). *The Shock of the Old: Technology and Global History since 1900*. London: Profile

Ellul, J. (1965). *The Technological Society*. London: Jonathan Cape.

Evans, C. (1979). *The Mighty Micro: The Impact of the Computer Revolution*. London: Gollancz.

Eynon, R., Fry, J. and Schroeder, R. (2008). 'The ethics of Internet research.' *In*: N.G. Fielding, R.G. Lee and G. Blank (eds.) *The SAGE Handbook of Online Research Methods*. London: Sage.

Fandy, M. (1999). CyberResistance: Saudi opposition between globalization and localization. *Comparative Studies in Society and History*, **41** (1), 124–47.

Feenberg, A. (1999). *Questioning Technology*. New York: Routledge.

Feenberg, A. (2003). *What Is Philosophy of Technology*. Available at: http://www.sfu.ca/~andrewf/komaba.htm (accessed 06/12/2012).

Firmin, M.W. (2008). 'Themes.' *In*: L. Given (ed.) *The SAGE Encyclopedia of Qualitative Research Methods*. London: Sage.

Firth, L. and Mellor, D. (2005). Broadband: Benefits and problems. *Telecommunications Policy*, **29** (2–3), 223–36.

Fossey, E., Harvey, C., McDermott, F. and Davidson, L. (2002). Understanding and evaluating qualitative research. *Australian and New Zealand Journal of Psychiatry*, **36**, 717–32.

Foucault, M. (1977). *Discipline and Punish: The Birth of the Prison*. New York: Random.

Foucault, M. (1991). *Discipline and Punish: The Birth of the Prison*. Harmondsworth: Penguin Books.

Fox, S.D. (1956). 'Introduction to the English translation.' *In*: E. Durkheim (ed.) *Education and Sociology*. New York: Free Press.

Frankel, M. and Siang, S. (1999). Ethical and legal aspects of human subjects research on the Internet: A report of a workshop. *American Association for the Advancement of Science*.

Frey, B.S., Kucher, M. and Stutzer, A. (2001). Outcome, process and power in direct democracy. *New Econometric Results*, *Public Choice*, **107** (3–4), 271–93. Available at: http://www.springerlink.com/content/v4346764847r7507/ (accessed 06/12/2012).

Galbraith, J.K. (1967). *The New Industrial State*. New York: The New American Library.

Gallagher, E.B. and Searle, C.M. (1985). Health services and the political culture of Saudi Arabia. *Social Science & Medicine*, **21** (3), 251–62.

Garrison, M. and Bromley, H. (2004). Social contexts, defensive pedagogies and the (mis)uses of educational technology. *Educational Policy*, **18** (4), 589–613.

Garvin, D.A. (1993). Building a learning organization. *Harvard Business Review*, **73** (4), 78–91.

Gasser, L. (1986). The integration of computing and routine work. *ACM Trans-actions on Office Information Systems*, **4** (3), 205–25.

Gasset, J.O. (2001). *Toward a Philosophy of History*. New York: WW Norton.

Giddens, A. (1981). *A Contemporary Critique of Historical Materialism*. London: Macmillan.

Giddens, A. (1984). *The Constitution of Society: Outline of the Theory of Structuration*. Berkeley, CA: University of California Press.

Gitlin, A. and Margonis, F. (1995). The political aspect of reform: Teacher resistance as good sense. *American Journal of Education*, **103** (4), 377–405.

Glaser, B.G. and Strauss, A.L. (1967). *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Chicago: Aldine Pub.

Goffman, E. (1959). *The Presentation of Self in Everyday Life*. New York: The Overlook Press.

Goodson, I, Knobel, M., Lankshear, C. and Mangan, M. (2002). *Cyber Spaces/Social Spaces: Culture Clash in Computerized Classrooms*. New York: Palgrave Macmillan.

Graça, J. (2010). *Between the Winner's Curse and the Blessings of Vintage*, Unpublished Master's Dissertation, Aalborg University. Available at: http://projekter.aau.dk/projekter/files/32242474/Between%20the%20Winners%20Curse%20and%20the%20Blessings%20of%20Vintage.pdf (accessed 06/12/2012).

Graneheim, U. and Lundman, B. (2004). Qualitative content analysis in nursing research: Concepts, procedures and measures to achieve trustworthiness. *Nurse Education Today*, **24**, 105–12.

Griffin, T.D. and Algren, M.S. (1988). *Adult Education in Saudi Arabia*. Available at: http://eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/22/35/3e.pdf (accessed 06/12/2012).

Griffiths, D. (1985). 'The exclusion of women from technology.' *In*: W. Faulkner and E. Arnold (eds.) Smothered by Invention: Technology in Women's Lives. London: Pluto Press.

Grimmelmann, J. (2006). Virtual borders: The interdependence of real and virtual worlds. *First Monday*, February 2006.

Grint, K. and Woolgar, S. (1997). *The Machine at Work: Technology, Work and Organization*. Cambridge, UK: Polity Press.

Grosvenor, I. Lawn, M. and Rousmaniere, K. (2000). Imaging past schooling: The necessity for montage. *The Review of Education/Pedagogy/Cultural Studies*, **22** (1), 71–85.

Guba, E.G. and Lincoln, Y.S. (1981). *Effective Evaluation*. London: Jossey-Bass.

Habermas, J. (1984). *The Theory of Communicative Action Volume 1: Reason and the Rationalization of Society*. Boston: Beacon. Available at: http://www.wehavephotoshop.com/PHILOSOPHY%20NOW/PHILOSOPHY/Habermas/J%FCrgen%20Habermas,%20Theory%20of%20communicative%20action%20I.pdf (accessed 06/12/2012).

Habermas, J. (1987). *The Theory of Communicative Action Volume 2: Lifeworld and System - A Critique of Functionalist Reason*. Cambridge: Polity Press.

Hammersley, M. (1992). *What's Wrong with Ethnography?* London: Routledge.

Hammond, N., Gardner, N., Heath, S., Kibby, M., Mayes, T., McAleese, R., Mullings, C. and Trapp, A. (1992). Blocks to the effective use of information technology in higher education. *Computers Education*, **18**, 155–62.

Hanna, D.E. (1998). Higher education in an era of digital competition: Emerging organizational models. *Journal of Asynchronous Learning Networks*, **2** (1), 62–95.

Hård, M. (1993). Beyond harmony and consensus: A social conflict approach to technology. *Science, Technology & Human Values*, **18** (4), 408–32.

Hassan, A. (28 September 2011). Al-tayeer be'eradah wa aydee al-Saudiyeyen' yoqalaq al-monatamah al-qarbeyah 'Change by "the will and the hands of the Saudis" concerns Western organizations.' *Sabq Newspaper*. Available at: http://www.sabq.org/sabq/user/news.do?section=5&id=30831 (accessed 06/12/2012).

Heilbroner, R.L. (2009). 'Do machines make history?' *In*: D.G. Johnson and J.M. Wetmore (eds.) *Technology and Society: Building our Sociotechnical Future*. London: MIT Press.

Hewitt-Taylor, J. (2002). Inside knowledge: Issues in insider research. *Nursing Standard*, **16** (46), 33–5.

Hoepfl, M.C. (1997). Choosing qualitative research: A primer for technology education researchers. *Journal of Technology Education*, **9** (1), 47–63.

Holliday, A.R. (2005). *Doing and Writing Qualitative Research*. London: Sage.

Holt, D.M. and Segrave, S. (2003). 'Creating and sustaining quality e-learning environments of enduring value for teachers and learners.' *In*: G. Crisp, D. Thiele, I. Scholten, S. Barker and J. Baron (eds.) *Interact, Integrate, Impact: Proceedings 20th ASCILITE Conference*, 226–35. Available at: http://www.ascilite.org.au/conferences/adelaide03/docs/backup/226.pdf (accessed 06/12/2012).

Hope, A. (2007). Risk taking, boundary performance and intentional school internet"misuse". *Discourse* , **28** (1), 87–99.

Hope, A. (2009). CCTV, school surveillance and social control. *British Educational Research Journal*, **35** (6), 891–907.

Hope, K. and Waterman, H. (2003). Praiseworthy pragmatism? Validity and action research. *Journal of Advanced Nursing*, **44** (2), 120–7.

Hopkins (2009). 'The intersection of culture, gender and technology.' *In*: D.G. Johnson and J.M. Wetmore (eds.) *Technology and Society: Building our Sociotechnical Future*. London: MIT Press.

House, E.R. and Howe, K.R. (1999). *Values in Evaluation and Social Research*. London: Sage.

Hughes, T. (2009). 'Technological momentum.' *In*: D.G. Johnson and J.M. Wetmore (eds.) *Technology and Society: Building our Sociotechnical Future*. London: MIT Press.

Hunt, F.J. (1990). *The Social Dynamics of Schooling: Participants, Priorities and Strategies*. London: Falmer.

Hutchby, I. (2001). Technologies, texts and affordances. *Sociology*, **35** (2), 441–56.

Ibrahim, M., Rwegasira, K.S.P. and Taher, A. (2007). Institutional factors affecting students' intentions to withdraw from distance learning programs in the Kingdom of Saudi Arabia: The case of the Arab Open University (AOU). *Online Journal of Distance Learning Administration*, **X** (I). Available at: www.westga.edu/~distance/ojdla/spring101/ibrahim101.htm (accessed 06/12/2012).

Jamjoom, M.I. (2009). Female Islamic studies teachers in Saudi Arabia: A phenomenological study. *Teaching and Teacher Education*, **xxx** (2009), 1–12.

Johns, C. (2000). *Becoming a Reflective Practitioners: A Reflective and Holistic Approach to Clinical Nursing, Practice Development and Clinical Supervision*. London: Blackwell Science Ltd.

Johnson, D.G. and Wetmore, J.M. (2009). *Technology and Society: Building our Sociotechnical Future*. London: MIT Press.

Jonassen, D.H., Howland, J., Moore, J. and Marra, R.M. (2003). *Learning to Solve Problems with Technology: A Constructivist Perspective*. 2nd edition. Upper Saddle River, NJ: Prentice-Hall.

Karl, T.L. (1999). The perils of the petro-state: Reflections on the paradox of plenty. *Journal of International Affairs*, **53**, 31–48.

Kast, F. and Rosenzweig, J. (1979). *Organization and Management: A Systems and Contingency Approach*. 3rd edition. New York: McGraw-Hill.

Kechichian, J.A. (2002). *Al-Kalafah fi Al-Arabiyah Al-Saudiyah* 'Succession is Saudi Arabia.' London: Dar Al Saqi.

Keller, H.E. and Lee, S. (2003). Ethical issues surrounding human participants research using the Internet. *Ethics and Behavior*, **13** (3), 211–9.

Kelly, K. (1995). *Out of Control: The New Biology of Machines, Social Systems, and the Economic World*. London: Addison–Wesley.

Kerr, S.T. (1996). 'Toward a sociology of educational technology.' *In*: D. Jonnassen (ed.) *Handbook of Research on Educational Communications and Technology*. New York: Macmillan. Available at:

http://faculty.washington.edu/stkerr/ethb94.htm (accessed 06/12/2012).

Klee, H.D., Dowson, A., Dunipace, R., Hanbury, R., Lejeunr, A., McDougall, R., Milburn, A., Odgers, C., Rawlinson, J., Stacey, T.C.G. and Wilton-Steer, H. (1983). *The Kingdom of Saudi Arabia*. London: Stacey International.

Knight, P.T. and Trowler, P.R. (2000). Department level cultures and the improvement of learning and teaching. *Studies in Higher Education*, **25** (1), 69–83.

Koch, T. and Harrington, A. (1998). Reconceptualizing rigour: The case for reflexivity. *Journal of Advanced Nursing*, **28** (4), 882–90.

Koetting (1993). 'Education, Curriculum and Social Foundations.' *In*: R. Muffoletto and N. Knupfer (eds.) *Computers in Education: Social, Political, and Historical Perspectives*. Cresskill, NJ: Hampton Press.

Koole, T. (2003). The interactive construction of heterogeneity in the classroom. *Linguistics and Education*, **14** (1), 3–26.

Kopytoff, I. (1992). 'The cultural biography of things: Commoditization as process.' *In*: A. Appadurai (ed.) *The Social Life of Things: Commodities in Cultural Perspective*. Cambridge: Cambridge University Press.

Lacey, R. (2009). *Inside the Kingdom: Kings, Clerics, Modernists, Terrorists and the Struggle for Saudi Arabia*. London: Hutchinson.

Lally, E. (2002). *At Home with Computers*. Oxford: Berg.

Latour, B. (2005). *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford: Oxford University Press.

Lessig, L. (1999). *Code and Other Laws of Cyberspace*. New York: Basic Books.

Levinson, D. and Sadovnik, A.(2002). 'Education and society: An introduction.' *In*: D. Levinson, P. Cookson and A. Sadovnik (eds.) *Education and Sociology*. London: Taylor and Francis.

Lewis, T., Marginson, S.W. and Snyder, I.A. (2005). The network university? Technology, culture and organisational complexity in contemporary higher education. *Higher Education Quarterly*, **59** (1), 56–75.

Liker, J.K., Haddad, C.J. and Karlin, J. (1999). Perspectives on technology and work organization. *Annual Review of Sociology*, **25** (1), 575–96.

Lin, H. (2000). Fluency with information technology. *Govt. Information Quarterly*, **17** (1), 69–76.

Lincoln, Y.S. and Guba, E.G. (1985). *Naturalistic Inquiry*. London: Sage.

Lincoln, Y.S. and Guba, E.G. (1986). 'But is it rigorous? Trustworthiness and authenticity in naturalistic investigation.' *In*: D. Williams (ed.) *Naturalistic Evaluation*. San Francisco: Jossey-Bass. Available at: http://www3.interscience.wiley.com/cgi-bin/fulltext/114274436/PDFSTART (accessed 06/12/2012).

Lorde, A. (1980). Age, race, class and sex: Women redefining difference. Paper delivered at the *Copeland Colloquium*, Amerst College, April 1980. Available at: http://goose.ycp.edu/~dweiss/phl380_feminist_thought/lorde%20audre%20age%20race%2

0sex%20class.pdf (accessed 06/12/2012).

Low, S. and Lawrence-Zúñiga, D. (2002). *The Anthropology of Space and Place: Locating Culture*. Oxford: Blackwell.

Luckin, R. (2008). The learner centric ecology of resources: A framework for using technology to scaffold learning. *Computers & Education*, **50** (2), 449–62.

Luft, G. (2009). 'Dependence on Middle East energy and its impact on global security.' *In*: S. Stephen and B. Besnik (eds.) *Energy and Environmental Challenges to Security*. London: Springer Netherlands. Available at: http://www.springerlink.com/content/m242504150513581/ (accessed 06/12/2012).

Lyon, D. (1996). 'The roots of the information society idea.' *In*: N. Heap, R. Thomas, G. Einon, R. Mason and H. Mackay (eds.) *Information Technology and Society: A Reader*. London: Sage.

Mabry, L. (2009). 'Case study in social research.' *In*: P. Alasuutari, L. Bickman and J. Brannen (eds.) *Handbook of Social Research Methods*. London: Sage.

Mackay, H. (1996). 'Theorising the IT/society relationship.' *In*: N. Heap, R. Thomas, G. Einon, R. Mason and H. Mackay (eds.) *Information Technology and Society: A Reader*. London: Sage.

Mackay, H. and Gillespie, G. (1992). Extending the social shaping of technology approach: Ideology and appropriation. *Social Studies of Science*, **22** (1992), 685–715.

MacKenzie, D. and Wajcman, J. (1999). 'Introductory essay: The social shaping of technology.' *In*: D. MacKenzie and J. Wajcman (eds.) *The Social Shaping of Technology*, 2nd edition. Buckingham: Open University Press.

Madar Al Watan (2008). *Al-Akhatalad: Daa am Dawa* 'Gender-Mixing: Disease or Medication.' Riyadh: Madar Al Watan.

Makatham, F. (23 March 2007). Al-muntadayat al-tolabayah al-elaqeteroneyah... Mareaat al-tolab al-haqeeqayah fi al-jamaaat al-Saudiyah 'Student electronic forums... Students' real mirror in the Saudi universities.' *Asharq Al-Awsat Newspaper*. Available at: http://www.aawsat.com/details.asp?section=43&issueno=10403&article=420342&feature= (accessed 06/12/2012).

Mann, C. and Stewart, F. (2003). 'Internet interviewing.' *In*: J. Gubrium and J. Holstein (eds.) *Handbook of Interview Research: Context and Method*. London: Sage.

Marx, K. (1964). 'Economic and philosophical manuscripts.' *In*: T.B. Bottomore (trans. and ed.) *Karl Marx: Early Writings*. New York: McGraw-Hill. Available at: http://spartan.ac.brocku.ca/~tmulligan/READING_Estranged_Labor.pdf (accessed 06/12/2012).

Mason, R. (1996). 'IT and learning.' *In*: N. Heap, R. Thomas, G. Einon, R. Mason and H. Mackay (eds.) *Information Technology and Society: A Reader*. London: Sage.

Masschelein, J. and Quaghebeur, K. (2005). Participation for better or worse? *Journal of Philosophy of Education*, **39** (1), 51–66.

MAWAS (26 April 2011). Wazeer al-taleem al-aali yaftateh montada al-sharaqah al-mojetamaayah ah-thani al-lathi yoqam tahet reaayat al-nayeb al-thani 'Minister of Higher Education opens the Second Forum of Community Partnership, held under the auspices of the Second Deputy'. *Saudi Press Agency*. Available at: http://www.spa.gov.sa/readsinglenews.php?id=887226 (accessed

06/12/2012).

Maxwell, J.A. (1996). *Qualitative Research Design: An Interactive Approach*. London: Sage.

McFarland, D.A. (2004). Resistance as a social drama: A study of change-oriented encounters. *American Journal of Sociology*, **109** (6), 1249–318.

McHale, T.R. (1980). A prospect of Saudi Arabia. *International Affairs*, **56** (4), 622–47.

McIsaac (1993). 'Global computer-based distance education.' *In*: R. Muffoletto and N. Knupfer (eds.) *Computers in Education: Social, Political and Historical Perspectives*. Cresskill, NJ: Hampton Press.

McPherson, M. and Whitworth, A. (2008). Editorial introduction: BJET special issue on best practice or situated action: The organization of technology enhanced learning. *British Journal of Educational Technology*, **39** (3), 411–21.

Mehana, E.T. (2009). *Perception of Saudi Female Higher Education Students Using Web-based Videoconferencing: A Case Study*, Unpublished MA Dissertation, The University of Manchester.

Mezirow, J. (1990). 'Conclusion: Toward transformative learning and emancipator education.' *In*: J. Mezirow and Associates (eds.) *Fostering Critical Reflection in Adulthood: A Guide to Transformative and Emancipatory Learning*. San Francisco: Jossey-Bass.

Mintzberg, H. (1989). *Mintzberg on Management: Inside our Strange World of Organizations*. London: Free Press.

Misa, T.J. (1992). 'Controversy and closure in technological change: Constructing "steel."' *In*: W.E. Bijker and J. Law (eds.). *Shaping Technology/Building Society: Studies in Sociotechnical Change*. Cambridge, MA: MIT Press.

Monahan, T. (2004). Just another tool? IT pedagogy and the commodification of education. *The Urban Review*, **36** (4), 271-92.

Moon, J.A. (2000). *Reflection in Learning and Professional Development: Theory and Practice*. London: Kogan Page.

Morgan, G. (1999). Images of Organization. 2nd edition. London: Sage.

Muffoletto, R. (1993). 'The expert teaching machine.' *In*: R. Muffoletto and N. Knupfer (eds.) *Computers in Education: Social, Political, and Historical Perspectives*. Cresskill, NJ: Hampton Press.

Muffoletto, R. and Knupfer, N. (1993). *Computers in Education: Social, Political, and Historical Perspectives*. Cresskill, NJ: Hampton Press.

Nakshabandi, A.A. (1993). A comparative evaluation of a distant education course for female students at King Saud University. *International Journal of Instructional Media*, **20**, 127–36. Available at: http://ipac.kacst.edu.sa/eDoc/eBook/26.pdf (accessed 06/12/2012).

Nakshabandi, A.A. and Alageeli, M. (1997). A preliminary investigation of the effectiveness of two alternative forms of distance education for female students in Saudi Arabia. *Majalat Kuliyat Al-tarbyah*, **12** (14), 1–30. Available at: http://www.fedu.uaeu.ac.ae/Journal/PDF14/10.pdf (accessed 06/12/2012).

Nelson, C. (1974). Public and private politics: Women in the Middle Eastern World. *American Ethnologist*, **1** (3), 551–63.

Newson, J. (1999). Techno-pedagogy and disappearing context. *Academe-Bulletin of AAUP*, **85**, 52–5.

Nicholls, G. (2001). *Professional Development in Higher Education: New Dimensions and Directions*. London: Kogan Page Limited.

Noble, D.F. (1998). Digital diploma mills, Part 1: The automation of higher education. *October*, **86**, 107–17.

Nye, D.E. (2007). *Technology Matters: Questions to Live with*. Cambridge, MA: MIT Press.

Omar, F.F. (2002). *Istkhdam Shabakat Al Internet Fi Idarat Mo'asasat Al Ta'leem Al Aali Fi Al Mammlakah Al Arabyah Al So'oodyah* 'The Use of the Internet in the Management of Higher Education Institutions in Kingdom of Saudi Arabia.' Riyadh: Obekan.

Orlikowski, W.J. (1992). The Duality of technology: Rethinking the concept of technology in organizations. *Organization Science*, **3** (3), 398–427.

Orlikowski, W.J. (2000). Using technology and constituting structures: A practice lens for studying technology in organizations. *Organization Science*, **11** (4), 404–28.

Oudshoorn, N., Rommes, E. and Stienstra, M. (2004). Configuring the user as everybody: Gender and cultures of design in information and communication technologies. *Science, Technology and Human Values*, **29** (1), 30–64.

Patton, M.Q. (2002). *Qualitative Research and Evaluation Methods*. 3rd edition. London: Sage.

Pellow, D. (2002). 'The architecture of female seclusion in West Africa.' *In*: S. Low and D. Lawrence (eds.) *The Anthropology of Space and Place: Locating Culture*. London: Blackwell.

Peña, E.D. (2007). Lost in translation: Methodological considerations in cross-cultural research. *Child Development*, **78**, 1255–64.

Pfaffenberger, B. (1992). Technological dramas. *Science, Technology and Human*, **17** (3), 282–312.

Pharaon, N.A. (2004). Saudi women and the Muslim state in the twenty-first century. *Sex Roles*, **51** (5/6), 349–66.

Pinch, T. and Bijker, W. (1984). The social construction of facts and artefacts: Or how the sociology of science and the sociology of technology might benefit each other. *Social Studies of Science*, **14**, 399–441.

Pollock, N. (2005). When is a work-around? Conflict and negotiation in computer systems development. *Science, Technology and Human Values*, **30** (4), 496–514.

Pollock, N. (2009). When is a work-Around? Conflict and negotiation in computer systems development. *In*: D.G. Johnson and J.M. Wetmore (eds.) *Technology and Society: Building our Sociotechnical Future*. London : MIT Press.

Popkewitz T.S. and Shutkin D.S. (1993). 'The production of educational technology in the U.S.' *In*: R. Muffoletto and N. Knupfer (eds.) *Computers in Education: Social, Political, and Historical Perspectives*. Cresskill, NJ: Hampton Press.

Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, **9** (5), 1–6.

Prokop, M. (2003). Saudi Arabia: The politics of education. *International Affairs*, **79** (1) 77–89.

Raiffa, H., Richardson, J. and Metcalfe, D. (2002). *Negotiation Analysis: The Science and Art of Collaborative Decision Making*. Cambridge, Massachusetts: The Belknap Press.

Rappert, B. (2003). Technologies, texts and possibilities: A reply to Hutchby. *Sociology*, **37** (3), 565–80.

Reffell, P. and Whitworth, D. (2002). Information fluency: Critically examining IT education. *New Library World*, **103** (1182-3), 427–35.

Rezabek (1993). 'Computers and copyright concerns.' *In*: R. Muffoletto and N. Knupfer (eds.) *Computers in Education: Social, Political and Historical Perspectives*. Cresskill, NJ: Hampton Press.

Riseborough, G. (1993). Primary headship, state policy and the challenge of the 1990s: An exceptional story that disproves total hegemonic rule. *Journal of Education Policy*, **8** (2), 155–17.

Ritzer, G. (2009). 'Control: Human and nonhuman robots.' *In*: D.G. Johnson and J.M. Wetmore (eds.) *Technology and Society: Building our Sociotechnical Future*. London: MIT Press. Available at: http://www.lavoisier.fr/livre/notice.asp?id=O3XW3XAOOL2OWA (accessed 06/12/2012).

Robins, K. and Webster, F. (1988). 'Cybernetic capitalism: Information, technology, everyday life.' *In*: V. Mosco and J. Wasko (eds.) *The Political Economy of Information*. Madison: University of Wisconsin Press.

Robins, K. and Webster, F. (2002) (eds.) *The Virtual University? Knowledge, Markets and Management*. Oxford: Oxford University Press.

Rodman, M. (2002). 'The anthropology of space and place: Locating culture.' *In*: S. Low and D. Lawrence (eds.) *The Anthropology of Space and Place: Locating Culture*. London: Blackwell.

Rogers E. and Shoemaker F. (1971). *Communication of Innovations*. Free Press: New York.

Rogers, E.M. (2001). The digital divide. *Convergence*, **7** (4), 96–111.

Rosa, H. (2003). Social acceleration: Ethical and political consequences of a desynchronized high-speed society. *Constellations*, **10** (1), 3–33.

Russell S. and Williams R. (2002). 'Concepts, spaces and tools for action?' *In*: K. Sørensen and R. Williams (eds.) *Shaping Technology, Guiding Policy*. Cheltenham: Edward Elgar.

Samin, N. (2008). Dynamics of Internet use: Saudi youth, religious minorities and tribal communities. *Middle East Journal of Culture and Communication*, **1** (2), 197–215.

Sandelowski, M. (1986). The problem of rigor in qualitative research. *Advances in Nursing Science*, **8** (3), 27–37.

Sandelowski, M. (2000). Focus on research methods: Whatever happened to qualitative description? *Research in Nursing and Health*, **23**, 334–40.

Sanders, C. E. (2000). The relationship of Internet use to depression and social isolation among adolescents, *Adolescence*, **35** (138), 237.

Schofield, J.W. (1995). *Computers and Classroom Culture*. Cambridge: Cambridge University Press.

Schön, D.A. (1971). *Beyond the Stable State: Public and Private Learning in a Changing Society*. London: Temple Smith.

Schütz, A. (1944). The stranger: An essay in social psychology. *American Journal of Sociology*, **49** (1944), 499–507. Available at: http://www.jstor.org/stable/2771547 (accessed 06/12/2012).

Schwandt, T.A. (2007). *Judging Interpretations*. Available at: http://www3.interscience.wiley.com/cgi-bin/fulltext/114274436/PDFSTART (accessed 06/12/2012).

Seale, C. (1999). Quality in qualitative research. *Qualitative Inquiry*, **5** (4), 465–78.

Selwyn, N. (14 June 2012). Ten suggestions for improving academic research in education and technology. Keynote Speech at *Losing Momentum Conference*, University of Oxford.

Selwyn, N. (2007). The use of computer technology in university teaching and learning: A critical perspective. *Journal of Computer Assisted Learning*, **23** (2), 83–94.

Selwyn, N. (2010). Looking beyond learning: Notes towards the critical study of educational technology. *Journal of Computer Assisted Learning*, **26** (1), 65–73.

Selwyn, N. (2011a). *Schools and Schooling in the Digital Age: A Critical Analysis*. London: Routledge.

Selwyn, N. (2011b). *Education and Technology: Key Issues and Debates*. London: Continuum.

Setrakian, L. (10 March 2008). Saudi woman drives on YouTube. *ABC News*. Available at: http://i.abcnews.com/International/Story?id=4420162&page=1 (accessed 06/12/2012).

Sheikh Amin, B. (1972). *Al-Harakhah Al-Adabeyah fi Al-Mamlaqah Al-Arabeyah Al-Saudiyah* 'The Literary Movement in the Kingdom of Saudi Arabia.' Beirut: Dar Sateer.

Shokri, A. (1979). *Baat Malamah al-Takayar al-Ejtimaay al-thaqafi fi al-Watan al-Arabi: Dirasat Maydaniyah Lithakafat baad al-Mujtamaat al-Mahaleyah fi al-Mamlakah Al-Arabyah al-Suodyah* 'Some Features of the Social and Cultural Change in the Arab World: Field Studies for the Culture of some Local Communities in Saudi Arabia.' Egypt: Dar Al-Jeel Leltebaah.

Siemens, G. (2004). Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology and Distance Learning*. Available at: http://www.itdl.org/Journal/Jan_05/article01.htm (accessed 06/12/2012).

Siemens, G. (2006). *Knowing Knowledge*. Lulu.com

Sims, R.R. and Sims, S.J. (1995). 'Learning enhancement in higher education.' *In*: R.R. Sims and S.J. Sims (eds.) *The Importance of Learning Styles: Understanding the Implications for Learning, Course Design, and Education*. London: Greenwood Press.

Sismondo, S. (2010). *An Introduction to Science and Technology Studies*. 2nd edition. Chichester: Wiley-Blackwell.

Smith, J.A., Harré, R. and Van Langenhove, L. (1995). 'Idiography and the case study.' *In*: J. Smith, R. Harré and L. Van Langenhove (eds.) *Rethinking Psychology*. London: Sage.

Smith, M.R. (1994). 'Technological determinism in American culture.' *In*: M.R. Smith and L. Marx (eds.) *Does Technology Drive History? The Dilemma of Technological Determinism*. Cambridge: The MIT Press.

Sørensen, K.H. (2002). 'Social shaping on the move?' *In*: K.H. Sorensen and R. Williams (eds.) *Shaping Technology, Guiding Policy: Concepts, Spaces and Tools*. Cheltenham: Edward Elgar.

Speer, A. (1970). *Inside the Third Reich.* New York: Macmillan.

Stake, R.E. (1978). The case study method in social inquiry. *Educational Researcher*, **7** (2), 5–8.

Stake, R.E. (1994). 'Case studies.' *In*: N.K. Denzin and Y.S. Lincoln (eds.) *Handbook of Qualitative Research.* London: Stage.

Star, S.L. (1999). The ethnography of infrastructure. *The American Behavioural Scientist*, **43** (3), 377–91.

Staudenmaier, J.M. (1985). *Technology's Storytellers: Reweaving the Human Fabric.* Cambridge: The Society for the History of Technology and The MIT Press.

Stenbacka, C. (2001). Qualitative research requires quality concepts of its own. *Management Decision*, **39** (7), 551–5.

Sterling, B. (1996). 'The hacker crackdown: Evolution of the US telephone network.' *In*: N. Heap, R. Thomas, G. Einon, R. Mason and H. Mackay (eds.) *Information Technology and Society: A Reader.* London: Sage.

Steuer, J. (1992). Defining virtual reality: Dimensions determining telepresence. *Journal of Communication*, **42** (4), 73–93.

Tamboukou, M. (2008). Machinic assemblages: Women, art education and space. *Discourse*, **29** (3), 359–75.

Teitelbaum, J. (2002). Dueling for da'wa: State vs society on the Saudi Internet. *Middle East Journal*, **56**, 223–39.

Thomas, R. (1996a). 'Differing perspectives.' *In*: N. Heap, R. Thomas, G. Einon, R. Mason and H. Mackay (eds.) *Information Technology and Society: A Reader.* London: Sage.

Thomas, R. (1996b). 'Access and inequality.' *In*: N. Heap, R. Thomas, G. Einon, R. Mason and H. Mackay (eds.) *Information Technology and Society: A Reader.* London: Sage.

Toffler, A. (1970). *Future Shock.* New York: Random.

Tripathi, A.K. (2008). Dimension of philosophy of technologies critical theory and democratization of technology. *ACM Ubiquity*, **9** (22), 1–10.

Tyack, D. and Tobin, W. (1994). The 'grammar' of schooling: Why has it been so hard to change? *American Educational Research Journal*, **31** (3), 453–79.

Verma, S. (7 February 2008). Religious police in Saudi Arabia arrest mother for sitting with a man. *The Times.* Available at: http://www.timeshighereducation.co.uk/story.asp?storycode=408895 (accessed 06/12/2012).

Volti, R. (1992). *Society and Technological Change.* New York: St Martins Press.

Vyas, D., Chisalita, C.M. and van der Vee, G.C. (2006). Affordance in interaction. Proceedings of the *13th European Conference on Cognitive Ergonomics: Trust and Control in Complex Socio- Technical Systems.* New York: ACM Press, 92–9.

Wagner, E. (2007). *Delivering on the Promise of eLearning.* Adobe eLearning Solutions, retrieved on July, 7.

Wajcman, J. (2004). *TechnoFeminism*. Cambridge: Polity.

Wajcman, J. (2008). Life in the fast lane? Towards a sociology of technology and time. *The British Journal of Sociology*, **59** (1), 59–77.

Wajcman, J. (2010). Feminist theories of technology. *Cambridge Journal of Economics*, **34** (1), 143–52.

Warschauer, M. (1999). *Electronic Literacies: Language, Culture and Power in Online Education*. Mahwah, NJ: Lawrence Erlbaum Associates.

Waskul, D. and Douglass, M. (1996). Considering the electronic participant: Some polemical observations on the ethics of on-line research. *The Information Society*, **12** (2), 129–39.

Webb, P.T. (2008). Re-mapping power in educational micropolitics. *Critical Studies in Education*, **49** (2), 127–42.

Weber, M. and Eisenstadt, S.N. (1968). *On Charisma and Institution Building*. Chicago: The University of Chicago Press.

Webster, F. (2005). Making sense of the information age. *Information, Communication and Society*, **8** (4), 439–58.

Weisman, L. (1992). *Discrimination by Design: A Feminist Critique of the Man-Made Environment*. Urbana: University of Illinois Press.

Wenger, E. (1998). *Communities of Practice: Learning, Meaning and Identity*. Cambridge: Cambridge University Press

Wessels, B. (2009). *Understanding the Internet: A Socio-Cultural Perspective*. Basingstoke: Palgrave.

Whitworth, A. (2009a). *Information Obesity*. Oxford: Chandos Publishing.

Whitworth, A. (2009b). Whose context is it anyway? Workplace e-learning as a synthesis of designer- and learner-generated contexts. *Impact: Journal of Applied Research in Workplace E-learning*, **1** (1), 27–42.

Whitworth, A. (8–10 September 2010). The three domains of value: Why information literacy practitioners must take a holistic approach. Keynote Speech at the *Creating Knowledge VI Conference*, Bergen, Norway.

Williams, P. (1991). *The Alchemy of Race and Rights*. Cambridge, MA: President and Fellows ofHarvard College.

Williams, R. and Edge, D. (1996a). The social shaping of technology. *Research Policy*, **25**, 865–99.

Williams, R. and Edge, D. (1996b). 'The social shaping of technology.' *In*: W.H. Dutton (ed.) *Information and Communication Technologies: Visions and Realities*. Oxford: Oxford University Press.

Willig, C. (2001). *Introducing Qualitative Research in Psychology: Adventures in Theory and Method*. Buckingham: Open University Press.

Winner, L. (1977). *Autonomous Technology: Technics-out-of-control as a Theme in Political Thought*. Cambridge, MA.: MIT Press.

Winner, L. (1986). Do artefacts have politics? *Daedalus*, **109** (1), 121–35.

Winner, L. (1993). Social constructivism: Opening the black box and finding it empty. *Science as Culture*, **3** (16), 427–452.

Woods, P. (1983). *Sociology and the School: An Interactionist Viewpoint*. London: Routledge.

Woolgar, S. (2002) (eds.) *Virtual Society? Technology, Cyberbole, Reality*. Oxford: Oxford University Press.

Woolgar, S. and Cooper, G. (1999). Do artefacts have ambivalence? Moses' bridges, Winner's bridges and other urban legends in S&TS. *Social Studies of Science*, **29** (3), 433–49.

Wright, L. (5 January 2004). The Kingdom of Silence. *New Yorker Magazine*. Available at: http://www.lawrencewright.com/art-saudi.html (accessed 06/12/2012).

Wyatt, S., Thomas, G. and Terranova, T. (2002). 'They came, they surfed, they went back to the beach: Conceptualizing use and non-use of the internet.' *In*: S. Woolgar (eds.) *Virtual Society? Technology, Cyberbole, Reality*. Oxford: Oxford University Press.

Yamani, M. (2010). *Hawiyat Mutaqayarah: Tahadi Al-Jeel Al-Jadeed fi Al-Saudyah* 'Changed Identities: The Challenge of the New Generation in Saudi Arabia.' 2nd edition. Lebanon: Riyad El Rayyes.

Yeaman, A.R.J. (1993). 'The mythical anxieties of computerization: A Barthesian analysis of a technological myth.' *In*: R. Muffoletto and N. Knupfer (eds.) *Computers in Education: Social, Political, and Historical Perspectives*. Cresskill, NJ: Hampton Press.

Yin, R. (2009). *Case Study Research: Design and Methods*. 4th edition. London: Sage.

Youdell, D. (2010). *School Trouble: Identity, Power and Politics in Education*. London: Routledge.

Zhao, S., Grasmuck, S. and Martin, J. (2008). Identity construction on Facebook: Digital empowerment in anchored relationships. *Computers in Human Behaviour*, **24**, 1816–36.

Zhao, Y. and Frank, K.A. (2003). Factors affecting technology uses in schools: An ecological perspective. *American Educational Research Association*, **40** (4) 807–40. Available at: http://www.jstor.org/stable/3699409 (accessed 06/12/2012).

Zhao, Y., Lei, J. and Conway, P.F. (2006). Global perspective on political definitions of e-learning: Commonalities and differences in national educational technology strategy discourses. *The international handbook OF virtual learning environments*. 673–97.

Index of Entries

grounded theory, 12, 14, 81, 84, 94, 103, 286

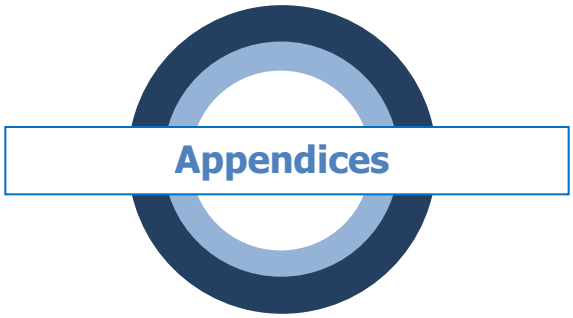
influence of social relations on technologies, 40, 121, 130, 202

influence of technologies on social relations, 48, 202

pilot study, 71, 74, 76, 95, 97

research question, 12, 13, 22, 40, 65

research sub-question, 41, 48, 49, 65, 83, 121, 200, 202, 282


Appendices

Appendix 1: Illustrating the Sequence of the Entire Analytical Process

A copy of this appendix can be found here: http://sdrv.ms/11M0DOE.

If, however, the link is not valid, then feel free to contact me: allili55@hotmail.com

Appendix 2: Information on the Participants [Example]

Personal Information on the Off-Campus Female Undergraduate Participants

N	Pseudonym	Marital Status	Income	Age	Residence	Region	Travel Abroad	Study Abroad
1	Raqad	Single	Average	18-22	Dammam	City	No	No
2	Al-Hanoof	Single	Average	23-27	Dammam	City	No	No
3	Ahlam	Married	Average	18-22	*	City	Arab and non-Arab Countries	No
4	Wafa	Single	Average	23-27	Madina	City	Arab and non-Arab Countries	No
5	Rawan	Single	Average	18-22	Ahsa	City	Arab Countries	No
6	Rowa	Single	High	23-27	Ahsa	City	Arab Countries	No
7	Matawi	Married	*	*	*	*	*	*
8	Asma	Single	Average	18-22	Hafar Batin	City	Arab Countries	Arab Countries
9	Shomokh	Single	Average	18-22	Riyadh	City	No	No
10	Nadia	Single	Average	23-27	*	City	Arab Countries	No
11	Bodoor	Single	Average	18-22	Madina	City	Arab Countries	No
12	Sana	Single	High	18-22	Khobar	City	Arab and non-Arab Countries	No
13	Amani	*	*	*	*	*	*	*
14	Tahani	Married	Low	18-22	Ahsa	Village	Arab Countries	No
15	Asalah	Single	Average	18-22	Qatif	City	Arab Countries	No
16	Joori	Single	High	18-22	Dammam	City	Arab Countries	No
17	Nada	Single	High	18-22	Al-Bahah	Centre	No	No
18	Abtihal	Married	*	*	Dammam	City	*	*
19	Widad	Single	Average	18-22	Khobar	City	Arab Countries	No
20	Talebah	Married	Average	28-32	Dammam	City	Arab Countries	No
21	Bent-Muh	Single	Average	23-27	Ahsa	Village	Arab Countries	No
22	Aumlatin	Married	Average	18027	Dammam	City	Arab Countries	No
23	Shams	Single	Average	18-22	Dammam	City	Arab Countries	No
24	Alaa	Married	Average	23-27	Dammam	Village	Arab Countries	No
25	Meeto	Single	Average	18-22	Khobar	City	Arab and non-Arab Countries	No
26	Noor	Single	Average	23-27	Hafar Batin	City	No	No
27	Reemi	Single	Average	23-27	Dammam	City	Arab Countries	No
28	Hajer	Single	Average	18-22	Dammam	City	Arab Countries	No
29	Sozy	Married	Average	28-32	Dammam	City	Arab and non-Arab Countries	No
30	Abeer	Single	Average	23-27	Dammam	City	No	No
31	Hanadi	Single	Average	18-22	Dammam	City	Arab Countries	No
32	Ala	Married	Average	30	Yanbu	City	Arab and non-Arab Countries	No
33	Sarah	Single	Average	18-22	Dammam	City	No	No
34	Talebah	Single	Average	23-27	Tabuk	City	Arab Countries	No
35	Haya	Married	Average	23-27	Khobar	City	Arab Countries	*
36	Rana	Single	Average	23	Dhahran	City	Arab and non-Arab Countries	No
37	Hayfa	Married	High	33-37	Jubail	City	Arab and non-Arab Countries	No

*** Data are not provided by the participant**

Appendix 3: Interview Questions [Example]

Latest Version of the Interview Questions asked to Face-to-Face Female Undergraduates

N	Estimated Time	Main Questions
1	2.5 ms	What do you think about CCTV-network-based classes?
2	2.5 ms	What do you think about glass-wall classes?
3	2.5 ms	Do you prefer CCTV-network-based classes to be female-only or shared with male students? Why?
4	2.5 ms	Do you prefer to be taught by women face to face or by men through technological means? If the latter, do you prefer to be taught through the CCTV network or the glass wall?
5	2.5 ms	What do you think about the forums? Do you prefer these forums to be female-only or shared with male students?
6	2.5 ms	What do you think about female and male students communicating by phone for academic purposes? What does your family think about this communication?
7	2.5 ms	What do you think about female and male students communicating by email for academic purposes? What does your family think about this communication?
8	2.5 ms	What do you think about the idea of teachers assigning a female student to work with a male student on a joint project using such communications technologies such as phone and email? What does your family think about this communication?
9	2.5 ms	What do you think about female students communicating with male teachers by phone for academic purposes? What does your family think about this communication?
10	2.5 ms	What do you think about female students communicating with male teachers by email for academic purposes? What does your family think about this communication?

Appendix 4: Ethical Approval

SOCIAL SCIENCES & HUMANITIES
INTER-DIVISIONAL RESEARCH ETHICS COMMITTEE

Hayes House, 75 George Street, Oxford. OX1 2BQ
Tel: +44(0)1865 614871 Fax: +44(0)1865 614855
ethics@socsci.ox.ac.uk www.socsci.ox.ac.uk

Co-ordinator of the IDREC
Social Sciences Divisional Office

UNIVERSITY OF OXFORD

Ref. SSD/2/3/IDREC

March 5, 2010

Abdulrahman E.A. Al-Lily
Department of Education
15 Norham Gardens

Dear Abdulrahman Al-Lily,

Application for research ethics approval

Ref No.: SSD/CUREC1/10 – 307

Title: Technology-Facilitated Communication and Saudi Female Experience within Academia

The above application has been considered on behalf of the Social Sciences and Humanities Inter-divisional Research Ethics Committee (IDREC) in accordance with the procedures laid down by the University for ethical approval of all research involving human participants.

I am pleased to inform you that, on the basis of the information provided to the IDREC, the proposed research has been judged as meeting appropriate ethical standards, and accordingly approval has been granted.

Should there be any subsequent changes to the project, which raise ethical issues not covered in the original application, you should submit details to the IDREC for consideration.

Yours sincerely,

Chris. Ballinger

Dr Chris. Ballinger

cc: Dr. Chris Davies, Department of Education
Lisa Currie, Department of Education

HBP / CAJB

Form: CUREC/1

University of Oxford

CENTRAL UNIVERSITY RESEARCH ETHICS COMMITTEE (CUREC)

IDREC Checklist

***Principal investigator/supervisor/student researcher:**	ABDULRAHMAN ESSA A AL LILY
FOR STUDENT RESEARCH PROJECTS ONLY **Name of Supervisor:**	Dr Chris Davies
Department or institute:	Department of Education
Address for correspondence:	Wolfson College, Linton Road, Oxford OX2 6UD
E-mail and telephone contact:	07946674377 allili55@hotmail.com abdulrahman.al-lily@education.ox.ac.uk

FAQ 12

Before completing this checklist, please ensure you have consulted the following CUREC guidance documents available on the CUREC website at http://www.admin.ox.ac.uk/curec/resrchapp/index.shtml:

- Guidance on approval process
- Glossary
- FAQs

This checklist is the first stage of the University of Oxford's scrutiny procedure for *research involving *human participants. (Definitions of terms marked with an asterisk are to be found in CUREC's glossary and guidance).

The University aims to ensure that all research is subject to appropriate ethical scrutiny. This form is designed to identify those projects which fall outside CUREC's remit; those which fall within CUREC's remit but which pose low risks to participants and so need scrutiny only through this checklist; and those which fall within CUREC's remit and which pose greater risk to participants and so need more scrutiny. If you need further advice or if you have comments about this form, please consult the relevant IDREC officer (please see: http://www.admin.ox.ac.uk/curec/oxonly/contact.shtml).

FAQ 26

The checklist should be completed by the *principal investigator/supervisor/student researcher (under the guidance of his/her supervisor) undertaking or supervising research which comes under CUREC's responsibility. Please carry out a risk assessment of the project, in consultation with all researchers involved, using the checklist and CUREC's other documentation.

This form does not cover research governance, satisfactory methodology, or the health and safety of employees and students. As principal investigator, it is your responsibility to ensure that requirements in these areas are met.

Office use only:

IDREC Ref. No. _____

Date of confirmation that checklist accepted on behalf of IDREC: // //

1

Form: CUREC/1

Section A

Title and brief lay description of *research (about 150 words), plus description (about 200 words) of the nature of participants (including the criteria for inclusion/exclusion, method of recruitment, attaching samples of participant information and consent forms), purpose of the research, methods to be used, and use to which the results/data will be put.

TITLE: Communications Technologies and the Social-Cultural Pattern of Saudi Female Educational Experience

What is the research about?

This three-year DPhil research is based on a naturalistic case study of a Saudi state university. It looks at the changes in the social-cultural pattern of Saudi female educational experience caused by the integration of communications technologies into the Saudi public higher education sector. By way of illustration, the exploratory study conducted last summer revealed three fundamental changes. First, although the genders were separated in face-to-face classes, they were integrated in technology-based ones (e.g. Videoconferencing-based and CCTV-based ones). Secondly, although women were to be taught by women in face-to-face classes, they were taught by men in technology-based ones. The third change was that, whereas in the real world female students were not allowed to communicate with male students (for neither academic nor social purposes), in the virtual world the genders were permitted to communicate across gender lines in publically-available university forums. The forthcoming main study seeks to investigate such changes by asking the following questions: 1) What are the aspects of these changes? 2) To whom do these changes matter? 3) What are the different perspectives on these changes? 4) How are these changes experienced in practice? 5) What control mechanisms have the authorities implemented in order to ensure that these changes remain consistent with the national culture? 6) To what extent is technology itself a key factor in these changes?

How will the data be collected?

The data will be collected through 60-minute, semi-structured (individual and group) interviews with female students, in addition to other stakeholders if possible (e.g. male students, academics, administrators and female students' families). All participants will be selected using either a convenience or a snowball sample. Because of the Saudi norm of gender separation, I will not be able to interview women face-to-face. Hence, I will employ the following methods:

1. Employing female assistants to carry out the interviews, which seems a novel idea in the Saudi literature.
2. Using the CCTV system or the Videoconferencing system. This entails me sitting in a room, interviewing the woman sitting in another room through a television/computer monitor. This process consists of one-way video (from interviewer to interviewee) and two-way audio (from interviewer to interviewee and vice versa). This seems an original idea for the conducting of research across gender lines in Saudi Arabia. I tried this idea in the exploratory study and it worked very well.
3. Using email. I will print out the interview questions and give them to teachers to pass to their students. I will then ask the teachers to ask those willing to take part in my project to email me the answers.
4. Using the private messaging feature of the University forums. In the University forums, private messaging across gender lines is not allowed unless permission is obtained from the Director of the Forum. Thus, I will first seek this permission.

All interviews will be either in a written or oral form. All the oral interviews will be recorded. A recording device will not be used when an interviewee refuses permission or appears

2

uncomfortable in its presence (Yin, 2009). Instead, the data from the unrecorded interviews will be compiled only through the taking of notes. A letter of thanks will be sent to all participants. Regarding interview questions, online female students studying via distance learning will, for example, be asked questions such as the following:

1. As a woman, do you prefer online classes or face-to-face classes? Why?
2. What, if anything, do you like about your online classes?
3. What, if anything, do you dislike about your online classes?
4. Do you like online classes to be mixed-gender, or female-only? Why?
5. In online classes, do you prefer to be taught by men or women? Why?
6. What are the main things that constrain or discourage you from participating (e.g. asking questions or discussing an idea) in your online classes?
7. What, if anything, do you like about the forums?
8. What, if anything, do you dislike about the forums?
9. What do you think about the mixing of the genders in theses forums?
10. Why do you think that participation in these forums is dominated by female students, rather than male students?

In addition to analysis of documents, I will observe some classes (e.g. Videoconferencing- and CCTV-based ones). Owing to the Saudi norm of gender segregation, women have their own campuses and are supposed to be taught only by women. Because of the increasing number of female students and the shortage of female academics, however, a system making extensive use of CCTV was founded to allow male academics to teach female students without violating the cultural mechanism of gender segregation. This system, as mentioned earlier, consists of one-way video (from teacher to students) and two-way audio (from teacher to students and vice versa). This system is used in two different ways. One entails the teacher sitting alone in a room, lecturing to female students sitting in another place where they observe him (and the whiteboard) through TV monitors. The other way entails the inclusion of male students who sit in the same room as the teacher. In both classes, interaction between men and women occurs through microphones and speakers.

In both Videoconferencing and CCTV-based classes, I will observe how the teacher handles the class. For instance, is his attention biased towards one gender over the other? Does he use masculine or feminine pronouns and pay equal attention to each gender? Can he handle two groups simultaneously, one face-to-face and the other remotely? I will also observe how male and female students participate and interact with each other. For example, how do discussions and interactions between the genders occur? Do such interactions encourage teamwork or conflict? Is the dynamic of these classes dominated by one gender over the other? In addition, I will examine how female students interact with male academics and vice versa.

For these observations, I will obtain consent only from the tutor. In the pilot study, I discovered that academics took some offence when I asked them if I could obtain consent from each student above their consent. The reason for this negative reaction is, I believe, that Saudi society is a hierarchical one (Al-Saggaf and Weckert, 2004) and teachers tend to hold that they are *solely* responsible for their own classes and students and therefore, if they give consent, then this must be enough. Another thing to mention is that classes in Saudi Arabia consist of a large number of students, i.e. 100 students, which makes it impractical (and insufficient) to obtain consent from every student, especially given that the process of data collection will not involve tracing the activity of certain individuals but rather the dynamic of the whole class.

I will also conduct direct observations of the two University forums, each of which consists of more than 40,000 members. This raises some ethical issues concerned, for example, with

privacy. In theory, these issues can be overcome by the practice of obtaining consent from all members of these forums (Keller and Lee, 2003). In practice, however, this is unworkable, as it is fraught with complicated questions, such as: (1) whether consent should be obtained only from those in charge of the community, from all its members, or both; (2) whether consent from a community representative is sufficient if membership is continuously in flux; (3) whether the study should be stopped if some members refuse to give permission; and (4) whether it can be assumed that both those who respond favourably and those who do not respond at all have given permission (cf. Waskul and Douglass, 1996; Frankel and Siang, 1999; Anderson and Kanuka, 2003; Keller and Lee, 2003; Eynon et al., 2008). Some scholars point out that the answer to such questions depends on the personal ethical stance of the researcher, who is ultimately responsible for performing ethically (Anderson and Kanuka, 2003; Waskul and Douglass, 1996). Indeed, I will put great effort in to performing ethically. Nevertheless, I will obtain content only from those who are in charge of the forums, considering the large number of the forum members and considering that the observations will focus on the dynamics of the forums as a whole, rather than on tracking the activity of certain individuals. The literature shows that there is a possible risk, i.e. that the reader can trace any anonymous quotation of the forum participations, which is cited in the thesis, back to the original non-anonymous participations using online search engines. This risk does not exist in my study whatsoever, as all the quotations, which will be originally written in Arabic, will be translated into English in the thesis.

The data will be analysed using a technique developed from Lincoln and Guba (1985). This technique involves the following four steps: coding the raw data; grouping similar codes together to create chunks of codes; grouping similar chunks together to create categories; and reading each chunk within each category interpretively by thinking about it and with it. This analytical process will be carried out manually using cards. All the raw data will be made anonymous and kept with my personal confidential documents.

How have the ethical issues been considered?

Every effort will be made to ensure and preserve confidentiality, anonymity and an ethic of respect. The participants will be given a voluntary informed consent sheet, and will state therefore that they understand and agree to their participation without any duress (see the appendixes). I will give the participants the option as to whether to write their name or not. This is crucial given that Saudi culture regards females as something extremely private and thus often shields the disclosure of their identities, voices and photos. In terms of a signature, I will also give them the option as to whether to sign the consent sheet or just write that: 'I have read the participant information and informed consent sheets.' This is because signatures are culturally very sensitive, especially for women.

List all *sites where project will be conducted:	[ ] **– Saudi Arabia**
Anticipated duration of project:	**18** months
Anticipated start date:	01 / 03 / 2010
Anticipated end date:	01 / 09 / 2011
Name and status (e.g. 3rd year undergraduate; post-doctoral research assistant) of others taking part in the project:	N/A

Form: CUREC/1

Section B

(Please put a tick in the yes/no column as appropriate to indicate your response).

	YES	NO
1). Does your study primarily aim to monitor and/or improve the performance of a particular service provider?		✓
2) Will your conclusions be applicable wholly or primarily to that service provider?		✓
3) Are you conducting your study on behalf of or at the request of a service provider?		✓

If you have answered 'yes' to any question in section B it is likely that your study is *audit, not *research. Please check CUREC glossary and if your study is audit you need not submit your proposal for ethical scrutiny. If you have answered 'no' to all questions please proceed to section C.

5

Form: CUREC/1

Section C

(Please put a tick in the yes/no column as appropriate to indicate your response).

	YES	NO
1) Will the research involve *human participants recruited by means of their status as present or past NHS *patients or their relatives or carers or present or past NHS staff?		✓
2) Will the research involve *personal data of any of the people listed in question C 1 above ?		✓
3) Will the research in whole or part be carried out on NHS premises or using NHS facilities?		✓
4) Does the research involve administering any drug, placebo, or other substances to participants in the European Union (EU)?		✓
5) Does the research involve ionising radiation in the EU?		✓
6) Does the research involve human genetic research in the EU?		✓
7) Does the research involve magnetic resonance imaging in the EU?		✓
8) Does the research involve use of organs or other bodily material of past and present NHS patients?		✓
9) Does the research involve any other *invasive procedure (Class A) not described above?		✓
10) Does the research involve *human participants aged 16 and over who do not have *capacity to consent for themselves? [Please note that the definition of *capacity has been altered by the Mental Capacity Act 2005; see the Glossary on the CUREC website for further information]		✓

If you have answered 'yes' to any question in section C please stop work on this checklist as you will need to submit your proposal to the appropriate NHS ethics committee. Further details may be obtained from the websitehttp://www.nres.npsa.nhs.uk. Please submit the NHS Ethics Committee approval to the relevant IDREC officer for information when received.

If your research involves any of the above procedures but will be carried out by University of Oxford staff wholly outside the EU your research will be scrutinised by OXTREC (http://www.tropicalmedicine.ox.ac.uk/oxtrecframeset.htm). **If you have answered 'no' to all questions so far, please proceed to section D.**

6

Form: CUREC/1

Section D

(Please put a tick in the yes/no column as appropriate to indicate your response).

1) Is the study to be funded by the US National Institutes of Health or another US federal funding agency?	YES	NO
		✓

If you have answered 'yes' to the question in section D please stop work on this checklist as you will need to submit your proposal to OXTREC which uses separate documentation (http://www.tropicalmedicine.ox.ac.uk/oxtrecframeset.htm).

If you have answered 'no' to all questions so far, please proceed to section E.

Section E

(Please put a tick in the yes/no column as appropriate to indicate your response).

1) Are all the data about people to be used in your study previously collected anonymised data which neither you nor anyone else involved in your study can trace back to the individuals who provided them (e.g. census data, administrative data, secondary analysis)? Please refer to the definition of *personal data in the glossary and FAQ no. 6 for further guidance.	YES	NO
		✓

If you have answered 'yes' to the question in section E please stop work on this checklist as you do not need to secure ethical approval for your study. There is no need to submit any details to IDREC as such research does not constitute research involving human participants for review purposes.

If you have answered 'no' to all questions so far, please proceed to section F.

Section F

Methods to be used in the study (**tick** as many as apply: this information will help the committee understand the nature of your research and may be used for audit).

METHOD USED	PLEASE TICK
Unstructured interview	
Semi-structured interview (see Section A)	✓
Structured interview	
Questionnaire	
Analysis of existing records	
Participant performs verbal/paper and pencil/computer based task	
Measurement/recording of motor behaviour	

7

Form: CUREC/1

Audio recording of participant (just for the interviews, not for the observations) (See Section A)	✓
Video recording or phtotography of participant	
Physiological recording from participant	
Participant observation	
Systematic observation	
Observation of specific organisational practices	
Other (please specify) **Analysis of documents and non-participant observations of some classes (See Section A)**	

Section G

(Please put a tick in the yes/no column as appropriate to indicate your response).

1). Have you made arrangements to obtain written *informed consent from participants?	**YES**	**NO**
	✓	
2) Have you made arrangements to ensure that *personal data collected from participants will be held in compliance with the requirements of the Data Protection Act?	**YES**	**NO**
	✓	
3) If your research involves any use of *personal data obtained from a *third party, have you checked to ensure that the *third party has arrangements in place to permit disclosure?	**YES**	**NO**
	N/A	
4) Does the research involve as participants *people whose ability to give free and informed consent is in question?	**YES**	**NO**
		✓
5) Does the research involve any alteration of participants' normal patterns of sleeping, eating, or drinking?	**YES**	**NO**
		✓
6) Is there a significant risk that the research will expose participants to visual, auditory, or other environmental stimuli of a level or type that could have short- or long-term harmful physical effects?	**YES**	**NO**
		✓
7) Is there a significant risk that that the research will induce anxiety, stress or other harmful psychological states in participants that might persist beyond the duration of the test/interview?	**YES**	**NO**
		✓

8

Form: CUREC/1

8) Does the research involve exposing participants to any physical or psychological hazard, beyond those of their usual everyday life, not covered by questions 9 and10?	**YES**	**NO**
		✓
9) Does the research involve any *invasive procedure (Class B)?	**YES**	**NO**
		✓
10) Will the research elicit information from participants that might render them liable to criminal proceedings (e.g. information on drug abuse or child abuse)?	**YES**	**NO**
		✓
11) Does the research involve the *deception of participants?	**YES**	**NO**
		✓
12) Will the research require a participant to spend more than 2 hours in any single session on activities designed by the researcher (NB this time restriction does not refer to situations where participants are observed going about activities not devised by the researchers e.g. observation of lessons in schools)?	**YES**	**NO**
		✓
13) Will the research involve a significant risk of any harm of any kind to any participant not covered above?	**YES**	**NO**
		✓
14) Do you intend to follow any professional/CUREC guidelines (please provide details)	**YES**	**NO**
The code set out by the British Educational Research Association (i.e. the Revised Ethical Guidelines for Educational Research, 2004) and the Association of Internet Researchers.	✓	

If any of your answers in section G are in a shaded box, please complete section H. If all your answers in section G are in the unshaded boxes, please complete section I.

9

Form: CUREC/1

Section H

One or more aspect(s) of your research project suggest(s) that it may pose risks to participants (see shaded box(es) ticked in section G).

FAQs 19-22

	YES	NO
Are all the aspects of your project which caused you to tick a shaded box in section F fully covered by research protocol(s) which has/ve received IDREC/CUREC approval?	Please give IDREC protocol number (s). Please proceed to section I.	Please complete this form AND form CUREC/2 and submit both to the relevant Inter Divisional Research Ethics Committee.
If you answered NO to question 1) in Section G concerning informed consent but a section of the Code of Practice governing your research activity is relevant, are you going to apply the standard set out in the Code of Practice?	Name of Code of Practice and section number: Please proceed to section I.	Please complete this form AND form CUREC/2 and submit both to the relevant Inter Divisional Research Ethics Committee.

FAQ 26

Section I

Complete this section only if you do not need to submit form CUREC/2.

FAQs 19&26

I understand my responsibilities as principal researcher/supervisor/student researcher as outlined on p.1 of this form and in the CUREC glossary and guidance.

I declare that the answers above accurately describe my research as presently designed and that I will submit a new checklist should the design of my research change in a way which would alter any of the above responses so as to require completion of CUREC 2/full scrutiny by an IDREC. I will inform the relevant IDREC if I cease to be the principal researcher on this project and supply the name and contact details of my successor if appropriate.

FAQs 28&32

Signed by principal researcher/supervisor/student researcher:

Date: 15/02/2010

Print name (block capitals) ABDULRAHMAN ESSA A AL LILY

Signed by supervisor:……(for student projects)

Date: 15/02/2010

Print name (block capitals) DR CHRIS DAVIES

I understand the questions and answers that have been entered above describing the research, and I will ensure that my practice in this research complies with these answers.

Signed by associate/other researcher: ……

Print name (block capitals)……

Date ……

10

Form: CUREC/1

I have read the research project application named above. On the basis of the information available to me, I:

(i) consider the principal researcher/supervisor/student researcher to be aware of her/his ethical responsibilities in regard to this research;

(ii) consider that any ethical issues raised have been satisfactorily resolved or are covered by CUREC approved protocols, and that it is appropriate for the research to proceed without further formal ethical scrutiny at this stage (noting the principal researcher's obligation to report should the design of the research change in a way which would alter any of the above responses);

(iii) am satisfied that the proposed project has been/will be subject to appropriate *peer review and is likely to contribute something useful to existing knowledge and/or to the education and training of the researcher(s) and that it is in the *public interest.

(iv) [FOR DEPARTMENTS/FACULTIES WITH A DEPARTMENTAL RESEARCH ETHICS COMMITTEE (DREC) OR EQUIVALENT BODY - PLEASE DELETE IF NOT APPLICABLE] confirm that this checklist (and associated research outline) has been reviewed by the Department's Research Ethics Committee (DREC)/equivalent body, and attach the associated report from that body.

Signed:……..**(Head of department or nominee e.g Chair of DREC, Director of Graduate Studies for student projects)**

Print name (block capitals)……

Date:……

Please send an electronic copy and a signed paper copy of this completed checklist to whichever of the IDRECs is more suitable (Social Sciences or Medical Sciences) keeping a copy for yourself.

IDRECs and/or CUREC will review a sample of completed checklists and may ask for further details of any project.

Revised July 2008

11

Appendix 5: Participant Information Sheet

Form: CUREC/1

Invitation to Participate in a Doctoral Study

Dear Madam,

I hope this message finds you well.

My name is Abdulrahman Al Lily from the University of Oxford. In this message, it is my pleasure to invite you to participate in my doctoral research, aimed at members of King Faisal University. As a respected member of this University, your participation in this research would be very valuable. This research aims to examine the changes in the pattern of Saudi female educational experience caused by the introduction of the Internet into the Saudi public higher education sector. If you kindly accept this invitation, you will be sent some questions to answer. These questions are related to your personal experience with the Internet. After you have answered these questions, I will send you some follow-up questions generated from your answers. This sending of follow-up questions will happen no more than twice. It is likely to take you around 60 minutes to answer all the questions, including the follow-up questions. This is not work with a tight deadline and therefore you can respond to my questions in a month's time. Below is some extra information about the research. I also attach the interview questions, just in case you feel like having a look at them.

Your participation is crucial to the success of my research and therefore I really appreciate any cooperation you feel you can give. Moreover, your participation will contribute to improving the status of Saudi women, an aim that we all seek.

If have any questions or enquiries about the study, please feel free to contact me.

I am looking forward to hearing from you.

With all warmest wishes,

Researcher:
Abdulrahman Essa A Al Lily
Doctorate Candidate at the Department
Wolfson College, Linton Road, Oxford OX2 6UD
00447946674377 - abdulrahman.al-lily@education.ox.ac.uk

Supervisor:
Dr Chris Davies
Lecturer at the Department
chris.davies@education.ox.ac.uk

Extra Information

What will happen to the data?

1. Data referring to respondents will be made anonymous and kept confidential.
2. Only the researcher will have access to the non-anonymised data.
3. The findings will be used only for academic purposes.
4. You can withdraw your consent at any time during the study by informing the researcher of your decision.

What is the institution to which this study belongs?

It belongs to the University of Oxford. It is also received by, and has received ethics clearance from, the University's Central University Research Ethics Committee.

12

Who should I contact to find out more or if I have a concern?

If you have any queries or concerns or wish to speak to the researcher about this research project, please do not hesitate to contact me. If you remain unhappy and wish to make a formal complaint, please contact chris.ballinger@admin.ox.ac.uk who will pass on your complaint to the University's Central University Research Ethics Committee Chair.

Appendix 6: Informed Consent

Form: CUREC/1

Informed Consent

I declare that I...

1. have read the participant information sheet
2. have had the opportunity to ask questions about the study and receive satisfactory answers to my questions
3. understand that I may withdraw from the study without penalty at any time by advising the researcher
4. understand that this project has been received by, and received ethics clearance from, the University of Oxford Central University Research Ethics Committee
5. understand how to raise a concern and make a complaint
6. agree to participate in this study

Name (optional).....

Signature (you can write "I have read both this sheet and the other sheet" instead).....

Many thanks for agreeing to participate. I really appreciate it.

Abdulrahman Al Lily

14