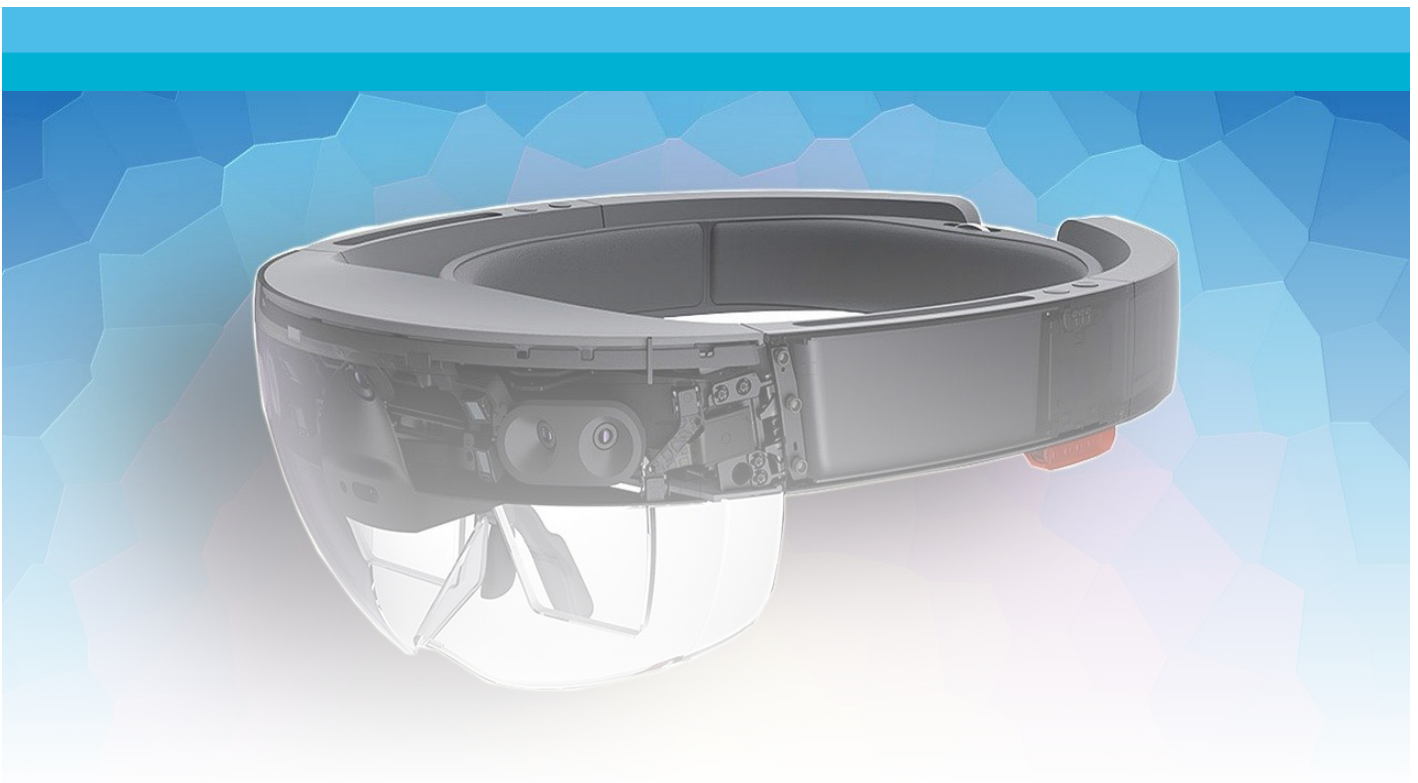# Case Study: Implementation of Microsoft HoloLens2 into Allied Health Professionals, Nursing and Midwifery for Clinical Placement Expansion

The Clinical Placement Expansion Project started at East Lancashire Hospitals NHS Trust (ELHT) in March 2021. The Trusts put forward a bid to Health Education England (HEE) for involvement in developing and expanding placement capacity across Allied Health Professionals (AHPs), Nursing and Midwifery by using digital solutions. The Trust have been successful in receiving the funding from HEE and the main aim of the project was to purchase four mixed reality headsets (HoloLens2). These are wearable, digital glasses that live stream videos from a professionals' perspective to a learner watching remotely on Microsoft Teams via Trust Secure networks.

Over the past 6 months, the project leads, and support team have been developing standard operating procedures alongside information governance and infection prevention and control. Training has been provided to a large variety of staff and learners alongside the development of user guides, feedback questionnaires, patient information leaflets/videos and risk assessments/disclaimers. The project has been supported by an Informatics Project Manager and collaboration with teams across the Integrated Care System (ICS) in Lancashire and South Cumbria.

The headsets are almost ready to go 'live' into practice and the trust intend to pilot them across a variety of AHPs including Orthotics, Speech and Language Therapy, Occupational Therapy, and Physiotherapy throughout community, out-patient and acute settings. The trust are also using these with Nursing and Midwifery professionals throughout a wide variety of settings including theatres, community, and health centres. Students will loan trust secure laptops and complete elements of their practise based learning remotely. This has the advantage of taking on more students at a time, reducing footfall across clinical sites whilst still maintaining an interesting and meaningful placement experience in line with professional body requirements and University learning outcomes.

Key Outcomes

• Excellent initial staff and student engagement/attendance for the open days (Appendix 1)

• Due to the delay in the project start date (due to the COVID-19 pandemic), the digital aspect of the project has not been fully utilised. However, an increased number of placements as proposed from 2019-20 to 2020-21 was still achieved. See table below:

Profession	2019-2020 No of placement weeks	2020-2021 No of placement weeks	Actual Increase/Percentage
Adult Nursing	12188 weeks	13388 weeks	1200 weeks / 9.8%
Midwifery	1267 weeks	1427 weeks	160 weeks / 12.6%
Allied Health Professionals	3750 weeks	4469 weeks	719 weeks/ 18.9%

• This has been achieved by utilising the Collaborative Learning in Practice (CLiP) Model (Appendix 2), Hub and Spoke placements (Appendix 3), weekly Community Based Practise Training, utilisation of other digital technology such as video consultations and leadership placements. This released further capacity for additional students.

• Due to the delay in utilising the HoloLens2 headsets, AHPs have an extension for the project to showcase the effectiveness of the technology after a pilot.

Background

East Lancashire Hospitals NHS Trust (ELHT) was established in 2003 and is a large integrated health care organisation providing high quality acute secondary healthcare for the people of East Lancashire and Blackburn with Darwen.

We employ 8,000 staff, some of whom are award winning and internationally renowned for their work and achievements. We treat over 700,000 patients a year from the most serious of emergencies to planned operations and procedures. Our high quality healthcare services are offered across five hospital sites and various community sites.

We have a total of 1041 beds:
- 709 beds at Royal Blackburn Teaching Hospital
- 240 beds at Burnley General Teaching Hospital
- 32 beds at Clitheroe Community hospital
- 67 Pendle Community Hospital

We provide a full range of acute hospital and adult community services and are a specialist centre for:
- Hepatobiliary
- Head and neck
- Urological cancer services

And also provide:
Specialist cardiology services
Level 3 Neonatal Intensive Care

Health Education England contacted Directors of Nursing and Midwifery at NHS Trusts as well as AHP leads in various healthcare and educational institutions across England in 2020. This was to invite bids from clinical providers or placement organisers (such as Integrated Care Systems) to HEE's Placement Expansion Programme, which was providing £10m of funding to support the growth of clinical placements in selected professions. The aim of the funding was to increase the number of placements offered to nursing, midwifery and selected allied health professional students from September 2020 and enable HEE to deliver the future health and care workforce in sufficient numbers and with the skills the NHS needs.

https://www.hee.nhs.uk/our-work/education-funding-reform/clinical-placements-expansion-programme-nursing-midwifery-allied-health-professionals-ahps

Key Aims

Allied Health Professionals

• To create virtual placement capacity through the introduction of virtual reality headsets to stream live clinical sessions to groups of multiple students and to also create a Virtual Placement Education Library of recorded clinical sessions for group education sessions. As virtual placement capacity increases, face to face placement capacity can be reduced for each student releasing face to face placement capacity for additional students (Initial aims: AHPs to increase by 5%)

• To develop virtual learning through involving students in virtual patient consultations taking place via AccurX (communication software used in the NHS). Virtual consultations have become a feature of how AHP services will be delivered going forwards. It is something students will need to be trained to work within therefore it is appropriate that some of their learning is via this means also.

• To create digital learning environments where students from multiple professional programmes can receive virtual clinical education within multi-disciplinary teams (MDTs).

Nursing and Midwifery

• To create virtual placement capacity through the introduction of virtual reality headsets to stream live clinical sessions to groups of multiple students.

• Create a Virtual Placement Education Library of recorded clinical sessions for group education sessions.

• To create constant learning environments where students can be placed all year round through a) increasing the confidence of clinical educators b) developing multi professional models of placement education within MDTs.

• Utilise the CLiP model to increase student numbers in each placement area to complement the development of virtual capacity.

• Increase placement capacity by 25% for adult nursing and midwifery students.

Key Stages of Set-up

Main Key Stakeholders

Kirsty Brierley (Digital Development Practice Educator Facilitator for Nursing & Midwifery)
Sarah Unthank (Digital Placement Development Lead for Allied Health Professionals)
Gemma Adams (Digital Learning Developer)
Andrew Keavey (Placement Education Lead)
Alison Turner (Associate Director for Allied Health Professions and Health Care Sciences)

Other:
ELHT Deputy Director of Education, Research & Innovation
Health Education England – NW Support Team
ELHT Information Governance
ELHT Infection, Prevention & Control Team
ELHT Patient Experience Support
ELHT Quality & Safety Unit
ELHT Informatics Project Manager
ELHT Information Technology

Key Stages

1.   Bid application and securing the funding from HEE
2.   Recruitment into project posts: Digital Development Practice Educator Facilitator for Nursing and Midwifery, Digital Placement Development Lead for Allied Health Professionals, Digital Learning Developer
3.   Procurement of Equipment (Financial cost codes, working with suppliers)
4.   Training with suppliers on the use of HoloLens2
5.   Development of: Standard Operating Procedure (SOP) for the use of HoloLens, Standard Operating Procedure for Cleaning the HoloLens, Patient Information Leaflet and Video, Patient Consent Form, Student Disclaimer and Technology Enable Care Services (TECS) Placement Pack, User Guides for Staff, Promotional content, Risk of Use Guide/Staff Consent Form, Feedback Forms
6.   Equipment and process submitted through Information Governance - Data Protection Information Assessment Form (DPIA)
7.   Patient Information submitted through Patient Experience Support Group (PILs)
8.   Cleaning SOP agreed with Infection, Prevention and Control
9.   SOPs submitted through committee groups and the policy council
10.   In-house training session/ open days
11.   Identification of any issues/ barriers (need for procurement of microphone to assist with sound wave length, hand gestures vs voice command for holographic images)
12.   Identification of pilot sites to trial equipment

The HoloLens2 Project is awaiting to go 'live' as of week commencing 6th September 2021. Final SOP was sign off agreed on 31st August for use of HoloLens and additional equipment ordered (microphone).

Throughout the next few months (Sept 2021 onwards), the HoloLens headsets are to go into practice education within theatres and community for nursing, orthotics, speech and language therapy, occupational therapy and physiotherapy (+/- dietetics/radiography).

The project team continues to work on staff engagement and are holding several meetings/presentations with other organisations such as local Higher Education Institutes (HEIs) for utilisation of its use with our learners.

The next phase of this project is to pilot the use of HoloLens in practice gaining staff, patient, and learner feedback. If successful, the HoloLens will then be utilised with a greater amount of learners throughout the trust.

How it Works

ELHT are using this equipment to live video stream patient assessments, treatments and consultations to learners who will be watching remotely via Microsoft Teams on a trust secure network. This enables a greater amount of learners to watch any one professional at any one time. This is turn will create additional capacity for having a greater amount of learners within the trust.

Microsoft HoloLens 2 is a pair of mixed reality smart-glasses developed and manufactured by Microsoft. Smart glasses are effectively wearable computers which allow a live video stream to be relayed back to students (Appendix 4).

Resources

Health Education England awarded funding for Nursing and Midwifery and Allied Health Professionals.

This funding has been used for:
• Recruitment
(Digital Placement Development Lead across AHPs, Digital Development Practice Educator Facilitator for Nursing, Digital Learning Developer)
• Procurement
(Laptops, HoloLens2 headsets with associated licenses, training package and accessories)

Key Challenges

• Delayed start dates for the successful candidates for the Digital Development Placement Lead and Digital Placement Practice Education Facilitator due to clinical pressures in substantive roles. Roles commenced as soon as possible.

• Delay in recruitment for the Digital Learning Developer as initially no appropriate candidates. The job was re-advertised and a successful candidate was recruited within one month of the original advert.

• Delay in procurement and ordering of kit. This was due to delay in the manager holding the budget code for sign off and no centralisation for the bid organised by finance. This was overcome by on-going liaison with finance and escalation to higher management.

• Inconsistency across professionals in recording student allocations. The Trust are developing a Placement Hub which will be a centralised system to review student allocations and offers.

• Staff shortages within Information Governance for review of Data Protection Impact Assessment. This was overcome with perseverance from the Informatics Project Manager and Project Lead in requesting escalation of sign off due to project timeframe.

• The Trusts local Information Governance team have declined the ability to record live video sessions for future use. This has limited the progress and opportunities within the project in creating a virtual educational library for the learning platform (part of the bids proposal).This has been discussed with HEE's North West Support Team, the ICS and across other boards. At present we are unable to record patients, however we can record actors for case studies.

• Due to COVID restrictions and government guidelines, initial agreement for the cleaning SOP from Infection, Prevention and Control was declined. Further investigation with the suppliers regarding cleaning and an agreed clean procedure was discussed and agreed with the Infection, Prevention and Control team within Trust.

• Staff Engagement - Digital Exclusion/ Inclusion has been discussed around the use of HoloLens and the barriers that a virtual placement might have on our learners. It has been agreed that we trial the equipment and gain feedback from all involved prior to a full role out.

• Equipment changes - Once trialling the equipment with staff, it became apparent that not all sound was transmitted through the headset to the remote listeners. Additional procurement of microphones is now required. These have been ordered and the project team are awaiting arrival of this.

• Internet access across satellite sites - This has been overcome with the ability to tether a network from iPads that professionals already use within the community for electronic patient records.

• Once trialling the equipment it became apparent that hand gestures would bring up holographic images i.e. menu display, when not required. This could be distracting for people using the HoloLens during treatment sessions. We are now going to trial them whilst disabling the hand gesture function and having voice command in its place.

Key Learning

• Prior to commencing a project or submitting a bid for funding, it is important to scope out key stakeholders and develop a live project tracker. In order for this project to be successful, it has required a number of senior members of staff within the trust to agree and sign off different elements of the projects. This has been successful in ELHT due to thorough collaboration with different departments. It is important to consider the implications that a new piece of equipment or learning style might have on the trust itself i.e. Data Protection.

• Prior to sourcing the equipment for a project and spending funds, Information Governance should be contacted alongside a completed Data Protection Information Assessment form. This ensures that any Information Governance queries are answered prior to spending funds. It would also ensure that realistic project aims can be written.

• Digital Inclusion/Exclusion - Not every staff member, patient or student is able to access the equipment, or have the confidence or skill set to use the equipment. This could pose a risk to people using the HoloLens however; the project team within the trust are available for support, training and trouble shooting. Not all patients, staff or students will be suitable to use this equipment due to medical reasons. Alternative placement opportunities will be provided within the trust for these learners.

• People's perception of how a learner should be educated i.e. traditional placement models. It has become apparent during the pandemic that, alternative models of placement need to be used. Education on how these models are and can be successful has been an important part of the project.

• The development of digital technology is a valued resource within the trust. HoloLens allows learners to see procedures, treatments and care through the eyes of a professional, reducing the obstructive view, infection risk and allowing valuable opportunities to a larger number of learners. The headsets will also create additional learning opportunities that a learner may not usually see i.e. placements in speciality areas.

• The Open Days provided valuable feedback from a wider amount of professionals and students regardless of the level of experience or qualifications.

Sustainability

This style of learning will be sustainable by becoming part of the every day to day role of the practice education facilitator in nursing, midwifery and allied health professionals. HoloLens will offer additional practice based learning opportunities including multi-professional practice.

The headsets have been fully purchased for the trust to keep alongside its accessories and laptops. However, there will be an additional cost each year due to licencing agreements which will be funded under the Directorate of Education.

The project team intend to continually monitor and gain feedback from the practice based learners, educators and patients to ensure any issues, challenges or barriers are addressed. Any successful case studies or stories will be shared across the organisation. Once the project team has completed their secondments, this will become part of a practice educator facilitator duty.

Next steps

- Trial additional microphone to see if the sound transmission is greater. If successful, order more.
- Use of voice command rather than hand gestures to ensure clinicians are not distracted with Holograms whilst treating or assessing patients.
- Present and share work with others – EELE Forum, Universities, Education Boards and HEE
- Trial live patient care with remote learners. This has been organised with midwifery, orthotics, physiotherapy and speech and language therapy and theatres commencing 13th September 2021.
- Ongoing collaboration with district nurse community teams (24th November 2021)
- Ongoing collaboration with allied health professionals.
- Collect staff, student and patient feedback using bespoke feedback forms created by the project team (Appendix 5)
- Evaluate the feedback from staff, students and patients to review any re-occurring positive and negative themes.
- Present outcomes of feedback to the wider trust, HEIs and learners.
- Roll out to wider areas, linking with other organisations including private and public care sectors.
- Further contact with Information Governance and to complete an amended DPIA to assess the possibility of recording and storing live patient care for future learner use within a secure educational platform. This will increase the sustainability of the project further.
- To complete a further case study once the project is fully implemented.

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Next steps

- Appendix 1 – HoloLens Open Days Poster
- Appendix 2 – CLiP leaflet
- Appendix 3 – Hub & Spoke
- Appendix 4 – HoloLens video demo
- Appendix 5 – Feedback questionnaire examples

Allied Health Professionals

HEE:
https://www.hee.nhs.uk/our-work/education-funding-reform/clinical-placements-expansion-programme-nursing-midwifery-allied-health-professionals-ahps

https://www.hee.nhs.uk/our-work/allied-health-professions/increase-capacity/ahp-pre-registration-student-practice-based-learning-programme/practice-based-learning-resources

Microsoft HoloLens:
https://news.microsoft.com/en-gb/2020/05/19/imperial-college-healthcare-nhs-trust-uses-microsoft-hololens-to-protect-doctors-and-reduce-need-for-ppe/

For more information contact:

Sarah Unthank/Kirsty Brierley
Digital Placement Development Lead for AHPs/ Digital Placement Practice Education Facilitator for Nursing & Midwifery
cpep@elht.nhs.uk