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## Layouts for Learning - Finding the Best Configurations for Computer Suites

By Kevin Eagles

31 Oct 2001

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## Summary

Considering the effectiveness for maintenance, for whole class teaching, for individual learning and for freedom of vandalism, Assistant Manager of IT Services, Kevin Eagles, describes the IT suite layouts at St Brendan's College.

## Background

The college is located in Brislington, Bristol and is a Catholic Sixth Form College catering for a maximum of around 1000 GNVQ, GCSE and A' Level students. Roughly forty percent of the students are Catholic.

## A Content

There are five main student computer suites at St. Brendan's Sixth Form College, totalling 114 computers.

The college's IT Department gives advice regarding networking issues and computer specifications for new computer suites, suggesting possible room layouts. However, the Premises Manager has always had final say on suite design and room layout, which is often dictated by the quantity of machines required to fulfil teaching requirements and also what classroom is available for conversion to a computer suite. Therefore decisions end up being computer centred rather than people centred with the location already determined by whatever is available (this situation is a common limitation in smaller academic institutions).

This report describes each of our five suites, and incorporates the findings from part of our annual IT Survey taken from a small sample of 95 students (the section determining which suite students prefer to use).

N.B. Please note that the numbers represented on the computer workstations on the floor-plan graphics relate to network node numbers and should be ignored by the reader

## B Outcomes

## 1] E1.24 Suite - [Inception July 1998, 37 Computers, Open Access Learning Suite]

Click here for [E1-24 Floorplan](#), and click the image to see full size photos of the suite:



E-124a



E-124b



E-124c



E-124d

E1.24 is our largest suite, and is used as an 'Open Access' area for students. Few subjects are taught in this suite, namely some CAD and Business Studies classes. Computers occupy the perimeter of the suite, with clusters of 3 to 5 machines in parts of the suite. Our IT Survey highlighted this suite as the most liked by students, this may be because it is an 'Open Access' suite where students can meet and work together with lots of desk space for paperwork.

## (a) Effectiveness for Maintenance

Maintenance is fairly simple, however there are accessibility issues with power points and network points which are located underneath the computer desks. This is not a problem with room layout but with the type of desk surface used, which is one continuous surface and this

creates difficulties in disconnecting equipment or ascertaining network node numbers (printed on the node point).

NB Hubs and digital printer devices in all our suites also have this issue of accessibility, however this isn't perceived as a problem because these expensive and important devices should be out of sight and awkward to reach, to avoid tampering and theft.

#### **(b) Effectiveness for Whole Class Teaching**

The associated floor-plan and digital photographs illustrate the room's large size, which makes whole class teaching awkward, however the room can be naturally and evenly split down the middle, with one half containing a taught class and the other still operating as an Open Access area (two different classes being taught simultaneously in such an 'Open' environment may create conflicts).

Although the room lacks a whiteboard, a flipchart can easily be placed at key locations in the suite to optimise teaching (shown on the floor-plan as a red X). However, not all computer monitors are immediately visible to a teacher due to the layout of the suite, which is disadvantageous when monitoring student progress.

#### **(c) Effectiveness for Individual Learning**

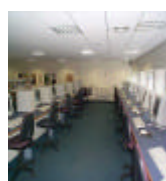
The desk surface area in this suite is spacious and students can easily spread out paper-work and text-books next to computers without moving keyboards or mice. The suite is intended for Open Access and the restricted amount of taught subjects in this suite leaves it mostly free for constant use by students for individual learning. This suite lacks adequate ventilation and does get warm and humid in Summer, however this limitation does not seem to deter students from wanting to work in this popular suite, it is highly favoured by them.

#### **(d) Freedom from Vandalism**

All suites have CCTV. This goes some way to alleviating large scale vandalism and theft, however small scale acts of vandalism do still occur (occasional mice/keyboard damage, mouse mat damage and minor graffiti). E1.24 suffers the second highest rate of vandalism compared to other suites.

### **2] Library Suite - Inception July 1998, 16 Computers, Internet and Open Access Suite**

Click here for [Library Floorplan](#), and click the image to see full size photos of the suite:



Library1



Library2

The Library computer suite is also Open Access and consists of two rows of computers, and it is the only student suite with Internet access. In our IT Survey this suite came out as the second favourite suite, possibly due to Internet availability.

#### **(a) Effectiveness for Maintenance**

Although this suite has a different layout from E1.24 (see floor-plan and photographs above) it has the same style desk surfacing and the same accessibility problems referred to in the E1.24 section B] 1] (a).

#### **(b) Effectiveness for Whole Class Teaching**

This suite was not designed for consistent whole class teaching in mind. Its main role is an Open Access learning/work area. Teachers book small student groups into this suite to use the Internet for research or exercise work (e.g. Modern Languages and Key Skills), but as the suite is located within the Library, teachers cannot be too vocal. There is no whiteboard, but on the floor-plan the red X indicates where flipcharts can be placed. All computer monitors are generally visible to a teacher or trainer with minimum effort.

#### **(c) Effectiveness for Individual Learning**

The computer desks in this suite are spacious, and identical to E1.24, so students can easily spread out paperwork. The main purpose of this area is to promote individual learning and use of the Internet as a research tool. Students can book set time on an Internet terminal for this purpose.

#### **(d) Freedom from Vandalism**

This suite has CCTV and Library and IT staff often visit the area. Minor desk and Mouse Mat damage has occurred, but is infrequent.

### **3] E2.1 Suite - [Inception July 1999, 16 Computers, IBT2 Courses and Open Access Suite]**

Click here for [E2-1 Floorplan](#), and click the image to see full size photos of the suite:



E2.1 is a smaller computer suite and is used to teach students IBT2 computer literacy. The layout is similar to E1.24; computers occupy most of the room perimeter, with a cluster of 4 machines in the middle.

The décor and image of this room is bland and sterile compared to other suites, and although it can be Open Access during vacant periods our students do not seem to utilise it for such a purpose. The IT Survey highlighted this as the least favoured of all the suites by students.

**(a) Effectiveness for Maintenance**

These desks differ from E1.24/Library, but have similar accessibility issues with network points; the power points are more difficult to reach than any other suite because they are located within the desk itself, inside two partitions.

**(b) Effectiveness for Whole Class Teaching**

This suite caters for groups of 15 to 16 students, and has a whiteboard that is visible by all computer users and also means projectors can be used too. Due to the room layout, most but not all monitors are easily viewable by the teacher.

**(c) Effectiveness for Individual Learning**

The desks have some space for students to spread out paperwork next to computers, and the room is free from disturbances. Some monitor glare can occur due to large unpolarised windows in the room.

**(d) Freedom from Vandalism**

This suite has CCTV, but it suffers with the most vandalism. Mice are sometimes stolen, computer cases have been scrawled on, and chairs have been damaged, all with more consistency than in other suites.

**4] E3.8 Suite - [Inception July 1999, 23 Computers, Computing and IT A'Levels Suite]**

Click here for [E3-8 Floorplan.pdf](#), and click the image to see full size photos of the suite:



E3.8 is our second biggest suite, and is a dedicated teaching suite for students following computer disciplines. Due to a need to maximise floor-space the layout is stylised in small rows, the teaching/learning atmosphere has been kept intimate and functional. Teachers who use this room state the layout is good for practical lessons, but can seem cramped.

In our recent IT Survey this room had a neutral response, neither positive nor negative.

**(a) Effectiveness for Maintenance**

This suite is straight forward to undertake maintenance work, all power points and network node points are located on the sides of the walls and easily reachable. However, the cables are not housed in trunking and are visible.

**(b) Effectiveness for Whole Class Teaching**

This suite is very productive for whole class teaching due to the number of computers and because of the small sizes of the rows. Nearly all monitor screens are visible to the teacher. Unfortunately the whiteboard is obscured and obstructed by some of the computers, which means it isn't used, however a flip chart can be used and a red X denotes this on the floor-plan.

**(c) Effectiveness for Individual Learning**

The desks in this suite do have some space for paperwork/text books, but not as much as E1.24, Library, E2.1 suites. The suite is located in a quiet area and is in regular use for teaching and by computing students during free periods. Windows have polarised anti-glare filters.

**(d) Freedom from Vandalism**

This suite has CCTV and hardly any vandalism. This is probably due to the fact that there are many lessons taking place and very few unsupervised periods.

**5] E3.6 Suite - [Inception July 2000, 22 Computers, Media Studies and IT A'Level Suite]**

Click here for [E3-6 Floorplan.pdf](#), and click the image to see full size photos of the suite:



E3.6 is similar in layout to E3.8, small rows of computers maximising floor-space. The desks and chairs in this suite were more expensive and of higher quality than in other suites.

In our recent IT Survey this room also had a neutral response, neither positive nor negative.

**(a) Effectiveness for Maintenance**

This suite is the most agreeable to undertake maintenance work. All power points and network node points are located at the back of the desks meaning minimal disruption to surrounding computer users, and cabling is housed in trunking behind the desk.

**(b) Effectiveness for Whole Class Teaching**

Like E3.8 this suite has a layout of small rows, but its real success lies in having less rows than E3.8 and hence it feels less cluttered and confined. All monitor screens are visible to the teacher and there is a whiteboard, however the whiteboard is situated at the back of the suite and students have to turn round to view the board and turn back round to see their monitors.

**(c) Effectiveness for Individual Learning**

Windows have polarised anti-glare filters. The desks in this suite have a small surface area and only have room for the computers, monitors, keyboards and mice. If students need to consult or use paperwork or text books they have to move the keyboards and mice on top of the computer units. The room is in regular use for teaching and by students during free periods.

**(d) Freedom from Vandalism**

This suite has CCTV and is our newest suite (one year old) and has had no vandalism to date. There are few unsupervised periods.

**C] Evaluation and Recommendations:**

This analysis has been subjective, but from the viewpoint of someone who works firsthand with the suites and areas under discussion. The inclusion of information from our IT Survey is not conclusive, but may assist in drawing together other factors. The rooms least liked or regarded neutrally are the rooms with restrictions (the ones used for teaching and having a degree of supervision); the rooms most liked are unsupervised. The rooms most vandalised are unsupervised Open Access areas or our most lacklustre suite where a subject (IBT2), generally regarded as a chore by students is taught.

Fig. 1 graphically illustrates the choices made by students for their favoured suite: -

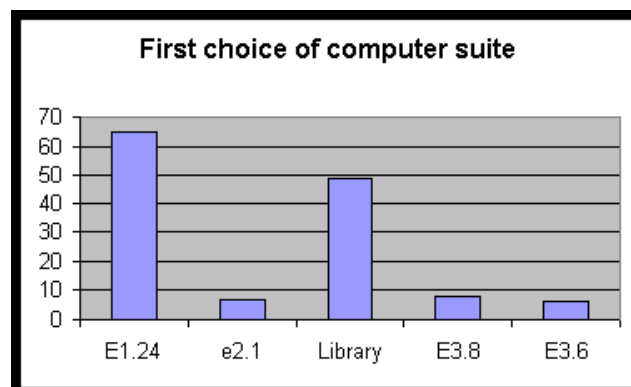


Fig. 1

Regarding layout and functionality, none of our suites have been absolutely perfect; all have their

own minor weaknesses. Our most successful layouts have been E3.8 and E3.6, and these layouts were derived after consultation with the teachers who were going to be using these suites after creation.

The fact that decisions for layouts are based from a tension whereby room design is computer led and computer centred rather than person centred, along with the fact that not always the best room is the one that's available for a computer suite are common tensions in smaller academic institutions like ours, but these problems are not insurmountable.

Issues such as:

- Consulting users (in our case teachers, but also students) on their needs and requirements
- Layout of machines to enable teachers maximum monitor visibility
- Adequate desk space for paperwork and computer equipment
- Comfortable and suitable chairs
- Polarising sheeting on windows
- Easy visibility of a whiteboard
- Effective and easily accessible cable location and housing (trunking)
- Correct diffused (soft) lighting to minimise glare
- Good ventilation or air conditioning
- Pleasant décor

All go to improving the operational functionality of a suite and help even up the balance to focus on the person more, the all important end user.

The University of Stirling have carried out quite a lot of research in this field and I would like to quote from part of their findings:

"In institutions which we visited, we consulted teachers and students about these matters. All complained about poor artificial lighting, a lack of natural lighting, not enough space for books or taking notes, monitors obstructing views of the teachers and other students, lack of natural ventilation, and poor seating. Bluntly the common problem is that the technology leads the learning rather than the other way around - this results in rooms built for machines and not for people. We argue that more thought needs to be given to what happens in a room with computers and how people use these rooms. "

#### Related resources

See related resources under the 'Related resources tab'.

