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Critical Evaluation of GroupWare for Teaching & Learning, Course Administration And Internal Communication within the University of North West.

A RESEARCH PROJECT

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TABLE OF CONTENT

		Page no
Acknowledgements		**1**
List of Abbreviations		**2**
Abstract		**3**
Theoretical Framework		**4**
1.	Introduction	**4**
1.1	Aims and Objectives of Study	**4**
1.2	GroupWare and Other Technologies	**5**
1.2.1	What is GroupWare?	**6**
1.2.2	Why GroupWare	**6**
1.2.3	Statement of the Problem	**7**
1.3	Hypothesis	**7**
1.4	Motivation	**8**
1.5	Assumptions	**8**
1.6	Significance of the Study	**9**
1.7	Delimitations	**10**
1.8	Definitions of Terms	**10**
1.8.1	GroupWare	**10**

1.8.2 Teaching and Learning 10

1.8.3 Course Administration 10-11

1.8.4 Internal Communication 11

2. Literature Review 12

2.1 Overview of GroupWare Systems 13

2.2.1 Microsoft Exchange 13-14

2.1.2 Lotus Notes/Domino 17-21

2.1.3 Novell Group Wise 6.0 22

2.2 Teaching & Learning 28

2.3 Face-Face 29

2.4 Paper Handouts 29

2.5 Network 29-31

2.6 Web Sites 31

2.7 Course Administration 31

2.8 Course Handbook 32

2.9 Module Information 32

2.10 Notice board 32-33

2.11 Internal Communication 33

2.12 Face-to-face communication 33-34

2.13 Leaflets 34

2.14 Pegasus Mail 34-35

2.15 Potential Impact of GroupWare 36-37

3. Research Design 38

Methodology 38

3.1 Methods 38

3.1.1 Web-search 38

3.1.2 Interviews 38

3.1.3 Questionnaires 39

3.14 Hands on use of GroupWise 39

3.2 Research Application 39

3.2.1 MBONE 39

3.2.2 Dr B's Virtual Tools World 40

3.3 Sampling 40

4. Findings **41**

4.1 Evaluation of GroupWise Features **41**

4.1.1 Calendar Evaluation **41**

4.1.2 Newsgroup Evaluation **42**

4.1.3 Mailbox Evaluation **42**

4.1.4 Document Evaluation **42-43**

4.1.5 Task Management and GroupWise Scheduling **43**

4.1.6 Workflow **44**

4.2 Access to GroupWise **44**

4.2.1 Novell Client **44**

4.2.2 Web-based **45**

4.2.3 PDA's Personal Digital Assistant **45**

4.2.4 Remote and Other Access **45-46**

4.3 Novel GroupWise Security **46-47**

4.3.1 Access Permission **47**

4.3.2 PDA Risks **48**

4.3.3 Firewalls **49**

4.3.3.1 Packet Filter Firewall 49-50

4.3.3.2 Application-level Gateway 50

4.3.4 Virus 50-51

5. User Feedback and Evaluation 52

5.1 Unskilled Users 52-53

5.2 Skilled Users 53-54

5.3 Expert Users 54

6. Documentation and user guide 55

6.1 How to use prototype 55

6.2 Login procedure 56-58

6.2.1 Navigation within the prototype 58-59

6.2.2 How to add content 59-60

6.2.3 Teaching & Learning 60-61

6.2.4 Course Administration 61-62

6.3 How TO Redevelop The Prototype 62

6.3.1 Customisation 62-64

6.3.2 Restructuring 64

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7. Critical Analysis and Review **65**

7.1 What works well? **65**

7.2 Drawbacks **67**

7.3 Further improvement to the GroupWise systems **69**

7.4 What Should the University Do Now? **70**

Conclusion **71**

Bibliography

List of Appendices

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List of Abbreviations

DNS	Domain Name Server
FTP	File Transfer Protocol
GW	Group Wise
HTML	HyperText Mark-up Language
HTTP	HyperText Transfer Protocol
IMAP4	Internet Messaging Access Protocol 4
LDAP	Lightweight Directory Access Protocol
LSE	London School of Economics
MTA	Message Transfer Agent
MAPI	Message Application Programming Interface
NDS	Novell Directory Services
NNTP	Network News Transport Protocol
PDA	Personal Digital Assistant
POA	Post Office Agent
POP	Post Office Protocol
POP3	Post Office Protocol 3 (Client)
SCOS	Single Copy Object Store
SMTP	Simple Mail Transfer Protocol
SSL	Secure Socket Layer
S/MIME	Secure Multipurpose Internet Mail Extension
TCP/IP	Transmission Control Protocol/Internet Protocol
UNW	University of North West
WAP	Wireless Application Protocol
XML	extensible Mark-up Language

Abstract

The University of Bophuthatswana Act (No. 10 of 1978) led to the appointment, by President Mangope, of the University Council, which held the first meeting on 28 September 1978. The Act charges the Council with the control of the University and all its affairs and activities. "Uppermost in my mind was the wish to create in our own country a university whose structures will be determined by the actual needs of today's people in today's world" (President, Kgosi Dr Lucas Mangope, 1992: 15) Today the university's key goal is teaching and learning. To better serve the need of its students, staff and clients while at the same time achieve its goal, the institution has pursued a vigorous changes on its IT system and IS policy.

As part of the institution's communication strategy, it uses e-mail, Internet and Intranet as forms of electronic communication. Because of developments in technology and the high premium placed by the University on quality education, there is a need for the current mail system to be upgraded.

This project seeks to provide brief definition of GroupWare systems as well as an overview of its features and benefits with particular reference to Microsoft Exchange, Lotus Notes and Novell GroupWise.

This report explores the features of GroupWise 6.0 and highlights some of its benefits to the University of the North West. This entails evaluating options for group-based user computing, collaborative systems and their impact on Teaching & Learning, Course Administration and Internal Communication.

This report also compares the use of GroupWare application in production at other institutions and a local company. Other areas of investigation that can improve the system both for Teaching & Learning, Course Administration and Internal communication are proposed.

CHAPTER ONE

Theoretical Framework

1. Introduction

GroupWare is technology designed to facilitate the work of groups. This technology is used to communicate, cooperate, cooperate, solve problems, compete, or negotiate. While traditional technologies such as telephone qualify as GroupWare, the term is ordinarily used to refer to a specific class of technologies relying on modern computer networks, such as email, newsgroups, videophones, or chat. http://www.usabilityfirst.com/groupware/intro.txl. Over the last few years, these systems have increasingly advanced towards the centre stage of business and education. Some organisations has standardised on Microsoft Exchange and Lotus Notes, others have selected Novell GroupWise. Be the Exchange, Notes or GroupWise, these systems all support group interaction, integration and collaboration.

1.1 Aims and Objectives of the Study

Increasing efficiency and productivity is at the centre of every business activity. To achieve this goal various establishments have geared their efforts to investigate systems or applications that would help them achieve this goal. At the University of North West, the major goal is to provide better infrastructure to students and staff for Teaching & Learning.

This project report seeks to identify key GroupWare features. The study aims to critically review these features with particular reference to Microsoft Exchange, Lotus Notes and Novell GroupWise. An evaluation of GroupWise features as part of an assessment of the product to ascertain what role it can play in the repositioning drive influenced by the merger between the University of Potchefstroom, University of North West, Vaal Technikon and the Sebokeng Vista Campus that is currently going on within all those structures. A more detailed overview is to be made of how GroupWise can contribute to Teaching & Learning, Course Administration and Internal Communication.

An investigation of current Teaching & Learning practices at UNW with an overview of other GroupWare technologies in other organisations provides a significant test matrix. Thus the project seeks, with knowledge of these technologies, to provide both students and staff at UNW a better and user-friendlier environment for learning and communicating.

1.2 GroupWare and Other Technologies

The last decade has witnessed the increasing reliance on GroupWare and other technologies for the delivery of services. Three of the key commercial GroupWare systems are Microsoft Exchange, Lotus Notes and Novell GroupWise. Other applications that have recently been developed and widely used in research and teaching & learning are Dr. B's Virtual Tool World, MBONE, WebCT and Blackboard. The latter are often classed as victual Learning environments.

1.2.1 What is GroupWare?

Computer applications that support groups are commonly known as GroupWare. The term GroupWare was first defined by Johnson-Lenz as a "computer based system plus the social group processes" (Beacker R.M, 1993). The term has widely been accepted by Scholars as a "Computer based system that supports groups of people engaged in a common task (or goal) and that provides an interface to a shared environment" (Beacker R.M 1993). Based on this view therefore, GroupWare is thus defined in terms of a group's common tasks and its needs for a shared environment. Its core features include; Electronic mail, Document Management, Calendar, and Bulletin Boards, Voice application, Intelligent databases and Group decision support systems. The advent of Information systems has also seen the development of Computer-supported cooperative work (CSCW). As CSCW are performance driven, this " enables benefits of the virtual organisation, where staff skills/expertise can be called on irrespective of time or place"(Beacker R.M, 1993).

1.2.2 Why GroupWare?

GroupWare has been defined as technologies that allow people to work together electronically irrespective of time or place. Over the last few years, the University community has increasingly become heterogeneous and made up of part time/full time, local and international students. One of the factors likely to influence future IT/IS strategy in the educational sector is computer aided teaching & learning and Internet technologies to meet the heterogeneous nature of this environment. As a result of this, collaborative working and GroupWare is of potential value. Seamless Integration with self-service facilities and collaborative working with students sharing

information with each other and staff is at the centre of GroupWare application and utilization in organization and institutions.

1.2.3 Statement of the Problem

The last decade has witnessed the increasing reliance on GroupWare and other technologies for the delivery of services. Three of the key commercial GroupWare systems are Microsoft Exchange, Lotus Notes and Novell GroupWise. Other applications that have recently been developed and widely used in research and teaching & learning are Dr. B's Virtual Tool World, MBONE, WebCT and Blackboard. The latter are often classed as victual Learning environments.

The establishment of University of North West GroupWise system has at least created a transparent environment and provide staff, students, clients an integrated and better working environment. To achieve this goal, there has been an installation of a separate NetWare 5.1 server, installation of GroupWise 6.0 software as well as Novell clients to access the system. The benefits of the environment its provision of a more detail overview in customizing a GroupWise system that better serves the needs of staff, students and the University community in general.

1.3 Hypothesis

The University of the North West uses Pegasus and GroupWise mail system for communication between its staff and students. At other universities, different systems are used depending on their culture and network operating system. Communication plays a vital role in all organizations. To achieve this goal, various computer-based systems are used in different universities and for different purposes. An examination

of these systems in different university would show a great reliance by these institutions on various systems.

1.4 Motivation of the Study

GroupWare has been defined as technologies that allow people to work together electronically irrespective of time or place. Over the last few years, the University community has increasingly become heterogeneous and made up of part time/full time, local and international students. One of the factors likely to influence future IT/IS strategy in the educational sector is computer aided teaching & learning and Internet technologies to meet the heterogeneous nature of this environment. As a result of this, collaborative working and GroupWare is of potential value. Seamless Integration with self-service facilities and collaborative working with students sharing information with each other and staff is at the centre of GroupWare application and utilization in organization and institutions.

1.5 Assumptions

The study founded that Information and Communication Technology systems in the University of North West:

- Has increased the number of computer users within the University
- Uses Pegasus and GroupWise mail system for communication between its staff and students
- Needs a thorough restructuring so that it can benefit the whole university community
- Is still in the developing stage to can cater the everyone within the campus

- **Insist on the University management to train more staff members on the ICT usage or employ extra staff in the Computer Centre**

1.6 Significance of the Study

Computer applications that support groups are commonly known as GroupWare. The term GroupWare was first defined by Johnson-Lenz as a "computer based system plus the social group processes" (Beacker, 1993). The term has widely been accepted by Scholars as a "Computer based system that supports groups of people engaged in a common task (or goal) and that provides an interface to a shared environment" (Beacker, 1993). Based on this view therefore, GroupWare is thus defined in terms of a group's common tasks and its needs for a shared environment. Its core features include; Electronic mail, Document Management, Calendar, and Bulletin Boards, Voice application, Intelligent databases and Group decision support systems.

The advent of Information systems has also seen the development of Computer-supported cooperative work (CSCW). As CSCW are performance driven, this " enables benefits of the virtual organisation, where staff skills/expertise can be called on irrespective of time or place"(Beacker, 1993).

The study illustrated key features in the development of Information and Communication Technology within the University focusing on the Internal Communication, Course Administration and Teaching & Learning. This study did help in the policy of ICT and the improvement of the university's internal and external communication. It also contributed to the formation of a support system to the staff, students and the distance learning programmes.

1.7 Delimitations

This study explores the features of Group Wise and highlights some its benefits to the University of North West. It also focuses on evaluating options for group-based user computing, collaborative systems and their impact on Teaching and Learning, Course Administration and Internal Communication.

The project also provided a brief definition of Group Ware systems as well as an overview of its features and benefits with particular reference to Microsoft Exchange, Lotus Notes and Novell GroupWise.

1.8 Definitions of Terms

1.8.1 Groupware – is a technology designed to facilitate the work groups. The term has widely been accepted by Scholars as a "Computer based system that supports groups of people engaged in a common task (or goal) and that provides an interface to a shared environment" (Beacker, 1993).

1.8.2 Teaching and Learning – A framework allowing students the opportunity of gaining credits through a variety of learning processes in one or more departments, along an agreed pathway towards an assessed award (http://wwwusabilityfirst.com/groupware/intro.txl).

1.8.3 Course Administration – This is the administration of the course, which means the registration, finance, and the running of all the office duties of that particular course (www.cognetic.com). The act or process of administering, especially

the management of a course or subject. The group of people who manage or direct an institution especially a school or college.

1.8.4 Internal Communication - The act of communicating, transmission. The art and technique of using words effectively to impart information or ideas. The field of study concerned with the transmission of information by various means, such as print of broadcasting. Any of various professions involved with the transmission of information such as advertising, broadcasting or journalism (http://www.jisc.ac.uk:8080/pub97/sm01sechtml). A means of communicating especially a system such as mail, telephone or television for sending and receiving messages. A network of routes for sending messages and transporting troops and supplies.

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CHAPTER TWO

2. Literature Review

Though a fairly recent concept, GroupWare has received considerable attention by scholars. Beacker, (1993) published his book titled Readings in GroupWare and computer- supported cooperative work in which he discussed themes on the process of developing interactive systems, and research frontiers in human-computer interaction. He analyses GroupWare and Computer-Supported Cooperative Work (CSCW) as paradigm shift in computer use. He rightly pointed out that by the Year 2000 many or most software tools will probably be GroupWare. Though this project report does not contest Beacker's view, it presents a picture of GroupWare systems in production.

Alan Dix et al (1993) published their work titled Human Computer Interaction in which they analysed the concept of human computer interaction design. Though a good book on design practices its review of GroupWare is passive. However its analysis of CSCW issues echoes various themes that are employed by University of North West for Teaching and Learning. There is a great abundance of literature and software on GroupWare systems and their application. However this project reviews various examples of GroupWare application with particular reference to the University of the North West ICT programme.

A review of material on GroupWare from the Internet (see Bibliography) has provided background information on GroupWare system. But non-of these have

critically evaluated the future of GroupWise. Classical works such as Mastering Lotus Notes (see Bibliography) have fallen short of critically evaluating its features. Rather, it presents its core features.

2.1 Overview of GroupWare Systems

There is a general consensus amongst GroupWare experts that the goal of GroupWare lies in its ability to assist people in communicating, collaborating and coordinating group activities. Ronald Baecker (1993) specifically defines GroupWare as "computer-based systems that support groups of people engaged in a common task (or goal) and that provide an interface to a shared environment".

A number of GroupWare platforms exist. These include Microsoft Exchange, Lotus Notes/Domino, and Novell GroupWise amongst commercial applications and other applications that facilitate research. A detailed examination of these systems highlights some real-time features.

2.1.1 Microsoft Exchange.

Microsoft Exchange is a product that has evolved over the years. The examination of this platform is focussed on the features Microsoft Exchange 2000, the most recent release by Microsoft and a product that supports CSCW. It presents an infrastructure that creates, stores and shares information, as well as tools for acting on that information with speed and intelligence www.microsoft.com/exchange/default.asp.

Although Exchange 2000 has been regarded by some experts as being reliable, scalable, with a low cost of ownership and a secured infrastructure that is easy to

manage, it has a number of drawbacks. This is especially so when the product is compared to Lotus Notes /Domino.

Features

Micorsoft Exchange has an array of features which include: mailing lists, newsgroups, calendar, contact and task management, discussion groups and document-centric workflow that could be categorised under the following three headings:

- messaging and collaboration
- anywhere, anytime collaboration
- value-added collaboration solution

Messaging & Collaboration

The increasing high level of technology and the demands of the digital economy has placed a heavy premium on the ability to exchange information seamlessly. www.microsoft...exchange/productinfor/over.htm. Building and maintaining reliable messaging systems is therefore at the forefront of corporate and other organisations including academic institutions. The feature that constitutes a backbone to MS Exchange 2000 is its enhanced platform for messaging and collaboration. There has been a general observation that MS Exchange 2000 has been created to take full advantage of the capabilities of Windows 2000. This has resulted in the effective integration and management of corporate networking and infrastructure. This has resulted in some cases in low cost-of-ownership messaging and collaboration www.microsoft.com/evaluation/.

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Another feature of MS Exchange 2000 is the Active Directory Services. This feature takes advantage of Windows 2000 Active Directory to create a single management point for organisation's messaging system. The distributed services offered by MS Exchange 2000 has capabilities in delivering scalability to tens of millions of users by enabling systems to be stored on different servers. Its policy-based administration features offer a powerful model that enables one to make changes across mailboxes, servers and folders in a single operation.

Anytime, Anywhere Communication

In the last few years, IT and IS has changed drastically. To catch up with new trends in cooperate business and delivery of organisational goals, it is no longer enough to simply deliver electronic mail and the Internet to the desktop. The performance of organisations has in the recent past been pegged to the speed with which the information required is delivered. "In order to meet this goal, companies and organisations are faced with the basic reality of bridging the barriers of time, distance and technology to provide employees within the organisation with real-time access to the information that is required irrespective of time and place" (Todd Foley (1997). MS Exchange has a wide range of emerging digital technology such as unified managing platforms, web access, presence information, chat services, data conferencing, audio and video conferencing and URL addressing.

The instant messaging feature of Exchange is built on a secured architecture. Though ideal for enterprise use and business-to-business communication, it is embedded with a number of pitfalls. The presence information feature enables a knowledge user to see if others are logged on to the network or Internet. In the last few years, audio and

video conferencing have increasingly become vital in co-operation management and delivery of services.

Value-Added Collaborative Solution:

In recent years, messaging used to be just another way of communicating. Telephones, faxes, forms and written documents were and are still ways of sharing information. Advancement in technology has lead to development of massaging infrastructure that has in a number of was increased workers productivity. Exchange 2000 has built-in services such as calendaring, contact and task management, discussion groups, and document–centric workflow support feature. Building work/flow applications with business logic is an enhanced feature of Exchange 2000. This is capable of tracking work/flow processes such as document approval, expense reporting and payment of purchase orders. www.Microsoft.com/exchange/evalaution/features/workflowbuslogic.asp.

Collaboration Data Objects 3.1 and Exchange 2000 event model provides a systematic workflow engine to control workflow state-transition and associate business logic action with events. Exchange 2000 support for HTTP and XML means data can be accessed through the web.

Benefits

The key benefits of Exchange 2000 have significantly been linked to the business value of the product. Some of these benefits have to do with the reduction in cost and increased productivity namely:

- Reduced hardware and software costs, including cost of migration and upgrading.
- Reduced system and administration, management and training costs.
- Increased team productivity.

As earlier mentioned, Exchange 2000 server seamlessly integrates with Windows 2000 operating system. This allows business to increase overall productivity. Integration and effective utilisation of other Microsoft products such as Outlook 2000 provides an easily managed messaging and collaboration infrastructure.

The use of Microsoft Windows 2000 Active Directory Services in Exchange server makes systems planning easier, since directory structures are already in place for a unified massaging and network infrastructure www.microsoft.com/exchange/productinfor. Microsoft Corporation has argued that hardware and software costs reduce as a result of the innovative database feature of Exchange 2000. These include multiple message databases, active clustering and distributive service.

From a general point of view, Exchange 2000 provides a significant number of benefits for business of all size, organisations and academic institutions. As already mentioned Exchange 2000 server seamlessly integrates with the Windows 2000 operating system, thus offering a wide range of benefits.

2.1.2 Lotus Notes /Domino

"Lotus Notes R5 is an integrated e-mail and e-business platform for the Internet and corporate Intranets. Its key features include e-mail, calendaring and group scheduling" Todd Foley (1997). Tight integration with Lotus Domino R5 server makes notes R5 one of the powerful platforms for e-business clients. With an improved level of technology and infrastructure, Notes enable organisations to lower the total cost of

messaging. Collaboration infrastructure enhances user productivity and thus reduces administrative overhead. Notes and Domino are complementary to each other providing security, mobility and integration. As compared with other GroupWare systems such as Exchange and GroupWise 6.0, Notes strives for increased collaboration and integration with many platforms.

Features

Lotus Notes and Domino R5 are embedded with collaborative business and messaging solutions. Notes has an easy-to-use and customisable client for e-mail, calendering, group scheduling, web access and information management. The Domino Server family incorporate collaboration solutions for e-business.

Messaging: Electronic messaging has evolved beyond basic e-mail, to include support for collaborative web applications and corporate Intranets (www.cognetic.com). The availability of enhanced services for mobile users and their fast growing array of wireless communication devices such as PDAs has placed a high premium on the development of interactive and integration software.

"Electronic messaging has proved to serve as a foundation for collaborative solutions and other strategic solutions that can yield real competitive edge and support future growth" Todd Foley (1997). These solutions vary from company to company. The great dependence and reliance on messaging by both corporate organisations and academic institutions makes messaging systems a central focus in many organisations.

Lotus Corporation in developing its messaging infrastructure focuses on security and cost effectiveness. Though not at an optimum level of satisfaction, Lotus messaging system features currently include

- Integrated web access
- Rapid development of applications over web protocols
- A common unified Inbox for all forms of messages, e-mail, fax, pager and even voice mail.
- Enterprise scale workflow.
- Live chats, shared applications and other forms of real-time collaboration.

Shared mail: The availability of shared mail feature within the Domino scope, means Domino massage store can optionally be configured to use shared mail or single copy object store (SCOC). Thus saving significant amount of client space and reducing message traffic http://www.novell.com/producr/groupwise/certtified.htlm.

Enterprise scale directory service: Reports indicate that the Domino directory is a scalable and secure infrastructure with full LDAP V3 support throughout. This means that changes made in any instance of the directory can be propagated throughout the organisation.

Notes Address Book: The Notes personal address book features are usually placed on Notes desktop. Its content ranges from contact information and personal notes and this is synchronised with the enterprise Domino directory http://www.novell.com/producr/groupwise/certtified.htlm.

Centralised configuration management: This lets administrators centralised configuration management. Thus reducing the skill required at remote sites.

Web-based server Administration: As compared with GroupWise, while wed-based server administration is design within Domino to offer greater convenience and flexibility, its capabilities allow many common server management tasks to be performed from any location via the internet or intranet using a web browser http://www.novell.com/producr/groupwise/certtified.htlm.

While GroupWise has this feature, it lags behind in many areas of administration like effecting change to server configurations. The task of adding, editing and deleting users or groups do not exist within the web enable environment of GroupWise.

Workflow automation is an enabling technology that streamlines the integration of people with the information they need. This reduces cycle time thus increasing productivity and improving the quality and responsiveness of client. Workflow leverages expertise and information to improve organisational productivity. This feature can aid significantly in Teaching & Learning. According to Wolfgang Hilpert, Domino workflow eliminates cumbersome manual processes that are prone to communication error www.Lotus.com/products/Dom.

Lotus Notes support for web standards makes Note R5 the one point of call in which to receive and manage e-mail. The newsgroup calendar view allows one to see the free and busy time slot of your whole team, at once. Though with given appropriate access permission. The view of each group member calendar makes it easy to manage multiple calendars and schedule appointments. This feature is also supported by GroupWise 6.0.

Benefits

Of significant benefits to organisations is the Domino's architecture that supports many platforms and transport protocols.

	Windows NT	UNIX	A5/400	S/390	O52/word
TCP/CP					
X.PC Notes					

Domino provides support for NetBios/NetBEUI, SNA, AppleTalk, VINES, X.25, SPX and SPX2. The benefit of this to organisation is that, it enables companies to apply Domino messaging infrastructure on whatever server that best meets organisational needs as well as systems already in place. Lotus Corporation has indicated that deploying Domino on highly scalable server platforms facilitates replication and partitioning, which can yield low cost of ownership. Though this is true, when compared to Exchange 2000. The cost of ownership tends to be low with Exchange, than Domino.

This fact is further stressed by test result conducted be ZDNet.com. They have accordingly indicated that Exchange 5.5 though an earlier release from Microsoft has capacity to better service a large POP/SMTP user population than Domino R5 www.microsoft.com/exchange/evaluation/compare/ZDLotus.asp. In spite of this fact, Domino's integrated messaging and web application platform makes comprehensive services like message routing, security, workflow, and replication available to all applications. The Domino message architecture supports a wide range of messaging clients in the industry via Lotus Notes, Netscape Navigator, Eudora, POP3 and IMAP4 internet mail client/ Microsoft outlook and wireless devices such as PDA`s

and data-enabled cellular phones and pagers. The key benefit of this to organisations is that, it enables them to deploy whatever mix of clients that best met users needs.

2.1.3 Novell GroupWise 6.0

GroupWise 6.0 is a dependable messaging and collaboration system that connects a user to his/her universal mailbox anytime anywhere. "It is a seamless, cross-platform collaboration and messaging system, which is used in corporate organisations and institutions" Len Fertuck (1995). It has capabilities of communicating across Intranets and Internet. Its main features include:

- Calendar
- Newsgroups
- Document sharing
- Secure messaging
- Scheduling of items
- A universal mailbox and
- An address book.

According to reports from IT experts, the installation process of GroupWise is much easier than MS Exchange and Lotus Notes/Domino. The implementation of a GroupWise 6.0 environment involves installing a NetWare sever, installing a basic GroupWise System, installing GroupWise Internet Agent, installing GroupWise Internet Web Access, installing GroupWise monitor, installing GroupWise Agents and installing GroupWise client, Len Fertuck (1995).

Features

On March 23, 2001 Novell announced the availability of Novell GroupWise 6.0 collaboration software that allows internal and external users to communicate and work together across all types of networks and platforms. The software manages a variety of technologies including e-mail, faxes, documents, spreadsheets, images, schedules, discussions, and task.

The calendar feature within the system allows users to keep track of appointments, meetings and events. "After scheduling an appointment in a users personal calendar, the user is able to set GroupWise to notify him/her of the appointment. Users are also able to schedule and prioritise task in their personal calendar" Len Fertuck (1995). The system has capabilities of moving any tasks that are not completed on its scheduled date to the next day's list. This feature makes collaboration easier especially when colleagues are able to view each other's schedule. Identification of common time slots thus eliminates conflicting appointments.

"The scheduling feature allows for scheduling appointments, sending tasks, sending reminder notes, accepting or declining scheduled items, specifying a time zone for an appointment and scheduling recurring items" Len Fertuck (1995). When an appointment, task or notes has been sent, it is possible within GroupWise to check if it has been accepted or declined. This feature can also be used in reserving equipment, rooms or other resources.

GroupWise 6.0 is an e-mail system. Users are able within the system to send messages to the same department, organisation or distant colleagues irrespective of

the mail system they are using. With the aid of GroupWise gateways, users within the GroupWise environment can communicate with any e-mail user in the world.

With availability of an address book feature, one can add entries of people, resources, and organisations, recording all information in predefined templates http://www.encyclopedia.com/articlesnew/100061.html. Sharing of an address book with other users within a GroupWise system is also possible. To facilitate communication with people you contact often, GroupWise automatically creates an address book for your frequent contacts.

To streamline business task, GroupWise workflow can be used to manage the sequence of actions necessary to complete business processes. With GroupWise workflow, one can send files or links to a file, along with instructions to a series of users or a group of users. The system sequentially forwards workflow to the next user as each other completes the work item.

Folders and document sharing allows users access to shared folders and documents within a GroupWise environment. With GroupWise WebPublisher and an HTTP server installed on the network, users can easily publish documents from GroupWise libraries to the World Wide Web and to local Intranets http://www.encyclopedia.com/articlesnew/100061.html.

GroupWise support for IMAP4 and POP3 allows users to access the universal mailbox from any location on the Internet. With IMPA one can view, edit, and manage messages and folders in a GroupWise Post Office. www.novell.com/source/printer

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GroupWise 6.0 have a wireless application feature that runs on any device that supports Wireless Access Protocol (WAP). The inclusion of this feature within the GroupWise set of capability increases the scope of how and when collaboration takes place within an organisation. The effective integration of PDA's and other wireless laptop computers thus increases corporate efficiency.

Benefits.

GroupWise specific benefits include collaboration and messaging that is secure and works across many platforms and devices. Thus accelerating organisational responsiveness, productivity and efficiency. Secure and power web-and wireless-based collaborative environments with unprecedented access means users are able to expand their collaboration zones and securely integrate across board. Information sharing is a vital component in new corporate endeavours. GroupWise 6.0 support this aspect thus making the product a central focus both in corporate as well as educational institutions.

Communicating with GroupWise 6.0 is secure. The system protects messages by leveraging industry-standard Public-key infrastructure technologies. " Because GroupWise also supports Internet-standard protocols, Secure Sockets Layer (SSL), and gateway integration, secure interoperability with virtually any other collaboration system is ensured" www.novell.com/source/printer_friendly/.

The tight integration of Novell GroupWise to Novell NDS is of significant benefit to companies. "Novell GroupWise's comprehensive support for palm OS-based devices combined with its support for other handheld devices... extends Novell's lead in the desk less collaboration market" www.novell.com/news/leadstories/2000/may18/ .

Amongst other aspects, Novell GroupWise 6.0 supports industry Entrust and PGP Internet security feature, provide document access, conversion, integration as well as enhanced business collaboration over internet. An interactive calendar for scheduling that can be used to coordinate people and resources through group scheduling is likely to be of benefit to companies the deploy the product.

Installation.

The installation of GroupWise 6.0 evolves seven major processes. Installing a NetWare sever, installing a basic GroupWise System, installing GroupWise Internet Agent, installing GroupWise Internet Web Access, installing GroupWise monitor, installing GroupWise Agents and installing GroupWise client.

A basic GroupWise system consists of a single domain with one post office, a document library, and one or more users. The GroupWise user has a mail box in the post office. The GroupWise post office agent (POA) delivers messages between users' mailboxes in the post office. If there is more than one post office the GroupWise Message Transfer Agent (MTA) routes messages between post offices and domains

The installation of a GroupWise Internet agent adds internet messaging services to an existing GroupWise system. The system allows communication between GroupWise users and users of other messaging systems who use the Internet to send e-mails. "The internet Agent picks up inbound e-mail messages from the internet, converts them from RFC-822, SMTP, or MIME format to GroupWise message format, and then passes the converted message to the GroupWise MTA" (Kenneth E and Julie E Kendall, 1995).

Installing GroupWise Web Access enables access to GroupWise mailboxes through the web browser on computers or WAP-enabled wireless devices such as PDA's. The GroupWise Web Access also includes GroupWise Web Publisher. This is an optional extension to GroupWise Web Access. This feature allows users to publish documents from the GroupWise library to the web. Other wed users can then view the published documents in their web browsers provided they have the rights.

Installing a GroupWise monitor allows for the monitoring and management of GroupWise agents and gateways from any location you are connected to the Internet and have a web browser.

The installation of GroupWise client sends and receives messages. It can be installed to users' workstations by the user or by the systems administrator. 'Workstation install allows the user to run GroupWise from the network while standard install, installs all files on the user's hard drive" (Kenneth E and Julie E Kendall, 1995).

Requirements

Hardware/software	Requirements
Operating System	Windows 95 or higher
CPU	Pentium* 133 or higher (recommended) for Windows 95/98 and Windows NT* Pentium 200 or higher (recommended) for Windows 2000
RAM	48 MB or higher (recommended) for Windows 95/98 64 MB or higher recommended) for Windows NT* 128 MB or higher (recommended) for Windows 2000
Disk Space	5 MB (workstation installation) 51 MB (standard installation)

2.2 Teaching & Learning

In order to achieve University of North West 's key goal of Teaching & Learning, teachers and academics are placed under considerable pressure to source out ways of increasing output in Teaching & Learning. To achieve this goal, various approaches are employed. "While face-to-face teaching is as old as education itself, the provision of paper handouts, network drives and web sites are recent concepts geared towards improving the quality of Teaching & Learning" (Kenneth E and Julie E Kendall, 1995).

2.3 Face-to-face

Face-to-face contact is the most primitive form of communication - primitive, that is in terms of technology (Alan Dix et al 1993). Over 70% of Teaching & Learning at the University of North West is by face-to-face contact. Lectures are delivered in rooms. A typical class taught model lasts for 45 minutes http://www.encyclopedia.com/articlesnew/100061.html. During the face-to-face contact between teachers and students, there exists a direct two-way flow of information. Face-to-face contact between students and lecturers is the most important part of Teaching & Learning at University of North West.

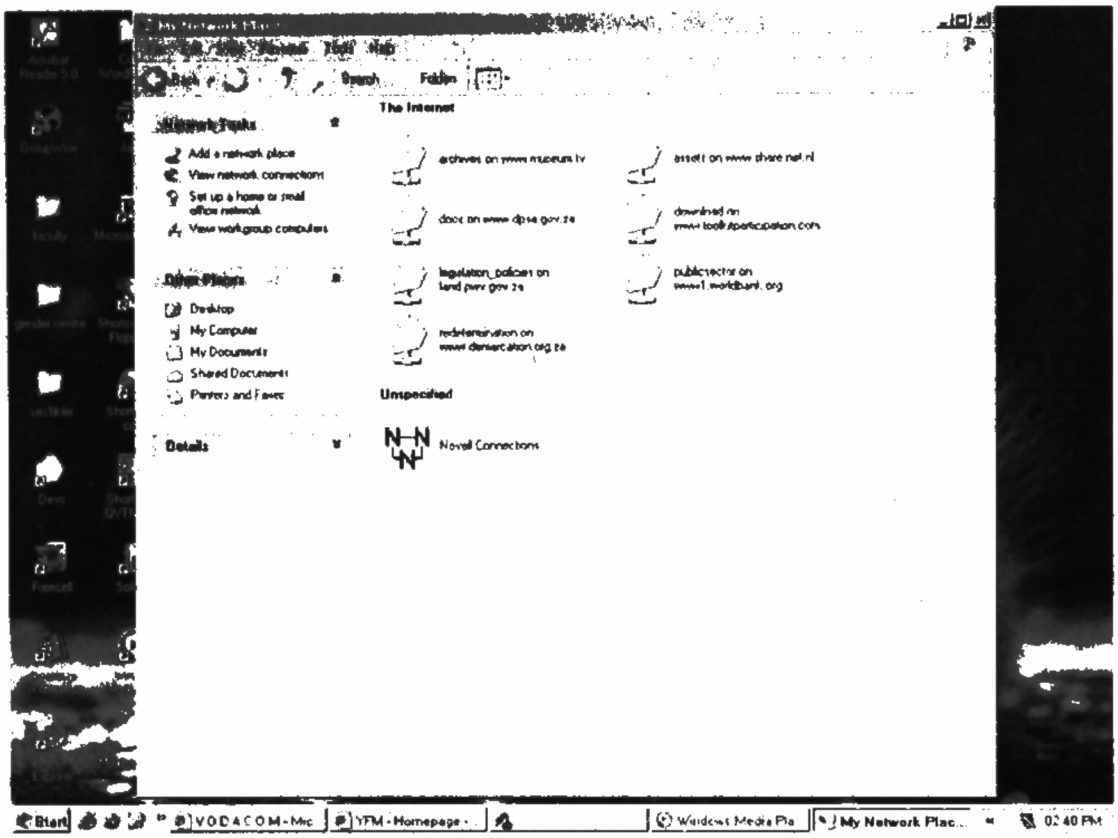
2.4 Paper Handouts

Paper handouts are given to students of University of North West as part of Teaching & Learning. Handouts are either notes or overhead projectors (OHP) slides presented to students http://www.encyclopedia.com/articlesnew/100061.html. Some lecturers do not use this medium as a tool of Teaching & Learning.

2.5 Network Drives (All drives)

Network drives constituted a major part of Teaching & Learning at the University of North West. "When students logon to computer system of the University, they have access to a number of drives depending on the right they have to such drives or folders" (Computer Weekly, 3rd May 2001).

Figure 1. Network Drives on the University of North West System.



Adopted from the University's GroupWise system.

A majority of students have rights to the 3 ½ floppy (A:), C:, D:, staff on ' CIS'\APPS'(J:), APPs' CIS' (Y:), U:, and Z: drives. Students are allowed access to A: drive on the University's computer system. In most company with sensitive security data A: drives are normally disabled. The C: drive has programs such Acrobat 3, command.com, autoexec.bat and program files. The J: drive, which is dedicated to staff, holds staff folders and information on modules either at undergraduate or postgraduate level. The Y: drive within the network system holds login files, staff folders, profile and GPAS, which is print software. There also exist F: and Z: drives. Perhaps of most importance to the students is the U: drive. The U: drive is a network space within the system that allows the students space to store personal files,

assignments and lectures note. Though there is limitation to this space, it constitutes a major aid towards learning at the University.

2.6 Web Sites

The utilisation of web sites for Teaching & Learning is a fairly new concept at the University of North West. Lecturers can have web sites with information on course modules, notes and research papers. With the installation of a GroupWise 6 environment at the university, there is a likely tendency that more web sites would be developed to promote Teaching & Learning at the university. The current URL is http://unw001.uniwest.ac.za

Eg: jspring for computing and Internet security while http://unw001.uniwest.ac.za ~ebaker has been established by in the University for staff and other administration members. Accesses to these sites require passwords.

2.7 Course Administration

One University of North West 's key goal is to make its students and staffs attain their full potentials. This will be achieved by various efforts to provide quality education, " education that works". "In administrating modules, University of North West like many other institutions of higher learning provide course handbooks, module information, notice boards and also the organisation of workshops and talks. Academic advice is also provided to students" www.uniwest.ac.za. The implementation of these aspects is a constant attempt by the University to effectively manage students' academic progress.

2.8 Course Handbook

University of North West provides course handbooks to students at the beginning of the course. "A course handbook contains information on modules that make up the course, the structure of the course and the period of the academic year when that module has to be taken" (Computer Weekly, 3rd May 2001). The course handbook addresses issues such as structure and contents of course, admission requirements, mode of delivery, assessment and regulations and a brief outline of course module information.

2.9 Module Information

Module information for modules studied at the University of the North West can be acquired from a number of sources. While a majority of this can be found on individual module information pack, the course handbook also has part of this information. Lecturers and course managers also provide part of the information.

The aim of module information and handbook is to provide information on module code, aims and objectives, block when model has to be taken, prerequisites, restrictions as well as learning outcomes http://www.nokia.com/securitysomtions/platforms/650.htlm. Details on assessment are also provided. The single most important part of module information is the provision of an outline-teaching schedule and recommended reading list.

2.10 Notice board

The idea and usage of notice board has evolved over the centuries. While conventional notice boards are being used for teaching, in the last few decades this has witnessed the use of more modern methods of communication in order to promote

Teaching and Leaning. Suffice to mention here that a notice board exists in almost all departments where Teaching and Learning takes place at University of North West. They carry information about lectures, exam timetables and local advertisements. They also carry information on entertainment and other activities within the university. Perhaps the single most important notice board at University of North West is that which has vital information that can help in teaching & learning. It is one on the wall of Learning Resource Centre (LRC). It provides information on the use of library facilities as well as information technology basics such as e-mail http://www.nokia.com/securitysomtions/platforms/650.htlm.

2.11 Internal Communication

Communication has become the single most important factor in education, research and development www.cognitive.com. Channels of communication at University of North West include face-to-face, distribution of fliers (leaflets), the use of notice boards and the Pegasus mail system.

2.12 Face-to-face communication

Face-to-face communication at the "album" (front of the Cafeteria) location of University of North West is estimated at about 70%. At the out reach sites of the university like Molopo Tusk, this figure is about 90%. "The reasons for this difference according to staff at both locations, lies in the level of information systems placed at the disposal of students" said Ms Beauty Mphatwsa (IT Manager, University of North West). A majority of students at the out reach sites solve most of their problems through a face-to-face contact with a member of staff at the help desk. From statistics gathered, a very small number of students use either e-mail or phone to make

enquiry. Though face-to-face communication occupies a prime position at University of North West, other aspect and means of communication should be encouraged. With the increased level of technology and the implementation of information systems at University of North West, this is likely not a problem.

2.13 Leaflets

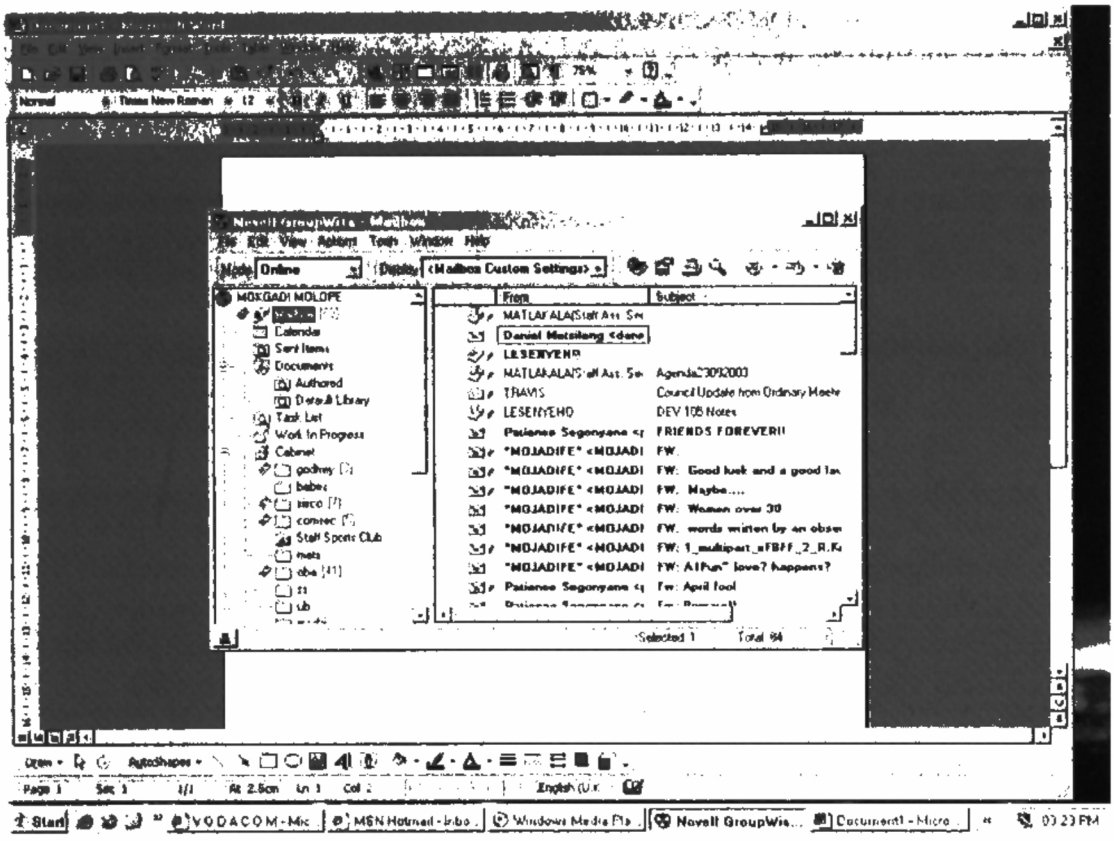
The distribution of leaflets constitutes a great portion of the manner in which information is disseminated at University of North West. "A majority of these leaflets provide information on either courses or services provided within the university" said MS T Tlhabane (Faculty Officer, Human & Social Sciences). Faculties, Department and Units hold large chunks of leaflets ready for distribution at the start of each new academic year. Their content briefly describes the service or maps to faculties or to where such facilities are held.

2.14 Pegasus Mail

Pegasus mail is part of mail system at University of North West. Students should be attached to the Learning Resources, which provide them with automatic access to the university's Pegasus e-mail service as part of their network account. Regulations exist covering the use of e-mail and Internet at the university http://www.nokia.com/securitysomtions/platforms/650.htlm. The use of Internet mail and chat services is not allowed in the Learning Resource Centre every time.

However, students should be allowed to send and receive e-mails. Figure 2 below is a sample inbox mail feature of a staff member at University of North West using the GroupWise mail system.

Figure 2 Browser Window of a Staff member e-mail Account on GroupWise Mail



Adopted from the University of North West's GroupWise system

Within the GroupWise mail system students have the ability to open, send mails, receive, reply mails, forward, copy, delete, print and make attachments. Although the mail systems is intended as a means of communication, features provided by Pegasus mail system are likely not to meet the growing needs for collaboration and seamless integration http://www.nokia.com/securitysomtions/platforms/650.htlm. The need for web-based mail systems is therefore of vital importance to students at the university. The gap likely to be filled if the GroupWise 6.0 pilot scheme is implemented at the university.

2.15 Potential Impact of GroupWare

UNW has already embraced the concept of GroupWare because of the highly potential benefit it can bring to the university. Its design and implementation of a wide system for computer based assessment in close collaboration with academic and support staff is a pointer to the right direction. The university is currently running a GroupWise 6 system. If effectively implemented to the entire university, the potential benefit it can impact to teaching and learning, course administration and internal communication would be enormous http://www.nokia.com/securitysomtions/platforms/650.htlm. This would be as a result of students and staffs haring information with each other regardless of time or location

GroupWare implementation incorporates seamless collaboration, Integration and workflow management. This, in a number of ways is likely to have great impact at the university especially with the university's part-time students. This use of GroupWare for collaboration with groups of people either at the same place and time, different place same time, or different time same place is likely to contribute significantly to the universities drive towards quality education" said the IT Director, Ms C Pieterson, University of North West.

Since most GroupWare systems are web enabled, effective synchronization of information on Teaching & Learning and Course Administration is likely to be of potential benefit to students at UNW. In the recent past UNW has gained a national reputation for its systematic approach to the adoption of computer-assisted assessment. The implement of a GroupWise 6.0 pilot attest to the universities

commitment to provide quality education to is a student. The potential benefit to the University of GroupWare is the systems support for anywhere, anytime collaboration http://www.nokia.com/securitysomtions/platforms/650.htlm. Though UNW has not effectively implemented GroupWise 6.0, doing so would provide platforms that can contribute to teaching & Learning, Course Administration and Internal Communication.

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CHAPTER THREE

Research Design

3. Methodology

The research method adopted by this research project was a varied and mixed one. Combinations of research methods were employed to capture and analyse data.

The methods adopted included; the use of qualitative and quantitative data search over the web, interviews, questionnaires, and document search, secondary materials such as books. Practical tests carried out as a member of the GroupWise pilot project is also one of the approaches that was undertaken to conduct this research. Suffice to mention that time constraints limited the amount of data that had to be collected.

3.1 Methods

The following approaches were used to collect and analyse data.

3.1.1 Web search- there was an extensive search over the web on themes related to the project. Because of the vast nature of the data collected as result of this approach, they constitute the theoretical background of the report (see Bibliography).

3.1.2 Interviews: Elaborate and extensive interview sessions were conducted with IT experts and general users of GroupWare system. Their views provided not only qualitative assumptions, but also a test matrix that was used to crosscheck other facts and other opinions.

3.1.3 Questionnaire - A questionnaire was administered to various categories of users. These included expert user, skilled and unskilled users. A range of student and staff were asked to fill in the questionnaire.

3.1.4 Hands on use of GroupWise - this gave a true picture of the system in production. It was therefore possible to compare and contrast it with other GroupWare systems.

3.2 Research Application.

Various application exist that aid significantly in research and development. These include Dr. B's Virtual Tool World an interactive web solution for classroom, conferencing and message board and MBONE short for Multicast Backbone was also one of such applications.

3.2.1 MBONE

MBONE is a virtual network that has been in existence since 1992 www.savet.com/mbone/ch8.html. Today, hundreds of researchers use MBONE to develop protocols and applications for group communication. Multicast provides one-to-many and many-to-many network delivery services for applications such as videoconferencing and audio where several host need to communicate. Multicast has existed for several years on local area networks such as Ethernet and Fiber Distributed data interface. However, with Internet protocol multicast addressing at the network layer, group communication can be established across the Internet.

3.2.2 Dr B's Virtual Tool World

Dr. B's Virtual Tool World is an interactive web solution for classroom, conferencing tool and message board tool. Its main features include on-line classroom with messaging and conferencing components. The system enables student's access to on-line classes, completing student's profile, viewing current assignments, entering their private group section, contributing their research information and links to the classroom discussion etc.

3.3 Sampling Techniques

The subjects of the study were the university students, staff, computer centre staff, part-time students, members of the selected local companies and other academics. A stratified random sample method was used to choose the subjects. People who participated in the study have been people who are using the same system or familiar to the system. A random sampling was also used to choose the subjects.

CHAPTER FOUR

4. Findings

Focus on Novell GroupWise

GroupWise 6 is a dependable messaging and collaboration system with key features for effective communication and interaction http://www.nokia.com/securitysomtions/platforms/650.htlm. This chapter evaluates the core features of GroupWise 6.0, including access to the GroupWise system as well as it security aspects.

4.1 Evaluation of GroupWise Features

The core features of GroupWise include: calendar, newsgroups, mailbox, documents, task management, group scheduling and workflow.

4.1.1 Calendar Evaluation

As already discussed in chapter 3.3.1, the calendar feature within the GroupWise system allows users to keep track of appointments, meetings and events. While it is convenient for a schedule to be viewed in a variety of formats, the inability of the system to block private schedules within the system from view by a third party is an issue of great concern http://www.novell.com/producr/groupwise/certtified.htlm. Though this inadequacy exists, other features of calendar like the multi-user view concept is highly effective though with given proxy rights. Suffice to mention here that printing and changing of calendar view and concepts ease usability and friendliness.

4.1.2 Newsgroup Evaluation

The newsgroup feature allows users the ability to view and post newsgroup items from GroupWise http://www.novell.com/producr/groupwise/certtified.htlm. Though similar to GroupWise shared folders, newsgroups have an additional advantage. Instead of sharing information within the department or company, users can share information with anyone on the Internet. The defect of this feature is its user-unfriendly nature. To use newsgroups, users must have access to a Network News transport Protocol (NNTP) server. The insecure nature of our networks makes access to NNTP servers another issue of great concern.

4.1.3 Mailbox Evaluation

The mailing feature within the GroupWise system provides many options for sending and receiving different kinds of electronic mail. Though a robust mailing system with capabilities of sending and receiving e-mails from POP3/ IMAP4 accounts, and coping with file attachments, the mail format feature of GroupWise leaves something to be desired http://www.novell.com/producr/groupwise/certtified.htlm. While spell checker exists, bold and the use of different font size and various formatting styles do not exist. However, the systems ability to keep addresses of users' frequent contacts is recommended as this saves a lot of time.

4.1.4 Document Evaluation

The document feature within the GroupWise tool set is a concept that is likely to be of great benefit at the University of the North West. The ability of the system to allow users capabilities of sharing folders and documents is useful especially within a University community, where teachers may want to share information with other colleagues or students. Though a good feature within the GroupWise tools set, the

storing of document as flat files is an issue that needs investigation. "Though GroupWise assigns a unique number to each document this is not enough to ease search" said Ms N B Mphatwsa, Academic I T Consultant, University of North West.

The highly personalised environment within the GroupWise system is yet another issue of concern. This is because GroupWise has not got the capability of maintaining a certain level of hierarchy with two users sharing the same folders. However, the ability of the system to allow the publishing of documents on the web with a web publisher, viewing the history of a document, storing multiple versions of a document, viewing documents when a network is unavailable, and compressing and encrypting documents makes the GroupWise document feature a worthwhile concept http://www.novell.com/producr/groupwise/certtified.htlm.

4.1.5 Task Management and Group Scheduling

The scheduling of appointments, a tasks and reminder note is possible within a GroupWise environment. It is possible to find out whether someone has accepted a task or is coming to a meeting by checking for an accepted or declined status in the item's properties. It is likely that with a full development of this concept, paper-based memos will be eliminated within administrative circles. This is an aspect that does not only save cost, but also increases efficiency and productivity. "GroupWise support features in scheduling appointments, sending tasks, sending reminder notes, accepting or declining schedule items (calendar/diary), and scheduling recurring items are likely to contribute significantly in the corporate as well as educational sectors' (Norfolk, D: 1994).

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4.1.6 Workflow

As exemplified in 3.3.1, GroupWise workflow can initiate and manage the sequence of actions necessary to complete a business process. Since the system is able to automatically forward scheduled work to the next recipient, increased efficiency and effective management is likely to be achieved within a work environment.

4.2 Access to GroupWise

Access to a GroupWise system can be achieved from various points of entry. This depends very much on the user and the facilities at his or her disposal. Access to a GroupWise environment and system can either be through a Novell GroupWise client, web-based, PDA and other hand-held devices www.cognitive.com.

4.2.1 Novell Client

The main access to a GroupWise system is through the use of a Novell client installed on a local network or external computer. "Full functionality access to resources and administration of a GroupWise system can only be implemented or achieved with the existence of a Novell client" (David Norfolk, 1994). The GroupWise client is available from Novell Corporation and is designed to interface with a GroupWise server. There has been an implementation of Novell GroupWise at the University of the North West as part of a pilot scheme (See Figure XX: Novell Client Front-End). The client's functionality is not limited to a Windows platform. However an investigation has been conducted to ascertain the level of compatibility with a Novell client on Macintosh, Linux and Solaris operating systems.

4.2.2 Web-based

GroupWise supports web access. It includes a Java and HTML 3.2-enabled version of GroupWise for web access. Since GroupWise has web access features, a web browser can be used to access a user's universal mailbox. This access enables account holders to view their calendar, perform searches, send and retrieve e-mails, attachments, faxes, appointment, tasks, and documents from anywhere on the Internet or on corporate Intranets http://www.novell.com/producr/groupwise/certtified.htlm. GroupWise web access uses an intuitive browser interface identical to the GroupWise desktop environment. Account holders are able to, with a web access create and delete folders, access personal address book, and accept shared folders. Unlike the Novell client, full administration of the network from a browser access route cannot be achieved.

4.2.3 PDAs Personal Digital Assistant

GroupWise 6 web access supports access to GroupWise mailboxes through WAP-enabled wireless devices with micro browsers that support HDML or WML www.novell.com/product. Wireless telephones and wireless PDA devices such as Windows CE, Pocket PC and Avant GO interoperate with GroupWise 6. As such the GroupWise mailbox can be accessed with such devices (See Appendix XX: PDA Front End).

4.2.4 Remote and Other Access

GroupWise 6.0 have a remote access feature. This means that a user who travels or works from stand-alone or remote PC's using a modem can get connected to the network. Tests conducted with the pilot scheme at the University of the North West

indicate that when access of the GW is achieved through this means, users have the same capabilities as with a GroupWise client. "Account holders are able to exchange e-mails, appointments, notes, images and documents with users on the master system and with other remote users" (Mphatswa, B. N: Academic IT Consultant, University of North West). Furthermore, when a user works from a remote location, GroupWise automatically determines whether or not you have established a network connection. In "connected" mode all actions performed are immediately updated in the universal mailbox. While if in "disconnected" mode all actions are stored on your local hard disk until a connection is made for the records to be updated http://www.novell.com/producr/groupwise/certtified.htlm. For an example, the Faculty of Education are going to jointly teach online educational modules together with Technikon RSA.

4.3 Novell GroupWise Security

Connecting systems through the Internet presents a number of security risks. In recent years, security issues have crawled to the forefront of business activity. Because of the insecurity of our networks, there have been increased attempts to secure data that is transmitted over Internet, Intranet and Extranet. Reports from Novell Inc indicate that Novell GroupWise 6.0 conforms to industry standards because of the level of security it provides. The company has stressed that with GroupWise 6 one can "SSL encrypt all open-standard communication, including hyper-text transport-protocol (HTTP), SMTP, POP for secure access to GroupWise mailboxes and secure monitoring of GroupWise agents from any point of entry" www.novell.com/product/

While this view cannot be seriously contested, a number of lapses exist not only with the GroupWise system but also with a number of other GroupWare systems. A careful examination of GroupWise security highlights a number of drawbacks to the system as explored in the section of this project on Novell GroupWise access permission and risk posed by PDAs http://www.novell.com/producr/groupwise/certtified.htlm. The compromise position of firewalls and the volatile nature of viruses constitute a major threat to GroupWise as a tool for internal and external communication.

4.3.1 Access Permission

Because of the vulnerability of our networks various security arrangements have to be put in place to make them secure. Security on most networks has three aspects: authentication, authorisation and privacy www.disc.ac.uk:8080/.

Authentication verifies the identity of a user and the identity of the service or computer they wish to use. With the GroupWise system, authentication is through the user-id and password. Novell Inc has emphasised GW6 supports S/MIME. This enables users to sign and encrypt messages digitally, ensuring authentication and privacy of external communication. Tests carried out with the GW6 system at UNW seem to tally with this view. Though authentication is carried out, it is likely that user-id and passwords are encrypted. Once the identity of a user has been proved, if a service is being requested a check is needed to ensure that the particular user is entitled and those services www.jisc.ac.uk:8080/pub97. As a result of these security measures, a reasonable amount of security seems to be in place. However, with the increasingly sophisticated nature of hackers with sound knowledge of various encrypting and decrypting techniques, it still leaves a network with a considerable amount of risk.

4.3.2 PDA Risks

This section examines the risk posed by PDA's. There has been a significant rise in the usage of this device with a number of its inherent merits. However these applications present a number of risks to organizations. "Wireless transmissions are susceptible to interception and tampering...Portable devices with no fixed connection offer tempting wireless access points to hackers" (http: //www.rsa.com/solution/wireless).

From a non-technical point of view, PDA's are easier to lose than laptops, the password protection (if users can be persuaded to invoke it) is more primitive and they may contain sensitive data. Since these devices contain valuable information and credentials, there is an inherent need to protect them from theft or loss. Though this seems likely not to constitute a major problem now, as their power and functionality increases, there is a tendency that software distribution synchronization (how codes and data are transferred to and from the PDA) will constitute a risk in the future (Computer Weekly, 3rd May 2001).

Furthermore, issues such as PDA specific issue and data security are also likely to become more important in the near future. Paul Williams Anderson, writing for the Computer Weekly has indicated that though PDA's have a number of inherent problems, there are ways of addressing some. He has highlighted the issue of the e-mail synchronization package, which he says can limit the length of downloaded messages and attachments. He further suggests that management framework solutions such as the Tivoli hand-device manager can be used to distribute software and manage device configurations (Computer Weekly, 3rd May 2001).

4.3.3 Firewalls

As already indicated, security constitutes a central focus in both commercial and educational settings. The implementation of firewalls on networks is to protect networks from attack by hackers http://www.novell.com/producr/groupwise/certtified.htlm. Firewalls are security solutions to protect systems. Emphasis should be made here that they could only provide a certain level of security. The two commercial architectures available today are:

- Packet filter firewall
- Application level-gateway

4.3.3.1 Packet Filter Firewall

A packet filter firewall regulates network access. This is based on the protocol and the information in the packets. As access control is provided at the IP layer, packets are accepted based on source address, destination address and type of application. The firewall contains a database of filtering rules, which it uses to compare with incoming IP packets http://www.novell.com/producr/groupwise/certtified.htlm. The rules configured by the network administrator contain conditions for allowing or denying packets through the firewall.

There is a general consensus amongst security experts that packet-filtering firewalls provide a modest level of security with a high level of performance. While packet-filtering firewalls are normally transparent to users, their weaknesses include;

- Unable to hide the private network topology
- Limited auditing capability
- Difficult to configure

- Its understanding of only the network level protocols

4.3.3.2 Application-level Gateway

An application level firewall provides control to corporate networks at the application level layer (SMTP, FTP, HTTP, etc). It examines the network in detail and is more secure than a Packet-filtering firewall. Application level firewall has full auditing facilities, with high level of preference. Because there are flaws with both packet filtering and application firewalls, an implementation of a hybrid firewall is probably the way forward. This is particularly because hybrid firewalls combine the features of application level and packet filtering. As earlier indicated, firewalls are not without their limitations. Information can get across firewalls through e-mail and attachments http://www.jisc.ac.uk:8080/pub97/sm01sechtml.

4.3.4 Viruses

Viruses are computer programs that are designed to spread themselves from one file to another on a single machine. In the last few years, virus attacks on systems have been enormous, costing businesses and industry large sums of money.

Viruses can be classified into several categories. They include file infectors, file system viruses, macro viruses and system/boot record infectors. In the last 15 years, different types of viruses have hit the world http://www.jisc.ac.uk:8080/pub97/sm01sechtml.

In 1987 Jerusalem was discovered. It's estimated damage according to ICSA.net was $50 million. Three years latter, Cascade, a boot sector virus was discovered and the

damage to business was also $50 Million US Dollars. In 1995, the concept virus, (the first micro-virus) was discovered. Melissa then followed this in 1999. As e-mail enabled word macro vandal it takes only 4 days to reach its first target. Its estimated cost to business stood at between $93-$385 Million US Dollars. Last year the Love Bug virus swept across the world like wild fire. As an e-mail enabled VB script vandal, the Love Bug's estimated cost to business stood at between $700m-$7billion US Dollars http://www.checkpoint.com/products/firewall-//whatsnew-fw.html.

From these statistics, it's significantly clear that viruses are a potential threat to business. It is therefore essential for organizations to understand these threats and make the necessary education of using either automatic and constant virus protection. Because of the threat posed by viruses, the GroupWise system lacks basic preventive mechanism to guard against such threats.

CHAPTER FIVE

5. User Feedback and Evaluation

Both Novell GroupWise users and users of GroupWare systems have provided valuable opinions on both the GroupWise prototype environment and the GroupWise pilot at the University of the North West . Users in various categories have provided feedback and evaluation of the system. These include unskilled users whose knowledge of the World Wide Web and Internet was very limited, skilled and expert users who had a clear understanding of advance communications systems. Their opinions have provided significant views as to the possible improvement not only of the prototype environment but the GroupWise systems a whole.

5.1 Unskilled Users.

Novel GroupWise 6.0 became available commercially in June 20001. Many unskilled users that were introduced to both Novel GroupWise 6.0 and the prototype environment were seeing the system in operation for the first time. Though they admired the structure and content of both environments (GroupWise and prototype environment) they lacked the technical know-how to comment on its features. However, some of these users stressed on some Graphic User Interface (GUI) such as designing the system as a useful toll for searching. Novel GroupWise 6.0 has these categories of search viz., key word and author search www.uniwest.ac.za.

A Users main purpose at a given moment is to search for information, for example for a particular file or report, searching for data or searching for another information.

Though the system has built in mechanisms to "go back", the option to save their own preferences to reuse is not available on the system.

Further more the GroupWise system has not planned for switching purposes. By this we mean to work interchangeable between two windows. Since users are always tempted to switch from search to another purpose, the GroupWise interface does not support this aspect http://www.checkpoint.com/products/firewall-//whatsnew-fw.html.

Though many unskilled users did not know the technical specification of the system or the environment, vital input was acquired on their views on designing effective GUI items on the system. This had to do with providing filters to let users search, narrow down, remember to make a history of sites visits and show them not only result but a summary of the criteria.

5.2 Skilled Users

As a result of a comprehensive and systematic analysis of user and their interaction with the GroupWise, pilot and the GroupWise prototype environment, an understanding of the need, expectations, task and work process of users has been clearly captured. This data capture or feedback mechanism can be used for future development on the GroupWise environment.

Most users that provided feedback on the prototype system were very familiar with Novel GroupWise earlier versions. Because of the recent introduction of GroupWise 6.0 many of them lacked the ability to comment on some major technical aspects. However like the unskilled users, more attention was made on the look and fell language, screen object layout, navigation and user assistance.

Some scholars have argued that over the past 30 years, several techniques for managing software development projects have been developed and documented. While these techniques have helped large software development projects meets time, budget, and quality goals, they do not directly address usability issues. http://www.cognetics.com. This is likely to be the case with GroupWise 6.0, which is interactive, but with little input in user interface. This conclusion has been made after formal and informal usability testing, user feedback and heuristic review of both GroupWise and prototype environment.

5.3 Expert Users

Because of time constraints, there were a limited number of users with expert knowledge that provided feedback and evaluation for the System and prototype environment. Some of these users are part of the evaluation group assessing the viability of GroupWise for use in the University of the North West. According to them, GroupWise 6.0 core features are particularly viable for the repositioning drive currently going on at the University. It offers mush more than simply e-mail. The fact that users can share data make GroupWise a good system. However, though both the GroupWise prototype environments seem to function properly, there are a lot of reservations especially when one takes into consideration that there were less than 20 test users on the system. These users see familiarity and functionality as being supreme. According to one of these experts," GroupWise will be particularly good with regards to published documents on the web. For example, lecturers posting courses on online, so that students can retrieve. This will provide a mush more convenient method of locating vital text.

CHAPTER SIX

6. Documentation and user guide

According to Hawrizkiewycz I. T. (1994), documentation is both a communication tool and a management tool. It is a communication tool because it contains a repository of all work done and makes it available to all persons who have access rights to them. As a management tool, documentation ensures greater efficiency.

It is designed to provide a full description of the system's functionality and behaviour in a systematic manner (Alan Dix et al 1993). There is often an implicit assumption that if an interactive system is properly designed it will be completely intuitive to use and the user will not require any help or training. The type of help or assistance required by users varies and is dependent on many factors such as their familiarity with the system.

From this point of view therefore, this chapter briefly analyses methods of how to use the prototype environment and some aspects of the GroupWise system, i.e. the login procedure and navigation within the system. It also discusses how content can be added especially on areas of teaching and learning, and course administration.

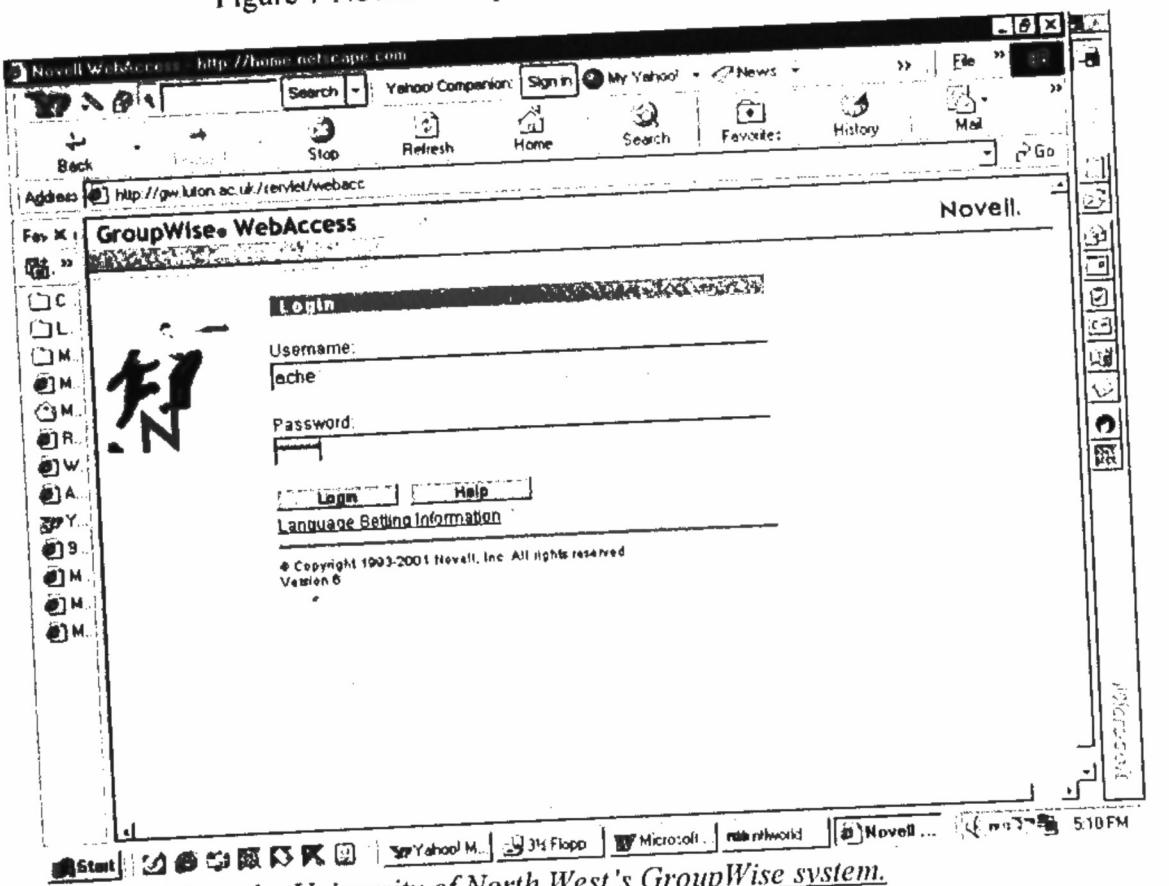
6.1 How to use prototype:

The development of a GroupWise environment is an attempt by this project to provide both staff and students at UNW better ways of teaching & learning respectively. Various options have been discussed as to how to the prototype can be used. These include login procedures as well as navigation within the prototype.

6.2 Login procedure

Logging onto GroupWise at UNW has various options and is password protected. Users are expected to have access to the UNW network service before access can be gained into the prototype environment. Whether access to the Environment is through the web or Novell GroupWise Client, password and username is required and the network administrator provides this.

Figure 7 Novell GroupWise Web Access Login Script



Adopted from the University of North West's GroupWise system.

When URL http//www.unw100.ac.za is typed, access to GroupWise web based interface can be attained http://www.novell.com/producr/groupwise/certtified.htlm. Users may be prompted to type information such as Username, password, TCP/IP address of your post office agent or username.

This information depends very much on the GroupWise mode that you log into. This may be your caching or remote mailbox.

Other logging into the system can be achieved through your Novell GroupWise client or from another workstation running Novell client services http://www.checkpoint.com/products/firewall-//whatsnew-fw.html. The login script above is the web access script for UNW GroupWise system. Though emphasis should be made here that you must belong to the same post office. The case study of the University of Warwick best explains this view. The University runs a GroupWise system with 8 post offices. It becomes very difficult for students to be aware of which post office they are attached to. However, this problem has been solved by the replication of data in the various post offices in the server. The case of the GroupWise environment in UNW is very much different. This is so because the system runs on one server and a post office. When the system is deployed to the whole University, this would be a potential problem. It is therefore incumbent on the network administrator to configure systems in such a way that TCP/IP neither addresses nor users post office agents are required.

Basic steps to login into the GroupWise environment are as follows;

1. Click on username and then type in the user name given to you by your network administrator.
2. Click on password and then type in your password. When correct username and password has been typed, press the OK button or press the enter keypad. This should log you into the UNW network. Depending on the level of security, you may be required to provide another password before access to the GroupWise

environment can be provided. However, though not advisable for security reasons, it is possible to save your password so as not to provide it when you next log on to the system. When access has been attained, your user front-end should be similar to figure 5.

6.2.1 Navigation within the prototype.

The GroupWise prototype environment has been designed and developed with the document feature of GroupWise http://www.novell.com/producr/groupwise/certtified.htlm. It is the desire of this prototype to simulate an environment that can contribute to teaching & learning at UNW at all levels. As already mentioned, the prototype environment can be designed to be able to teach at all levels including masters' modules. Navigation within the prototype is simple.

However, one should mention here that this navigation has limitation especially when an attempt is made to synchronise to other network services that provide teaching & learning facilities.

Clicking on any course material, would present users with the four modules taught at GroupWise level. Details of the components that make up each module can be achieved by clicking on the modules. This would then list various options or themes under the module. Right mouse click has been used in most systems for short cut. Suffice to mention here that right mouse click has very limited functionality as compared to this same action with MS Exchange and Notes.

Since the prototype environment falls within the same browser window of other GroupWise features such as Mailbox, calendar, task, cabinet and sent items, it is easy to move from one aspect to another http://www.novell.com/producr/groupwise/certtified.htlm. This means, while working with documents, your mails can be checked with relative ease especially as users do not need to log out and then in again.

6.2.2 How to add content

Within the GroupWise system the prototype environment lets users to manage documents and folders. Various options are available on how to add content to the prototype environment. This section briefly discusses how to create documents, organising these documents and sharing them with other users, saving documents,, storing multiple versions of a document and deleting documents. Though managing documents is a broad theme, this section looks particularly on how to add content for teaching & learning and course administration http://www.novell.com/producr/groupwise/certtified.htlm. To add content to the environment, documents have to be created. When you create a document in GroupWise, you are adding a document to the library. Documents can also be added to the library by importing e.g Disk, a: drive, J: drive etc or either copying. GroupWise library makes it easy to maintain multiple versions of a document, and share a document with others.

To create a document in GroupWise a user is expected to log on to the system from the client. Web access login has limited functionality and cannot support document creation or management. Documents or folders are stored in a library set up by the

system administrator. Each document stored in a library is assigned a unique number. This number identifies the document and makes it easier to find. Documents can be looked up from the library by use of another name or key word or phrase search. Steps to create a document in GroupWise include http://www.novell.com/producr/groupwise/certtified.htlm,

Using file→NEW—Document. GroupWise would prompt you to select a template for the document. You can use a GroupWise template, or a file on disk as the foundation for the new document. When documents are created if imported into GroupWise you can specify whether you want to share the document with another user. If sharing is the case, you can specify which user or groups you want to share a document with and what rights each user will have. When documents are created in GroupWise, author and creator have full rights to the document.

6.2.3 Teaching & Learning

Teaching and learning is the core business of the UNW. "In an attempt to provide better learning & teaching environment, the University will have to present its students and staff members a variety of services" (Mphatwsa, B. N: Academic IT Consultant, UNW). As earlier mentioned in chapter two of this project, UNW approaches & learning with various methodologies and services. Adding contents for teaching and learning purpose would go a long way to give students better possibilities of increasing study potentials. Staff development can be done properly with the improvement of the Academic Development Centre.

Adding content to the prototype environment is not a direct replacement of other UNW network service such as J: and U drives for face-to-face or staffs web sites. The

basic benefit would be to supplement these facilities. The web access feature makes this more beneficial as both staff and students can get access to the system no matter where or when http://www.novell.com/producr/groupwise/certtified.htlm. Content can be added either by drag and drop or by copy and then paste. Documents can be copied either from the a:, c:, J: drive or from U: drives or internet into the environment. However, caution should be taken when this exercise is being performed. As earlier indicated, copying a document creates a new document in the library. When this has to be done, you have to specify how you want it to be created. Properties can be specified manually for documents or you can have GroupWise create properties for you using the value in the original document.

When documents are copied and pasted on one of the course materials, they can be viewed over the web. It is therefore very possible to either copy or paste documents from the u: into the GroupWise prototype environment. Note should be made here of the fact that systems using windows 3.1 ands 95 application cannot save documents as a new version from the application http://www.novell.com/producr/groupwise/certtified.htlm. To make sure your changes are saved in the library, do not rename the document when you save it from within the application.

6.2.4 Course Administration.

The administration of any course material will be as equally as important as the teaching & learning aspect. In the past and currently UNW tended to provide hard copies of course handbooks, module information, the use notice board, and academic advice for administering the postgraduate courses. While these methods are still

extensively used today, the existence of a GroupWise system makes this more effective. The environment can consider making available course handbooks and module information on the prototype system http://www.novell.com/producr/groupwise/certtified.htlm. This is likely to provide students most of the FAQ on either a module or course thus easing administration.

6.3 How To Redevelop The Prototype

This section reviews options that can be used to redevelop the GroupWise prototype environment. Customisation is necessary to increase efficiency as well as present a better working environment. Restructuring of the prototype environment while serving the same purpose goes further to increase both the structure and functionality of the prototype http://www.novell.com/producr/groupwise/certtified.htlm.

6.3.1 Customization

Adaptations can be effected within the GroupWise systems to increase both functionality and look and feel. Environment options can be used to change the interface, language, GroupWise uses or use of send options to specify that you get a return receipt for every message you sends http://www.user.qwest.net/~johnbartley/palm7faqhtm. GroupWise have the following options that can be used to customize an environment. These options include

- delaying delivery of an item
- getting a return receipt for items you send
- requesting a reply for mail and phone message
- specifying where archived items are stored

- changing the priority of items you send
- changing your default views
- automatically spell-checking every message you send
- assigning passwords to your mail box
- customizing your tool bar
- using start-up switches

GroupWise let users customize settings for the libraries where you store and create documents you can specify a default library, default storing rights, default document property layout (such as the order and size of fields), and default value for document property sheet. It should however be noted that the library and property settings you specify only affect the individuals library set-up http://www.user.qwest.net/~johnbartley/palm7faqhtm. Other user settings cannot be modified. As earlier mentioned you can change the default library. When a user create, import, or copy a document in GroupWise, it is saved in the default library, unless you specify a different library. The default library is where all documents are stored and the library where find searches for documents.

To customise this aspects,

1: Click tools > options- double -click documents.

2: Click the library you want to use as default.

3: Click set default > click OK.

As already mentioned there are many options available to customise a GroupWise environment. An extensive use of these options would provide a better working environment.

6.3.2 Restructuring

Restructuring is a concept that is widely used in the redesign of systems. A number of options are available for the restructuring of the GroupWise prototype environment. However, this is limited because of unlikely compatibility with GroupWise 6.0 application http://www.user.qwest.net/~johnbartley/palm7faqhtm. It would be of significant benefit to redevelop the structure of the prototype and make use of all modules studied at postgraduate level.

To achieve this:

(1). Click on document > File > New

(2). Specify that subfolder.

(3). Type folder name

(4). Select either share or private.

(5). If shared, select users that have rights the folder.

While it is possible to restructure the prototype, caution should be taken not to click on the delete button.

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CHAPTER SEVEN

7. Critical Analysis and Review

With the availability of Novel GroupWise 6.0. GroupWise 6.0 like most other GroupWare systems such as Lotus Notes and Microsoft Exchange have good features that can help students achieve their key goals. However these systems are embedded with a number of problems that need further investigation. While GroupWare features are similar on most platforms, the manner of operation differs slightly from each other. The use of Newsgroup, mailbox, document management, and calendar are all features common to Microsoft Exchange, Lotus Notes and Novel GroupWise. However, a number of differences exist especially in their functionality http://www.user.qwest.net/~johnbartley/palm7faqhtm. This chapter therefore looks at those aspects of Novel GroupWise 6.0 that work well, its drawbacks and recommendations to UNW.

7.1 What works well?

From a general pinot of view, most GroupWise features function properly. From a series of tests carried out, GroupWise was 50% faster than Pegasus mail. As a mail system, Novel GroupWise 6.0 because of its level of performance is more superior and likely to carry high volumes of network traffic for teaching & learning purposes http://www.checkpoint.ccom/product/ngui.htm. The system has features for forwarding messages, filing messages, creating groups and attaching files. All these aspects work well. However, the support for attachments is likely to be of great importance to teaching & learning.

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GroupWise calendar service allows scheduling and coordination among many people and provides support for scheduling rooms. While this aspect of GroupWise works well, it is also likely to be of great benefit at UNW for teaching & learning and course administration.

The documents feature within Novel GroupWise systems aid collaborative writing and provide asynchronous support by showing authorship and allowing users track changes and make annotations to documents http://www.checkpoint.ccom/product/ngui.htm. Though this feature works similar to Lotus Notes. Doculink feature it has a number of drawbacks, as we shall see in section 9.2

Caching mode usage within Novel GroupWise functions properly, though with some limitations. Caching is likely to be useful at some of UNW smaller sites such as Mankwe Campus, which have slow connection links as opposed to main campus with better infrastructure. The latter is envisaged to be online permanently and this is likely to generate more traffic on the network system.

The Web enables feature of GroupWise functions properly and provides access to Novel GroupWise system on the web. Though password protected, it provides users anywhere anytime access to the GroupWise system. The prototype environment has an impressive level of functionality. The creation of folders and subfolders and placing them within a single user environment with a desired hierarchy is very possible http://www.novell.com/producr/groupwise/certtified.htlm.

Though, as we shall see latter, this does not maintain the same level of hierarchy with two identical users sharing the same documents. Copying, sharing, deleting, saving and importing documents into a GroupWise library all work well. The level of security provided with Novel GroupWise, which operates at SSL layer, also works well. The compression and encryption of documents in the library saves disk space and maintain the security of such documents. Generally, many Novel GroupWise 6.0 features function properly though some have a number of drawbacks.

7.2 Drawbacks

Over the last couple of years, there has been an increasing level of reliance on GroupWare systems by many HE / FE institutions. While they have provided interesting new ways of teaching & learning and internal communication, a few drawbacks have been noticed that need further investigation and amendment.

Document and folder hierarchy is of great concern to both teaching & learning. To fix folder hierarchy so users requiring a consistent view of documents would view the intended hierarchy have not been achieved at UNW environment. Workstation and GroupWise Novell client installation set-up could not resolve this problem because users view within Novell GroupWise works on documents rights, and providing this is not isolated data presentation is thought to be secondary http://www.novell.com/producr/groupwise/certtified.htlm. This seems likely to be a major problem especially in research, teaching and learning where scholars working on a document cannot track its hierarchy.

Response times have been investigated and there is a general consensus GroupWise works better and faster than Pegasus mail. However, an elaborate investigation has proved that the GroupWise server does not response at times to logging into the system on many occasions. In most cases the servers that support systems are always at the centre of most problems.

Working with items in the mailbox present yet another series of problems. It is possible to spell check mail and change language settings, but this also presents a number of difficulties. To spell check mail, select TOOLS from the main menu and then SPELL CHECK. The application will then check the message in the default language. To change the default language provided the software has been loaded, select: TOOLS/ WRITING TOOLS LANGUAGE change to ENGLISH-UK. Spell checking defaults to English-UK http://www.novell.com/producr/groupwise/certtified.htlm.

However, the English-UK checker correctly captures centre and suggests **centre** and suggests **center** as a replacement, but also accepts utilize and program. Extensive investigation has reveal that this is not 100 % reliable. In most cases the spell check defaults to American English. According to reports from Novell Inc, security flaws have been noticed with the system. This affects all GroupWise 5.5 enhancement pack and GroupWise 6.0 customer http://www.encyclopedia.com/articlesnew/100061.html. Downloads have been provided on the web to fix the situation. These include:

- GroupWise client padlock fix: Downloads
- GroupWise server padlock fix: Download

The padlock fix involves an update to the GroupWise server and GroupWise client. Until GroupWise server padlock fix to an institutions server, your site is not secure. To re-establish optimum performance characteristics, it has been suggested that GroupWise client padlock fix should not be made.

7.3 Further improvement to the GroupWise system

GroupWare systems offer significant advantages over single -user systems. Some common reasons as we have already seen in 2.4 are to facilitate communication and group problem solving. Means of further improvements to the GroupWise system are made not only to facilitate communication but also make systems faster and clearer. Improvement to the GroupWise system can be achieved by implementing better design concepts. Typically, a GroupWare system can't succeed unless most or the entire target group is willing to adopt the system. In contrast, a single -user system can be successful even if only a fraction of the target market adopts its http://www.usabilityfirst.com/groupware/intro.txl.

Amongst some of the issues that need to be addressed to make the GroupWise a better interactive system is the issue of document hierarchy. A system such as Microsoft Exchange maintains a public library concept that maintains its hierarchy across board. This feature can be investigated to further improve the GroupWise system. Novell's technology of the NDS tree can be replicated to provide a structured hierarchy with folder and documents within a GroupWise system http://www.encyclopedia.com/articlesnew/100061.html.

7.4 What Should the University Do Now?

The University of the North West has already embraced GroupWare and the inherent benefits they can bring to the University. The primary goal of the University should be the deployment of GroupWise to the whole University. GroupWise, like most other GroupWare system have a number of features including mail, calendar, document, task, default library etc.

Because of the number of staff and students that could use these systems it is a general view that UNW pre-occupies itself with staff training. Training trainers is also crucial to the success of the system. Training can be provided casually, taking the form of an automated session. Training should be carried out after the identification of various categories of users thus providing it to suit requirements. The issue of training is therefore vital to the success of Novell GroupWise system at UNW. With equal amount of attention is issue of change over from Pegasus mail to GroupWise.

Although some software support this aspect, the primary concern of the University will be investigate which of the software is appropriate. Help desk staff training is likely to be a major problem when the GroupWise system is deployed to the entire University. To be able to cope with the number of request or problems of the system, it is my wish that the University approach GroupWise features utilization in stages. It is an uncontested view that e-mail service remains the single most important feature of GroupWise systems http://www.encyclopedia.com/articlesnew/100061.html. This feature should be implemented fully while other aspects are disabled. This would, in a number of ways limits the amount of inherent problems. When this feature must have

been effectively implemented others features can then be deployed successively. This is the approach adopted by the University of Warwick (www.Warwick.ac.uk).

In more general terms the University should move towards facilitating communication by making it faster and concise. Telecommuting should also be encouraged as well as bringing together groups with common interest where it wouldn't be possible to gather a sufficient number of people face-to-face. This will significantly help part-time students both at undergraduate and post-graduate level.

Conclusion

This project has investigated GroupWare system such as Microsoft Exchange, Lotus Notes and Novell GroupWise. They have accordingly been portrayed as systems that can be relied on in the provision of services both in commercial organisation as well as in educational institutions. The main aim of this project has been to show how these systems with particular reference to Novell GroupWise is essential to teaching & learning, course administration and internal communication at UNW. To achieve this, a pilot GroupWise environment should be installed to the entire University community.

It can be seen from the report that number of features offered by the GroupWise system with the ability to support GroupWise Environment offers significant amount of ways both for students & staff at University to effectively interact http://www.encyclopedia.com/articlesnew/100061.html.

The Future of GroupWare

GroupWare offers significant advantages over single-user systems http://www.encyclopedia.com/articlesnew/100061.html. To therefore maintain its viability GroupWare systems need to bridge a number of gaps.

- The gap between individual and group work and individual process and group process
- The gap between work with conventional software and work with GroupWare
- The gap between work in one's individual office and work in a common meeting space
- The gap between work in a localised, meeting and work in a distributed meeting
- The gap between work the across local area networks and work across wide area networks.
- The gap between work without computers and work with computers

While most GroupWare technologies have already started to address these issues, making the very effective and reliable is the where the future lies http://www.novell.com/producr/groupwise/certtified.htlm

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FAQ for Palm OS wireless

http://www.user.qwest.net/~johnbartley/palm7faqhtm

GroupWare: Introduction

http://wwwusabilityfirst.com/groupware/intro.txl

Jisc senior management briefing paper/computer network security

http://www.jisc.ac.uk:8080/pub97/sm01sechtml

Next generation user interface

http://www.checkpoint.ccom/product/ngui.htm

Personal digital assistant

http://www.encyclopedia.com/articlesnew/100061.html

Whats new in firewall-/ next generation?

http://www.checkpoint.com/products/firewall-//whatsnew-fw.html

The nokia IP650 delivers carrier-class performance that meets the needs of managed service provider and large enterprise networks.

http://www.nokia.com/securitysomtions/platforms/650.htlm

Set a digital certificate to use in GroupWise

http://www.novell.com/producr/groupwise/certtified.htlm

The Lucid Design Frame Work

http://www.cognetic.com

RSA wireless security portfolio

http://www.rsa.com/solutions/wireless/

University of Warwick

http://www.warwick.ac.uk

University of North West

http://www.uniwest100.ac.za

QUESTIONNAIRE

GENERAL QUESTIONS

Critical Evaluation of GroupWare for Teaching & Learning, Course Administration and Internal Communication within the University of North West.

STUDY OBJECTIVES

This Research questionnaire forms part of my MA Communication research project that seeks to Evaluate GroupWare for Teaching & Learning, Course Administration and Internal Communication within the University of North West.

CONFIDENTIALITY

Your responses to this questionnaire are confidential and will be used for this study only. No organization or individual respondent will be identified by name in any analyses.

1. Do you know anything about GroupWise?

Yes ☐ No ☐

2. Can you use the GroupWise email system?

Yes ☐ No ☐

3. **Do you have access to learning materials from your lecturers through email?**

Yes ☐ No ☐

How? _____

4. How many times do you log on to your GroupWise email system?

   - once a day
   - more than once a day
   - once a week

5. Do you think GroupWise/intranet system can improve your relationship with students/lecturers?

Yes ☐ No ☐

How? _____

6. Are you computer literate?

Yes ☐ No ☐

7. I would like to check my Assessment results through the school's

   - email system
   - website

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QUESTIONNAIRE

IT STAFF QUESTIONS

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CONFIDENTIALITY

Your responses to this questionnaire are confidential and will be used for this study only. No organization or individual respondent will be identified by name in any analyses.

1. When did you install GroupWise 6.0 in your University?
2. How many Network drives do the University have?
3. Do we have GroupWise/Pegasus email system in student's computer Labs?
4. Can GroupWise send assessment marks to students?
5. How can Group-Wise be extended to Part-Time students?
6. Which Network drive can students and staff use to communicate?

QUESTIONNAIRE

ACADEMIC STAFF

Critical Evaluation of GroupWare for Teaching & Learning, Course Administration and Internal Communication within the University of North West.

STUDY OBJECTIVES

This Research questionnaire forms part of my MA Communication research project that seeks to Evaluate GroupWare for Teaching & Learning, Course Administration and Internal Communication within the University of North West.

CONFIDENTIALITY

Your responses to this questionnaire are confidential and will be used for this study only. No organization or individual respondent will be identified by name in any analyses.

1. Are you happy with GroupWise email system?

   Yes ☐ No ☐

   Reason. _____

2. Can you send assessment marks to students through GroupWise?

   Yes ☐ No ☐

3. Do you think GroupWise/intranet system can improve your relationship with Students?

   Yes ☐ No ☐

If yes, how? _____

4. **Would you like to send course materials through GroupWise to your students?**

   Yes  No 

5. Do you see GroupWise contributing to Teaching & Learning and Course Administration at the University?

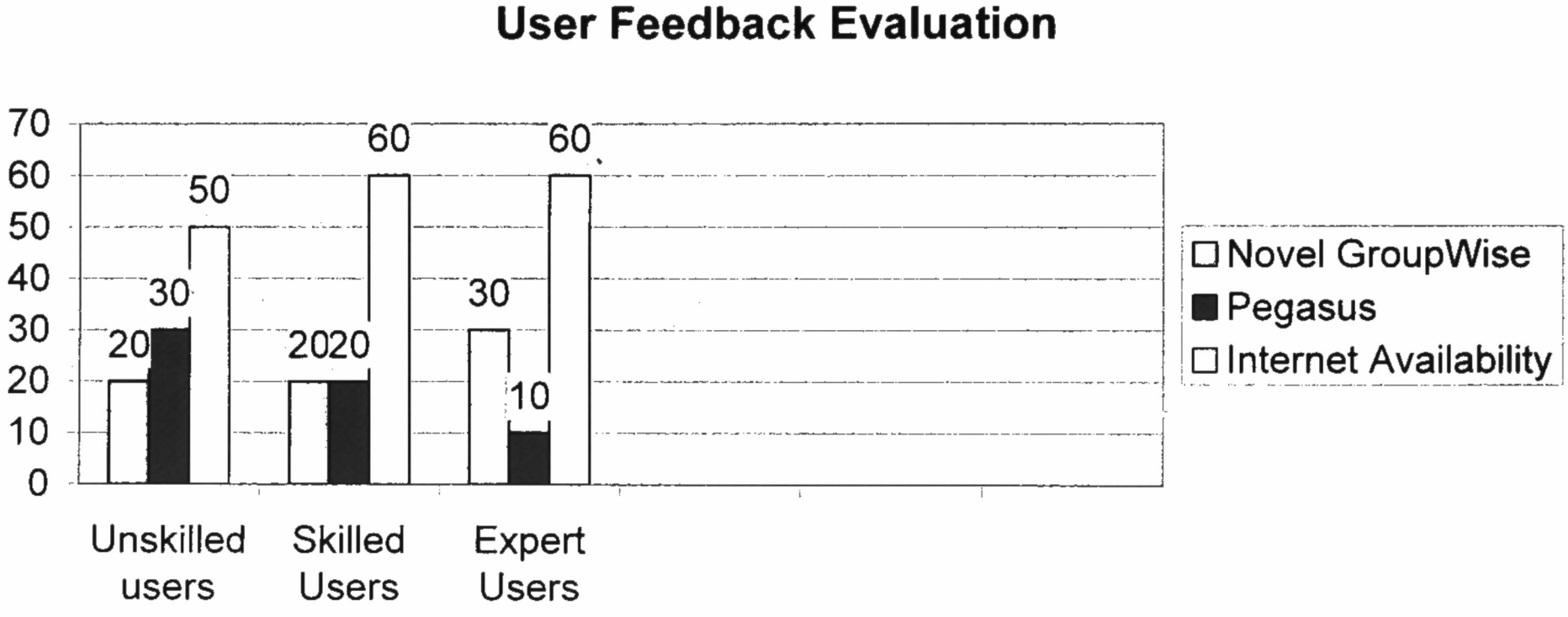
   Yes  No 

6. Are you happy with the current GroupWise email system?

   Yes  No 

   If no, why? _____

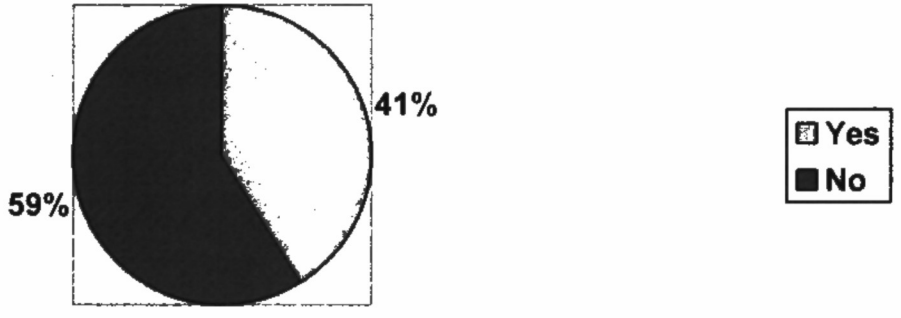
   _____



Annexture. 1 User Feedback Evaluation. C refer to Chapter 5)

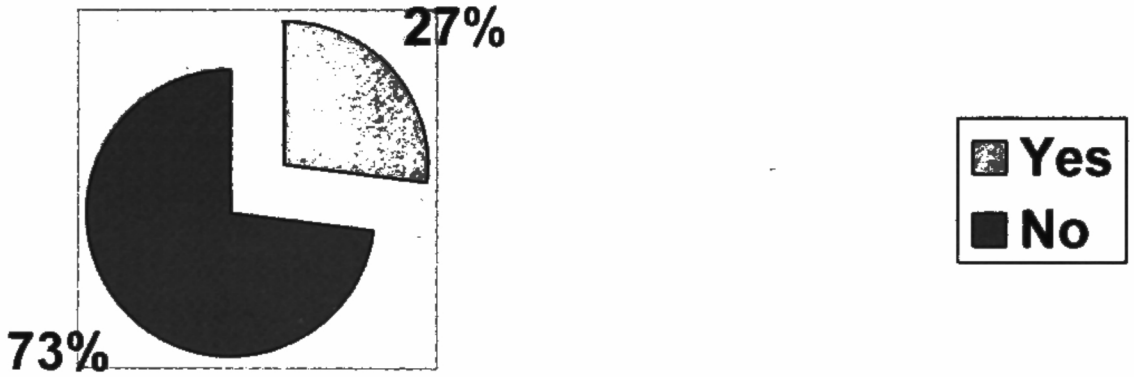
NWU LIBRARY

Do you know anything about GroupWise?



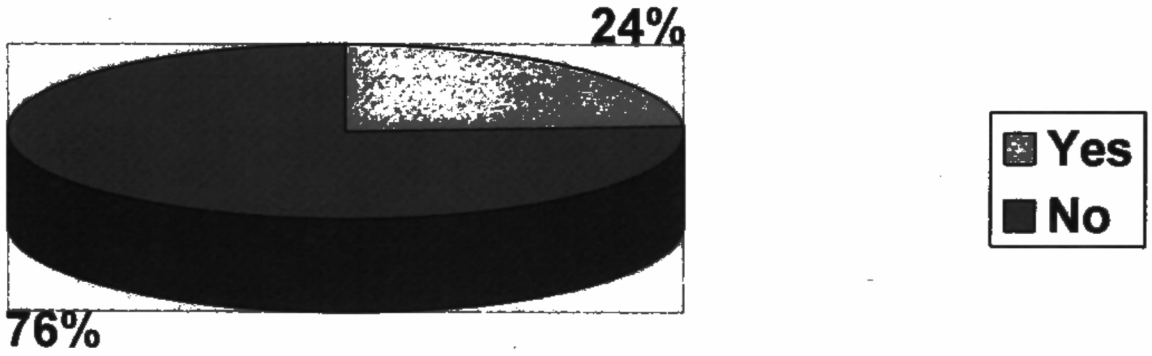
<u>Annexture2</u>. Refer to Chapter 4, 5 and 6

Can you use the GroupWise email system?



Annexture3. Refer to chapter 4, 5, 6

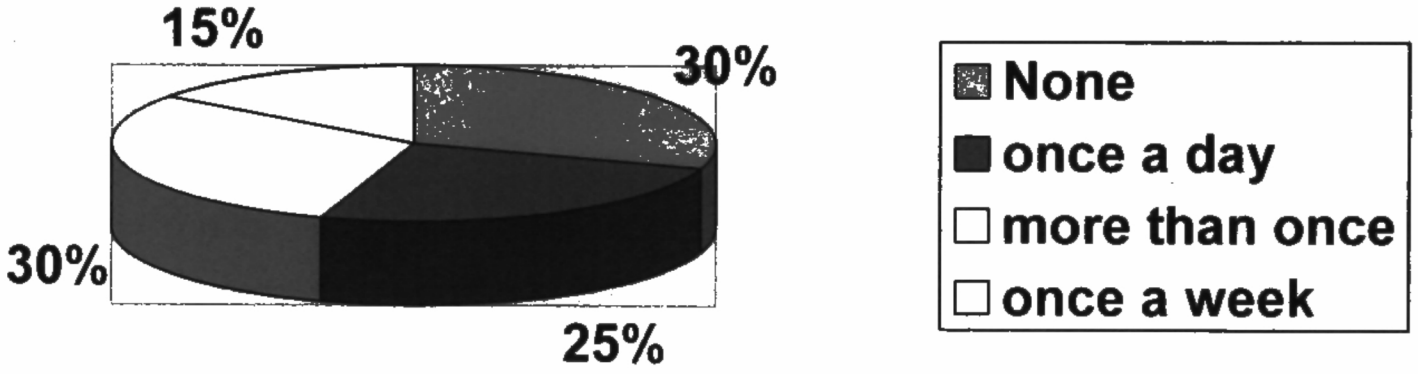
Do you have access to learning materials from your lecturers through email ?



<u>Annexture4.</u> Refer to chapter 4, 5, & 6.

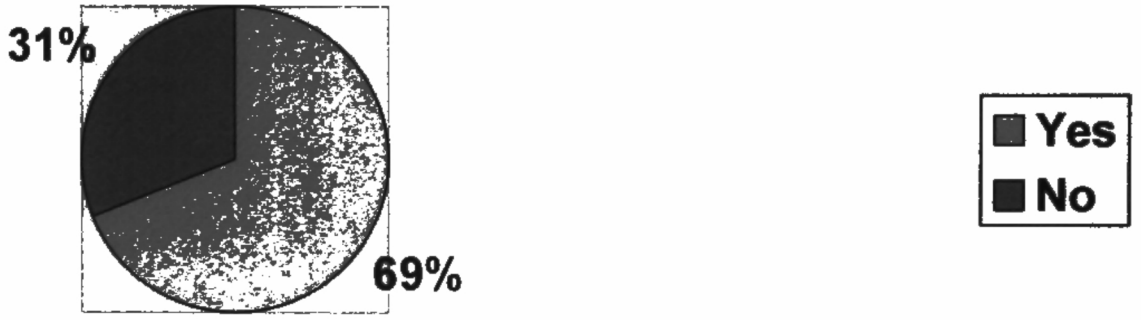
NWU
LIBRARY

How many times do you log on to your GroupWise email system ?



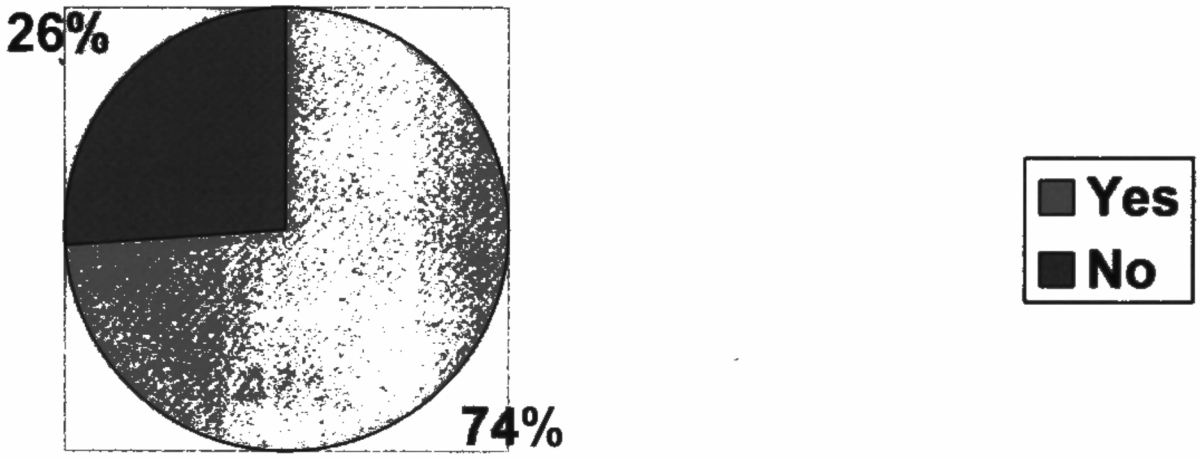
Annexture5. Refer to chapter 4, 5 & 6.

Do you think GroupWise email system can improve yor relationship with Lecturers ?



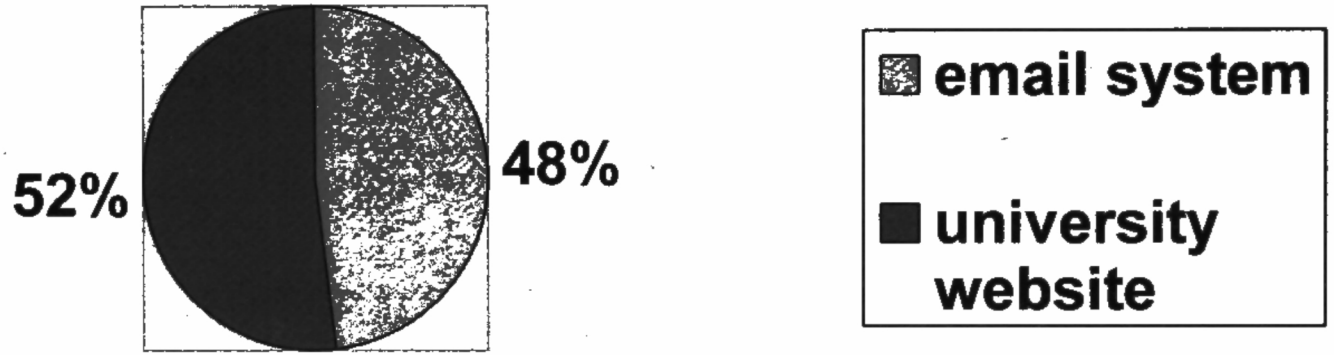
<u>Annexture6.</u> Refer to chapter 4, 5 & 6.

Are you computer literate ?



Annexture7. Refer to chapter 4, 5 & 6.

I would like to check my assessment results through the university's...



<u>Annexture8</u>. Refer to chapter 4, 5 & 6.