A study of the relationship between institutional policy, organisational culture and elearning use in four South African universities

Abstract

This article investigates the relationship between policy (conceptualised as goals, values and resources), organisational culture and elearning use. Through both qualitative and quantitative research methods, we gathered data about staff and student perspectives from four diverse South African universities representing a selection of ICT in education policy types (Structured and Unstructured) and organisational cultural types of "collegium, bureaucracy, corporate and enterprise" (McNay 1995). While our findings show a clear relationship between policy and use of ICTs for teaching and learning, organisational culture is found crucial to policy mediation and the way that elearning use is embedded within the organisation. We conclude that although a Structured Corporate institutional type enables the attainment of a "critical mass" within e-learning, Unstructured Collegium institutions are better at fostering innovation. Unstructured Bureaucratic institutions are the least enabling of either top-down or bottom-up elearning change.

Keywords: policy, organisational culture, elearning, use, higher education, change, innovation, South Africa

1. Introduction

This paper considers the role of elearning policy and organisational culture in relation to the use of Information and Communication Technologies (ICTs) for teaching and learning by academics and students in higher education institutions. The issues addressed in this paper arose from the intersection of a growing organisational change literature and from patterns which emerged from our empirical studies on user practices. Through research undertaken over the past five years, we have explored the use of ICTs in higher education in eleven institutions and have established how elearning has been playing out in the local context (Czerniewicz & Brown 2006; Brown & Czerniewicz 2008). Our findings have suggested that such practices are mediated in specific ways by institutional type, culture and policy environment. At the same time, the broader literature has shown that institutional policy and organisational culture are crucial to the way elearning is adopted or embedded in universities (de Freitas & Oliver 2005 ; Boezerooij et al. 2007; Cook et al. 2007; Inglis 2007; Holt & Challis 2007 ; Nichols 2008; Weaver et al. 2008).

It is obvious that user practices do not occur in a vacuum, and the tantalising patterns emerging from our user studies lead us to consider specifically the roles that institutional policy and organisational culture have in framing and mediating elearning practices. This paper therefore sets out to explore the following questions:

i. Is there a relationship between institutional elearning policy and use?
ii. Are there differences in how the relationships play out in different institutional types?
iii. How does organisational culture mediate these relationships?

In order to address these questions, it is necessary to answer several sub-questions, including: If there is a relationship between policy and use, how is it manifest in institutions with elearning policies and in institutions without elearning policies? What is the nature of the policy documents? What institutional "resources" are in place? How does institutional culture mediate policy intentions and use?

That a relationship should exist between culture, policy and use makes intuitive sense, but it is only in recent years (with key literature only emerging since 2005) that it has been robustly demonstrated through solid research. There is no evidence to date of such research being undertaken in developing country

contexts such as South Africa[1]. Such localised research would be strategically valuable in these contexts as well in contexts elsewhere where institutional elearning use is only beginning to be widespread. It is not confined to these situations though, as at the same time, the findings of this study consolidate and contribute to the broader literature developing in this area of study.

This study reported on here takes place in a South African higher education environment reeling from policy and structural changes at every level[2]. Educational policy researchers have their hands full tracking and making sense of all these changes and it is unsurprising that institutional elearning policies have received so little attention. One of the few reviews in this area noted that only three universities had in place formal elearning policies complete with strategic plans, frameworks and policy principles (Moll et al. 2007). Most institutions either incorporated elearning within other institutional policies or had policies in various draft forms. Eight institutions had no policy framework in relation to elearning in place at all. It is also of note that South Africa does not have a specific national educational technology policy, which means that institutional level strategic decisions are not being driven by national level government imperatives or funding. While government commitment to the new economic order and participation in the knowledge society is evident in numerous policy documents[3] (Czerniewicz et al. 2006; Cross & Adams 2007), the fact that institutional policies are not being led by national government policies is in stark contrast to many countries in the rest of the world.

This paper is structured by beginning with the conceptual framework used to frame policy and organisational culture, then describing the specifics of the study and analysis. Findings on policy, resourcing and use are provided before the synthesising discussion bringing together the analysis through the lens of the conceptual framing and determining questions. Implications of these explorations and suggestions for further investigations conclude the paper.

2. Framing the study

2.1 Policy

Our definition of policy includes but extends beyond that of formal policy documents; we understand policy to refer to the allocation of goals, values and resources[4]. A consideration of institutional level elearning policies therefore requires an examination of systems, services and structures, which exist to realise the intentions expressed in the policy documents. Our study uses two institutional elearning policy types: Structured and Unstructured, as summarised in **Error! Reference source not found.**.

Table 1: Institutional elearning policy types

	Structured elearning policy*	**Unstructured elearning policy**
Senior-level formal support	Policy document	No policy document
Elearning structures	Centralised support unit	No formal support unit (possible fragmentary or ad hoc support)
Institution-wide systems	Institutionally supported online learning management system (LMS)	No (or *ad hoc*) online learning management system (LMS)

* In order to consider an institution as "Structured", elearning policy had to be present at all three levels.

With regard elearning structures, our main consideration was that such structures were formally in existence, rather than where they were placed, as research has shown that the essential requirements are formal and structured support and co-ordination rather than whether a unit is a discrete entity or subsumed

[1] Literature on this relationship comes from the United Kingdom, New Zealand, Australia and the Netherlands

[2] The new post-apartheid national department of education in 1994 was faced with serious and deeply embedded inequalities in the higher education system. By the culmination of the restructuring process in 2005 some 36 universities and technikons had been merged into 21 higher education institutions in an endeavour to increase enrolments particularly for black students, streamline academic programs, spread management expertise, and spend limited resources more fairly.

[3] National Plan for Higher Education (Department of Education 2001), the National Research and Development Strategy (Department of Arts Culture Science and Technology 2002), the National Research and Technology Foresight ICT Report (Department of Science and Technology 2000), and the White Paper on e-Education (Department of Education 2003).

[4] The definition is adapted from Codd (1988p 235) who said, "Policy is taken here to be any course of action (or inaction) relating to the selection of goals, the definition of values or the allocation of resources".

within another larger department (Nichols 2008). Similarly, we are unconcerned about whether or not the institution's elearning policy was stand alone or embedded in an pre-existing policy as research has not been able to establish which type of policy approach is better at engendering change (Inglis 2007). It is also to be noted that the concept of a "Structured elearning policy" type institution does not imply a lack of bottom-up change, as policies can develop in response to on-the-ground activities.

Research indicates that elearning policy is not the only factor necessary for successful elearning institutional adoption; bottom up" change driven by e-learning champions or innovators and early adopters is shown to be important (Cook et al. 2007; Holt & Challis 2007) and pedagogical strategies which create a climate of collaboration can also drive organisational change . However, several studies have found that institutional policies are essential for successful organisational change. As the expression of senior leadership commitment, policy statements articulate the top management commitment and strategic ownership needed at the highest level for the uptake and rapid diffusion of elearning in institutions across the world (Boezerooij et al. 2007; Nichols 2008). In the South African context, research has shown that staff consider themselves explicitly constrained in their ICT use by lack of institutional support and vision (Czerniewicz & Brown in press). It is also relevant that policy is not necessarily the driving force for change and ICT take- up, but may be a response to on the ground activities which scale up across institutions (Rossiter 2007).

The literature also confirms the necessity for resource allocation in the form of the establishment of centralised structures (Marshall & Mitchell 2005) and institutional systems (Marshall & Mitchell 2005; Nichols 2008). In the local context, research indicates that student ICT use is explicitly enabled by institutional on-campus infrastructure (Czerniewicz & Brown in press).

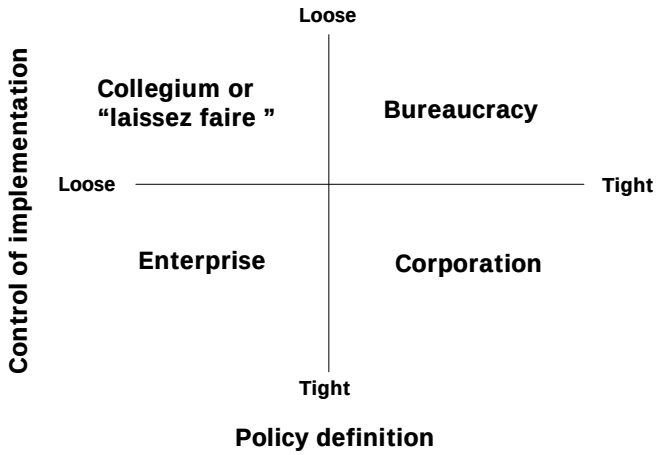
Of course, other factors beyond elearning policy are relevant, including institutional champions and students as drivers (Czerniewicz & Brown 2005), and individual staff innovators. Indeed, the argument is accepted that a system-wide approach is fundamental to successful integration of elearning (Rossiter & Crock 2006). In order for it to be truly embedded within an organisation, the institutional "acceptance, sanctioning and legitimisation" of elearning (*ibid* p286) must be accepted at the individual level. We are mindful of the crucial difference between policy statements and meaningful practices; as well as the distinction between usage (as reported in quantitative terms in this study) and internalisation of the importance of elearning, which would be captured by more qualitative research processes.

2.2 Organisational culture

Universities in South Africa have only recently emerged from an exceptionally fragmented and divided past. Institutional funding policy changes, organisational restructuring and changed student profiles (Bunting 2004) have gone hand in hand with changes in institutional cultures, these being contested, debated and researched. At the individual institutional level, therefore, it is essential to note that the implementation of ICTs is mediated by institutional academic legacies and micro politics (Kulati 2003; Jansen 2004; Cross & Adams 2007).

This paper acknowledges but cannot address the complexities of these local institutional dynamics at the individual level. We suggest that the changes and organisational cultures of local universities echo those found internationally and that it is possible to use McNay's taxonomy applied to international studies of organisational cultures in this local study to provide examples of institutional types rather than case studies of specific universities. McNay's taxonomy provides four organisational cultural types: collegium, bureaucracy, corporation and enterprise (1995) according to the continuums of institutional policy definition and control of implementation. This taxonomy has subsequently been extended by McNaught and Vogel (2006) in order to categorise the elearning implementation of two universities in Hong Kong.

Figure 1: Organisational cultural types (McNay 1995)



The collegium type is characterised by loose institutional policy definition, informal networks and decision arenas, and innovation at the level of the individual or department. The organisational response could also be as considered "laissez faire" (as it has few targeted policies or processes) (Rossiter 2007). The bureaucratic type is characterised by loose policy but strong regulation, dominated by committees or administrative briefings. This high regulatory environment is not conducive to rapid change and can be "contaminated by political authority" (McNay 1995) p107). The corporate type is characterised by tight policy definition, tight implementation and a culture of strong top-down directives, implemented by institutional or senior management. The enterprise type has a well-defined policy framework with the students as client being the dominant criteria for decision making. Leadership is devolved and the market is a strong focus. It must be noted here that no institution falls neatly into one grouping, and also that institutions may well change classification over time.

3. The study

The data for this study is drawn from a 2007 survey of ICT access and use in six diverse South African universities in five provinces. The data was collected by a questionnaire comprising three parts: access, use and demographics. The focus of this paper is on ICT use in support of academic studies in South African higher education[5] and thus drew on particular questions from the survey pertaining to use of ICTs across courses, frequency of use of ICTs for 26 different activities and satisfaction with support.

Respondents were asked how many courses used ICTs as part of teaching and learning, and whether management, technical and pedagogical support was adequate for their use of ICTs for teaching and learning. They were also asked how often they used ICTs for

- explaining or demonstrating concepts eg powerpoint, standard office applications, specialised software, audio /video and images,
- communication (specifically by email with their lecturers or peers, and using online discussion, chats and journals/ blogs),
- finding information (specifically searching the internet, online databases, general course information, lecture notes, assignments, old exam papers, course websites) and sharing information through online resources and wiki's
- undertaking activities (specifically quizzes, tests, tutorials, games and simulation or modelling)

[5] The complete survey is available at http://www.cet.uct.ac.za/virtualmobius

- creating and producing essays, presentations, websites or multimedia, models, databases or spreadsheets, and bibliographies)

Use was categorised into 26 ICT – mediated activities in four of the media form groupings in Laurillard's Conversational Framework (2002) namely Communicative, Interactive, Adaptive and Productive Media Forms[6]. This Framework provides an explicit way of linking ICT use to pedagogy and allows the categorisation of teaching and learning in terms of five key events: acquisition, discovery, dialogue, practice and creation. These events involve specific teaching strategies, roles or actions which interact with specific learning strategies, roles, actions and experiences. The framework then links five media forms narrative, interactive, communicative, adaptive and productive with the key teaching and learning events (Table 2). Together they describe the most dominant learning experiences and teaching strategies currently employed in higher education.

Table 2: Teaching and learning events and associated media forms.

Teaching & Learning Event	Teaching action or strategy	Learning action or experience	Related media form	Examples of non-computer based activity	Example of computer based activity
Acquisition	Show, demonstrate, describe, explain	Attending, apprehending, listening	**Narrative** Linear presentational. Usually same "text" acquired simultaneously by many people	TV, video, film, lectures, books, other print publications	Lecture notes online, streaming videos of lectures, DVD, Multimedia including digital video, audio clips and animations
Discovery	Create or set up or find or guide through discovery spaces and resources	Investigating, exploring, browsing, searching	**Interactive** Non-linear presentational. Searchable, filterable etc but no feedback	Libraries, galleries, museums	CD based, DVD, or Web resources including hypertext, enhanced hypermedia, multimedia resources. Also information gateways.
Dialogue	Set up, frame, moderate, lead, facilitate discussions	Discussing, collaborating, reflecting, arguing, analysing, sharing	**Communicative** Conversation with other students, lecturer or self	Seminar, tutorials, conferences	Email, discussion forums, blogs
Practice	Model	Experimenting, practising, repeating, feedback	**Adaptive** Feedback, learner control	Laboratory, field trip, simulation, role play	Drill and practice, tutorial programmes, simulations, virtual environments
Creation	Facilitating	Articulating, experimenting, making, synthesising	**Productive** Learner control	Essay, object, animation, model	Simple existing tools, as well as especially created programmable software

Adapted from Laurillard's Rethinking University Teaching (2002)

[6] For more detail on Laurillards' framework and how it informs our research see Czerniewicz and Brown (2005).

There were 3533 usable student responses to the survey, a realised response rate of 27% and 216 usable staff responses, a realised response rate of 16%. The realised response rate is congruent with higher education studies of access to and use of ICTs such as PEW and ECAR (Salaway & Borreson 2007; Horrigan 2008), but lower than our previous study of 50% , where we were able to monitor the sampling more directly (Czerniewicz & Brown 2006).

Despite our recommendations, each university chose a slightly different sampling model. The survey was offered online but response to this mode was very poor and in all cases print surveys were handed out on campus. In many cases this effort was conducted at the main or largest campus hence smaller campuses at the various institutions were under- represented. We cannot know how representative the respondent views are of their population at their respective institutions. In the light of the length of the survey and the voluntary participation, it is likely that the participants who took the time to complete the survey either had a specific interest in ICTs or had a specific issue they wanted to communicate.

However, our sample whilst small, was largely representative of the national population. Student respondents were comprised of slightly more undergraduates (89% in the sample compared to 85% in the population), the same gender mix (55% females) and slightly more international students (10%)[7]. The home language mix of the sample was reflective of the provinces from which the samples were drawn and was dominated by Afrikaans (23%), isiXhosa (20%), English (15%), seSotho (14%) and seTswana (12%). Staff respondents were comprised of mostly lecturers/ senior lecturers (63%) of even gender split (50% each) and predominantly South African (93%).[8] While staff response rates were generally low, they are not used in this paper to suggest trends (which would be problematic), but rather to provide interpretive commentary, and to suggest possible explanations for trends in student use.

For this paper we selected four institutions representing a variety of policy and organisational types and for which we had captured both staff and student perspectives[9]. In order to categorise the institutions in the research project, we drew on related work undertaken by fellow researchers as well as interviews with key informants. We categorised each institution according to leadership style (transformative managerialist, crisis, transformative collegial) (based on descriptions from Kulati 2003), the criteria described earlier in **Error! Reference source not found.**, our interpretation of personal communications with key role players at each institution and on the basis of descriptions of institutional structure and culture by other researchers ; institutional approach to ICT integration (bottom-up, driven by individual innovators; top-down, strategic (drawing from Cross & Adams 2007, and key informants); and organisational style of policy implementation (loose, tight, none) (drawing from Kulati & Moja 2004).

This enabled us to classify C-U-Coll as having loose policy definition and loose control of implementation (and thus according to McNay's framework a collegium organisational culture), D-U-Bur as having loose policy definition and tight control of implementation (and thus according to McNay's framework a bureaucracy organisational culture) and A-S-Corp and B-S-Corp as having tight policy definition and tight control of implementation (and thus according to McNay's framework a corporation organisational culture).

Table 3: Categorisation of institutions by policy and organisational culture

Institutional Code	Institutional elearning policy type	Institutional organisational type	Staff (n)	Students (n)
A-S-Corp	Structured	Corporation	101	760
B-S-Corp	Structured	Corporation	34	296
C-U-Coll	Unstructured	Collegium	21	564
D-U-Bur	Unstructured	Bureaucracy	36	419

[7] The latter perhaps because 3 of the 6 institutions were noted as having high numbers of international students ranging bt 8-10%.

8 Low response rate can be attributed to a decline in mean response rates for emails which has dropped from 61% in 1986 to 24% in 2000 (Sheehan 2001) and the response attitude of academics who are noted for being very poor survey respondents(Mitchell 1998)

[9] We acknowledge that this is a small sample and are treating the fours institution as cases as units of analysis of the various organisational types We see this research as an exploration of the relationship between organisational culture and e-learning use in our context, one which we believe is worth investigating more systematically in order to see how these findings can be extrapolated more broadly.

The sample, described in Table 2, comprised two Structured Corporation types, one Unstructured Collegium type and one Unstructured Bureaucracy type. We are cognisant that our study does not cover all the permutations of policy and organisational type nor could all the types co-exist. For example, it is unlikely (although not impossible) that a corporate organisational type with its tight institutional policy definition would have an unstructured elearning policy. Noticeably missing from this study are examples of the Structured Collegium type and the Structured Enterprise type.

The methodological approach to the project as a whole is best described as a mixed-method approach, as described by Creswell (1994). This approach was based on the need to collect baseline information across a wide group as well as to move beyond fact gathering to a multi-layered understanding of the issues of access and use for academic staff and students in the study. It also allowed us to deepen the investigation even at the early "broad brushstroke" phase of the work. Our quantitative statistical analysis has been both descriptive and exploratory and we used qualitative data from open-ended questions in the primarily quantitative survey to elaborate on survey results. This is a well-established approach in social science research which can "illuminate quantitative data, reducing the need for speculation or subjective interpretations" on the part of researchers (Selwyn 2000). Such an approach is also congruent with that of critical realist researchers (Sayer 2000; Carter & New 2004; Mingers 2004, for example) who promote the integrated use of both quantitative and qualitative methodologies. Consequently we do not present our findings from qualitative and quantitative data separately but integrate both in our findings and discussions, as is common in mixed-methodologies research designs.

4. Findings

This following section briefly describes the institutional policies which exist in two of the institutions, and describes resource issues as reported by respondents at all four institutions. It then describes ICT use for courses in terms of the frequency and variety of use of both staff and students.

4.1 Policies

At both of the Structured Corporate institutions, policy related to elearning is embedded within the institution's broader teaching and learning policy. However the level to which each policy spells out the details is different. In A-S-Corp the teaching and learning policy goals are strongly aligned to the university mission and aims to produce competent graduates (with one of the principles being in a "cost-effective" manner) supported by the "judicious use of suitable technology"; programmes can include a combination of modes of which elearning is one. The policy at B-S-Corp is more detailed with a goal of creating "deep and meaningful" learning for students by engaging them in a variety of ways with content.

Neither of the institutions require the use of ICTs (sometimes referred to as "a minimum presence"); in both policies the use of ICTs is listed as an "and/or" option. Both institutions are recently merged and were already encouraging use of technology for teaching and learning in their previous incarnations. Email correspondence with managers within the institutions indicated that at both, the elearning approach was regarded as having been driven (at least initially) by top-down management. From B-S-Corp "*Within [our institution], a top down drive started where "elearning" came out as a high priority*" and from A-S-Corp "*the institutional management level not only drives elearning implementation but also ensures adequate allocation of resources*".

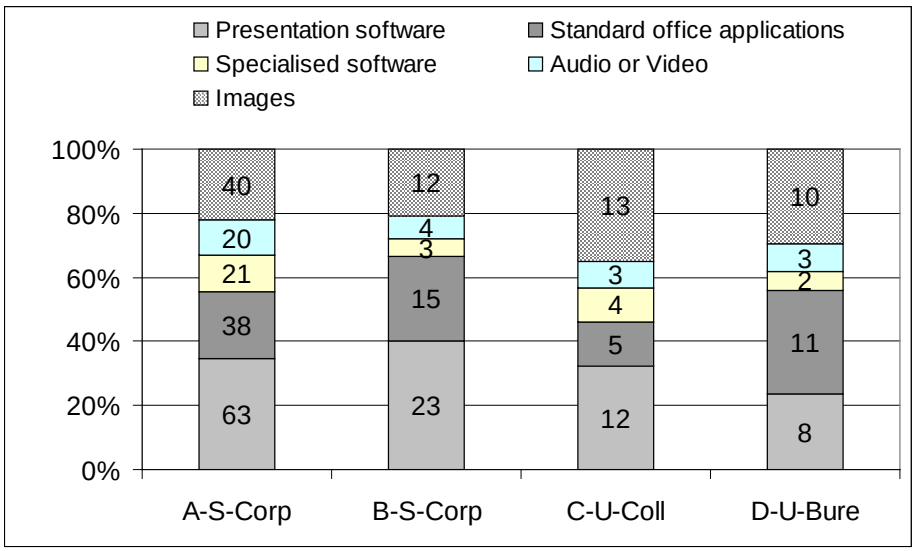
4.2 Resource issues

Because policy intentions are enacted through resources and systems, we considered the allocation of resources across the different institutional types. Staff from Structured Corporate institutions report high adequacy of computer for their teaching needs (all but 3 of the 128 respondents reported this as good to excellent). Staff from Unstructured Collegium and Unstructured Bureaucratic institutions report lower adequacy of computer and internet access (76%) and 71% report adequate computer access whilst only just over half report adequate internet access. In particular, the greatest disparity is apparent in the adequacy of teaching venues which only 12% of staff from D-U-Bure (4 of the 33 respondents) and 29% of staff from C-U-Coll (6 of the 21 respondents) said were adequate for their teaching needs. Differences were also apparent in the Structured Corporate institutions which 87% of B-S-Corp staff reported as adequate (all but 4 respondents) compared to only 64% of A-S-Corp staff.

This inadequacy of teaching facilities particularly provides a clear explanation as to why staff at Unstructured Institutions are constrained in their use of ICTs for explaining and demonstrating, as

illustrated below. Staff from B-S-Corp consistently reported the highest use of ICTs for this purpose overall but the difference between institutions was most notable in terms of use of presentation software. Staff from Unstructured Collegium institutions however did report use of images to explain and demonstrate concepts more often than use of presentation software.

Figure 2: Lecturers who use ICTs often for explaining and demonstrating concepts as reported by staff and compared by institutional type



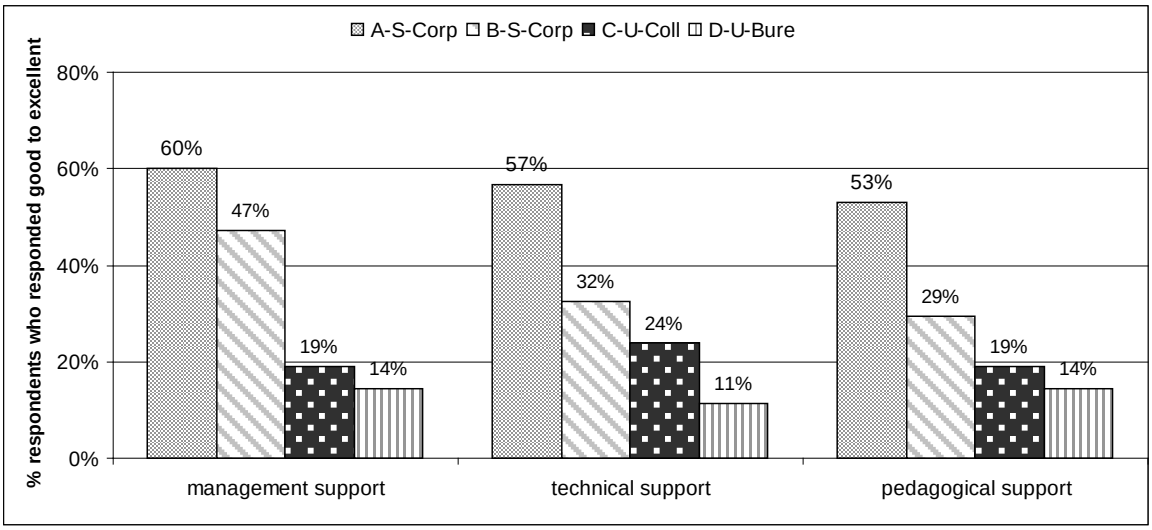
The issue is further highlighted in the qualitative data where staff from Structured Corporate institutions report teaching facilities as being present (albeit sometime inconsistent or poorly managed) compared to staff from Unstructured Institutions who report that lack of infrastructure make teaching with ICTs very difficult indeed.

Staff at A-S-Corp indicate that infrastructure is well established with problems relating rather to unevenness and process rather than availability; " *Not all teaching venues allocated to me are equipped*"; "*booking a room with media trolley can sometimes be a problem, in terms of planning*" and, "*have to fetch keys, remotes, etc. from a different venue before each class*". Similarly the other Structured Corporate Type focused on the need for improvement rather than absences: *"some venues are poorly maintained"*; *"In smaller teaching venues ICT infrastructure is supplied on demand", "teaching venues are not always accessible, even for lecturers*" and "*some useful sites are blocked, can't download from many sites"*.

The resource issues at Unstructured Institutional Types are more severe, with the Unstructured Collegium context still better off than the Unstructured Bureaucratic type. At C-U-Coll it was reported that *"Inadequate/insufficient knowledge/support from ICT support systems in place", "there is much red-tape to organise it [equipment]"*, reliance on other ineffectual support departments *"one is very dependant on the audio-visual department, if they forget a cable etc, or are late it has very negative consequences on the lecture"*, as well as university support and choices *"when the university support systems and internet access speed makes it time wasting and frustrating"*. The D-S-Bure staff lack of fundamental infrastructure seriously inhibited desired use "*our internet network is unreliable, we lose connection almost everyday*", not being secure "*Teaching venues are not secure therefore it is difficult to install electronic devices as they maybe stolen*", or non-existent "*Licences not renewed on time for software*". This has the impact of staff sticking to traditional methods "*As equipment cannot be left behind in lecture halls, carrying them up & down is not worth. Rather carry chalk for the blackboard*".

In terms of support received, there is disparity between the four institutional groupings. Staff at A-S-Corp were the most satisfied with support from management (60% said it was good to excellent) and over half indicated good to excellent support in terms if technology and pedagogy. In B-S-Corp satisfaction with support was lower in terms of management (47% indicated good to excellent support) but the difference was most noticeable in terms of technological and pedagogical support which just under a third indicated was good to excellent. Overall staff from Unstructured institutions indicate low satisfaction with support with less than a quarter of staff saying it was good to excellent at any of the three levels.

Figure 3: Staff who indicated that management, technical and pedagogical support was good to excellent



Qualitative data highlights interesting differences in perceptions of staff in terms of policy and support particularly in terms of the Structured Corporate institutions. At A-S-Corp staff clearly feel enabled by the overall institutional approach, and there is a sense of senior level buy-in even in the complaints. Thus "their institution" is described as having the *willpower*, showing *progress of change*, and endeavouring to *empower*. Technical and pedagogical support was well established. Support was also available at departmental level with one person noting that there was a lot of "*structured teamwork in the faculty*" for elearning.

The negative comments here are not about the lack of infrastructure or support, but rather about the need to keep up with changing demands, about discrepancies and about on-going pressures with regard ICT use. There is an expectation for "*service for support after hours*" and acknowledgement that the demand takes place when " *ITS [faces] numerous responsibilities*" and increased expectations. The reference to learning support being uneven across campus may well refer to the recent institutional mergers and the need to evenly distribute resources across new and old campuses.

The Unstructured Types (of both kinds) register far more serious concerns. At C-U-Coll lack of policy or support from management features strongly "*departmental policy on access to pool laptops is restrictive.", "…the use of ICTs must be part of departmental and institutional strategy", "Generally poor planning at central admin level", "Wish I were at a University where I could do more"*. Technical and pedagogical support is not mentioned much except to say more is needed "*Don't feel I have enough training/support to implement ICT in a big way "* and people want more autonomy "*giving us our own independence in terms of hardware, software and internet access.*". At D-U-Bure the staff are vocal about lack of management support "*it must be introduced immediately*", "*All academics must use ICTs & force students to develop their ict skills*", "*Institution unable to cater for ict needs. Management structures oblivious to student & lecturer needs*". Technical and pedagogical support was also just not available, "*no few training programmes offered by my institution*", "*There is no proper guidance & training on the use of icts in my institution*" and when it was not efficient "*Reluctance of ict personnel to assist in getting the ict equipment running*".

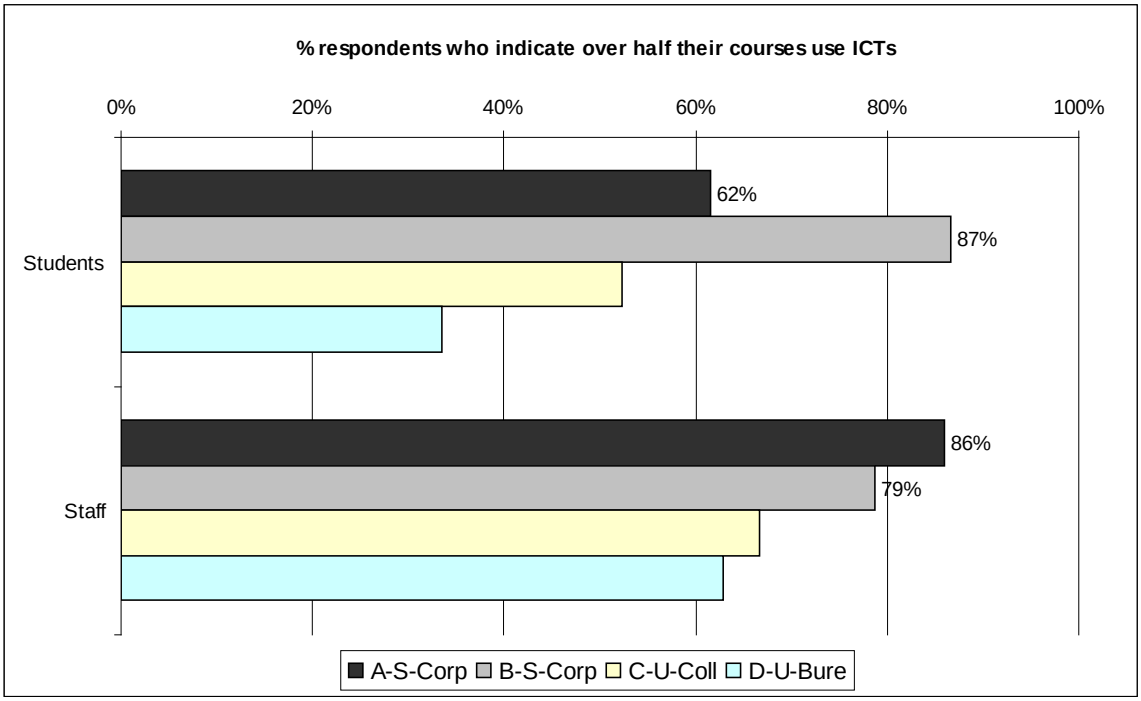
Elearning support is an essential resource. Our data finds the Unstructured Organizational Types worse off in this regard, and notes that although the Structured Corporate types are much better off comparatively, there is a difference in staff satisfaction with support overall.

4.3 Course use

More students from Structured Corporate institutions report that their courses used ICTs compared to the other two institution types. This was highest in B-S Corp (87% said over half their courses used ICTs) and lowest in the Unstructured Bureaucratic institution (33%). The same is true for academics. Over three quarters of staff from the Structured Corporate institution A-S-Corp (86%) and B-S Corp (79%) report that

most or all of their courses use ICTs. This is much lower for staff from Unstructured Collegium institutions (67%) and lower still for staff from the Unstructured Bureaucratic institution (62%) (see **Error! Reference source not found.**).

Figure 4: Students and staff who reported over half their courses used ICTs



It is clear that staff and students in Structured Institutional Types agree that more of their courses use ICTs than do those from Unstructured Institutional Types. At the same time these two institutions have corporate organisational cultures which might also account for the high use of ICTs. This is especially interesting given that neither of these two institutions have a minimum presence requirement.

What the numbers do not show is the kind or quality of use, and it is possible that much of this use is administrative or unexciting[10]. That said, interesting uses of ICTs often begin in mundane ways, and therefore cannot be dismissed too quickly. In addition is of note that within the Unstructured Collegium Type staff report much higher use of ICTs overall than students do (Figure 4). This increase in frequency is not surprising as staff are reporting on their own individual practice and it is likely that if they use ICTs for teaching and learning that they do so frequently across many of their courses. However, students are reporting on their experience across a range of courses, and therefore of a range of lecturers practices.

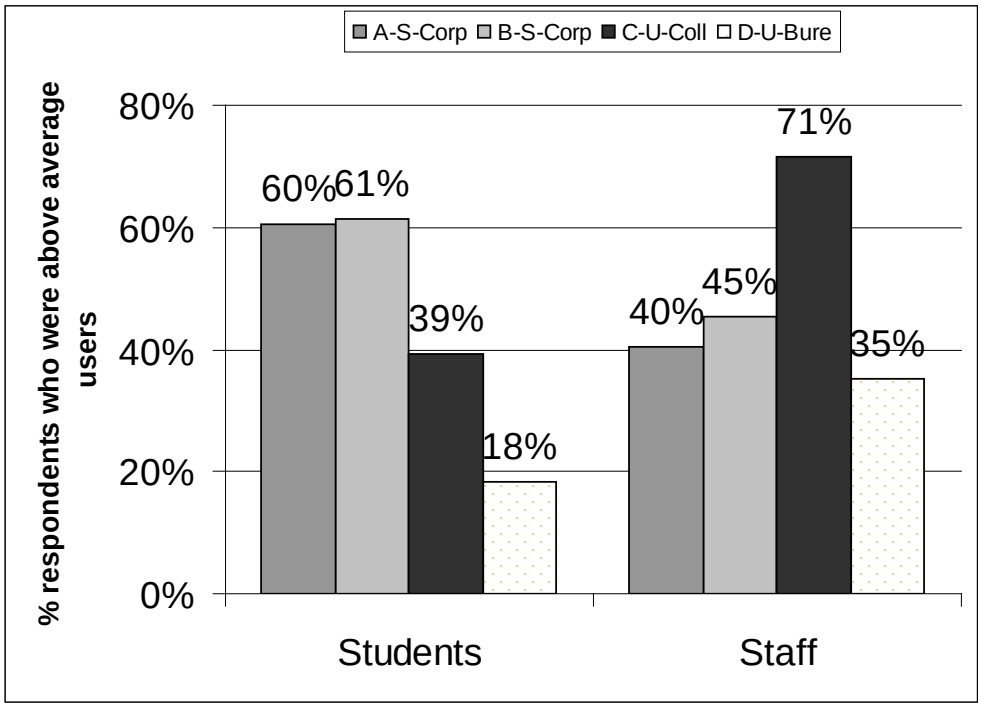
The fact that the lowest frequency of use takes place in the Unstructured Bureaucracy type is of note, as this suggest that the organisational cultural climate is a further restraining consideration. In the collegium type, networks exist and implicit practices are shared even when policies do not formally exist; in Bureaucratic types red tape and regulations can be seriously constraining.

4.4 Individual use: frequency

Student use from Structured Corporate institutions indicate higher use with between 60% (n=450) and 61% (n=158) of respondents reporting being above average users of ICTs compared to only 39% (n=213) of students from the Unstructured Collegium institution, and 18% (n=75) of students from the Unstructured Bureaucratic institution. However staff use from the Structured Corporate institutions was not as high as staff use from the Unstructured Collegium institutions (A-S-Corp 40% indicated above average, B-S Corp 45% indicated above average compared to 71% at C-U-Coll). Staff use from the Unstructured Bureaucratic institution was the lowest in terms of frequency (35% report above average use).

[10] International studies have shown that online courses are characterised by the provision of vast amounts of information and hierarchical ordering of content (Reeves et al. 2004). South African research has also noted an emphasis on content (Brown & Czerniewicz 2008).

Figure 5: Staff and students who reported above average users compared by institutional groupings



In terms of frequency of individual use, the data shows that while student use is more frequent in Structured institutional types, staff use is in fact more frequent in the Unstructured Collegium type. We believe that responses to our survey were skewed towards staff who were mostly using ICTs for teaching and learning[11]. whereas student respondents are comprised of both users and non users of ICTs. This is intriguing – one would expect that an Unstructured context would be related to lower use – yet, perhaps an Unstructured Collegium type environment is an important enabling consideration. It is in this context that academic staff are the owners and the leaders of change (Rossiter & Crock 2006). As use of ICTs for teaching and learning is not widespread across the Collegium institution, as evidenced by student data as well as from an email mail survey of elearning Managers within the institution (Brown et al. 2008), it seems that the staff who responded are innovators or early adopters in their institution as opposed to staff in the Structured policy institutions who are part of the mainstream and therefore engage in more predictable moderate use. This concurs with Rossiter (2007) who suggests that when elearning moves from the individual to the institutional domain there is a shift from autonomous creative activity to more uniform and consistent activity. In both cases use was the lowest in the Unstructured Bureaucratic institution suggesting that this is the least enabling context of the three represented here.

4.5 Individual use: variation

The findings regarding variety of use are arguably the most interesting of all given that is argued in academic settings that variation of learning and teaching activities and variation of ICT use related to those activities is essential to the gaining of knowledge and mastery of specific subjects (Laurillard 2000). In our case we asked respondents to indicate their use for a variety of communicative, interactive, adaptive and productive media forms and activities (Czerniewicz & Brown 2005).

[11] This concurs with findings on academics "response attitude" to surveys that indicate the importance of perceived relevance to response rate (Mitchell 1998).

Figure 6: Comparison of variation* of use of Students and Staff

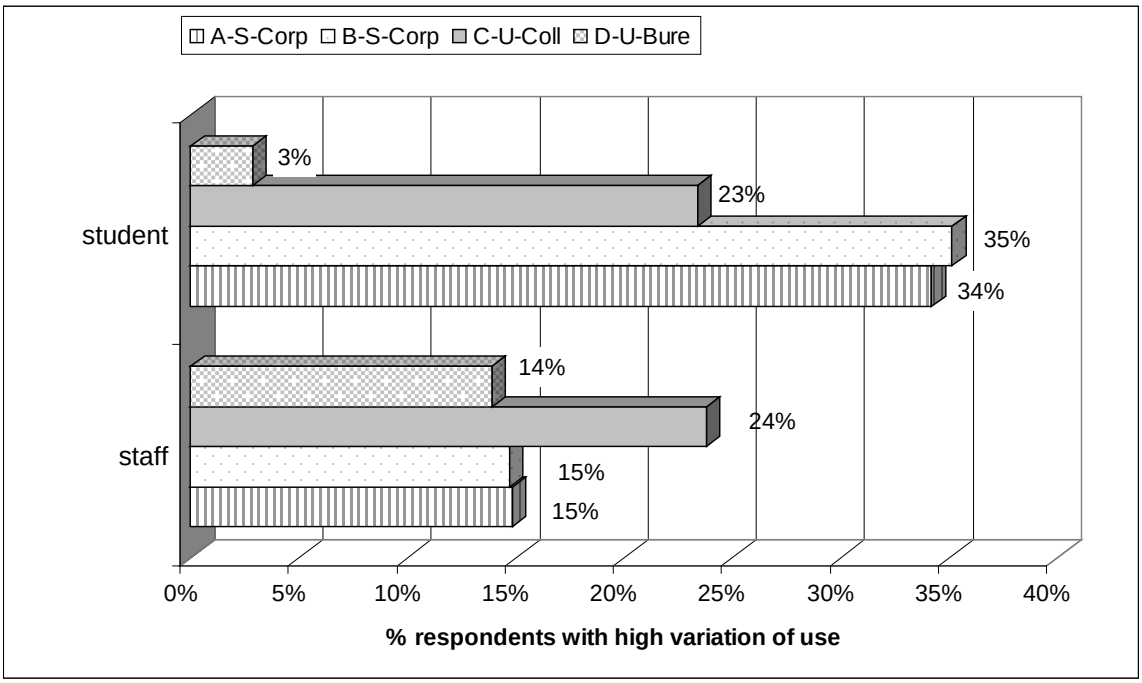


Figure 6 illustrates students' variety of use showing that there is more variation in the two Structured institutions (34% and 35% reported engaging often in more than 10 ICT related learning activities (classified here as high variation). Some variation is evident in the Unstructured Collegium institution (23% indicated high variation) and lowest in the Unstructured Bureaucratic institution. (where only 3% - 12 respondents - of students reported high variation and 132 respondents reported never engaging often in any ICT related learning activity).

Staff displayed a different pattern of variation in use. As with use, staff from the Unstructured Collegium institution exhibited more variation of use where 24% indicated they engaged their students often in more than 10 ICT related learning activities. There was less variety of use reported by staff in the Structured Corporate institutions (15% indicated high variation of use) and very low variety of use from the Unstructured Bureaucratic institution (14%).

It is therefore of especial interest that different contexts appear to be differently enabling for students and for staff. Given the Structured policy environment, and the better resources as described in the next section, how can the lack of variety be accounted for? Further investigations are needed especially given the small sample however our qualitative data points to three reasons.

Firstly, although there is no minimum presence requirement, there is a suggestion that staff feel compelled to use ICTs, and a concern is expressed that it "*should not be forced on all lecturers*" and "*it should be an option available to those who are keen and have received training. It should not be obligatory*". Indeed, *"Colleagues must not be forced to use ICTs in education"*. The second reason seems to be an oblique reference to the relatively newly merged nature of the institutions, now made up of campuses and sectors from previously advantaged and disadvantaged institutions. The unevenness is expressed in comments such as: *"I am worried about colleagues' lack of skills +training"; "there is differentiation between staff skills across campuses; and "there is a HUGE difference to what XX colleagues can do re IT literacy vs YY Campus. It is ridiculous that come YY Campus Staff can't type or format documents or write macros on .xls for marks"*. Thirdly, type of use is also relevant. Whilst staff at A-S-Corp report lower variation of use the type of use is actually more specialised and is 8-10% more frequent than staff at the other institutions for use of computer based modelling, using specialised software and blogs, wikis and sharing of resources.

5. Discussion

At the beginning of this paper we asked three interconnected questions: Is there a relationship between institutional elearning policy and use? Are there differences in how the relationships play out in different

institutional types? How does organisational culture play out in these relationships? While our answers inevitably suggest further investigation, the empirical evidence confirms our analytical categories and makes some answers quite plain. In brief, we observe that there is indeed a crucial relationship between policy and use but that the organisational culture is fundamental to mediating how that relationship is played out. Furthermore, that policy may not be the deciding factor regarding use, although it is an essential consideration when use is scaled up and integrated into the teaching and learning work of the institution as a whole.

Policy is associated with frequency of use, and indeed policy is associated with critical mass as is evident from these findings where the Structured institutional types report more courses online, a higher frequency of individual use, better support and more resources available. Critical mass is about numbers, but does not tell us about the quality of use, nor about the extent of genuine integration, nor the extent to which usage is genuinely embedded. It is acknowledged as the first dimension of widespread adoption or use of elearning (Rossiter & Crock 2006). Critical mass becomes integration when it is widely used and widely valued without any sense of coercion.

It is therefore important that policy in the sense that we use it here as exemplifying a Structured institutional type should not be conflated with a top down management style. The change management processes and management style are part of the organisational culture, and indeed institutional policies can also arise in response to bottom up change management processes. The two Structured institutional types reported on in this study, are also classified as having corporate cultures, a style associated with top down change management processes. The dangers of this approach is that they may not be consultative and inclusive enough and thus be resented or resisted. There are intimations in our findings that some staff perceive ICTs as being something that they are forced to use. Interestingly despite all the enabling conditions, our data suggests that the two corporate institutions have less variety of use than the Unstructured Collegium Type. This is an important issue because frequency may simply relate to the multiple repetition of certain activities (such as web browsing, email and presentations), but variety is crucial for pedagogical advantage. The concern is therefore that the corporate culture may not facilitate staff level innovation and variety of use. This aspect particularly warrants further investigation

Policy is not necessary for activities on the ground to take place, as even a national South African document acknowledges that “strategy is being made on the ground” and that diversity is positive and not to be stifled ((Department of Education and Department of Communication 2001).6). Yet, lack of policy becomes a serious constraint when such activities are to be scaled up or evenly distributed.

It is therefore of particular interest that our findings suggest that it is in the Unstructured Collegium Type that there is a high variety of use reported, a consideration we have emphasised is essential for good pedagogic practice and one which at least one Structured Corporate institution strives for as a principle in its policy statement. This culture is characterised by informal networks and innovation taking place at the level of the individual or department. This is more conducive to bottom up change processes, and pockets of excellence but also pockets of inactivity. But this “laissez faire” approach, as a national document notes, can create problems of unrealistic expectations and unsustainable costs (*ibid* p.6). At the level of individual universities, without policy oversight there is also the danger of the inequalities exemplified in the different parts of the premerger institutions remaining in place. Institutional policies in this situation would play a necessary redress and redistribution function.

In our study, it is perhaps not a co-incidence that the Unstructured Collegium Type is at an early stage of using ICTs for teaching and learning, and indeed it is possible that the variety of use being explored is being undertaken by early adopters and innovators. Thus while the organisational culture and early stages of the process makes such innovation possible, there is no evidence of critical mass being achieved nor does the institution have in place the requirements for scalability . Studies on scalability suggest that truly embedding ICTs into a university’s core business has four dimensions: critical mass in terms of adoption, integration into organisational values, legitimisation, and sustainability (Rossiter & Crock 2006).

We understand integration to include a sense of ownership, and legitimatisation to include formal policies and resource allocations. Thus for the variety and innovation at the Unstructured Collegium Type to be scaled up, institutional policies will need to be developed to support and spread the benefits of these activities and innovations. At the same time, the agency manifest presently by staff at this institution must not be stifled, and indeed genuinely embedded usage is engrained in staff values and activities, and has gained on the ground legitimacy.

While the Unstructured Collegium Type may not be well placed in terms of future developments, the Unstructured Bureaucratic Type are in the most difficult situation presently. There is no critical mass of use, there is no sense of ownership or agency (indeed it is at this that staff academics appear insistent that change rests with the institution or "point fingers" at the university) and there is a sense of being hampered by institutional processes and lack of support. There is little evidence of either top down or bottom up change with regard the use of ICTs for teaching and learning.

6. Conclusion

Our study suggests that none of the four institutions studied can be considered an "ideal type", a notion that would only apply in any event at a particular point in time. However, the concepts we have used and the findings in this study suggest that policies are indeed needed, and that supportive, flexible, non-restrictive institutional policies would be the most useful frames for staff innovation in the classroom and for the varieties of pedagogical practices needed to foster effective elearning. This suggests that either a Structural Collegium Institutional Type or a Structural Enterprise Institutional Type would be closer to the kind of coalescence needed for sustained, effective elearning use and innovation in support of learning and teaching in higher education. While neither of these "types" was found amongst the four in this study such an example had been highlighted as an effective model for implementing elearning elsewhere in the South African context (Cross & Adams 2007p 89).

The findings also echo those of other researchers have commented that the same diffusion strategy (or elearning policy in our case) can have different outcomes in different institutions even with the same broad cultural groupings. Despite the similarities between the two Structured Corporate types, intriguing differences also announce themselves, which require a more nuanced investigation. Finally, the findings both confirm expectations and foreground anomalies. It is evident that elearning policy (in terms of goals, values and resources being allocated) is linked with critical mass and appears to provide a generally more enabling context environment making it possible for ICTs to be used. But the suggestion that the variety of use exists more frequently in the collegium and not in the corporate contexts is critical. The implication is that successful, embedded, responsive and innovative ICT-teaching and learning practices are likely to be the product of both enabling institutional policies and conducive collegium or enterprise cultures. A implication that definitely needs further investigation. The challenge therefore lies in ensuring that the elearning policies support and enable, while simultaneously sustaining a culture that fosters innovation and a multiplicity of varied and responsive learning practices.

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