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**PROFESSOR NEIL MORRIS**
Director of Digital Learning - University of Leeds

Lecture Theatre redesign at the University of Leeds sets new standards in large group teaching.

A pilot programme at the University of Leeds has seen three lecture theatres undergo an innovative redesign to create flexible spaces that offer a range of new ways to enhance the student experience.

**COLLABORATIVE SPACES**

The new spaces replace traditional lecture theatre seating with Collaborative Booths. The Booths positioned on tiered levels and equipped with collaborative technology promote interaction between students in groups and increased interaction between students and lecturer; supporting the strategic drive towards an active learning approach.

The lecture theatres are also open to use by students outside of scheduled teaching times. This has enabled the University to increase the informal learning space across campus and offer students first-rate facilities for independent and small group working.

The audio visual project awarded to Pure AV following competitive tender was valued at approximately £420K and included the upgrade of three traditional style lecture theatres alongside the three pilot Collaborative Lecture Theatres.

Named as University of the Year 2017 by the Times and The Sunday Times’ Good University Guide, the University of Leeds is already recognised for the delivery of a sector leading student experience. The transformation of the lecture theatres is part of a wider £2.8m investment made in 2016 to upgrade the teaching spaces to a new set of standards in support of the University’s Digital Strategy for Student Education.

The Digital strategy states: “By 2017, students and staff at the University of Leeds will make use of a consistent suite of digital technologies and services, which support learning, inspire students to reach their full potential and enhance the student experience”.

As Andy Truswell, systems Integration manager at Pure AV explains, “The University engaged consultant David Marshall of Avant Garde AV on the development of the tender and as a result had a very clear vision for the pilot lecture theatres.

For us as the chosen integrator the priority was to deliver an audio visual system that created ease of use for room users and supported that vision in a straightforward and cost effective way”.

“COLLABORATIVE LECTURE THEATRES”
FLIPPED LEARNING

No stranger to innovation, the University of Leeds already has one of the most developed lecture capture systems in place in the UK. In fact according to Professor Neil Morris, Director of Digital Learning at the University, this has been one of the drivers encouraging academic staff at the University to really embrace the redesign. He explains that as a result of the lecture capture project, “There are lots of teachers who have now ‘seen’ (literally), just how passive didactic teaching is and want to do more flipped learning. They want to use media capture tools to create digital content for pre-session viewing and use contact time, namely the time spent in the lecture theatre, for active learning.”

NEW OPPORTUNITIES FOR LECTURE DELIVERY

Flexibility is incredibly important and the new design has created an adaptable space able to support both traditional didactic use and collaborative group based sessions. From an academic perspective, the new design creates lots of opportunities to rethink how a lecture is delivered. Professor Neil Morris explains: “From the teachers’ perspective, these rooms are dual purpose: they can still be used perfectly well for didactic delivery – the teacher could come in, load their PowerPoint on the lectern PC, fire up the projector and talk for 50 minutes. However, they also have a range of other options to enrich the learning experience for their students”. The lecturer experience has been carefully considered in the design of the AV solution and whilst the physical space is significantly different, the user interface is consistent across all the new rooms and where possible uses the same control systems already in place across the campus. This has ensured a consistent user experience and reduced the need for extensive specialist training on the technology.

The physical design of the space created by Project Architects Burwell Deakins includes a number of booth designs. Each Collaborative Booth seats 3, 4 or 5 students around a desk with all seats facing the front and the group. In each room there are also one or two rows of traditional seating at the back of the room to boost capacity when required. This arrangement facilitates group work and also allows focus on front of room activity. By maintaining a raked seating structure the students also have a clear line of sight to the front of the room.

CONNECTIVITY FOR ALL

Each desk is equipped with an internet enabled touchscreen laptop, a touch to talk desk microphone, built in speaker and spotlight controls. There is also a retractable HDMI cable for user devices, USB charging and power. The laptop security cable is long enough to reach all members of the group and a retractable HDMI cable means that user devices can be connected in comfort. To assist with ease of use both devices are connected to an Extron XTP switcher/transmitter which is then connected to an Extron XTP matrix. The HDMI is set to auto switch with priority given to the user device. The individual booths can then be selected for front of room display by the lecturer via a 15” Extron control panel mounted on the lectern.

TWO-WAY COLLABORATION

In order to further enhance the potential for collaborative working, the University has introduced DisplayNote software. This allows two-way collaboration between the student and lecturer either with the hardwired laptop or the student’s own device. This requirement was not in the original specification and the project team at Pure AV worked with the University to explore a number of different options before selecting the DisplayNote solution.

EFFECTIVE AUDIO AND MEDIASITE INTEGRATION

There is an audio conferencing system to support effective communication between the Booths and the rest of the room. Each Booth is equipped with Beyerdynamic microphones and speakers and their own dedicated push to talk button. When a Booth activates its microphone the audio is reproduced through the speakers in all of the Booths. The lecturer’s audio is played out through the ceiling mounted PA system.

As previously mentioned there is also a sophisticated Mediasite lecture capture system in place at the University and the system captures audio feeds from the lecturer’s microphone, the Booth microphones and the presentation audio. Lecture capture will also take the video from the projected images and a camera feed.

FRONT OF ROOM INNOVATION

There has been innovation in the front of room environment with the addition of new tools to help the lecturer deliver the lecture. There is the usual equipment that you would expect to see at the front of a traditional lecture theatre; lectern based PC, control panel, lecture capture recording light and pause button, visualiser, blu-ray player, lapel microphone and dual or in some cases triple Panasoniic projectors displaying content on the presentation wall. However, there is no whiteboard or black board and no pens or chalk. Instead, alongside the traditional lectern in this case Top Tec Gemini Duet 2200s and Explorer 1 Duplexes in the smaller lecture theatre, there is a large format 46” or 55” height and tilt adjustable NEC interactive touch screen. Positioned alongside the lectern, the touchscreen provides the lecturer with a digital whiteboard and enables them to manage, interact and capture their content whilst still engaging with the students.

For Professor Neil Morris, the NEC interactive touch screens are an exciting addition to the set up. He explained, “The touch screens are mounted on an adjustable stand making it easy to find a comfortable writing position. They offer a huge surface to work with; content can be zoomed and doesn’t have to be deleted when the board is full. The ability to face the students whilst writing helps the lecturer maintain the connection and engagement with the students”.

STRAIGHTFORWARD CONTENT SELECTION

There are two PCs in the room, a standard lecturer’s PC and one for the digital whiteboard. The default arrangement is that the digital whiteboard will project via one projector and the room PC will project via the other. This enables the lecturer to display their presentation content either with the hardwired laptop or on the digital whiteboard, simultaneously displaying the digital whiteboard content as the second projected image.

Sources are selected using the 15” Extron control panel on the lectern and these can be displayed on any of the projectors. A plan of all the Booths on the touch screen makes it easy for the room user to select an individual Booth and display the content from the laptop or device in that Booth on the in-room projectors.

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The software is run on the lecturer’s PC which acts as the server device. There are then a set of user licences which are allocated on a concurrent user basis. The students download an app onto their own device or login on the dedicated laptop situated in the Booths. This then allows two-way wireless collaboration, screen capture and personalised note taking.

Elizabeth Brittain is service manager – facilities directorate at the University, and she explained that “It was important to provide familiarity and the audio visual tools to support the occasions when traditional didactic teaching is the required format, however, crucially and in support of the strategic objective of the pilot it was also important to provide tools to support and actively encourage the development of the concept of active learning within the lecture theatre environment”. “The interactive technologies, intuitive control panels and touch screen make integrating technology into teaching a more interesting and rewarding experience for everyone. Students can access the VLE at their desks, use the Booth laptops to write and share work as a group, and their input can easily be integrated into the teaching process through the dual display system. It means I can create a learning environment that is varied and engaging, using different tools to help students develop and reflect on knowledge in new ways.”

A COMPROMISE ON ROOM OCCUPANCY?

One potential challenge levelled at the Collaborative Lecture Theatre design is the inevitable reduction in room occupancy compared to more traditional layouts. The University estimates the loss to equate to between 10% and 30% of seats. However, as Professor Neil Morris observes, this is considered an acceptable compromise for the benefits gained in the enhancement to the student experience. “The combination of physical space changes and innovative use of digital technology is sector leading and gives the University of Leeds a distinctive edge to support recruitment and student experience”.

The feedback and anecdotal evidence that the team at Pure AV has experienced from those customers already engaged in these collaborative, active learning projects is that delivered correctly they increase opportunities for learning, help maximise the potential usage of space within the University and have the potential to significantly enrich the student experience.

The project at the University of Leeds is an example of a new kind of project that is just starting to emerge as Andy Truswell of Pure AV explains. “Up until recently the majority of the collaboration projects tended to focus on smaller teaching and tutorial spaces. More recently, led by innovative institutions like the University of Leeds, our customers are looking to extend that collaborative, active student experience into their larger teaching areas. This creates some interesting challenges for system design in terms of the management and sharing of content and audio across multiple devices in multiple ways on a much larger scale, but also in consideration of audio and ensuring clarity of sound regardless of where you are sitting and who is speaking.”

COMPLEX SYSTEM, SIMPLE CONTROL

“This is also where the skill of the integrator becomes extremely important, and the ability of the integrator to design a system that manages all of the complexity to deliver a solution that the lecturer and students can quickly and easily use and engage with. The project at the University of Leeds has been very interesting, the early feedback has been extremely positive and I think a lot of people, suppliers and other institutions included will be watching with interest to see the results of the formal evaluation project”.

A VARIED AND ENGAGING LEARNING ENVIRONMENT

Early feedback from one of the first academics to use the space, Dr. Lee Edwards, associate professor, Communication Studies and PR, School of Media and Communication, suggests that this has been achieved. “The interactive technologies, intuitive control panels and touch screen make integrating technology into teaching a more interesting and rewarding experience for everyone. Students can access the VLE at their desks, use the Booth laptops to write and share work as a group, and their input can easily be integrated into the teaching process through the dual display system. It means I can create a learning environment that is varied and engaging, using different tools to help students develop and reflect on knowledge in new ways.”

EVALUATING FOR FURTHER ROLL-OUT

The Collaborative Lecture Theatre pilot at the University of Leeds will be thoroughly evaluated, with feedback from staff and students captured through in-room feedback systems, usage statistics and formal module evaluations alongside the formal evaluation project to be run by the Leeds Institute of Teaching Excellence. The results of this will determine any future roll out of the Collaborative Lecture Theatre concept.

Returning to director of digital learning Professor Neil Morris, his own view is that the rooms will be extremely popular with students and that staff will quickly warm to them. He predicts high demand for bookings and within a short-time frame pressure from staff for the introduction of more. “It is really exciting to see these new spaces come to life – they are truly sector leading innovative learning spaces that combine the best use of space and digital technology to offer a collaborative and interactive learning experience.”