Ethics and Trust Building in Digital Scholarship

by

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Abstract

The issue of trust should concern all universities whose faculty is pursuing research endeavours electronically. With the transformation of what was largely print environment into mega digital collections, several issues beg solutions in order to engender trust among scholars about the dependability of the emerging research process that is fully reliant on information and communication technologies. The issues of concern include but are not limited to: accuracy of data, integrity of scholarly research process, electronic publications and communications; intellectual property rights, confidentiality/privacy, data security, etc. Digital scholarship is characterised by a research process that involves receipt of manuscript, peer review and publication of journal articles all done but electronically. Scholars also rely on online resources to support their research work, with some people arguing that such resources are not rigorously reviewed putting in question the integrity of the entire research process. To what extent therefore do faculty trust digital research process? How can trust be nurtured in a scholarly environment where research is undertaken wholly or in part electronically? This paper discusses the subject of trust as an ethical issue that must be nurtured in a digital scholarship process.

Keywords: digital scholarship, ethics, trust, confidence, e-research, scholarly communication

Introduction

Digital research process (otherwise known as digital scholarship) in universities the world over, is motivated by the pervasive application of information communication technologies (ICTs) especially, the growing availability of internet connections. The Internet is affording opportunities for faculty to undertake the whole research process electronically. Furthermore, digital information resources are being relied upon as primary or complementary information sources of scholarship and scientific journals that were, a few years ago, produced largely in print format, are now rolled out first as e-versions. Libraries are also transforming their print collections through digitization or subscription to e-journals, with or without print alternatives to make them more accessible and to enhance resource sharing. Through digital scholarship information is delivered to users 24/7 via intranets, the Internet and other fast and emerging networks.

Digital scholarship may be perceived as a “networked, scholarly or academic environment with pervasive integration of digital technologies in everyday learning and research, the necessary physical infrastructure both on and outside campus for access, integration of university information systems such as institutional repositories, online public access catalogues and content management systems, that allow seamless access to content needed for research, publication and scholarly communication. Digital scholarship may include one or more of the following: submission of articles, peer review and publication, all done electronically;
teaching using electronic means; evaluation and assessment of academic work electronically; electronic collaborative research; and electronic communications, e-journals, e-books, and a variety of databases and digital libraries as sources of information (Youngman, 2007). Closely related to the concept of digital scholarship is e-research, which, O’Brien (2005), perceives to mean large-scale, distributed, national or global collaboration in research [that] typically entails harnessing the capacity of information and communication technology (ICT) systems, particularly the power of high-capacity distributed computing, and the vast distributed storage capacity fuelled by the reducing cost of memory, to study complex problems across the research landscape.

The potential of digital scholarship is enhanced by the increased sophistication of search engines and global library digitisation projects, such as the one that was undertaken by Google in 2004 involving the digitisation of five large academic libraries in the US. Moreover, the emerging net generation students is also instrumental in the growth of digital scholarship because of this group’s almost exclusive dependence on Google or other search engines for discovery of information resources (Lippincott, 2005). The possibilities also offered by Web 2.0 to modern libraries expand the opportunities for implementing digital scholarship projects. Web 2.0 refers to second generation, internet-based services, such as social networking sites, wikis, communication tools and folksonomies that emphasise online collaboration and sharing among users (O’Really, 2005). Also fuelling digital scholarship in universities is the concept of Library 2.0 which refers to libraries that integrate all e-resources into a single point of access with a uniform interface, Online Public Access Catalogue (consisting of federated search engines), Rich Site Summary, RSS (used for cataloguing and searching results), a ‘physical’ library that is a loud space for collaboration and conversation through the use of mobile devices, and the integration of the library with e-learning. Likewise, the Patron 2.0 concept has emerged and refers to users who not only consume content but create it as well (Pienaar, 2008). A digital scholarship environment is therefore one where online systems facilitate a variety of tasks related to supporting different scholarly scenarios such as; collaboration, virtual project teams communication, administration, etc. Through these interactions, large amounts of personal information is transmitted, collected and processed that could reveal personal details such as a learner, tutor, administrator, etc. Trust becomes critical for users to have confidence to interact and use such systems.

Ethics and Digital Scholarship

Ethics is a subject of study that is concerned with moral principle or framework (Hawker, 2002). Ethics issues pervade all environments where information or any other form of content is generated, stored, communicated, applied and owned. Ocholla (2008) highlights the assumptions underlying the subject of ethics namely, that:

- The distinction of right actions from wrong actions is that they [actions] have better consequences (Fallis, 2007 cited in Ocholla, 2008).
- There are ethical duties that human beings must obey…regardless of the consequences.
- The right thing to do is determined by the rights that human beings have.
- Ethics is concerned with the universal or commonly held values of persons, despite…different… moral or cultural values…
- Ethics …focusses on the norms and standards of behavior of individuals or groups within a society based on normative conduct and moral judgment, principles of wrong or right.
- The role and purpose of ethics in society is to promote what is good in people…and provide norms and standards of behavior…
The ethical values which all human beings are expected to enjoy were formalised when the UN General Assembly endorsed the Universal Declaration of Human Rights charter on 10 December, 1948 (United Nations, 1998). The key components of the charter are the recognition of the inherent dignity of the equal and inalienable rights of all members of the human family as the foundation of freedom, justice and peace in the world. The charter was conceived and motivated by the disregard and contempt for human rights across the world. There are 30 articles in the Universal Declaration of Human Rights charter with each defining a particular right. Article 19 for example, declares that everyone has the right to freedom of opinion and expression. This right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media regardless of frontiers. Similarly, article 21 notes that: 1) everyone has the right to take part in the government of his country, directly or through freely chosen representatives; 2) everyone has the right to equal access to public service in his country.

The implementation of Universal Declaration of Human Rights charter by those who wield the instruments of power or authority (e.g. government, statutory institutions, individuals, etc) can engender trust or distrust depending on whether the rights are being violated or upheld. Easton (1965) explains that the presence of trust means that members will feel their own interests would be attended to even if the authorities were exposed to little supervision or scrutiny. Koren (1997) in a published study, *Tell Me! The Right of the Child to Information* concludes that the right to information is a fundamental human right, which is crucial to human development and... important for... every human being. UNESCO (2008) is explicit about commitment to the free flow of information and access to knowledge sources ... for “the wide diffusion of culture and the education of humanity for justice... liberty and peace...” UNESCO states that access to information for all ... is a fundamental right which should be upheld with greater efficiency and imagination in a spirit of equity, justice and mutual respect. UNESCO further states that promoting ethical aspects and principles that espouse creative multilingual content, universal access to information and communication, best practices and voluntary, self-regulatory, professional and ethical guidelines should be encouraged among media professionals, information producers, users and service providers with due respect to freedom of expression for equitable presence in, and access to, cyberspace. When these values/rights are upheld consistently, they engender trust in the systems, institutions or individuals who have responsibility to uphold them but when they are violated they cause distrust. Mason (1986) observed that people's intellectual capital is impaired whenever they lose their personal information without being compensated for it, when they are precluded access to information which is of value to them, when they have revealed information they hold intimate, or when they find out that the information upon which their living depends is in error. Mason (1986) identifies four main ethical issues in an electronic age that have trust/distrust implication to include:

**a) Privacy:** What information about one's self or one's associations must a person reveal to others, under what conditions and with what safeguards? What things can people keep to themselves and not be forced to reveal to others?

**b) Accuracy:** Who is responsible for the authenticity, fidelity and accuracy of information? Who is to be held accountable for errors in information and how is the injured party to be made whole?

**c) Property:** Who owns information? What are the just and fair prices for its exchange? Who owns the channels, especially the airways, through which information is transmitted? How should access to this scarce resource be allocated?

**d) Accessibility:** What information does a person or an organization have a right or a privilege to obtain, under what conditions and with what safeguards?

Daniel and West (2006) have also identified five elements of ethical business practice that have some relevance to digital scholarship and trust. These include: **privacy** (does the company understand the privacy preferences of individuals it deals with? Are the privacy rights of customers ...protected? Do
consumers trust the company?); **security** (does the company take reasonable steps to protect information from authorized use? Is the information infrastructure secure? Are there backup and contingency plans in place to protect information in the event of a business interruption or catastrophic event?); **accuracy** (is the information collected and used reasonably accurate? Does the company exercise controls to ensure that accuracy over customer data is assessed and managed on an ongoing basis?); **efficiency** (does the company use appropriate amount of information to fulfil the business purpose and needs? does the company have the right information to develop a one-to-one relationship with customers?); **consistency** (does the company use consistent methods to protect and control business information? Are confidential, sensitive and private information sources protected in a consistent fashion throughout the enterprise?).

Oak (2008) says privacy has to be addressed in website where users give out their personal details on the Internet. For certain websites such as emailing sites, there are issues about whether third parties should be allowed to store or read emails without informed consent? Whether or not, the third parties should be permitted to track the visitors on a website and when sites that gather personally identifiable information from the users should store or share it? Anuar and Greer (2006) are of the opinion that both privacy and trust are essential elements of an effective e-learning environment. Whereas privacy provides a personal space to a member of an e-learning community, trust is a critical enabler for meaningful and mutually beneficial interactions that build and sustain collaboration. Ponemon (2003) warns that with the reward of capturing an increased share of the market through electronic means, comes the risk of not having privacy and data security policies in place to protect huge quantities of personal, sensitive and confidential information. The consequences may be litigation and loss of reputation by the service provider from the general public as well as consumers. The risk management approach the service providers adopt towards privacy and security of personal information will influence trust/distrust of the consumers in them and their services.

The other ethical issue affecting digital scholarship is the purchasing model of digital materials that is evolving from ‘purchase-to-own’ long associated with print resources to, licensing which means ‘purchase-without- ownership rights’. In the licensing model, the library does not own the content of journals or databases purchased. Instead the library is granted the license to use the content and after the expiry of the license the content reverts to the publisher unless the library renews the license. Libraries are concerned about the licensing model as it limits access to information resources. In addition, most of the content providers of digital material are based in developed world making developing countries bear the brunt of high costs of such materials. This is because, whenever the content providers in the developed world enter into negotiations with information providers in developing countries, they insist on the inclusion in the agreement of contractual terms which override the traditional exceptions to copyright as contained in national legislations (Kiggundu, 2007). These exceptions include fair use and fair dealing which make it difficult for the information provider to freely avail such information for academic use without breaching agreement of the license further alienating developing countries from mainstream information access.

The digital divide between developed and developing countries has negative implication on access to digital research content by developing countries. Jacobs et al. (2006) in a comparative study of peer articles published in a peer-reviewed journal, Journal of Digital Information Management and IEEE conference proceedings, found that most authors from developing world were not exposed to external public knowledge and hence the mean cited references in their papers was less than for papers submitted from the western world. Moreover, the mean age of references was less for third world researchers compared to western researchers. The differences in the two categories of papers was said to be largely attributed to level of access. The authors from developed world have more access to current and wide
range of content compared to their developing world counterparts. Consequently most papers from third world countries were rejected.

The integrity of research process on the internet may pose ethical challenges in the sense that the researcher does not have control over the environment in which the research is conducted, especially when compared to other experimental settings, given that when people are not identified, they feel less accountable for their actions. Anuar and Greer (2006) citing Johnson et al. (1998) point out that anonymity in research process especially on the internet; a) makes law enforcement difficult because actors are unknown; b) it frees individuals to behave in a socially undesirable and harmful ways; c) it diminishes the integrity of information since one cannot be sure from whom information is coming, whether it has been altered on the way; etc. Consequently, the basic ethical principles underlying research namely, respect for persons, beneficence and justice; are difficult to uphold in Internet-based research. This is because (Kraut et al., 2003), Internet research involves two potential sources of risk: harm resulting from direct participation in the research (e.g. acute emotional reactions to certain questions or experimental manipulations), and harm resulting from breach of confidentiality.

**Theoretical Basis of Trust**

The concept of trust is founded in key theories among them- the Social-Psychological Model; the Social Cultural Model and the Institutional Performance Model. The Social-Psychological Model posits that trust and institutional confidence (or distrust and lack of confidence) is a basic aspect of personality types. The Social Cultural Model on its part posits that the ability to trust others and sustain cooperative relations is the product of social experiences and socialization. This Model states that society has the ability to inculcate “habits of the heart” such as trust, reciprocity, and co-operation (Bellah et al., 1985). The Institutional Performance Model which is more aligned to trust in government opines that actual performance of a government is the key to understanding citizens’ confidence in such a government. Government institutions that perform well are likely to elicit the confidence of citizens; those that perform badly or ineffectively generate feelings of distrust and low confidence. The general public, the model assumes, recognizes whether government or political institutions are performing well or poorly and reacts accordingly. Collectively, these three models generate various meanings of trust namely: reliance on the integrity, ability, or character of a person or thing; reliance on somebody or institution; to have faith or a feeling of certainty that a person or thing will not fail; depth and assurance of feeling that is often based on inconclusive evidence. The meanings attached to trust arising from these models is what the Free Dictionary (2008) [online] seems to confirm when it defines the concept of trust as dependence or reliance on another party whom one is often subordinate, to believe that (someone) is honest and means no harm, to feel that (something) is safe and reliable... the obligation of someone in a responsible position.

Trust is considered to have a cross-disciplinary origin in such subjects as marketing, psychology (Erikson, 1963), management (Dirks and Ferrin, 2002) sociology (Lewis and Weigert, 1985) and economics (Williamson, 1981). From business management perspective, the common concepts used for trust building include (White, 2008): customer satisfaction, interaction, honesty, moral values, responsiveness, and confidentiality. In the context of e-learning, trust building is associated with upholding and/or providing (Daniel and West, 2006; Penemon, 2003; Bressan and Brosso, 2006): privacy, data protection, confidentiality, data security, accuracy, choice (opting in or opting out to the use and sharing of information), redress (opportunity for filing a complaint), access (giving people opportunity to view information held about them), consistency (data integrity); appropriateness, authentic (accredited), affordability, efficiency, effectiveness, benefits, transparency, mobility (any time, anywhere), and ubiquitous interaction.
The service quality model SERQUAL with its origin in the discipline of management assesses user satisfaction -a component of trust from the perspectives of tangibles (appearance of facilities; reliability, responsiveness, assurance, courtesy, credibility, security); and empathy (access, approachability, communication, and understanding the customer) (Fedoroff, 1988). The original SERVQUAL has been extended to include competence (possession of requisite skill and knowledge to perform a service); courtesy (politeness, respect, consideration and friendliness of contact person); credibility (trustworthiness, believability, honesty of a service provider); feeling secure (freedom from danger, risk or doubt); access (approachable and easy of contact); communication (listens to customers and acknowledges their comments, keeps customers informed in a language they understand); and understanding the customer (making the effort to know customers and their needs) (Zeithaml et al., 1990).

Trust formation framework examines ‘trust’ from the perspectives of web quality, product and service quality (Salo and Karjaluoto, 2007), interface design and customisation (Lee, 2005); brand and online feedback mechanism (Shao et al., 2005). Lee (2005) points out that the interactivity is a source of trust and is characterised by ubiquitous connectivity (continuance of a service activity irrespective of user’s time and location). Trust formation as observed from the perspective of 3G mobile services also include responsiveness and brand image. Responsiveness refers to providing speedy feedback to service subscribers (Dholakia et al., 2000; Heeter, 1989) and is used to measure service quality and also serves as a diagnostic tool for uncovering areas of service quality strengths and weaknesses (van Dyke et al., 1997). Responsiveness influences user satisfaction towards the use of the service because it can convey the trustworthiness of the service provider or system to customers (Corritore et al., 2003).

Information systems success model (DeLone and McLean, 1992) is the most well known for studying information systems success (Wang et al., 2005). The model intimates that information systems quality characteristics (system quality), quality of information systems output (information quality), consumption of information systems output (usage) and user reaction to the information systems (user satisfaction) are important to information systems implementation success. Whyte and Bytheway (1996) in a UK study in 1996 of business people on their perception of the success of information systems in business identified success constructs to include: user friendliness, responsiveness of personnel, reliability of system and personnel, data accuracy, system response time, system accuracy, content usefulness, and net benefits. Closely allied to Delone-Mclean model is the Technology acceptance model which posits that acceptance and use of a given system (such as e-learning) will be influenced by the degree to which the person believes that using such a system would enhance his or her job performance. Moreover, acceptance will be influenced by the extent to which the person believes that using a particular technology would be free from effort (Davis, 1989). Consumers are likely to accept and use a technology if it is useful and easy to use.

Genoud and Pauletto (2004) developed a model for an e-society known as a repository for implementing e-government strategy from which digital scholarship may benefit. The repository structure has three layers each with five dimensions. The first layer is known as the Project with the following dimensions: security, economic factors, impact on complexity, information policy, and technology. The second layer is the Organisation and comprises interoperability, transversality of processes, transversality of data, e-government processes, and knowledge management dimensions. The final layer is the e-society and covers legal framework, e-inclusion, society component, ethics and information concept. The dimensions in the Project layer collectively deal with issues related to security and new technologies. The Organisation layer broadly covers administration and internal exchanges and sharing of data. The e-society layer confines itself to covering social factors such as e-inclusion, acceptance of new technologies and ethical issues.
The granularity of each layer is encapsulated in the dimensions making up the layers. For example, security dimension under the Project layer covers confidentiality, integrity and availability. Confidentiality refers to limiting information access and disclosure to a set of authorised users. Data integrity implies that data has not been changed inappropriately whether accidentally or deliberately. Availability represents the requirement that an asset can be accessible to authorised person, entity or device. Economic factors are perceived as return on investment or costs benefits such as changes in waiting times or fees. Information policy relates to information channels through which project leaders, end users and IT specialists can communicate. Knowledge management dimension under the Organisation layer creates value, increases productivity and fosters innovation (Malhotra, 2002). Transversality of processes refers to reengineering existing processes to create completely new ones. Transversality of data ensures that data is consistently shared and used, and that its quality is preserved. Interoperability is taken to refer to the ability of information and communication technology systems and that of business processes they support to exchange data and to enable sharing of information and knowledge. E-inclusion under the e-society layer refers to enabling access (e.g. access to an e-learning website for all including the disabled), enhancing usability (e.g. users experience with an application/website, ease of learning, efficiency of use, satisfaction, etc); training, etc. Ethics dimension also covered under the e-society layer covers privacy, security and the enhancement of confidence.

Mutula and Ocholla (2009) derived an integrated model for studying citizens’ trust in e-government which may be applied for e-learning environments. The model is premised on five trust pillars: ethical/human; information/content; technical; policy/legal; and political/governance. Each of these pillars has several dimensions. The ethical/human pillar for example consists of among other dimensions: system acceptance; education and training; diverse cultural values; multilingualism; special needs; usability of system/service; benefits accruing from the service; user satisfaction; quality of service; and system security. The information/content pillar contain: friendly information architecture, different information formats; diverse information retrieval tools; diverse information delivery mechanisms; information security; knowledge management; information policy; and information quality dimensions. The technical pillar is composed of among other dimensions: online support; feedback mechanism; interactivity; interoperability; system or service availability; online security; friendly interface; transversality of processes; and transversality of data. The policy/legal pillar consists of consumer protection; data protection; intellectual property rights; freedom of information; standardization; universal access; privacy, confidentiality; and e-inclusion dimensions among others. The political/governance pillar consists of democracy; accountability; transparency; integrity; respect for human rights; separation of powers for the major arms of government-judiciary, legislature, executive; free speech; and freedom of press dimensions.

**Building Trust in Virtual Research Environments**

In order for digital scholarship to be institutionalised, a number of interventions are required, such as: an e-strategy; a research portal that facilitates data transfer; knowledge sharing, including protocols of uploading; open access standards; institutional repositories; e-research librarians responsible for training, re-orientation and liaison; digital curation services, including standards, software, marketing and training; and portable access/cyber infrastructure (Pienaar, 2008). The e-research strategy helps focus the organisation, provides a framework for capacity building, defines operational standards, integrates e-information applications in the organisation, caters for adequate cyber infrastructure, defines information products and services, enables the creation of digital repositories, and defines procedures for digital archiving. Libraries can help to institutionalise digital scholarship by making available variety of content in the form of e-journals, e-books, institutional repositories, databases and digital libraries. Libraries in university and/or research environments can also consult with authors, publishers, and other stakeholders to develop suitable business models that address issues of restrictive copyright regimes to enhance access.
to digital content. Kiggundu (2007) suggests that developing countries should take a firm stand with regard to provisions in the Copyright and Neighbouring Rights Act 2000 that expressly prohibit the inclusion of restrictive contractual terms in any contract entered into with information providers and also by advocating in WIPO and WTO meetings for such restrictive terms to be prohibited worldwide. The digitisation of documents, as well as creation of electronic databases that are of use to local communities should be encouraged.

Universal access is an important policy and legal attribute in promoting digital scholarship because it ensures that information resources are available to all at affordable prices. The favourable climate created by an appropriate legislative and regulatory regime would encourage communities, organisations and individuals to invest in and use information and communication technologies (ICTs). Furthermore, important areas, such as Internet availability, and the use of ICT are all influenced by public policy and the legal framework. Policies that promote open Internet access are needed to stem the widening digital divide between developing and the developed world. In the US for example, high speed policies have been implemented to enable the government promote a more open internet. High speed internet is needed for economic growth, jobs, telemedicine, education, e-government, and public safety (Communications Workers of America, 2006). The European Union member states (European Commission, 2005) have undertaken measures to ban the sale of inaccessible technology products while enhancing the growth of assistive technology. National strategies also emphasise interoperability of products, universal service policies for electronic communications, affordable pricing of network, and interactive content. Governments should explore the use of open source software to enhance access especially with regard to application development in local languages.

The degree to which a person believes using a particular system would enhance his or her job performance; and the extent to which the person believes that using a particular technology would be free from effort (Davis, 1989) are instrumental in technology acceptance. Lai et al. (2007) have shown in a study that when customers perceive better website service quality such as special treatment benefits, they will have more e-satisfaction, when customers feel e-satisfaction of the website, they will have more e-loyalty; when a website is responsive it will influence directly the customer’s e-loyalty. Satisfaction also enhances more use of the information system. Szymanski and Hise (2000) observe that consumer perceptions of online convenience, site design and financial security play important roles in e-satisfaction assessments. Furthermore, interaction online (Muirhead, 2000) and interface designs (Garvin, 1984) which provide varying level of system complexity to cater for users with diverse abilities, skills, requirements and preferences have been found to enhance online learning. Twigg (2003) also adds that online learning should encourage greater student engagement with course content; determine the best time for the student to learn rather than when the instructor wants to teach; allow students to choose when to access course materials and what types of learning materials to use depending on their needs.

Research online systems should provide customized interface and content to fit the needs of the individual learner, rather than one fit-all approach. Baeza-Yates and Ribeiro-Neto (1999) note that achieving goals of effective user interface in computer systems requires informative feedback, easy reversal of actions, support for internal locus of control, reduction in working memory load, and provision of alternative interfaces for novice and expert users. Digital scholarship can also be enhanced if efforts are made to promote linguistic diversity and multilingualism; dissemination of local content; and bridging the digital divide. Assisting users to navigate the online systems can significantly enhance usage. Hallett and Cummings (1997) in a study of computer-mediated undergraduate course in educational psychology found that the absence of visual cues and immediate instructor responses to their comments played a role in their negative perspectives. Heath (1998) in shared teaching experiences from an on-line undergraduate political and social philosophy course taught through the State University of New York found that students
appreciated the teacher’s on-line interventions by offering prepared commentary and participating in the class dialog. Moreover, integration of wireless technologies with wide-bandwidth range, real-time and multimedia features can also enhance interaction online by addressing the frustratingly low speed networks that are used to gain access to content online.

The European Commission launched the eEurope initiative in 1999 (European Commission, 2002) to bring all European nations into the digital age and create a digitally literate Europe which other regions could emulate to enhance digital scholarship. The initiative recognizes accessibility for disabled users such as the blind, deaf people or people with learning impairments by providing them with, keyboard support, captioning for audio, visual signposts, and single-switch support for menu commands. Moreover, the strategy emphasises interoperability of products; consumer protection; education and outreach; creating awareness of user needs among designers; etc. The importance of building trust in digital scholarship need to be stressed. Most faculty is carrying out most research away from the libraries for various reasons. First they can access such resources outside the library using laptops or within the comforts of their offices. Secondly most academic libraries are constrained by inadequate ICT facilities as they lack staff with appropriate skills to manage ICTs at the strategic and operational levels, they also lack skills to manage digital information resources. Housewright and Schonfeld (2008) note that for research needs of faculty to be met libraries in particular, need a deep understanding of the information needs of a scholarly community and how existing services mesh with these needs in order to effectively serve and remain relevant on the modern campus. Academic libraries should in this regard provide the tools to assist researchers in presenting their work in an organized and accessible fashion.

With regard to student show of apathy to digital academic environment with hallmarks of lack of trust in such systems, a study by Brown and Czerniewicz (2008) on trends in student use of ICTs in higher education in South Africa revealed that despite the rise of Web 2.0 tools for sharing information, 25% of students do not share resources using these tools, about half does not upload resources using these tools and 67% does not use these resources to publish content. 75% does not use blogs as part of their studies, 67% does not exploit the option of working collaboratively with other students online. The other common problem that now faces many universities the world over is plagiarism. Plagiarism affects negatively the integrity of scholarship. Plagiarism may arise because of the lack of trust and confidence in the academic support systems by users. Canadian universities and colleges’ librarians are involved in educating students and faculty about academic integrity. At most institutions, discussions of academic integrity and the ethical use of information are included in library workshops and library instructional material (Kloda and Nicholson, 2007). There are also several ways by which trust may be enhanced in electronic academic environments. Accreditation of the content (from the country of origin) can engender trust and satisfaction among users as such accreditation can serve as an indication of quality and consumer protection. The consumer country must also recognize the foreign programmes on offer to its citizens so that citizens can have trust in such programmes and be able to pursue them. UNESCO and OECD have developed higher education cross border quality assurance guidelines that can be used to develop academic programmes that are offered across borders. This kind of programmes would have international appeal to consumers and their countries and thus enhance trust.

The institutionalization of digital scholarship in universities can be enhanced by developing e-skills and carrying out information literacy. It is also important for institutions involved in digital scholarship to consider (O’Brien, 2005) having in place: technical infrastructure and services - ICT infrastructure (high performance computing), networks, data management and storage, repository management, data preservation, authorization and authentication mechanisms, and help desks; and leadership and coordination – meeting the needs of academics by providing connections to necessary support structures.
or expertise on campus. Digital scholarship environment can also be enhanced by (Buchhorn, 2004) enabling:

- Researchers to access storage and computational resources
- Videoconferencing and collaboration tools
- User-friendly, application-specific, web-based portals
- Shared access to large data repositories for searching, replication and updating
- Ability to collaborate in international projects

Conclusion

Building trust in digital research environments has become more imperative than ever before because of the increasing move towards digital scholarship by universities the world over. Trust in digital scholarship is concerned with such issues as accuracy, intellectual property rights, confidentiality, integrity, etc. Trust building is important in a digital scholarly environment because scholars will be encouraged to operate in an e-environment where for instance the information they search for and access is accurate and reliable. Research websites that contains errors will not meet the needs of scholars who may feel that their interests and needs are not being taken care of by content providers. Information on research portals may also link to information that does not necessarily belong to institutions offering the content, such institutions need to ensure that those accessing such information are insulated from any copyright violations arising thereof. Confidentiality ensures that only those with sufficient privileges and a demonstrated need may access certain information. Integrity, on the other hand, relates to the protection of content/information against corruption or the alteration of information. The integrity of information is threatened when it is exposed to corruption, damage, destruction or other disruptions to its authentic state. Trust has its foundation in different disciplines based on such theoretical frameworks as the Social-Psychological Model; the Social Cultural Model and the Institutional Performance Model. Trust is also implied in the various cross disciplinary models dealing with service quality and user satisfaction (SERVQUAL), information systems success, user acceptance model and the integrated trust building generic model. Trust building must take cognisance of the overall human rights framework as enshrined in the UN Declaration of Human Rights of 1948 by UN General Assembly.

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