Introduction

Small education centres and businesses to store and manipulate data belonging to their users for various different reasons. These users may be staff or external users such as students or customers. The challenge these organisations face is to being able to store this data according to data protection legislation while maintaining a high level of availability. Although they may have some IT infrastructures in place many of these organisations lack the knowledge and skills in-house to utilise these structures properly and achieve their IT goals. Due to cutback in funding over the past few years such centres have been forced to severely trim back their staffing levels to a point were some staff are carrying out duties which had been carried out by multiple members of staff staff in the past. Many administrate duties such as timetabling, scheduling, reporting and student/ tutor participation are carried out manually as it is felt there is a lack of affordable integrated software on the market [1].

The case study for this project is that of an adult education centre. The centre runs 5-6 different courses spread over five days a week with approximately 12-15 students attending each one. Although this project is being developed with a fairly small set up in mind it will be designed in such a way that it can be scaled to cater for many more users and features.

Aims and Objectives

1. AutoEduAdmin aims to create an application which will allow administration staff carry out their everyday duties more efficiently and securely
2. Design

AutoEduAdmin’s user friendly design with minimal mouse clicks, minimum data entry and minimum page navigation will ensure the user is comfortable in adding an extracting the correct information from the system.

Data to include

Internal user data - Staff/ Tutor

External user data – Customers/ Student

Activity data – courses/ promotions including associated users

1. Security
   * 1. Users will be required to log in with their own usernames and passwords which will be stored as encrypted fields in a login databases. Timeouts will also be placed on sessions to ensure a user is logged out after a set period of inactivity.
     2. Measures will be set in place to ensure the secure transportation and storage of data as well as appropriate logging.
2. AutoEduAdmin aims to provide a substantial amount of automation to ensure tasks are carried out more efficiently and cost effectively.
3. Timetable development interface

AutoEduAdmin will assist in the development of timetables by providing a user friendly interface with an intelligent option provider working in the background. This will aid the user in selecting only the resources which are available helping to avoid any overlapping when complete. Daily schedules will also be produced from these timetables.

1. Automated allocation of server accounts and resources

Once a user is added their profile will be examined to determine if they are to be allocated any resources on the network. Scripts will then be run to provide these automatically.

1. AutoEduAdmin will provide a network admin dashboard
2. Basic menu system which will allow users carry out basic tasks such as adding users and groups, changing users defaults, changing file permissions and running backups.
3. AutoEduAdmin looks to provide a user profile which can be accessed by internal and external users.
4. Centralised information depository

3 Similar Technologies

In this chapter similar technologies will be compared and assessed in order to assist in defining the functional requirements for AutoEduAdmin . As AutoEduAdmin is intended to be an all in one administration system that will incorporate functionality which might usually be provided in separate applications no one application reviewed will provide all the functionality proposed in AutoEduAdmin and vice versa. Instead applications that provide much of the functionality proposed and those that provide specific functionality have been chosen. There are many different software tools on the market targeting different audiences. Through research it has been found such tools are quite limited in this country particularly those intended for the adult education market. Most applications on the market provide functionality more aimed at delivering course rather than providing the resources to set up and manage courses.

In order to provide as wide a selection as possible of applications that provide similar functionality to that propsed for AutoEduAdmin applications have been split into categories depending on the functionality provided. Where possible trial versions of the different applications have been tested using Nielson’s Heuristics as a guide. Jakob Nielson proposes 10 general principles concerning user interaction design which are as follows

1. Visibility of system status

User should know where they are in the system and should be kept informed of what is going on.

1. Match between system and real world

The system should match how the user communicates and approaches tasks as much as possible

1. User control and freedom

Should provide easy to find undo and exit options for the user

1. Consistency and standards

Language and wording should be consistent throughout the system and comparable with is already available in the same category on peer systems

1. Error prevention

Should prevent errors as much as possible providing users with confirmation messages before completing actions

1. Recognition rather than recall

Options, objects and actions should be visible to the user. Help should be visible or easy to find

1. Flexibility and efficiency of use

System should be useable from a novice and an expert’s point of view. Expert users should be provided with options to accelerate use

1. Aesthetic and minimalist design

Only provide information that is needed. Keep as uncluttered as possible.

1. Help users recognise, diagnose and recover from error

Provide clear concise error messages and solution suggestions

1. Help and documentation

Should be easy to find, short and concise

Sales Pulse

Adult education centres are required by “” to use the sales pulse adult education application. This is a web application which is cloud based. It is mainly used by “” to collect information in order to sanction funding and tutor payments. The application allows the addition of course categories, courses, tutors, students and the allocation of students and tutors to specific courses. Timetables and reports can also be generated. [[1]](#endnote-1)

Although SalesPulse contains functionality that is the most comparable to that proposed in AutoEduAdmin it does present some shortcomings for Adult Education centres. Data stored collected and stored by Sales pulse is relevant only to courses affiliated to “”. This dictates that any timetables generated will not include courses not accredited by “” and data regarding student and tutor participation outside “” accredited courses is not stored.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Moodle | Sales Pulse | Efront | MIT | Edvance |
| User management | yes | Yes[3] | Yes | Yes |  |
| Course management | yes | Yes[3] | Yes | Yes |  |
| Timetabling | No | Yes[4] | No | Yes |  |
| Scheduling | Yes | No | No | No |  |
| File Import/Export | Yes | No | Yes |  |  |
| Reporting | Yes [1] | Yes[5] | Yes |  |  |
| Network Admin | No | No | No |  |  |
| Student Profile | Yes | Yes | No |  |  |
| Roll call & Tracking | No | No | No |  |  |
| Automated Tracking | Yes[2] | No | No |  |  |
| Automated Alerts | No | No[6] | NO |  |  |
| Automated backups | Yes | No | Yes |  |  |
| Logs | Yes | No |  |  |  |
| Cost | Free | N/A[7] |  |  |  |
|  |  |  |  |  |  |

Notes

1. Reporting seems to be very much grade specific and lacks options for group and overall participation
2. Tracks user activity and progress but not attendance
3. Specific only to course that are funded by Fetac or CDVEC
4. Only used for the calculation of payments not printable
5. Only available in excel format
6. Can send manual text alert
7. This system is a requirement for adult education centres in order to get their funding
8. Presumption is that there is a high cost associated with this application

Nielson’s Heuristics

1. Visibility of system status
2. Match between system and real world
3. User control and freedom
4. Consistency and standards
5. Error prevention
6. Recognition rather than recall
7. Flexibility and efficiency of use
8. Aesthetic and minimalist design
9. Help users recognise, diagnose and recover from error
10. Help and documentation

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Nielson’s Heuristic scaling table | | | | | | | | | |  |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Moodle | 10 | 7 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 9 |
| Salespulse | 6 | 8 | 8 | 8 | 6.5[i] | 8 | 8 | 7.5 | 7 | 9 |

Notes

1. Good in places severely lacking in others

Network Administration Software

The second set of applications reviewed were those designed to simplify network administration. These applications provide automation and the ability to carry out bulk tasks.

|  |  |  |
| --- | --- | --- |
|  | Adaxes from Softerra | [ADManager](http://www.manageengine.com/products/ad-manager/index.html) |
| Platform | Windows | Windows |
| User management | Yes | Yes |
| Group Management | N/A | Yes |
| Password management | Yes[1] | Yes |
| Bulk User/ group/ password management |  | Yes |
| Import /export files | No | Yes |
| Automation of user admin tasks | Yes | Yes |
| Reporting | Yes | Yes |  |  |
| Backup management | No | No |  |  |
| Server cleanup/maintenece | No | Yes |  |  |
| Cost | Per AD user license | Free for 100 systems |  |  |

Notes

1. Separate feature which be installed on PC to allow users change their own password

# Project Deliverables

# Phase 1

## User administration

Add user:

* Present user with option to input user data using form or uploading a spreadsheet
* Check database to see if user requires network resources (this will be done by checking user role entered and checking a table to find out what resources and permissions are associated with that role)
* A script is then automatically run which create a new user profile, adding the user to a group and creating any personal folders they may require

Update user details:

* Present user with options according to the user’s role within the organisation. These may include the following:
* Update personal details
* Change login details – run a script on the server if the user has an account to update those if necessary
* Change group membership
* Add new folders
* Delete folders
* Change folder permissions

Delete user details:

* Present user with option to delete the user completely or partially from the system
* Present option to the user to delete resources from the server also (will only be presented if relevant)

## Basic Network Administration

Users will perform the main network administration tasks they require through the user admin interface.

This interface will allow them perform the following:

* Backup predefined elements of the server or the database
* Change permission on folders and files
* Add folders or files
* Delete folders or files

## Course admin

* Add category
* Add course
* Update course
* Delete course
* Add tutor to a course
* Add student to a course

## Timetabling

* Present simple interface to enable admin staff create a timetable for upcoming courses
* Intelligent options provision. For example if a room is taken for a specific time period it will not be presented.
* Timetables stored in databases and made available when relevant users log in

## Scheduling

* Courses are run in blocks. Schedules will be created from the timetable created for a particular block
* Schedule will be presented to tutor upon login. Upon clicking on this schedule any resources associated with that schedule will be presented. The main resource will be a electronic roll call sheet
* Once completed this will be returned to the database where a service is running tracking student attendance and alerting tutors to any potential problems.
* Alerts may also be sent via text or other means to students

# Phase 2

## Statistical Reporting

* Detailed and accurate statistical charts are required for the creation of annual reports
* Develop a simple interface that will allow the user define which type of a report would like to generate a report for and in what format.

# System Overview

# System Requirements

Present user with login page

Authenticate user

Present user with interface containing menus depending on role

Allow user select action

Present user with options to perform selected action

Process input and call relevant functions to carry out required task

System Components

Secure user login

The proposed system must take in a user name and password from the user and hash the values. It will then attempt to find corresponding values in the database. if matched the database will then return the user role which will determine which initial screen the user is to be presented with.

* Show login screen
* Authenticate user
* Get user roles
* Present menu screen depending on role

Add user

New users either staff or students can be added to the system in two ways manually or by uploading from a spreadsheet

* Add user manually
* Present user form
* Process and “cant remember word” details and add to the database.
* Select users network requirements from database
* Run script to add new user to file server
* Proposed script
  + Create new user(username,password,group,location)
    - Username and password (same as login)
    - Add to group (depends on users role
* Create personal folder (Location depends on what user’s role is)

Update user

Present option menu to user off operations they are authorised to perform

Change username

All users will have the ability to change their own username and password. Staff belonging to the user administration group will have the ability to change all usernames and passwords

If logged on user is from network admin or admin group present list of usernames they may wish to change and field to take in new username. If the user not a member of either of these groups only the field is presented

* + Change username(old username, new username)
    - Compare new username to see if it exists in the system
    - If it doesn’t update information in the database
    - Depending on their role run script on the server to update their logon details
  + Change password(old password, new password)
    - Take in new password and twice ensuring they match
    - Update password in database
    - If required run script to update password on the file server

Specific Network administration tasks

* + Change add/ users group (username, group)
* Present user with user and group options
* Process selections and update the database
* Run script to change update users group on the file server

Add new group (groupname)

* Change login details – run a script on the server if the user has an account to update those if necessary
* Change group membership
* Add new folders
* Delete folders
* Change folder permissions

1. Limited to what courses are required by “” [↑](#endnote-ref-1)