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TEL discovery report

Promoting the use of TEL in healthcare

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EXECUTIVE SUMMARY

Technology has changed the way that teaching and learning is delivered in healthcare. It is being used to enhance learning across a broad range of learning settings and contexts, from the use of e-learning courses to deliver and assess statutory and mandatory training, to the use of 'simulated patients' to give trainees an opportunity to practise life-saving procedures in a safe learning environment. Technology has enabled the extension of learning activities beyond the reach of traditional training interventions, such as lecture halls and study rooms. Technology has been proven to enhance learning that improves patient care and safety, as well as delivering cost savings to organisations and ultimately to the NHS and tax payers.

This report follows Government Digital Service (GDS) best practice and guidelines to identify what could be done to help healthcare organisations to take full advantage of the opportunities offered by Technology Enhanced Learning (TEL) in delivering learning and training. With this in mind, the goal of this discovery project was to assess how TEL is currently accessed within healthcare, whether there is a user need for a new service from Health Education England (HEE) to promote the use of TEL by training and education providers, and whether such a system would be feasible and offer value for money.

Our research and analysis is built on knowledge from previous HEE research activities and has added fresh primary research:

- quantitative data from a survey (with 1,023 respondents).
- qualitative evidence from:
 - first hand one-to-one interviews with 15 training providers and students.
 - an ethnographic study based on three contrasting settings for learning within the health service (Acute, Mental Health, Primary Care).

The findings and insights from these activities are included as appendices.

Based on our research following GDS guidelines, we conclude that TEL is currently being used to deliver training and learning, and that people are already sharing TEL resources, largely through personal networks, but also through bilateral links¹ between organisations such as NHS Trusts. However, there are issues with the status quo in terms of: awareness of the resources that are available; long-term knowledge management; accessibility of content; and control of intellectual

¹ Bilateral links in this context refers to scenarios where two or more organisations have decided to set up sharing of content and/or metadata between their Learning Management Systems, without any centralised intervention to support this. Our research confirmed that this does happen – refer to section 0 for further details.

property. There can also be costs involved in setting up bilateral links between Trust Learning Management Systems (LMS) and missed opportunities for achieving economies of scale and cost savings on content commissioning and sharing through a single national platform. This shows that there is a user need for better TEL resources and ways of discussing and sharing best practice.

The report points to a possible better solution for sharing TEL resources and promoting their use, based on three key elements:

- A centralised digital service for sharing and accessing TEL resources – including an Application Programming Interface (API) that enables Trusts to connect to this service from their in-house LMS.
- Dedicated online community tools to encourage networking, debate, discussion and review.
- The use of social media to push out messaging, ideas and discussion onto platforms people use frequently in their personal and working lives.

We recommend that HEE develops an alpha prototype of a new TEL sharing service encompassing these three elements.

There is now an opportunity for HEE to prove that such a system can provide better value for the NHS. The alpha prototype should be used as an opportunity to assess the options for scope, functionality, technology and long term management, so that the TEL 'sharing service' delivers value as well as impact and effectiveness.

1 PROJECT APPROACH

1.1 Background

The discovery project's aim was to study the need for a new online service to support TEL healthcare in the UK and to encourage sharing of, and improve access to, resources between individuals and organisations.

This discovery report by Reading Room for HEE sets out possible strategic and technology solutions to answer the needs that we have identified.

We were also seeking to establish whether it is likely that new technology systems will be adopted by the target audience, having examined their attitudes towards the use of technology in learning and training. We did not seek to challenge whether TEL was an effective way of delivering learning, since there is ample evidence available already to confirm that it is. Rather, we sought to understand whether people working in healthcare were ready to use and access TEL resources, adopt them and share content with others who might benefit from them.

HEE had already undertaken a detailed research project, in two phases. The first was conducted in 2012/13, the second in 2013/14. The recommendations that the research made were clear: that there was value in the development of a single unified online technology solution for the healthcare workforce. However, this research is dated, and there are concerns that it may not best represent the needs of healthcare professionals in 2016 (given the rapid advances in technology, this is a reasonable assumption to make).

Reading Room were therefore commissioned to undertake an additional research phase to reassess the findings of the original report, to see whether needs may have changed in the intervening time, and to provide additional intelligence to the existing research outputs. We followed GDS guidelines and best practice in consulting with users directly and working in conjunction with HEE to design the research activities in order to omit any bias towards any explicit results.

1.2 Project goals

The aim of this project is for the output to be relevant across multiple strands of work. However, the initial findings and recommendations seek to:

- Ascertain whether people use TEL in healthcare.
- Determine whether people share learning resources digitally.
- Gain a deeper understanding of the different user types to find out how they interact with TEL resources and sharing of content.

This report details the findings and recommendations of the research study conducted by Reading Room on behalf of HEE between July 2016 and October 2016.

1.3 Methods and activities

The insights and recommendations in this report draw on the findings from four research activities, which included:

- A quantitative user survey (1023 respondents from across healthcare).
- User interviews (15 interviewees from across healthcare).
- Ethnographic studies (three settings - Acute, Mental Health and Primary care).
- Desktop research to include a technical landscape review.

The survey was designed to give us a better understanding of the varied user audiences, their views and expectations of TEL services and their digital capability. Psychological scales were included to provide insight into the factors that can influence people's behaviour, with a view to focussing on areas not identified through the desktop research.

It was conducted online using Survey Monkey. A full analysis, as well as the original questions, can be found in section 6 of this report.

15 phone interviews were also conducted with a range of NHS employees. These were arranged by HEE and included people in different types of employment, job role, physical location and with different levels of digital skills, years of experience and levels of seniority. The aim of the interviews was to gain a deeper insight into users' digital behaviour and information needs, explore their current relationship with HEE and identify any passion points (both positive and negative) with the currently available online learning systems. They were also carried out to determine the main objectives and expectations of any new service or improvements to existing services.

An ethnographic study was undertaken over three different sectors and geographical regions to capture some of the diversity of the healthcare profession and the range of learning activities that take place. This studied the live interactions of users with digital tools and resources and how they behaved or referred to existing services, their usage, attitudes and contexts in which these are employed in learning and education activities.

Desktop research assessing the technical landscape and a stakeholder workshop were also undertaken.

The research focussed on four audience groups identified by HEE:

- Health and social care learners.

- Trainers and teachers (educators).
- Educationalists and learning technologists.
- Commissioners.

An important caveat regarding the limitations of the findings of the research is that interviewees and respondents were identified by HEE across all research activities. The constituents we had contact with, arranged by HEE, lay primarily in the trainer, educationalist and commissioner audience groups. Any resulting insights and views are the perceptions and assumptions of the above groups on what digital behaviour the learner demographic displayed.

2 INSIGHTS FROM THE RESEARCH

In this section, we outline the top-level findings and insights we have identified during the user research. These findings inform the high-level options provided in section 3 of this report.

2.1 Current usage of TEL resources

Insight: *People are using TEL resources already and expect to do so in the future.*

Our survey found 80% of participants using TEL in some form in their current course/training, and 96% used TEL at some point in their overall training and learning. 80% said they would use TEL resources that were provided in their place of work.

This finding is backed up by our desk research (including the results of a survey conducted by The Guardian in mid-2016 – refer to section 5). It is consistent as a finding across the various research activities where digital and technical systems were being used as support for the delivery of various healthcare activities, including learning and training.

2.2 Preferences for TEL resources

Insight: *There is a strong preference for face-to-face tuition, with TEL in a supporting/complementary role.*

Our interviews found that the preferred form of tuition was face-to-face, and that students preferred technologies that support or complement face-to face tuition, rather than those that seek to replace the tutor with ‘self-driven’ online learning activities.

The type of resources that do try to replace the tutor are generally statutory and mandatory training, which could be described as being more “traditional e-learning” content. Such resources are seen as something people “have to do” rather than being something they enjoy or value.

Our ethnographic study also identified strong examples where TEL resources were used to complement and support face-to-face training – including live simulation training – and opportunities for content from those sessions to be captured (for example, a video of a live demonstration). The study also revealed a need for tutors to share or push out content to their students, with a range of ad hoc solutions to sharing being adopted by tutors, including email and social media groups.

2.3 Sharing of TEL resources

Insight: *People are actively sharing TEL resources already.*

Users feel that sharing of resources is beneficial. They share learning resources through email, social media, word of mouth (during training sessions and lectures) and by sharing links on Trust LMS. Most users across the research activities felt positively towards online learning and education services, although a premium value is placed on face-to-face and interpersonal interaction as a learning activity. The development of online resources should recognise the supporting role digital resources can play, but also that users feel that it is supplementary, rather than replacing the live interaction.

70% of survey respondents see the sharing of information, learning resources and tools between learners, trainers and organisations as beneficial.

In addition to some individual sharing, our interviews found evidence of Trusts setting up bilateral sharing of TEL resources between their LMS.

Our ethnographic study also saw many examples of TEL resources being shared by social media, by email, through LMS, and also by word of mouth (lecturers and trainers telling students about resources – which in some cases they started looking at immediately on mobile devices).

The ethnographic studies identified a number of instances where resources were being produced but not shared, or were not in a digital format, so could not be shared.

The ethnographic research and stakeholder interviews also identified several learning services developed for particular job functions or professions that could potentially be integrated with any centralised service produced by HEE.

2.4 Sources for TEL

Insight: *Trainers and learners must search multiple places to find the best content.*

The interviews found that people search multiple places, including their in-house LMS, third party LMS/Virtual Learning Environments, the websites of professional bodies such as the Royal Colleges, and then open internet searches.

The ethnographic research also found that a number of existing TEL resources are known and regularly searched, but the onus is on the individual trainer or student to go and check multiple places as part of a search for TEL resources. There is no centralised place to conduct searches.

Users from the trainer/commissioner demographic obtain specific information using a wide variety of NHS-trusted resources and external sources. Our research suggests that some of these external sources are difficult to navigate, but trainers can generally find what they want. Relying

on students to find trustworthy information for themselves was seen as a difficulty by some trainers, who sometimes prefer to directly transmit resources to their students via e-mail to ensure that they have got the correct content.

A proportion of potential service users are not familiar with or do not use any of the centralised services that are currently offered within healthcare. This lack of familiarity could be explained by factors such as marketing, promotion or communication strategies, or implementation factors which affect users having knowledge of them.

Trust is clearly an important factor as well, expressed to us repeatedly during interviews and reinforced by the survey responses. Users need to trust the sources of information they access as having authority, and a system that could help them establish trust in new sources that they encounter could be beneficial.

2.5 Peer support and personal networks

Insight: *peer support and personal networks are highly important in developing best practice and sharing resources.*

60% of our survey respondents stressed peer support as an important factor in helping them to apply newly found knowledge and skills. This is only slightly less than the 62% who said that the support of their supervisor or manager was an important factor in this respect. This applies equally to the tutors and trainers as well as the students. If we are asking them to change their teaching practice, then they are as much a learner in that respect.

Meanwhile, 53% of survey respondents listed personal recommendations from peers and personal connections as the most important factor in establishing trust in new learning resources. This is more than recommendations from media sources, which was seen as important by 43%, and natural search online at 33%.

The interviews we conducted also substantiated the importance of personal networks for sharing resources and ideas (refer to section 7.3.5).

Of course, sharing of content via personal networks is a very natural thing to do and will continue to happen whether there is a new digital service for sharing TEL resources or not. There is, however, an issue with relying solely on people sharing via personal networks, in that it creates a barrier to entry for people who have not been in their profession for very long and have not had time to build up personal networks of their own (this was confirmed by our ethnographic research). There is also a potential to harness personal recommendations and endorsements through a digital service, as has been done in many sectors – a ‘TripAdvisor style’ rating and review service for TEL content was suggested by several of the people we interviewed.

2.6 A need to establish trust

Insight: *There is a lack of trust in resources from unrecognised sources found on the open internet. This lack of trust can put people off using TEL content.*

40% of participants in our survey say they don't generally search for learning resources outside of their own Trust network, and a further 8% were disinclined to have confidence in the quality of learning resources they find on the open internet. Some respondents from the interviews were also of the view that they shouldn't have to go and find content, it should be provided for them by their institution and their trainers.

Many healthcare professionals have specialisms, and accessing information which is targeted and relevant to them is very important. Content provided by or endorsed by a known professional body such as one of the Royal Colleges was seen as a strong factor in establishing trust, as were resources from some Trusts known to be an authority on clinical practice in a particular area.

Quality assurance of learning resources is being provided by Trusts themselves in some situations. Some of our survey respondents described situations within their Trust where only teaching staff are allowed to post new resources to their LMS; students can make suggestions, but they need to be vetted before they are allowed onto the system. This could account for the high percentage of students who don't look outside their own network, because they have access to local resources which have already been reviewed and approved.

The one-to-one interviews highlighted that a quality assurance system based on peer review and rating could be one possible solution to help people distinguish poor quality from high quality learning resources.

2.7 Ad hoc approaches to sharing, including social media

Insight: *Whilst many trainers and students still use LMS, social media and email are increasingly popular for sharing resources.*

The interviews found that people who do share TEL resources often do so through decentralised personal networks, particularly social media and email. The simplicity and usability of social media and email for sharing was highlighted. Facebook groups, Twitter and WhatsApp were commonly used social platforms for sharing TEL resources and were referenced both in the one-to-one interviews and the ethnographic research.

Our interviews and ethnographic studies found that many practitioners are already using social media to share TEL resources and discuss best practice, and to share content and resources

with their students. While this is done largely through personal networks, some communities have been developed within the higher education sector. These include: the use of Twitter by the University of Sussex Technology Enhanced Learning department @SussexTEL; HEE's own @HEE_TEL Twitter feed; and the EU funded STELLAR network of excellence for TEL using LinkedIn to discuss TEL and share TEL resources and links to related articles.

By comparison, the interviews and the ethnographic study found that sharing resources through LMS was still common, but people complained of clunky interfaces that are not user friendly.

2.8 Barriers to social media sharing

Insight: *A reliance on social media for sharing was seen as a barrier by some.*

Social media is not seen as a panacea to sharing of content. Firstly, because it can exclude those who do not feel comfortable using it, and secondly because the IT network and internet access policies adopted by Trusts and other organisations may prevent tutors and learners from accessing social media sites from within the workplace.

2.9 Barriers to discovery of new resources

Insight: *Inexperience with searching, and poorly performing search systems are acting as a barrier to discovery of TEL resources.*

Our interviews found that people often struggle to construct searches that bring back good results due to a lack of knowledge of where and how to search, often paired with poorly designed and implemented search systems.

For example, one participant commented on “very restrictive search functionality that gives limited results” as well as observing that their students felt “overwhelmed by results due to nonspecific key word searches such as ‘nursing training’”, and not knowing how to refine the search to get to good content. Another tutor expressed frustration that her students “could find things whilst shopping online but seem unable to find online learning content”. This could be as much about the quality of the interface as about the ability of the students.

The one-to-one interviews also suggested a lack of skill by more junior learners to assess the quality of content found through search engines such as Google. This indicates a need to educate people in how to search, and indeed some Trusts include the development of search skills as part of their courses. Provision of a centralised system that supported people in their searches could also be beneficial to people in this situation.

2.10 Longevity of resources

Insight: *Some TEL resources are developed for time-limited programmes or initiatives, and can fall into neglect or even be taken down due to lack of funding when priorities move on.*

Our ethnographic study provided evidence of resources that had been developed and were being used by staff, but whose long-term future was under threat due to a lack of budget to maintain, update or even to host them. Valuable resources may be lost because of this.

2.11 Local LMS

Insight: *Many organisations in healthcare have deployed learning management systems, such as Blackboard and Moodle. Any new service needs to take into account the local provision of LMS and work with them.*

For a lot of the participants in our research, TEL is synonymous with the use of learning management systems and e-learning material. This represents a misunderstanding of what TEL is about; TEL includes the use of LMS and e-Learning material, but is not limited to these resources.

However, in developing and encouraging the use of TEL we need to accept that for a lot of trainers and learners their starting point in searching for learning content – including resources for planning and delivering learning – will be to search what is available in their local LMS. Given that our survey found that 40% do not generally look for TEL resources on the open internet, for some of them this is also likely to be where their search ends. This means that for HEE to influence these users there is a necessity to get content (or sign-posting to content) in front of learners and trainers from within these ‘walled gardens’, as many of them are not looking outside.

LMS are often based around the concept of ‘packaged’ e-learning content, using known content standards and specifications such as xAPI (Tin Can), AICC and SCORM (an older standard but one that is still in use).

Packaged e-learning content was generally designed to be used in self driven learning activities, although some content is also designed for mediated use in the classroom.

This type of content is common for statutory and mandatory training within the NHS. It is the sort of content that people perhaps think of when they envision ‘traditional e-learning’. Use of this sort of content can certainly be described as TEL.

However, this is not the only form of content we need to consider. Many of the best TEL resources are not created using packaged e-learning content, or even with LMS in mind. They involve unstructured guidance, advice and best practice, and also provision of tools that can be

used to support teaching and learning experiences. For example, some of our interviewees described use of recorded video lectures and online portfolio systems, as well as use of tools like Skype, WebEx and Slack for delivery of learning.

There is a need to support sharing of both types of resource and – where the resource is a tool rather than content – for storing best practice guidance on how it might best be used. This sort of unstructured content could still be catalogued in an LMS using metadata to describe resources that can be accessed elsewhere, in order to provide a centralised, searchable directory.

Given time pressures on the healthcare workforce, there is a tendency towards sticking with the status quo, both in terms of existing TEL resources, existing (traditional) teaching practice and established trusted sources. The lack of time was stressed to us in interviews by lecturers and trainers, with one commenting that people “work really hard, but don’t have the time to hunt around for information and resources. They want just to be given information”. Another senior expert observed that students will “take the easy options” of using content that is given to them, but also acknowledged that it “can be difficult if exploring new areas that you are unfamiliar with”.

Any new approaches to teaching and learning and online services will require a demonstrable cost/benefit impact in terms of the investment both in taking time to learn and building new ways of working into the teaching and learning programme.

We also heard some concerns raised in interviews about accreditation for learning, either when using technology that sits outside of LMS, or when transferring between Trusts. There is a danger that data about learners becomes fragmented, although this is a long-standing issue for LMS rather than an issue specific to the sharing of TEL resources.

2.12 High level needs

Based on the above insights, we believe the high-level needs for the health workforce and training providers are:

- Access to trusted TEL resources.
- A space to meet and discuss best practice with other practitioners.
- A method for providing a degree of quality assurance, potentially through personal recommendations, peer reviews or rating of resources from other practitioners/learners.
- Access to structured learning content compatible with Trusts’ LMS and Virtual learning environments (VLE).
- Access to a directory of unstructured TEL content.
- A simple user interface that fits in with daily work/life.
- A system that will be accessible in NHS Trusts.
- A system that saves participants time in searching for relevant resources.

- A system that is intuitive and straightforward, including for those individuals with a lower level of digital literacy.

3 MEETING USER NEEDS

Following GDS guidelines on discovery, having first established that there are needs to address around sharing of TEL resources, we can now move on to set out a number of approaches that, in our professional opinion, are capable of meeting these needs.

There are five options to consider: two of these focus on creating informal knowledge networks and communities of practice; a further two options concentrate on developing a centralised digital service for the sharing of resources, and which can be integrated with LMS deployed within organisations; a fifth option focuses on supporting bilateral peer-to-peer sharing between organisations.

Below is a summary of what each option involves, and the pros and cons of that approach. Following on from that, we make a recommendation for which of these options should be taken forward to develop as an alpha prototype.

3.1 Share TEL resources and ideas using social media platforms and groups

HEE could support the sector by further developing its own community of practitioners and learners using social media for discussing and sharing TEL resources and teaching and learning practice. This would involve growing and building on the existing HEE online community on Twitter, potentially adding more Twitter feeds for sub-topics within TEL, and possibly adding new social media channels such as LinkedIn, Medium and YouTube.

Note that, whilst our research found evidence of groups of tutors and learners using social media and collaboration tools such as WhatsApp, Facebook and Slack, these are much less appropriate to the needs of HEE because they are optimised for small groups to collaborate and share information. HEE should be looking at tools that are optimised for much larger audiences.

Pros	Cons
<ul style="list-style-type: none"> • Cost effective to implement – no hardware, software or licensing issues. • Many social media tools have excellent usability, including from mobile devices. • Quick to implement – available immediately. • Popular platforms integrated into some existing users' digital behaviour. 	<ul style="list-style-type: none"> • Access to social media may be blocked by IT and network policies of individual Trusts and organisations. • Not everyone likes social media – won't have full buy-in from the audience you need to reach. • Nature of many social media channels makes sharing of knowledge and resources somewhat ephemeral, which is less suited to long term utility. • Administration will be required. • Would require a moderator/facilitator, which would be an overhead. • Data protection and personal privacy issues.

3.2 Dedicated/bespoke online communities

This option would involve developing a dedicated online community service that can provide community tools such as threaded discussion, document/resource sharing, voting, personal profiles and networking tools.

There are definite advantages to this approach over the use of third party social media tools: it allows greater control of branding and visual identity; it provides content and tool providers who care about such things with a clearer way of controlling access to their intellectual property; it allows greater control over who can join an online community; and it gives complete freedom in the development of functionality.

There is obviously a greater cost to developing such a bespoke service, in comparison to the option of adopting existing social media platforms. However, HEE may judge that the benefits outweigh the costs in this respect.

Building a community from scratch is also not easy, as it requires promotion, marketing and active facilitation. It has, however, been achieved by some organisations with great success. One such example is the online community of school teachers developed by Times Educational Supplement (TES). This is now one of the most successful online forum for discussion of teaching at school level in the UK, and also has a growing international user base (see section 9.1.1 for more details of TES).

Pros	Cons
<ul style="list-style-type: none"> • Dedicated to HEE and their objectives. • Controlled access. • A trusted brand and a safe environment for learners. • Could build on and integrate existing established communities. 	<ul style="list-style-type: none"> • Development costs. • Content would need moderating. • Building a new community from scratch is risky and takes time and effort. • Whilst community tools offer more longevity to resources than social media, they are not optimised for long term knowledge management, as the information is organised around topical conversations at a point in time.

3.3 Centralised digital service for sharing TEL resources

The two options above (use of social media tools and use of forums and community sites) could certainly provide a service for increasing sharing of resources and best practice, but they both have the drawback of offering a somewhat ephemeral service, focussing on discussion of ideas and topics as and when they arise within a community. In order to ensure long term availability of content and resources, they need to be stored in – or signposted from – a central place.

HEE could develop a centralised service to store, showcase and promote the use of TEL resources that could store content and/or metadata about resources stored elsewhere. This would enable the provision of a centralised directory for searching for TEL content in healthcare.

This option does obviously have costs in terms of implementation and development, and support. The TEL service could be built bespoke, or could utilise an 'off the shelf' LMS. This would then provide a service for practitioners and learners to access TEL resources by users.

Content would be crowd-sourced by inviting organisations and individuals to voluntarily upload material, with HEE's role being to facilitate sharing and repurposing of existing TEL resources.

As discussed in the insight section, the platform could utilise a peer-rating/review or personal recommendations section to provide a form of quality assurance. Whilst this form of peer review can help to minimise the overhead of managing the content from HEE's point of view, there will need to be an Acceptable Use Policy with rules on when to take down resources if they breach intellectual property (IP) regulations, or are deemed inappropriate. Monitoring of usage will be required to ensure compliance with the Acceptable Use Policy.

As well as being given access to the new TEL service through the web, organisations and training providers could also be given the means to download resources for use in their local LMS. In addition, a facility could be provided to query the digital service using an API to enable local users to conduct a federated search that would include TEL resources from the digital service in searches on their local systems. This could ensure that even those who search only within their own systems will still have access to resources from the new TEL service.

Pros	Cons
<ul style="list-style-type: none"> • Complements existing platforms at NHS Trust and organisational level. • Can interface with the complex LMS/TEL landscape. • Facilitates sharing and repurposing of existing learning materials. • Peer review/rating system allows a form of quality assurance, whilst minimising administration overhead. 	<ul style="list-style-type: none"> • Development costs and time. • Creating a permanent library of resources means that some resources will not 'age' as well as others and may become out of date. This may require review by administrators.

3.4 Centralised LMS for TEL resources and learner data

This option would build on the new digital service for sharing TEL content outlined above, and add in LMS style functionality that stores learner data and allows content to be accessed by tutors and trainers and allocated to individual students and learners.

The system would need to support two different scenarios:

- Organisations who do not have an in house LMS, who could then use the full functionality of the HEE system.
- Organisations who do have their own in-house LMS, who may wish to either take content from the HEE system to run locally, or allow content to be accessed on the central service, with learner data being exchanged with their own in-house LMS.

Learner data and training records could utilise the Electronic Staff Record (ESR), if this was integrated with the LMS. Some Trusts are already integrating with the ESR from their own LMS, suggesting that this would be technically possible, although we have not specifically investigated its feasibility.

Pro	Con
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<ul style="list-style-type: none"> • For organisations who do not have their own LMS, this would provide a complete service. • Proven standards such as xAPI (Tin Can) and AICC exist and could provide the necessary integration route for Trusts with their own LMS. • Produces the best data for HEE on which learning resources are actually being used and their impact and effectiveness. • Could answer institutional concerns over fragmentation of content and data. 	<ul style="list-style-type: none"> • Developing LMS functionality and integrating with the ESR would add to complexity and cost. • Trusts may see this as overlapping with their own LMS. • Administration overhead would be higher than a service that just stores content on its own; as it would include administration of personal data.
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3.5 Promote bilateral and peer-to-peer sharing of resources through interoperability frameworks

Trusts are already starting to investigate how they can work together to share learner records (when staff move) and to pool content (where they are able to do so within restrictions on IP).

HEE could focus on encouraging this sort of sharing of TEL resources on a bilateral or peer-to-peer basis between organisations' LMS. This could be done alongside the provision of a central digital service, or could be developed independently from it. This could then be used by organisations to help them to share content and resources more effectively.

HEE could also develop an interoperability framework utilising proven technical specifications such as xAPI and AICC. In addition, best practice guidance to explain how these specifications should be used by healthcare organisations should be provided, in order to achieve the smoothest route to integration and sharing of content between LMS. This might include, for example, providing guidance on the use of controlled vocabularies and taxonomies to ensure content is described consistently across the sector.

Pros	Cons
<ul style="list-style-type: none"> • Utilises existing services. • No additional services need to be developed. • Technical specifications like xAPI and AICC already proven to work for exchange of content and learner data. 	<ul style="list-style-type: none"> • A peer to peer model would have no centralised content or reporting, so hard for HEE to assess effectiveness of TEL across the sector. • Communication protocols and data would need to be standardised – may require development at the NHS Trust and organisational level

3.6 Summary of options vs high level needs

	Share TEL resources and ideas using social media platforms and groups	Dedicated/bespoke online community	Centralised digital service for sharing TEL resources	Centralised LMS for TEL resources and learner data	Promote bilateral and peer-to-peer sharing of resources through interoperability frameworks
Access to trusted TEL content	X	X	X	X	X
A space to meet and discuss best practice with other practitioners	X	X	X		
Recommended content from other practitioners/learners	X	X	X		
Access to structured learning content compatible with Trusts' LMS and VLE			X	X	X
Access to a directory of unstructured content using metadata signposting			X	X	X
A simple user interface that fits in with daily work/life	X	X	X		
A system that will be accessible through NHS firewalls and systems		X	X	X	n/a
A system that saves participants time in searching for resources			X	X	X
Complexity to build	Low	Medium	Medium	High	Medium
Effort to moderate/facilitate /manage	Medium	High	Low	High	Low

4 THE RECOMMENDED APPROACH FOR ALPHA DEVELOPMENT

The options we have set out are not mutually exclusive; the service that is taken forward to alpha could be based on a combination of approaches. Each has the potential to help HEE meet some of the high-level user needs identified in this discovery research.

As explained above, of the five options, two focus on creating informal knowledge networks and communities of practice and two concentrate on developing a centralised platform for resources to be shared, and which can be integrated with LMS deployed within organisations.

But, as we saw from the above analysis, there is a false dichotomy here if HEE wishes to meet the full set of user needs – it is not a choice between one option or the other, both will address important requirements.

Our research showed that personal networks and recommendations are a crucial trust factor, whereas support from peers is very important to people wishing to develop and embed new skills and new practices. This would point strongly towards the **dedicated online community** and **social media sharing** options. Social media offers the quickest win as it utilises established platforms and tools. But it can't provide the complete answer to these user needs as social sites are often blocked by institutional firewalls and security policies. So, we recommend that both approaches are taken forward. In doing so, HEE will need to decide which conversations are held on the dedicated online community and which through social channels. It may be better, for example, to hold time-limited debates around selected topics on a dedicated community platform (creating communities of purpose), but to use social media channels for more open-ended, unstructured debate about TEL in healthcare (communities of practice). The exact mix will need to be decided as the project moves forward, and it may be that the community themselves help to make this decision through voting with their (virtual) feet.

TEL resources also need a home in the longer term, and our research found that there is a need to provide access to this from within the walled gardens of LMS deployed within Trusts. Here we set out three options.

Whilst there are attractions to having a **centralised LMS**, this would be the most complex of the options to implement, and we propose that it be parked as an option, at least for now, as it goes beyond what could be classed as a 'minimum viable product' for sharing TEL content.

This leaves two other options: a **centralised digital service for sharing TEL resources; and a focus on bilateral and peer-to-peer sharing of resources through interoperability**. Here we need to talk about the need to reduce costs and spending across the NHS. Whilst bilateral links between Trusts are a good thing, the ability to plug all the Trusts into a centralised digital service offers the biggest opportunity for cost saving as it will maximise content and resource sharing and minimise the amount of integration work for each Trust. This makes the **centralised digital service for sharing TEL resources** the most attractive option at a national level.

There is still space for work to develop interoperability frameworks in order to share content between Trusts, and in fact this could reuse development work on an API for sharing content and metadata to and from the central digital TEL service.

4.1 Proposed scope for alpha

In summary, our overall recommendation is that the HEE moves forward to alpha with a plan based on a system that includes:

- A centralised digital service for sharing and accessing TEL resources – including an API that enables Trusts to connect to this from their in-house LMS.
- Dedicated online community tools to encourage networking, debate, discussion and review.
- The use of social media to push out messaging, ideas and discussion into platforms people use frequently in their personal and working lives.

This will fully meet the high-level needs identified in our discovery work. We recommend that the scope of the alpha phase should involve the development a prototype of a system based on these three elements.

4.2 Delivering value for money

As part of discovery and the decision to move forward with this project, HEE must decide whether they believe they can provide a system that performs significantly better than the status quo and that provides better value for money.

The status quo for sharing TEL resources beyond the boundaries of Trusts, as we identified, is largely based on ad hoc sharing of resources using email and social channels and bilateral arrangements between Trusts.

We think there is certainly an opportunity to provide a better service. However, there is too much uncertainty at the moment concerning the functionality, underlying technology and associated costs and future management requirements to state conclusively whether such a service would offer better value for money for HEE. We therefore recommend that any assessment on whether the value for money criteria has been met be delayed until these factors have been evaluated and explored through the alpha phase. It is also recommended that a reassessment be made of whether plans and scope are optimal for the project, or need adjusting following on from that.

5 APPENDIX: DESK RESEARCH

To inform our discovery project we reviewed the following documents:

- Understanding the new NHS – an organisation chart (2015).
- HEE Training and recruitment discovery results and recommendations – a discovery report looking at the overall HEE audience and web-presence (2016).
- The Guardian's Healthcare Network Survey results (2016).

Some key insights from the review of the HEE audience and web-presence:

- The HEE audience is very supportive of the concept of a centralised service to provide access to quality learning and training resources.
- Current user experience of finding quality learning resources is poor. Issues include site navigation, lack of curation/quality control, content stagnation/broken links and search tools with poor performance/interface design.
- There is a strong sense of information overload, backed up by the T&R research which examined 88 websites.

Some key insights from The Guardian survey:

- Training is under-utilised, the survey found that 96% of people had access to training in the workplace but only 30% took advantage of all or most of what they were offered.
- Workload was seen as a bigger issue than access to a computer with an internet connection. 62% of respondents to the survey stated that workload was the main barrier to training. 20% of the health workforce and 6% of the social care workforce stated access to a computer with an internet connection was the main barrier.
- People want both face-to-face and online training, with both being popular. Of those who wanted more online training, having everything in one place and being able to customise or personalise the experience was seen as important.
- 90% of the workforce undertake at least some training every month, with 9% doing more than ten hours a month, and 35% doing up to two hours a month.
- Online training is done at home more than at work, with 60% of the health workforce saying they undertake online training at home compared to 48% saying they do it in working hours.
- Face-to-face training is the preferred delivery method for training, with 89% of the health workforce and 93% of the social care workforce wanting to see more of it. This is compared to 59% of the healthcare workforce and 43% of the social care workforce wanting more online training.

- The top five factors stated as likely to lead to people taking advantage of training:
 - Protected time in working day to complete it.
 - Understanding from managers and colleagues that it's necessary.
 - Bite-size chunks that could fit into a specific time period.
 - An easy to use platform/portal.
 - Better access to the internet for online training.
- 92% of the workforce has access to a desktop/laptop PC at work and at home. 36% use smartphones in the workplace, and 84% at home.

6 APPENDIX: QUANTITATIVE SURVEY ANALYSIS

The online survey was designed to provide quantitative data around the dominant factors that influence people's decisions to use technology-delivered resources. Drawing on a well validated theory of technology acceptance, the **Technology Acceptance Model (TAM)** developed by Davis et al., (1989); Venkatesh & Bala, (2008), as well as theories of motivation to learn/transfer and work environments, the aim of the survey was to look at current use of, and attitudes and views towards, accessing, creating and sharing online learning in healthcare education.

This approach enables us to run quantitative metrics against the responses to help us understand how we can increase the level of engagement of the varied audiences across the different areas of health and social care with the online technology.

6.1 Survey Method

The survey included 14 questions covering:

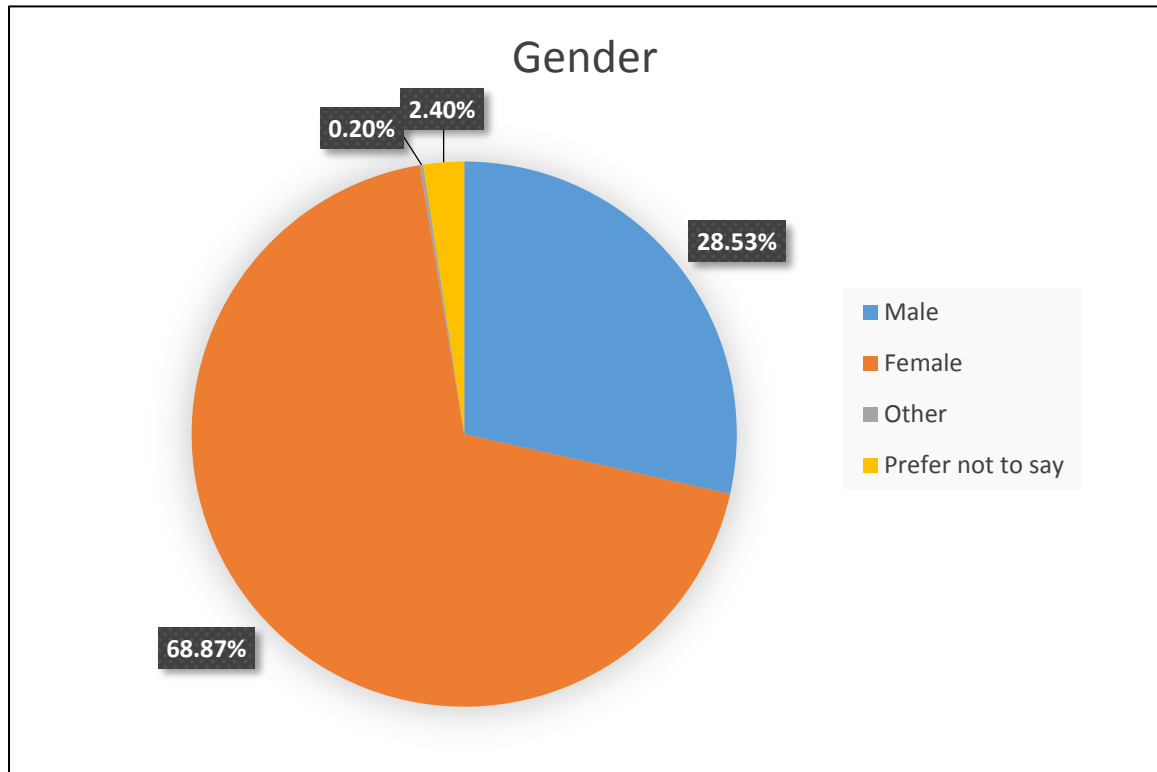
- Key demographics.
- Use of technology.
- Motivation to learn.
- Levels of trust in various sources of learning and education information.

We designed the survey using well-established measures wherever possible. We used a series of questions to achieve a measure. For example, the Technology Acceptance Model (TAM) as a measure is formed by averaging responses to 26 separate questions, while the motivation to learn was measured using 20 questions. This has advantages in terms of achieving accuracy in the measurement of complex abstract variables, reducing measurement error and in allowing statistical tests to be conducted on whether measures are reliable in the sample achieved. It also assists in the analysis of relationships and relative importance for key measures for the setting of priorities for action.

The survey was distributed to the employees working in health and/or social care and promoted through the internal communications systems in order to gain insights from a variety of groups. In total, 1,023 surveys were returned. This is a very high return rate and can be considered a success. Anonymity and confidentiality were maintained throughout the research.

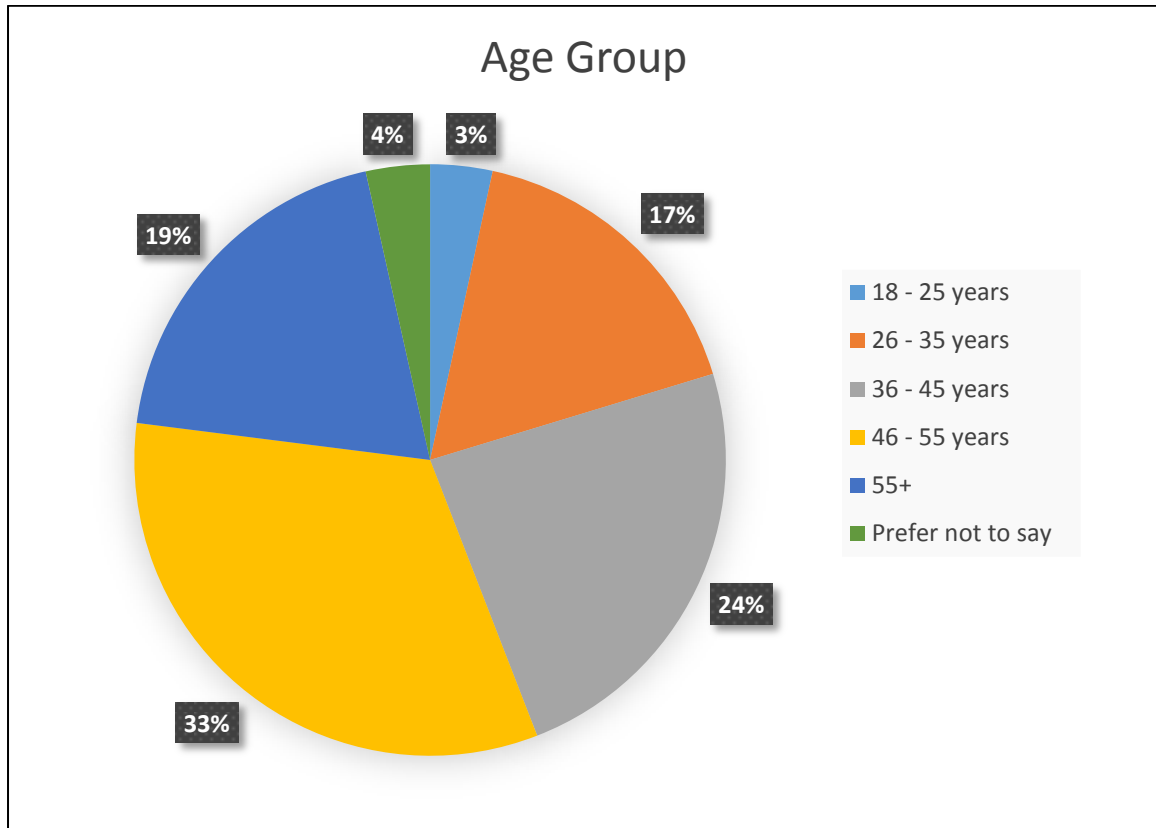
6.1 Demographics

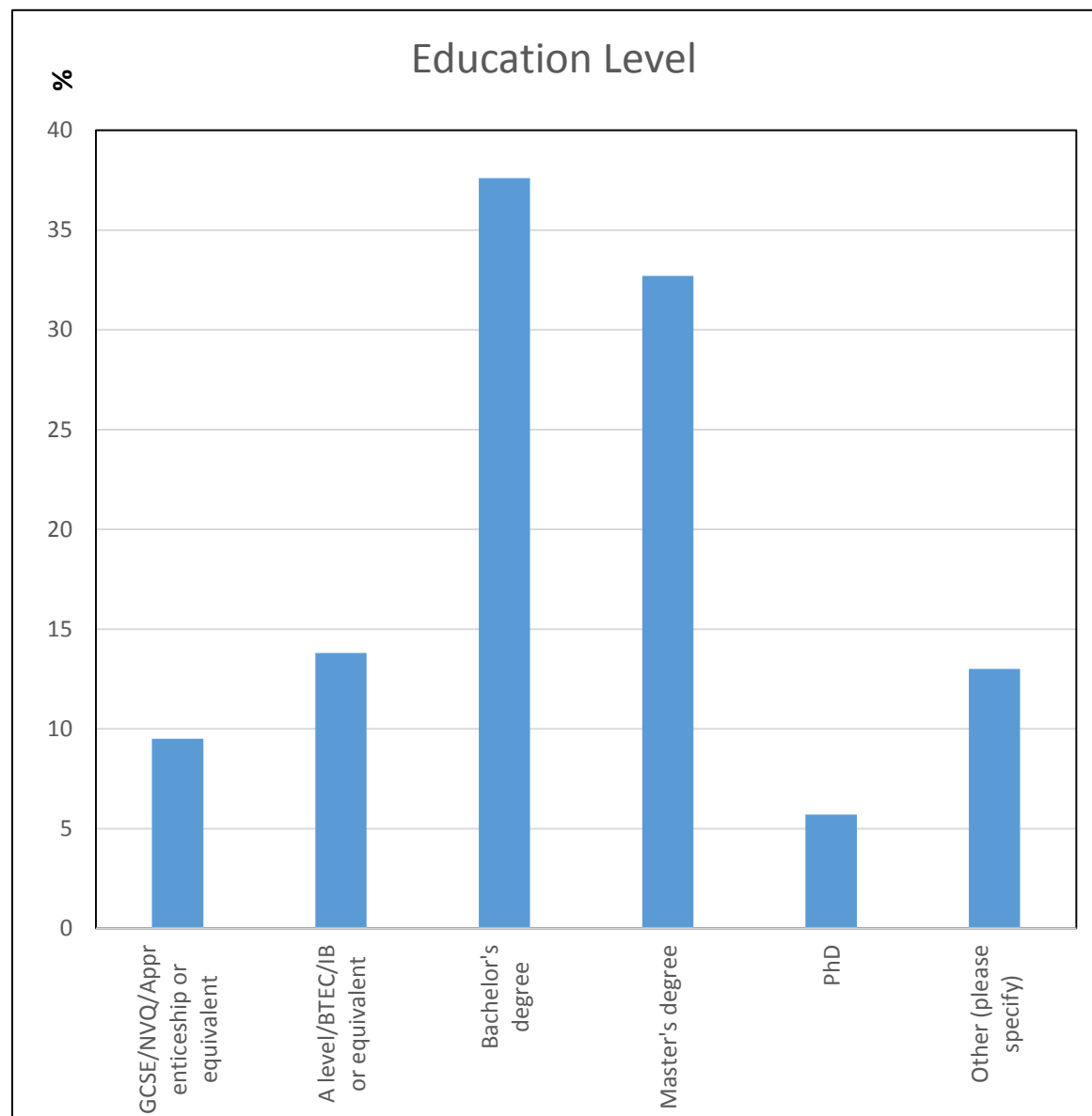
Of the 859 participants who completed this section of the survey² 69% are female and 29% are male, as can be seen in the graph below. This is consistent with the NHS demographic as a whole: 77% female, 23% male.



² In the demographics section the answers to the questions were optional. All other questions in the survey were mandatory.

Most individuals who completed the survey are between 46-55 years old, followed by participants aged between 36-45 years old.

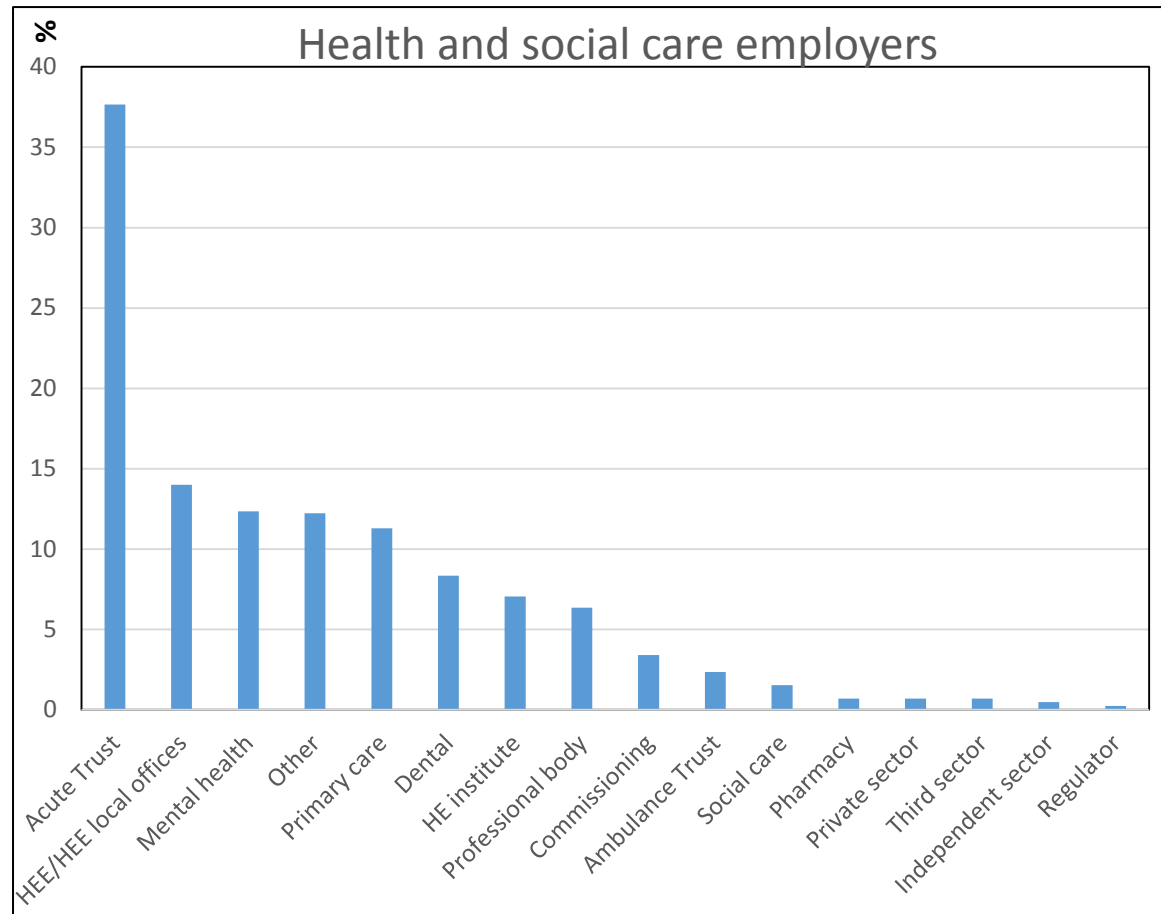




Most participants hold at least a Bachelor's degree, as illustrated in the graph below.

Health Education England
Discovery report

The split of responses by health and social care are shown in the following graph. As can be seen, the highest return rates were from individuals in Acute Trusts and the lowest in the independent sector and regulators.

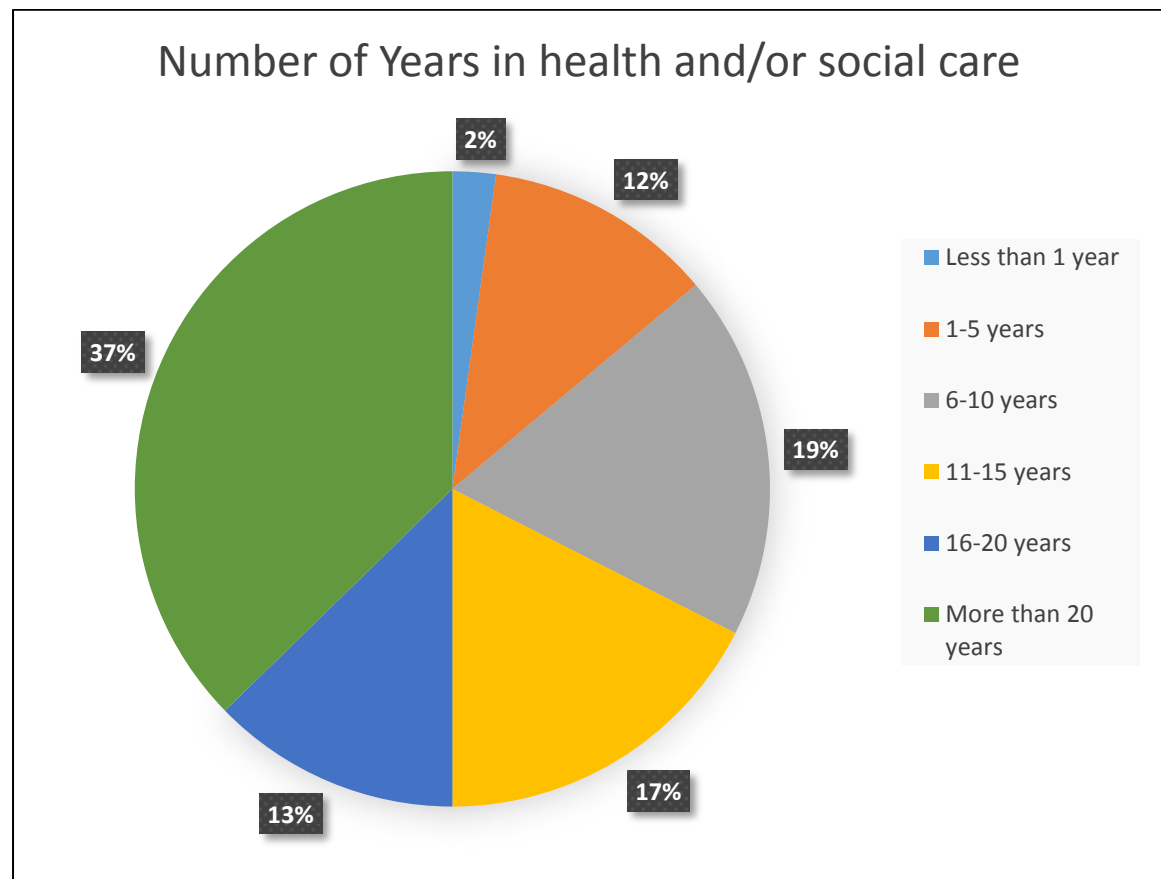


As can be seen in the following table, the majority of participants who completed the survey have been self-identified as Educators/Trainers. It is worth noting that 39% of those in the “Education/Training” category have not indicated any other role, while 12% of respondents in this category also fall under “Learning Technologist/Technology Enhanced Learning Lead”, 11% under “Doctor”, 10% under “Nurse” and 9% under “Manager/Senior Manager”.

Respondent Classification

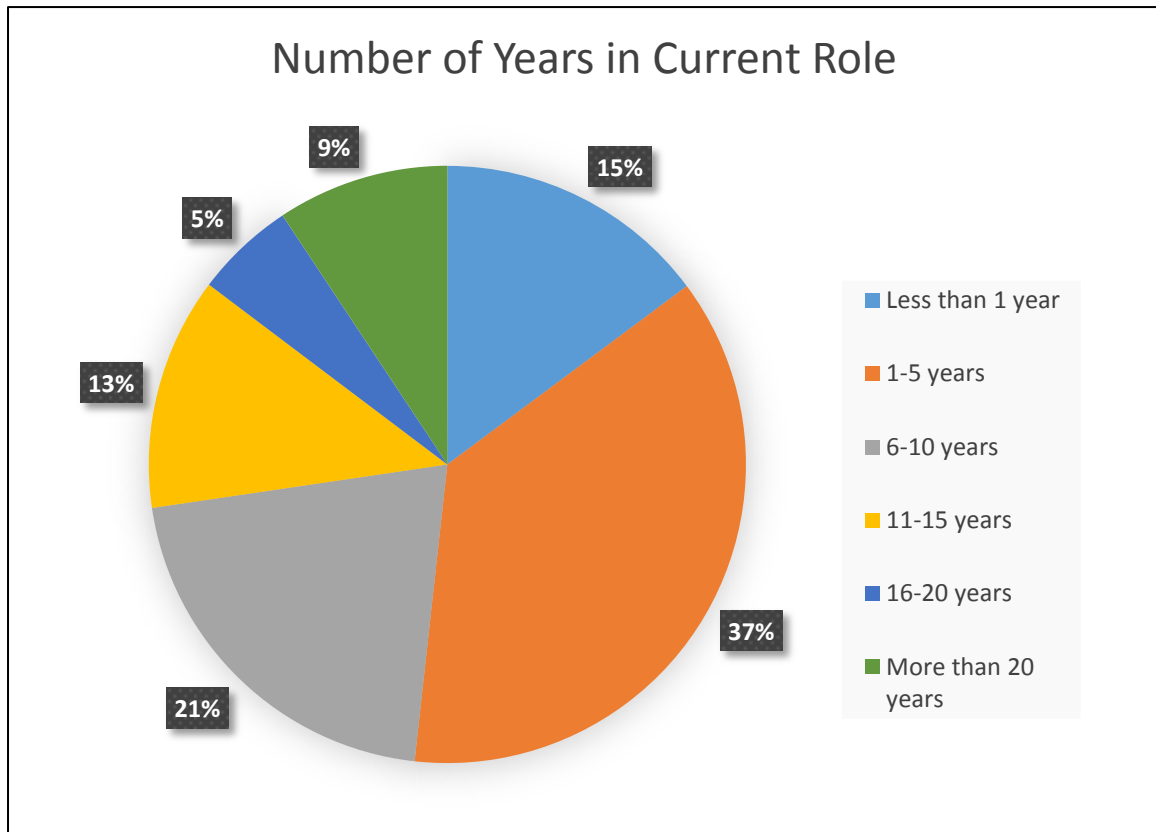
	% Responses
Education/Training	23
Manager	14
Nurse	13
Doctor	8
Dentist	6
Health Informatics	5
Learning Technologist	5
Administration	4
Librarian	4

The number of years individuals have been working in health and/or social care is shown in the graph below.



As we can see, half of respondents have been working in health and/or social care for more than 15 years.

The number of years individuals have been in their current job role is shown in the chart below.

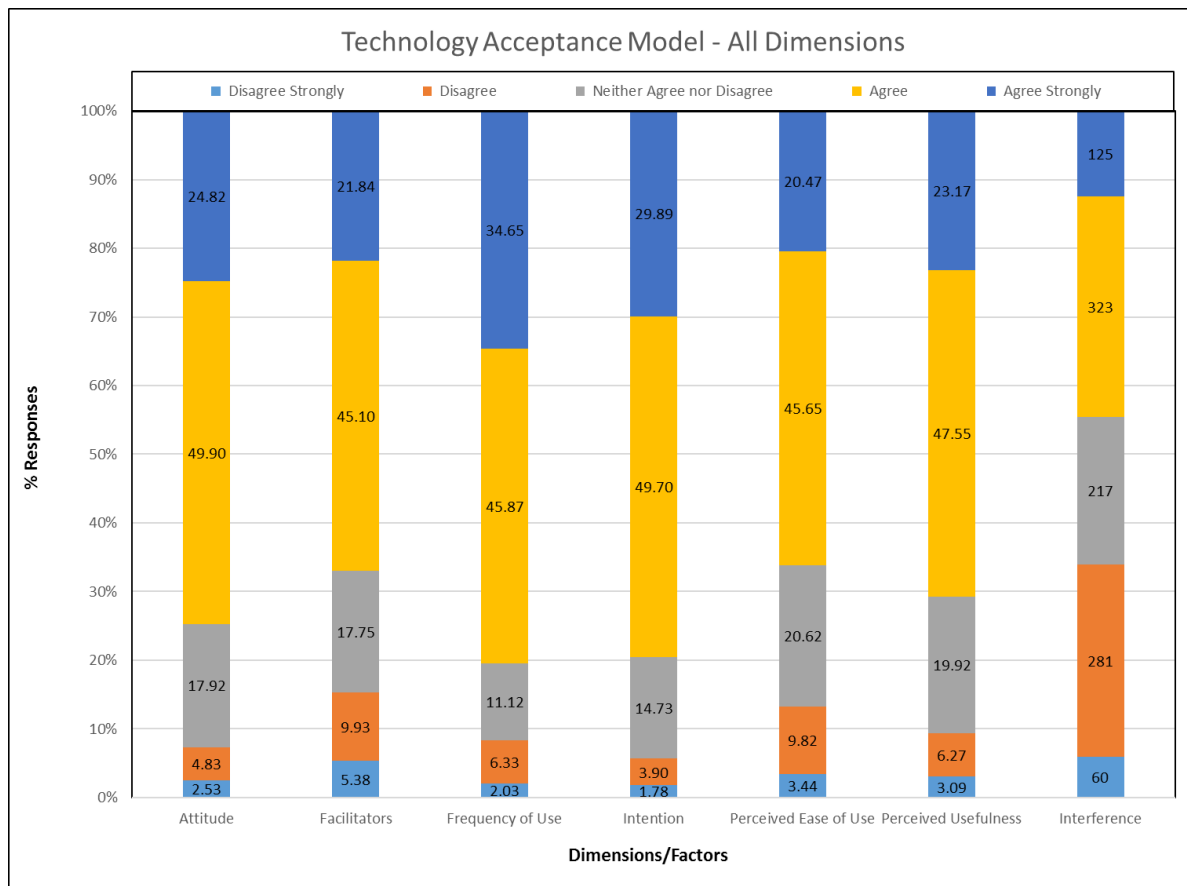


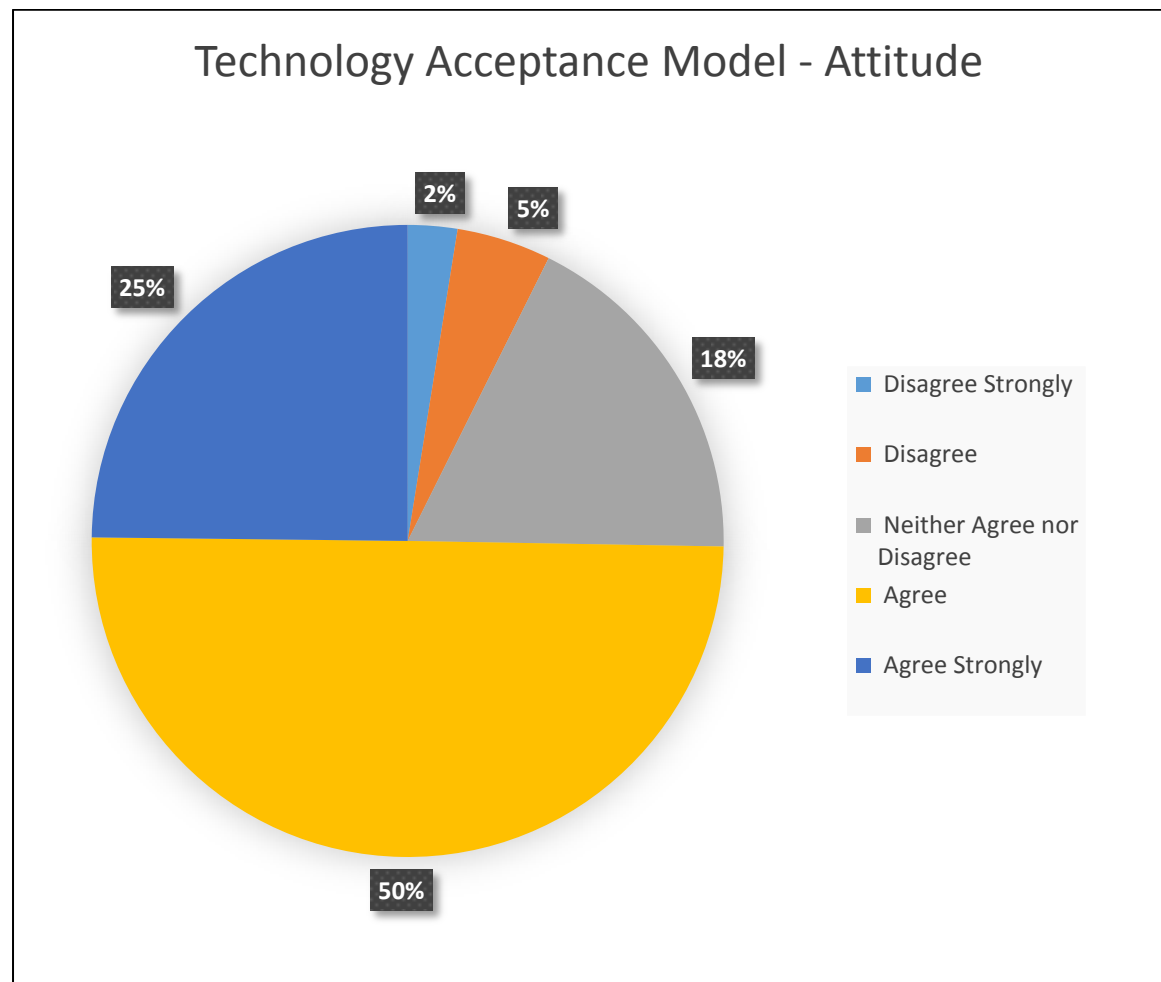
It is worth noting that although half of all respondents appear to have worked in health and/or social care for more than 15 years, a similar percentage have been working in their current job role for less than 5 years.

6.2 Technology Acceptance Model

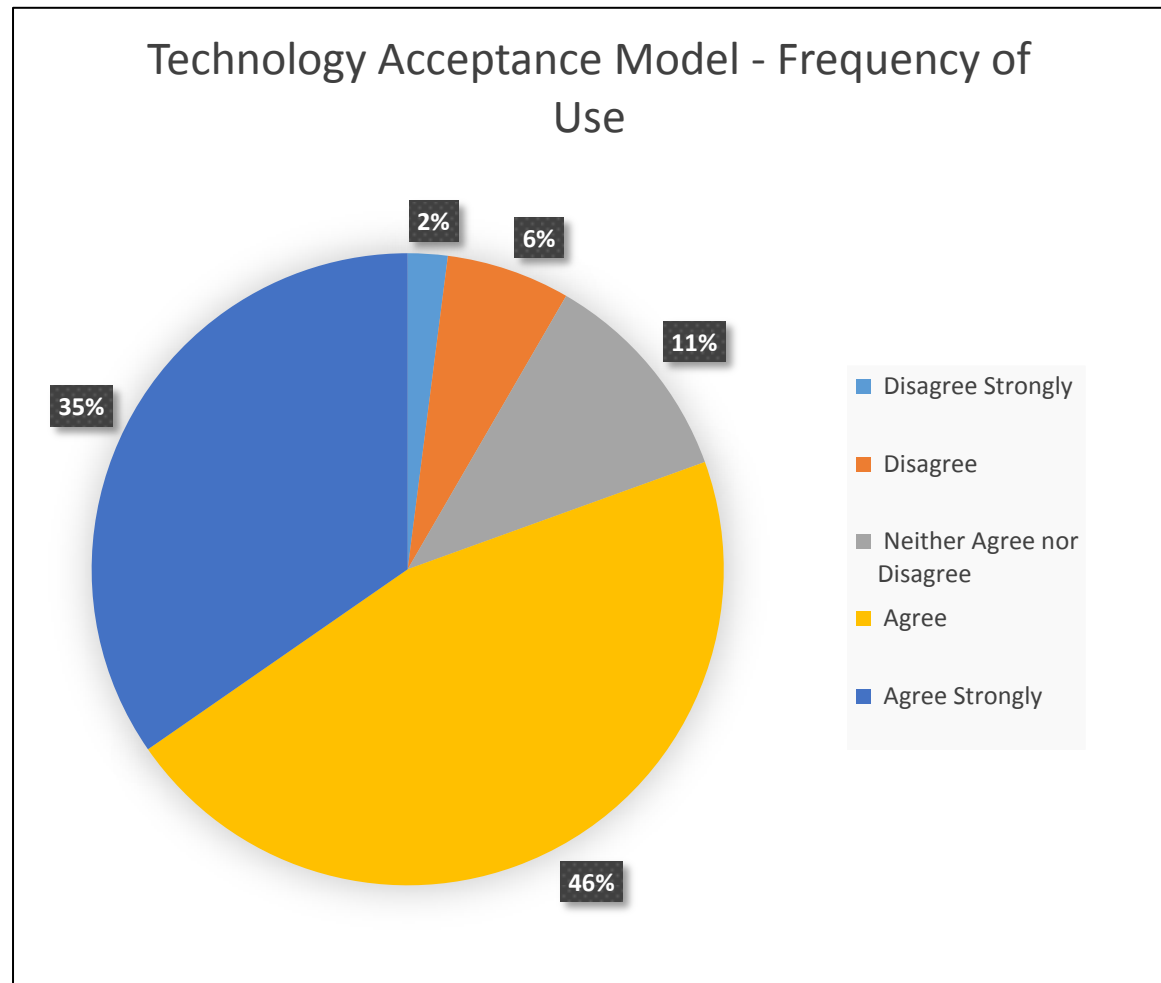
We used the **Technology Acceptance Model (TAM)** developed by Davis et al., (1989); Venkatesh & Bala, (2008) in order to evaluate the acceptance of any online learning systems and identify potential barriers that may exist for the adoption of such a system as a working tool. The TAM was specifically developed to explain and predict the acceptance of information and communication technologies by potential users. This model is a validated instrument that has been extensively studied. It comprises the following dimensions: **perceived usefulness; perceived ease of use; intention to use; and the attitude of the user towards the new technology.**

The data for this scale shows that respondents are largely positive towards the role and usefulness that technology can play in their learning and education across dimensions, although there is some concern that the use of online services can interfere with day-to-day work.





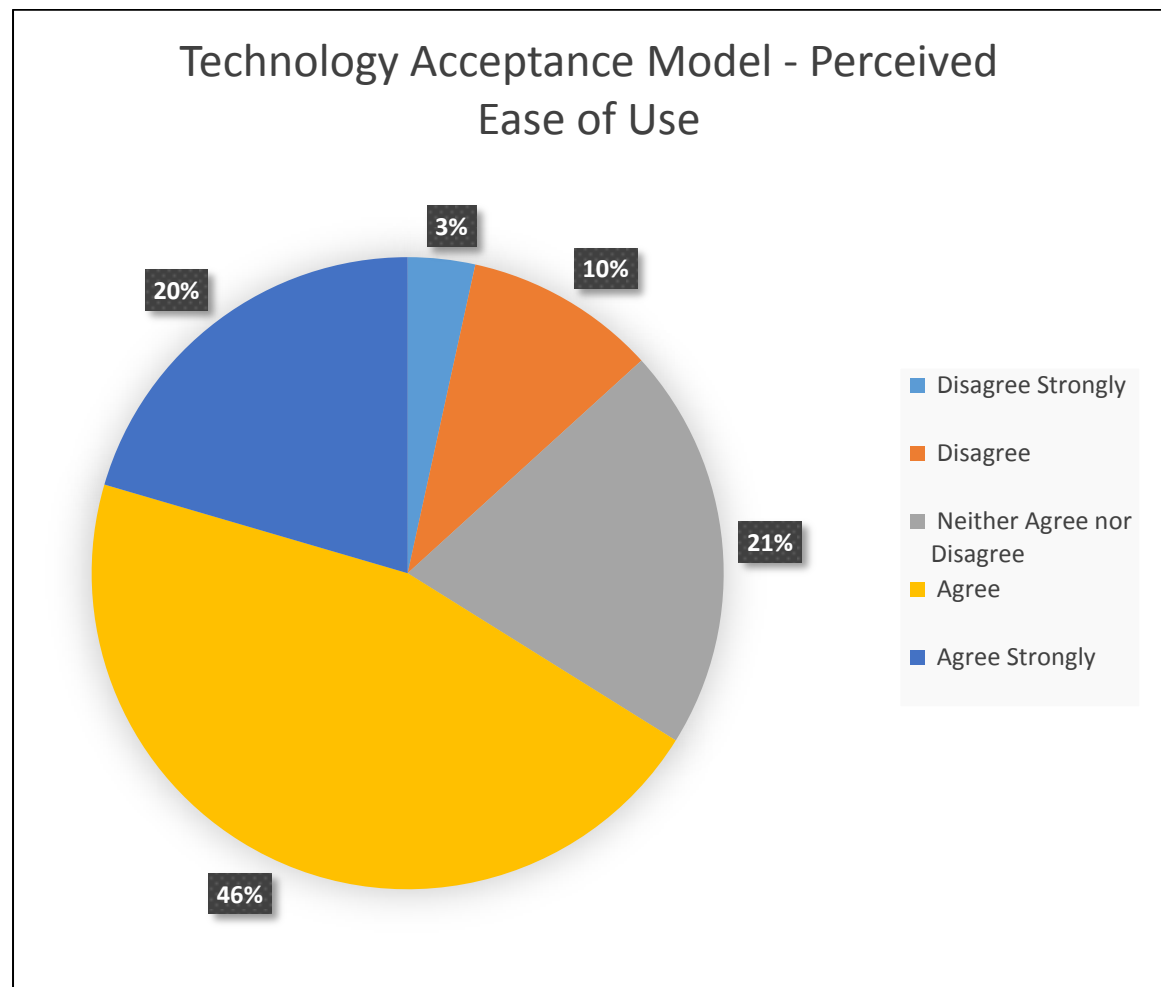
As can be seen in the graph above, just over 75% of respondents feel that the use of online learning systems/platforms/repositories is beneficial for health and social care related education and learning (attitude).



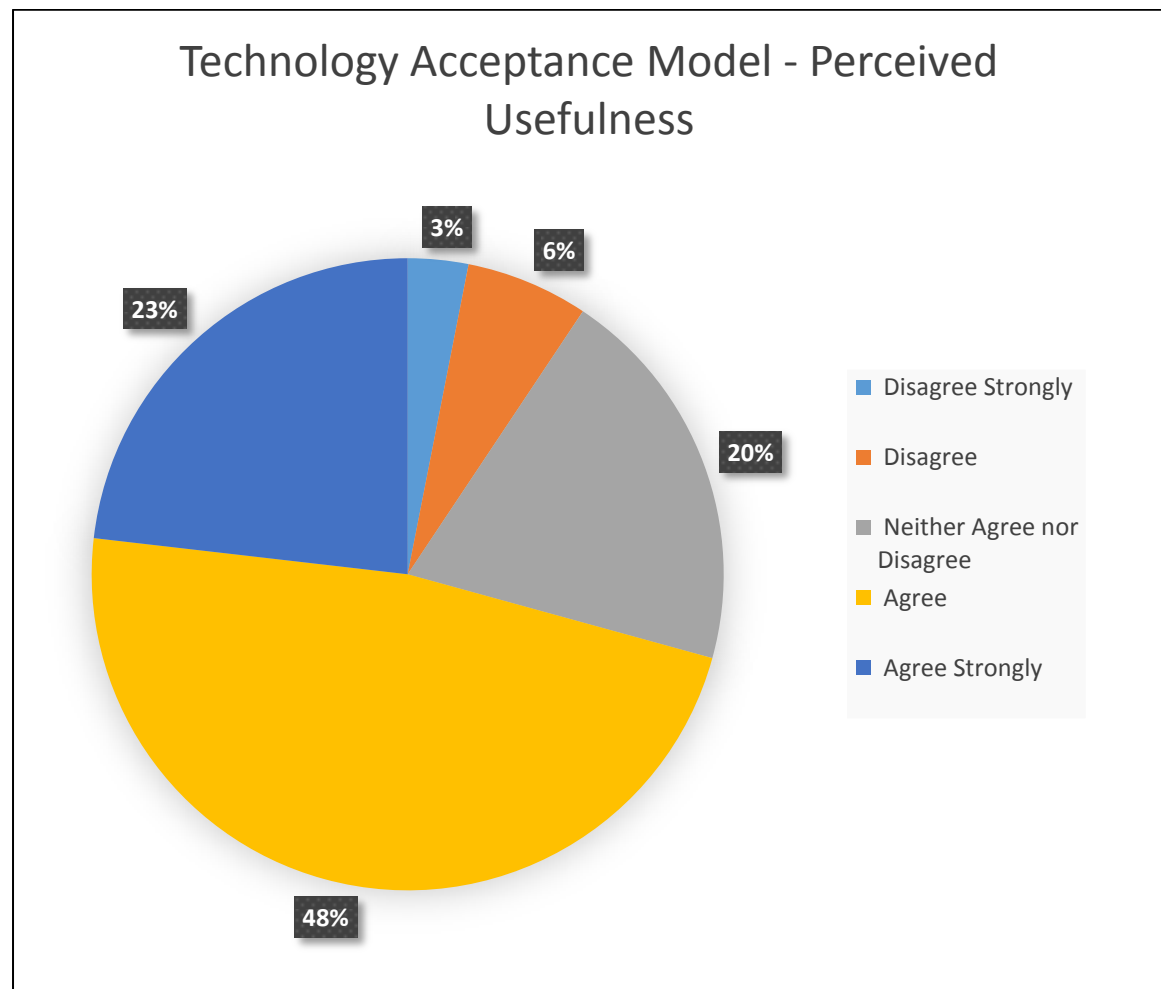
81% of participants feel comfortable with information, communication and digital technologies and do in fact use technology as part of their current work/teaching/learning (frequency of use).



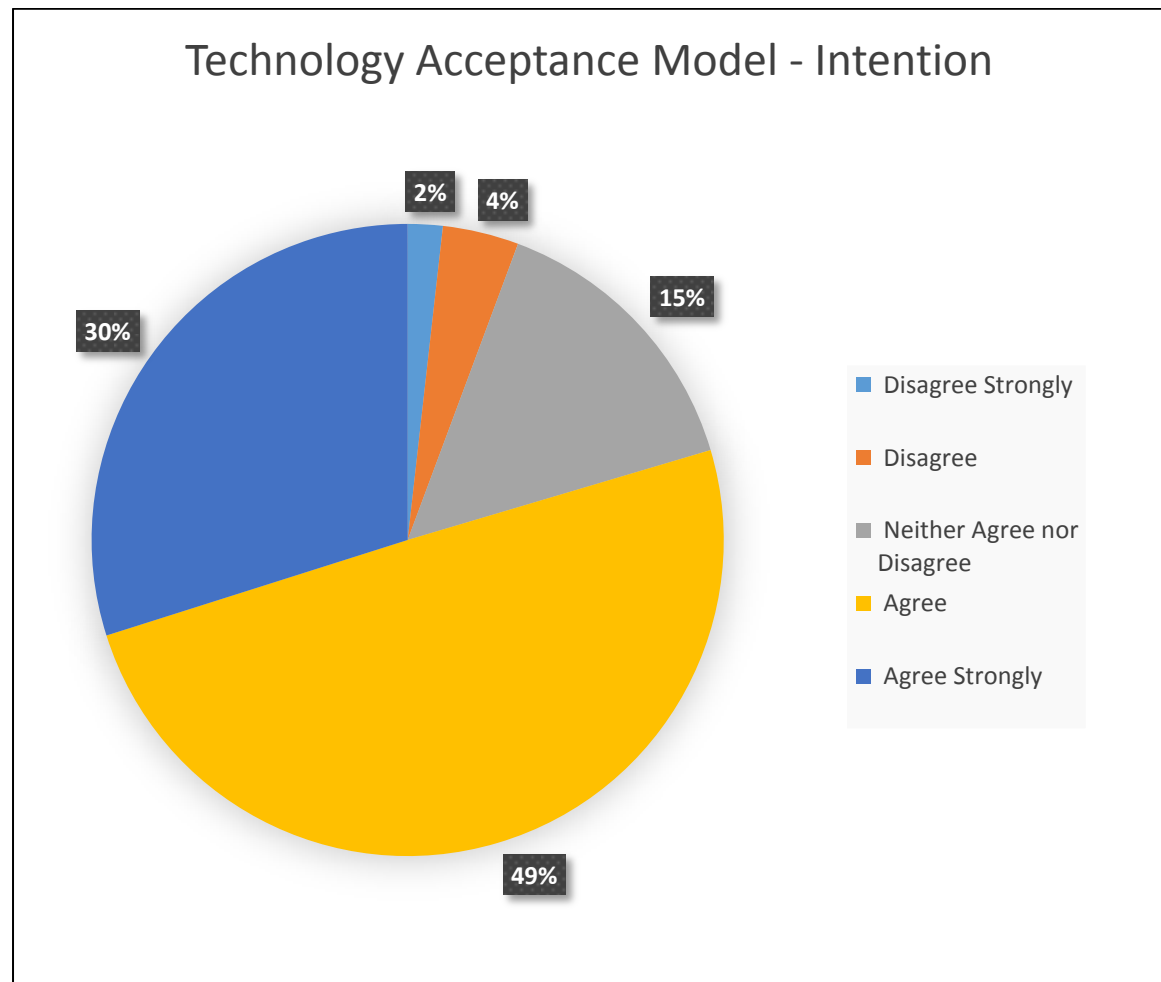
96.2% of respondents stating that they have used online services *at some point* for teaching and/or personal learning/training.



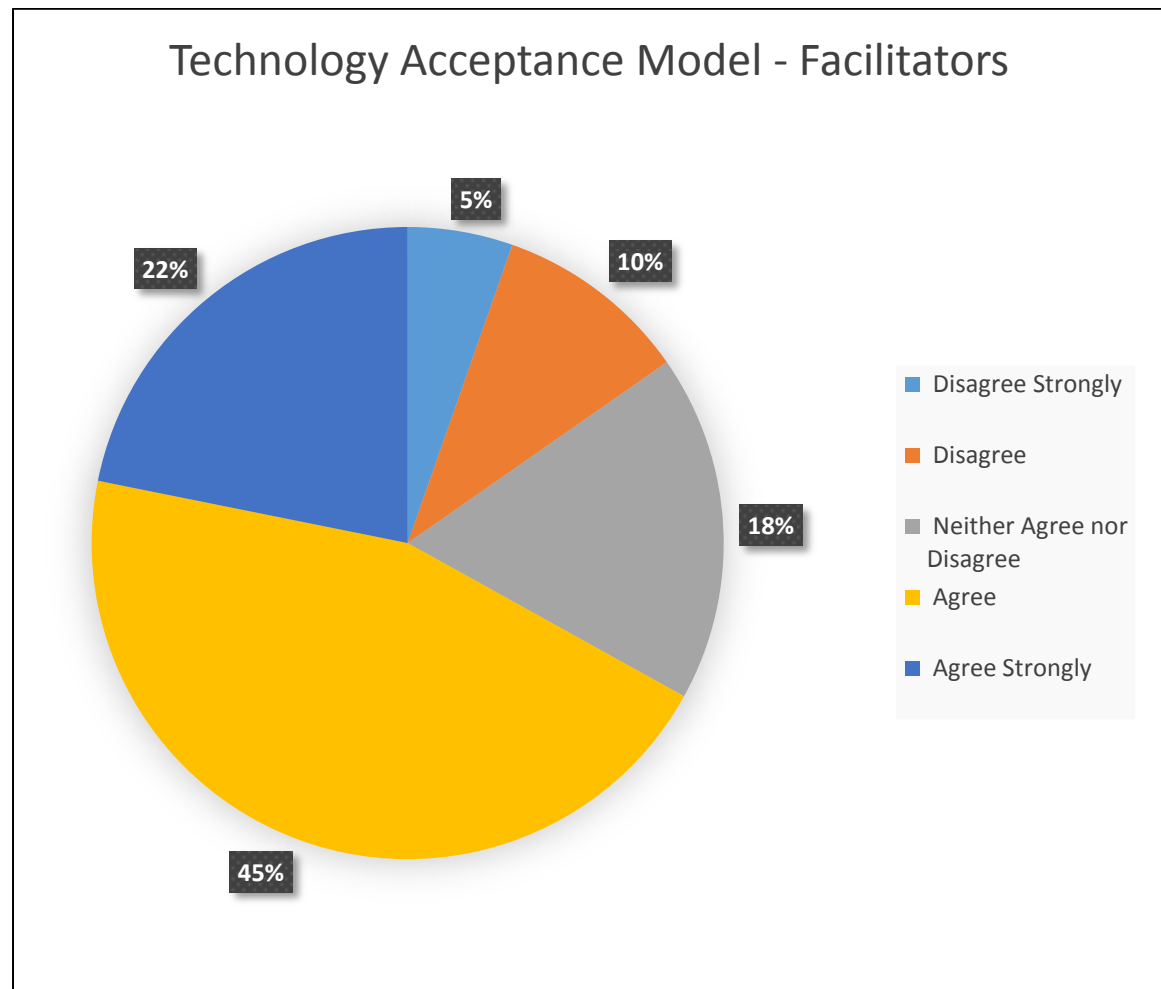
Most respondents seem to think that currently available online learning systems/platforms/repositories are generally easy to use (perceived ease of use). Since 66% either agreed or strongly agreed with the relevant questions (e.g. I think that online learning systems/platforms/repositories are a flexible technology to interact with, I think it is easy to perform the tasks necessary for my learning/teaching/work using online learning systems /platforms/repositories). However, it is worth mentioning that 21% appear indecisive regarding the ease of use of online learning systems.



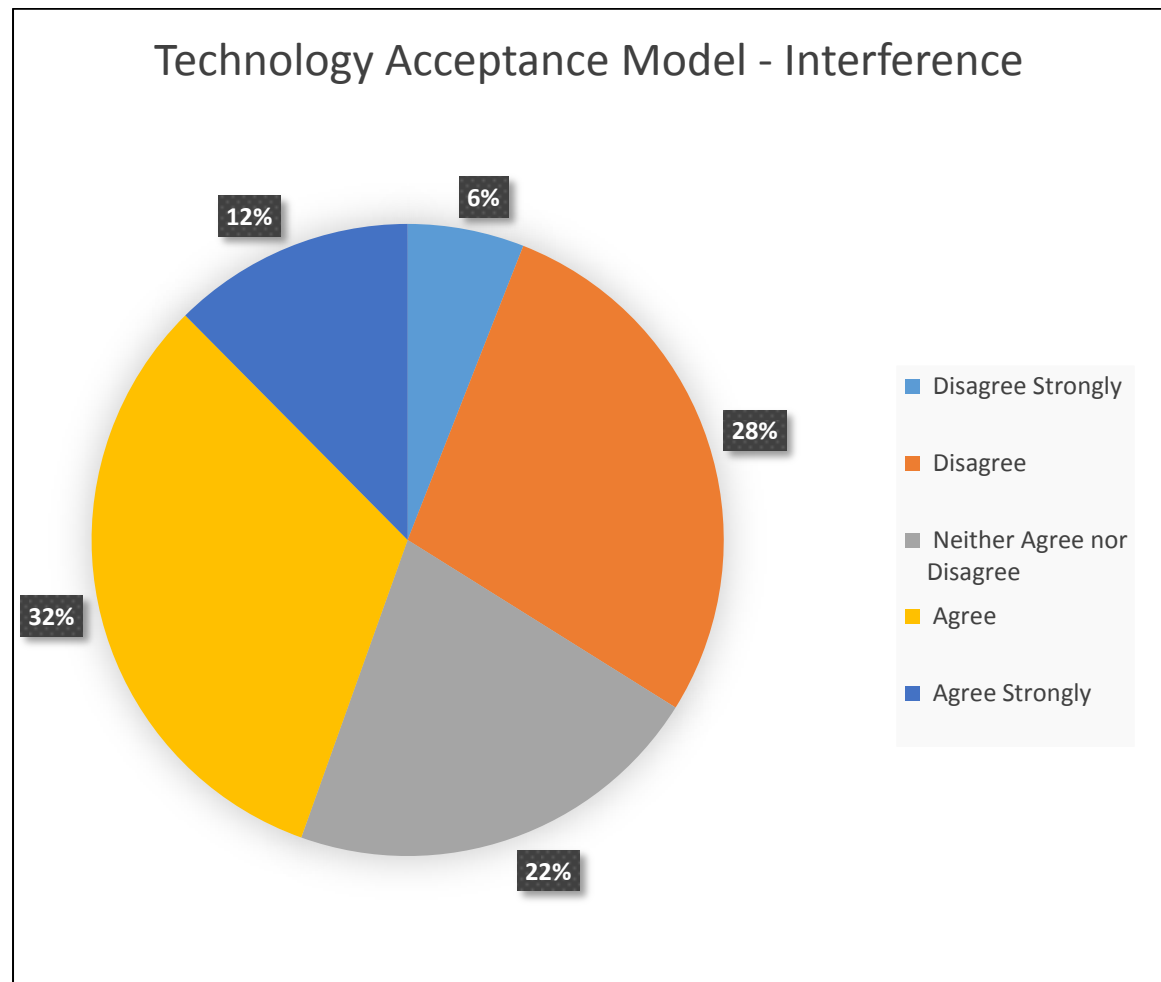
More than 70% of respondents acknowledge the fact that such services are a valuable resource when it comes to learning and passing on/sharing knowledge relating to health care (perceived usefulness).



Almost 80% of respondents would use online learning systems/platforms/repositories if they became available in their place of work (intention).



Just over two thirds of respondents (67%) would use online learning systems if the appropriate training and technical assistance were provided (facilitators).

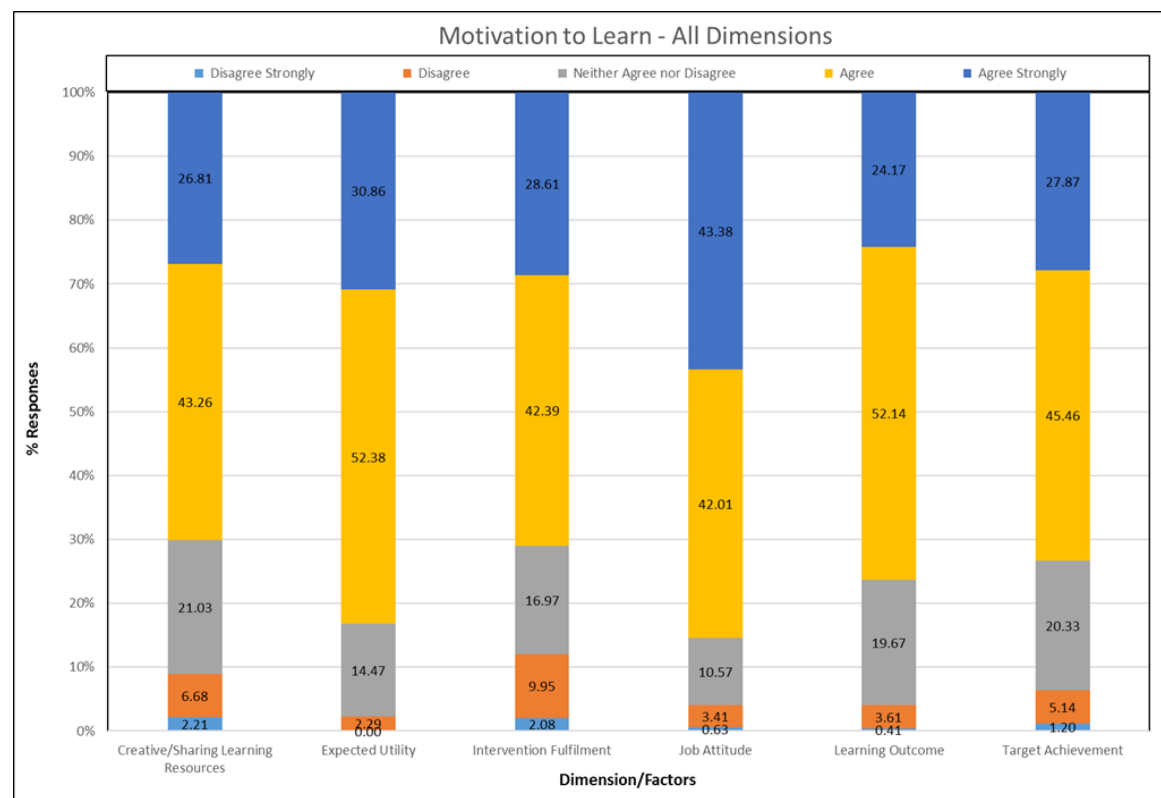


Interestingly, almost half of respondents (44%) feel that the use of online education services can interfere with or present challenges in their day-to-day work (interference).

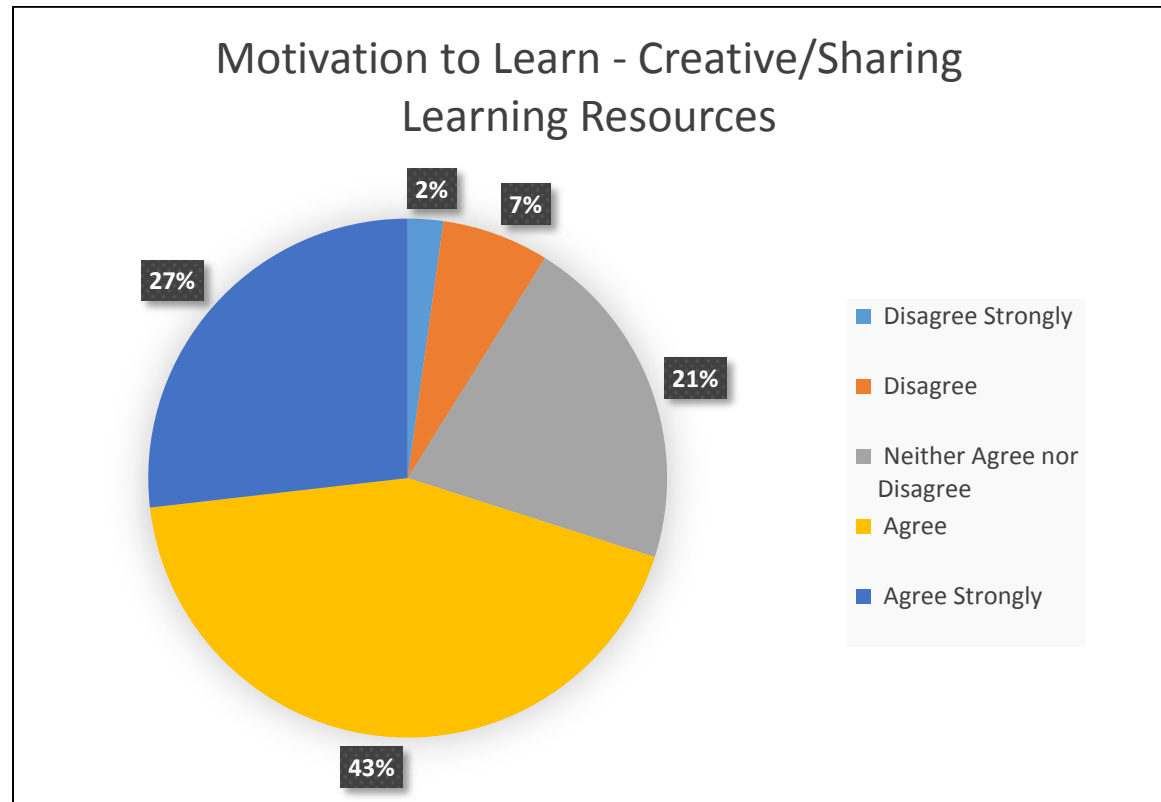
6.3 Motivation to learn/transfer

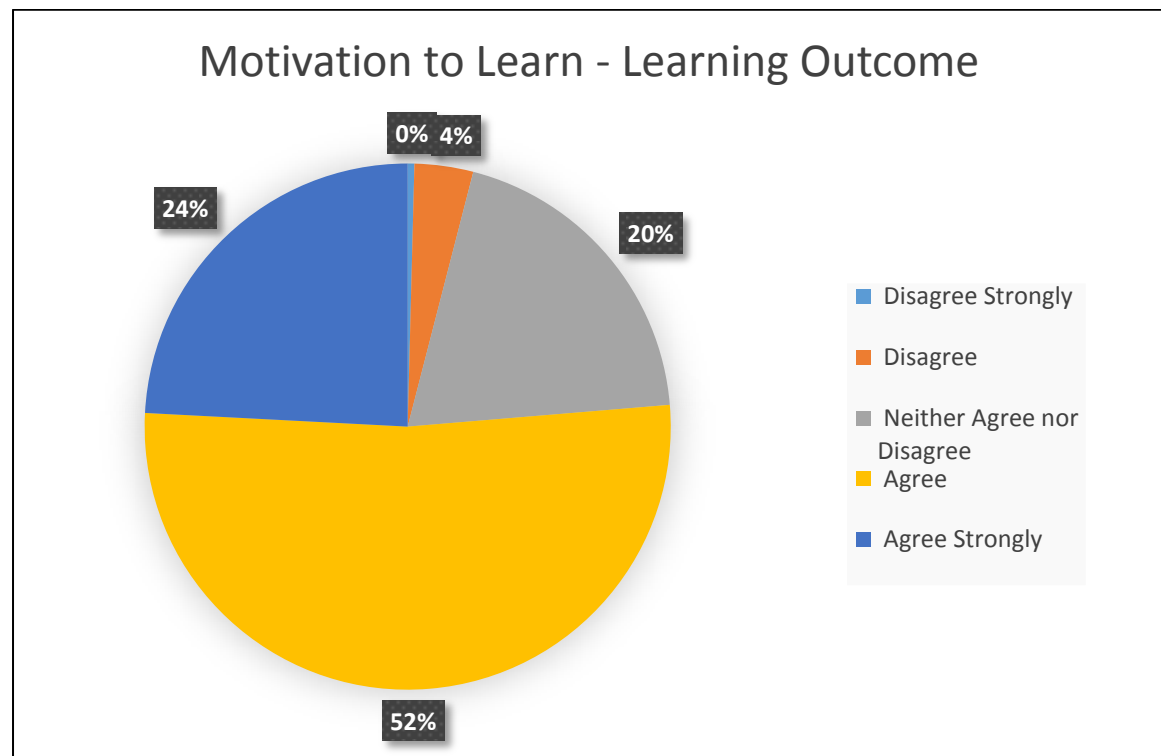
Individual motivation to learn/transfer is perhaps a strong predictor for future utilisation of an online learning system. Motivation to learn/transfer is defined as the learner's desire to learn and utilise skills and knowledge learned in training in a real-world work situation. The questions related to **motivation to learn** were adapted from those used by Noe and Schmitt (1986) on **job attitudes**, **intervention fulfilment** by Holton (1996), **expected utility** by Holton (1996), and **learning outcomes** by Tannenbaum et al (1991). We have also included a series of questions in order to measure people's motivation to create/share learning resources. Intervention fulfilment refers to learner perceptions of what they have learned, and if it has met their expectations and fulfilled their need for performance-related learning. Learning outcomes are related to the expectancy theory that suggests "individuals will be more motivated" to learn if they believe their efforts will improve performance (Yamhill & McLean, 2001, p.200). Job attitude means that a person's commitment and job satisfaction should influence motivation to learn and transfer learning to job performance. Finally, expected utility or payoff, is consistent with the expectancy theory that learners will be more motivated to transfer if they perceive their efforts will lead to rewards.

Overall, respondents are strongly motivated to learn and improve upon their existing skill sets, are keen to share this knowledge with peers, and welcome the opportunities and challenges that come from applying this new-found knowledge to their jobs.



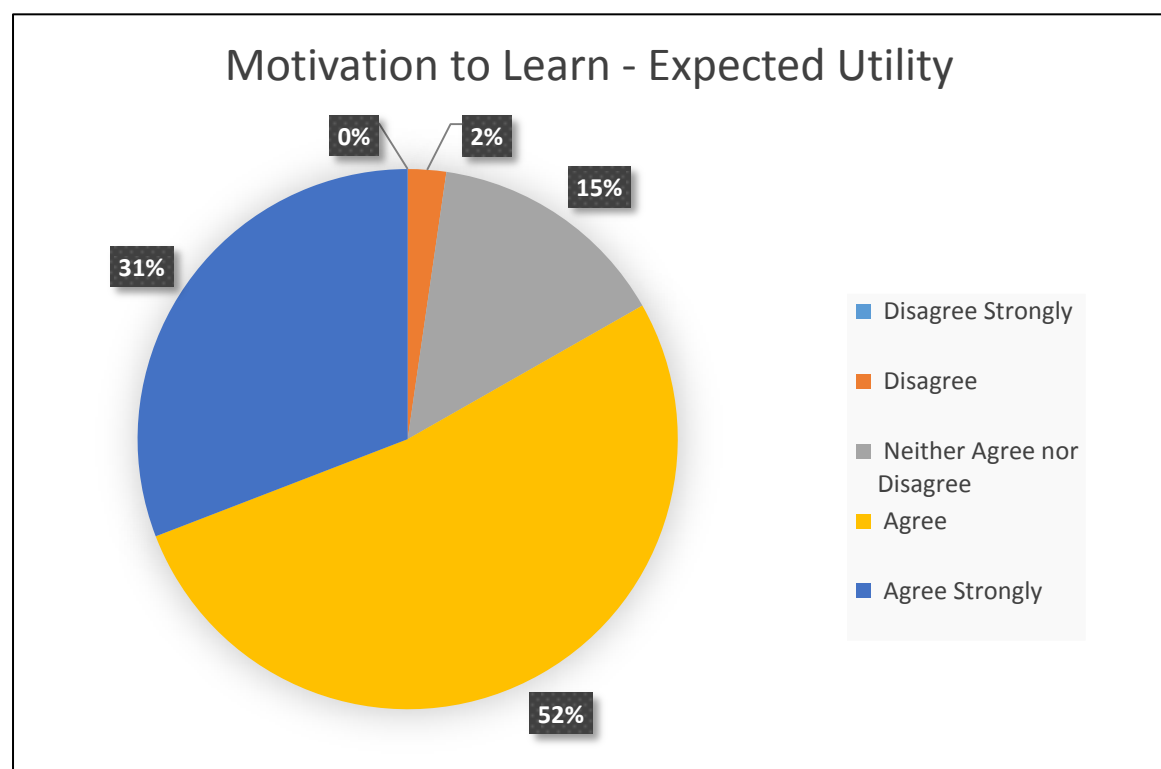
Data shows that just over 70% of respondents feel that the sharing of information and learning resources/tools is beneficial to both education and to patients (creating/sharing learning resources), with the majority of respondents being willing to freely share any resources that they create or find online.



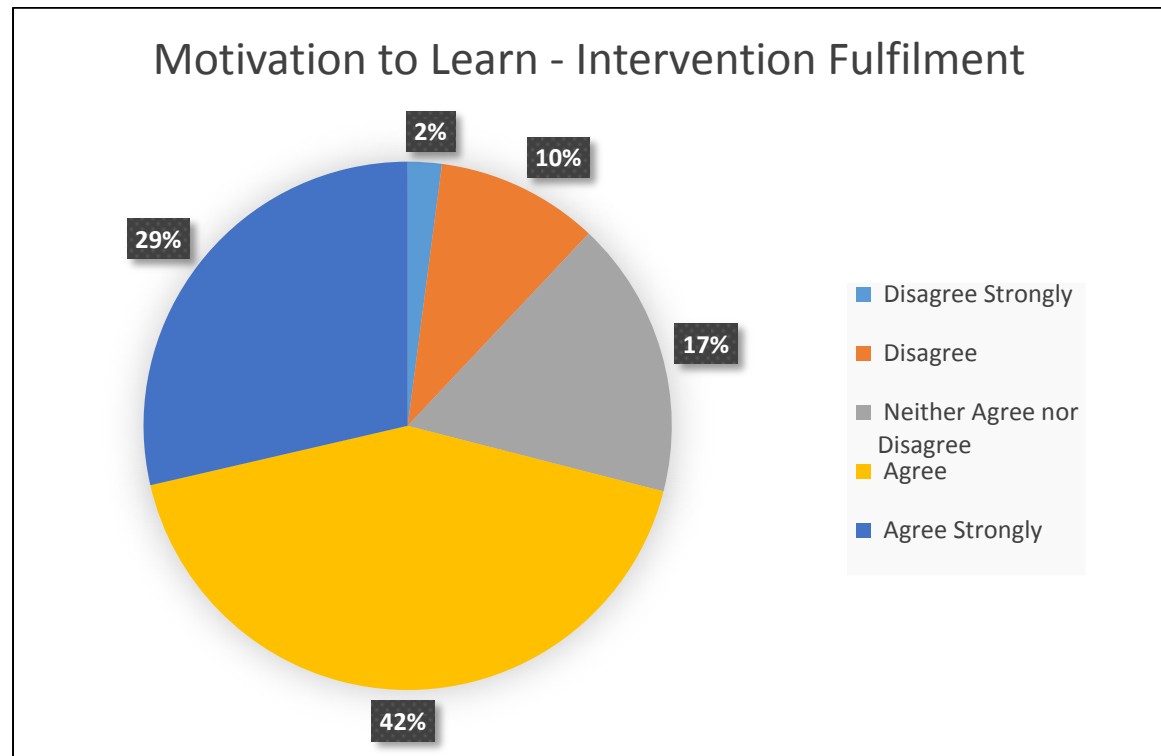


As illustrated in the graph above, most respondents (76%) believe that learning/training helps them to do their job better and increases their personal productivity (learning outcome).

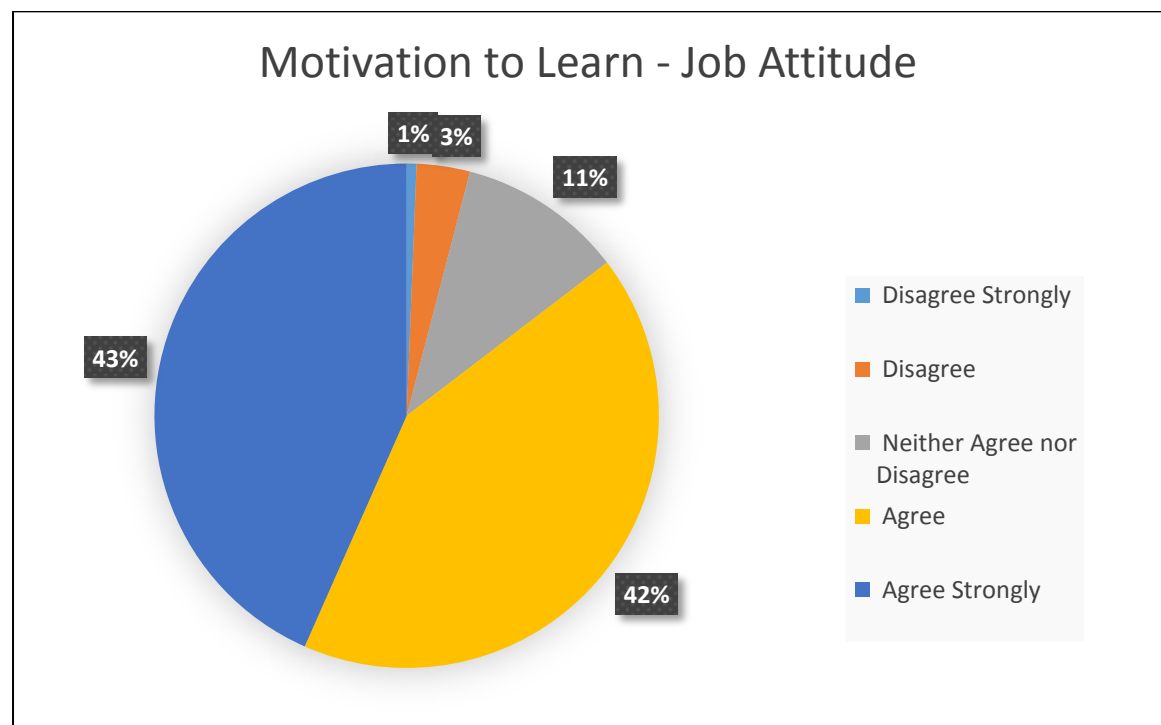
Almost 85% of participants are eager to put into practice what they learn (expected utility).

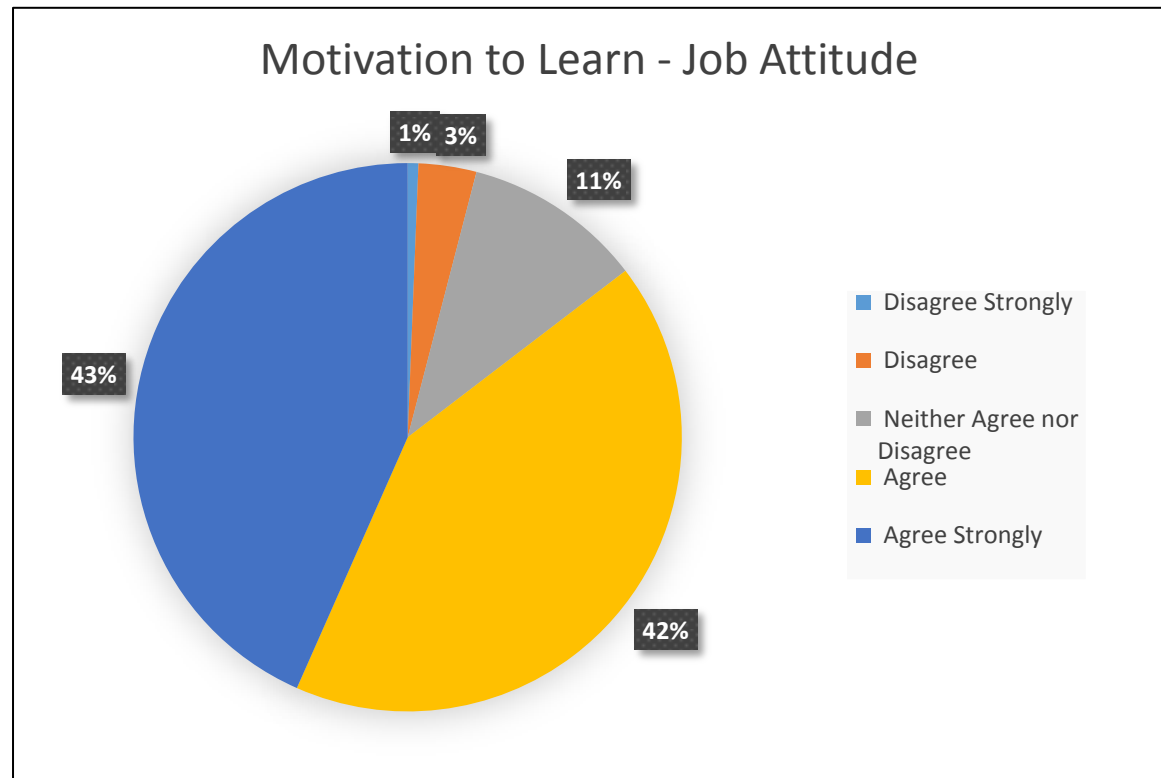


70% see training and education as a way to progress in terms of personal development and additional responsibility (intervention fulfilment).



The majority of respondents (85%) value a work environment that encourages the setting of personal/professional development goals and the performance of work to a high standard (job attitude).



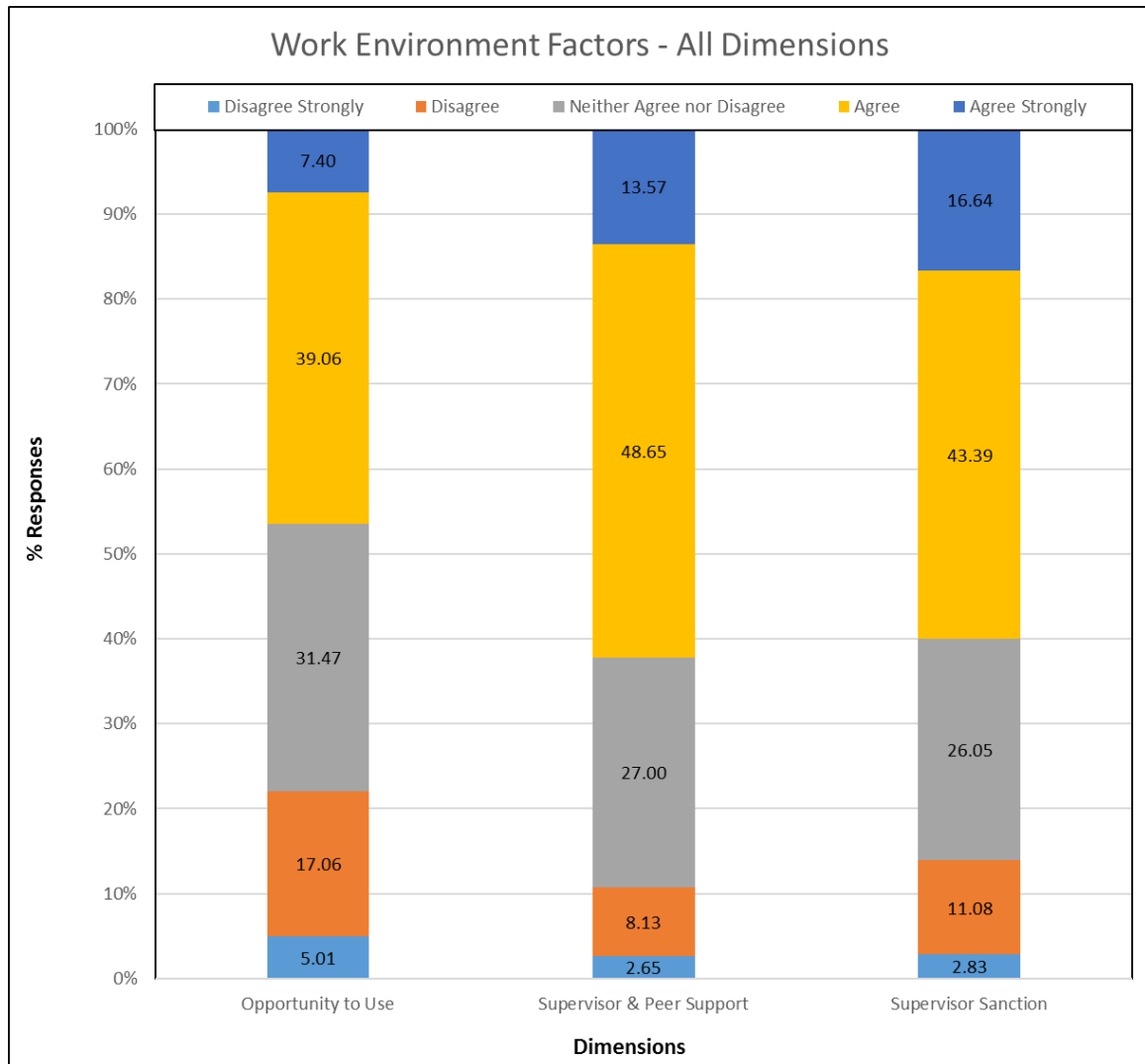


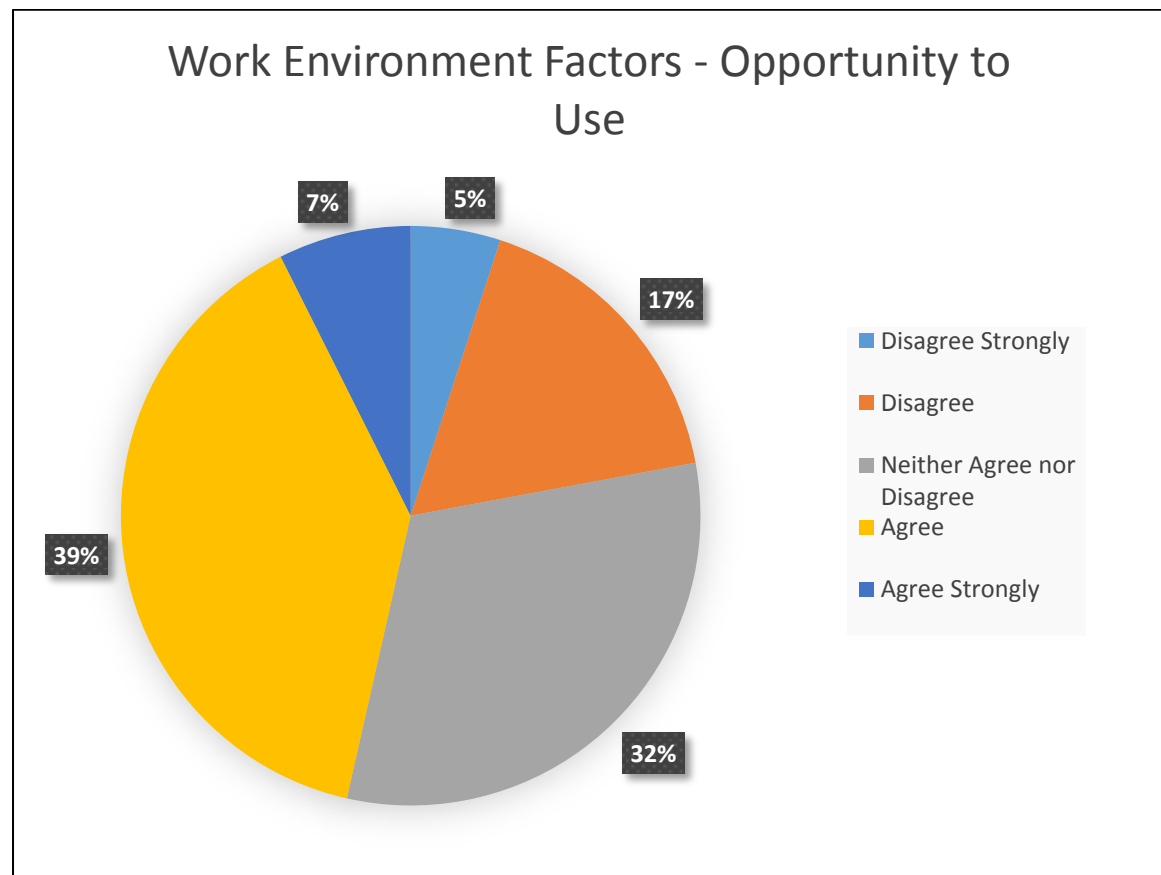
74% are strongly motivated by the setting of achievable goals (target achievement).

6.4 Work Environmental Factors

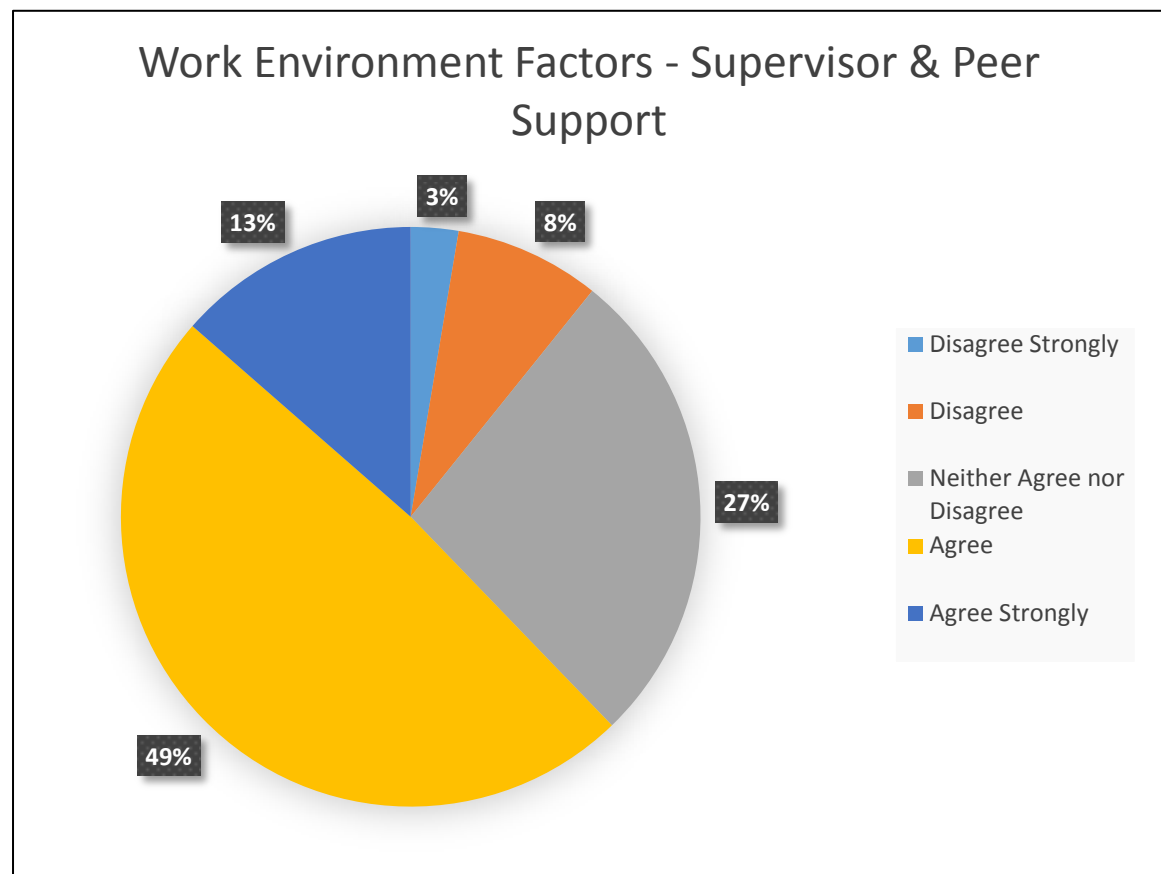
Work environmental factors is one of the major aspects HEE needs to consider to ensure a maximum transfer of knowledge. According to Seyler et al., (1998), there are two types of environmental factors: the organisation climate (supervisor's support, supervisor's sanction and peers' support); and the situational constraints or aids (opportunity to use). The questions looking to investigate work environmental factors were adapted from Seyler et al., (1998), and Mathieu and Martineau (1997) for items on **supervisor support**, Mathieu et al., (1992) on **supervisor sanction**, Russ-Eft (2002) on **peer support** and Ford et al., (1992) on **opportunity to use**.

Overall, data from this scale shows that although almost half of the respondents feel that they are given the opportunity to use the knowledge that they gain through training, and that their supervisors and peers do support or encourage the use of new knowledge, there are also a significant number of respondents who maintain a neutral view.





Despite the previous results showing that around 85% of respondents are eager to apply the knowledge that they learn through training, only half (46%) feel that they are given the opportunity to actually do so (opportunity to use), as can be seen from the graph above. It is worth mentioning that 32% appear indecisive.



More than half of respondents perceive the organisation as being supportive; since 62% indicated that their direct supervisor or manager was happy for them to apply this newly-gained knowledge (supervisor sanction). An almost equal number of respondents (60%) feel that their immediate peers encourage the application of this knowledge (supervisor and peer support). However, 27% didn't express a clear view.

6.5 Trust in various sources of learning and education information

Finally, we wanted to evaluate the levels of trust in various sources of learning and education information (interpersonal channels, traditional media, and internet) in order to identify how levels of trust differ among the different sources of information. Previous studies about the evaluation of learning information have shown that the source of the information has a big impact on levels of trust. Trust refers to a user's subjective assessment of sources of information.

Trust in interpersonal sources of learning and education information

This was assessed using the following measure: “How much do you trust the following sources of learning and education information/resources?”

Eight interpersonal sources were provided:

- Clinical peer in the same field as me.
- Clinical peer in the same field as me with higher qualifications.
- Clinical peer in a different field/specialty than me.
- Clinical peer in a different field/specialism than me with higher qualifications.
- Non-clinical line manager or supervisor.
- Teacher, trainer, educationalist.
- Family members and friends who are not healthcare professionals.
- Family members and friends who are healthcare professionals.

Respondents were asked to answer the question using a five-point Likert scale, with responses ranging from one (disagree strongly) to five (agree strongly), or they were given the option to indicate that they don’t know or don’t use these sources.

Trust in traditional sources of learning and education information

This category included books, print journals relating to respondents’ field/specialty/area of practice, newspapers, and TV/radio.

Trust in internet sources of learning and education information

This category included:

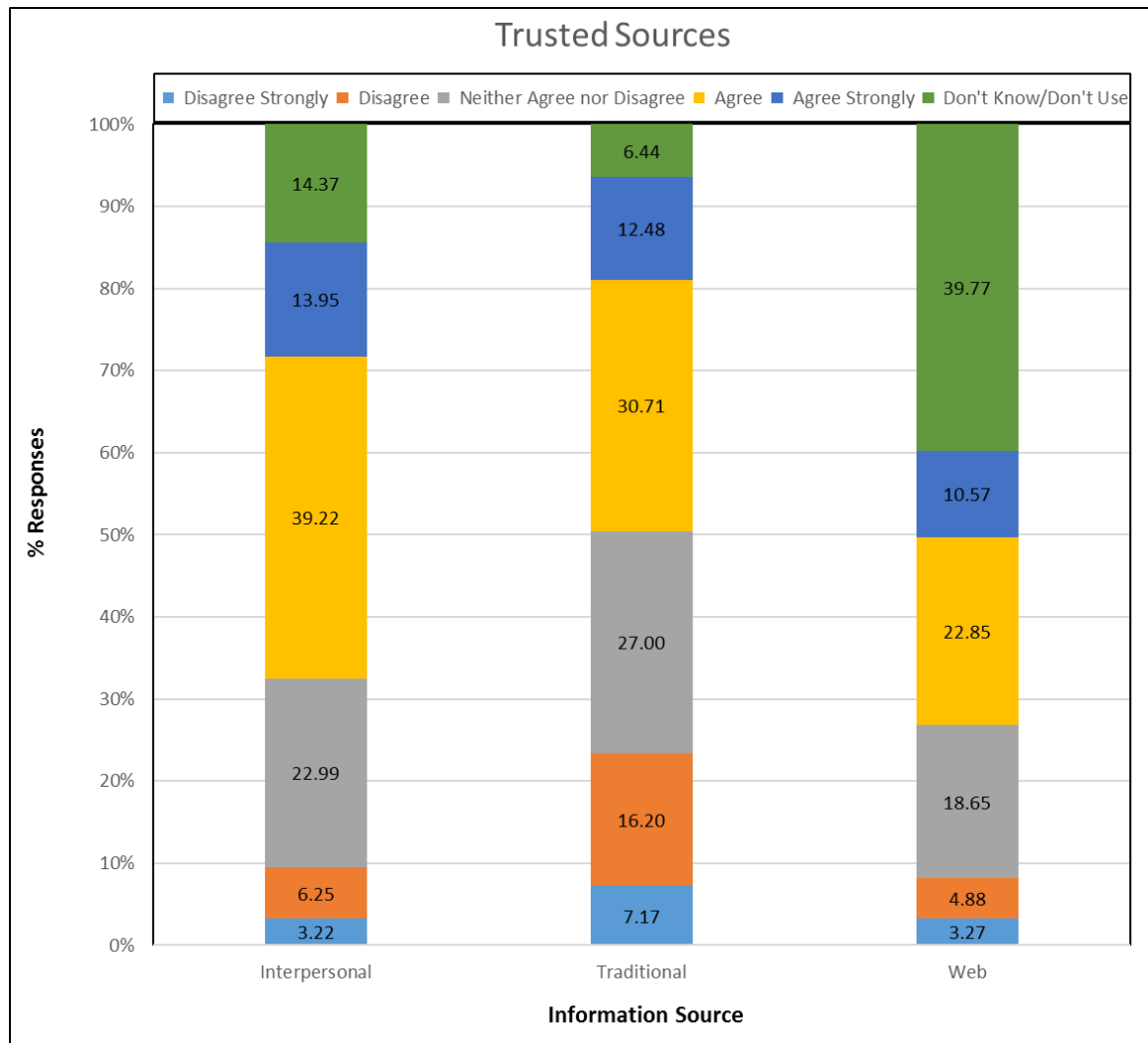
- NHS Network.
- FutureLearn.
- eLearning Repository.
- e-Learning for Healthcare.
- eWIN.
- Royal College/College/professional body website e.g. Royal College of Nursing, Royal College of General Practitioners, College of Podiatry, College of Paramedics, British Association of Prosthetists and Orthoptists.
- Times Education Supplement.
- Knowledge Hub.
- The National Institute for Health and Care Excellence.
- NHS Professionals.
- Skills for Health.

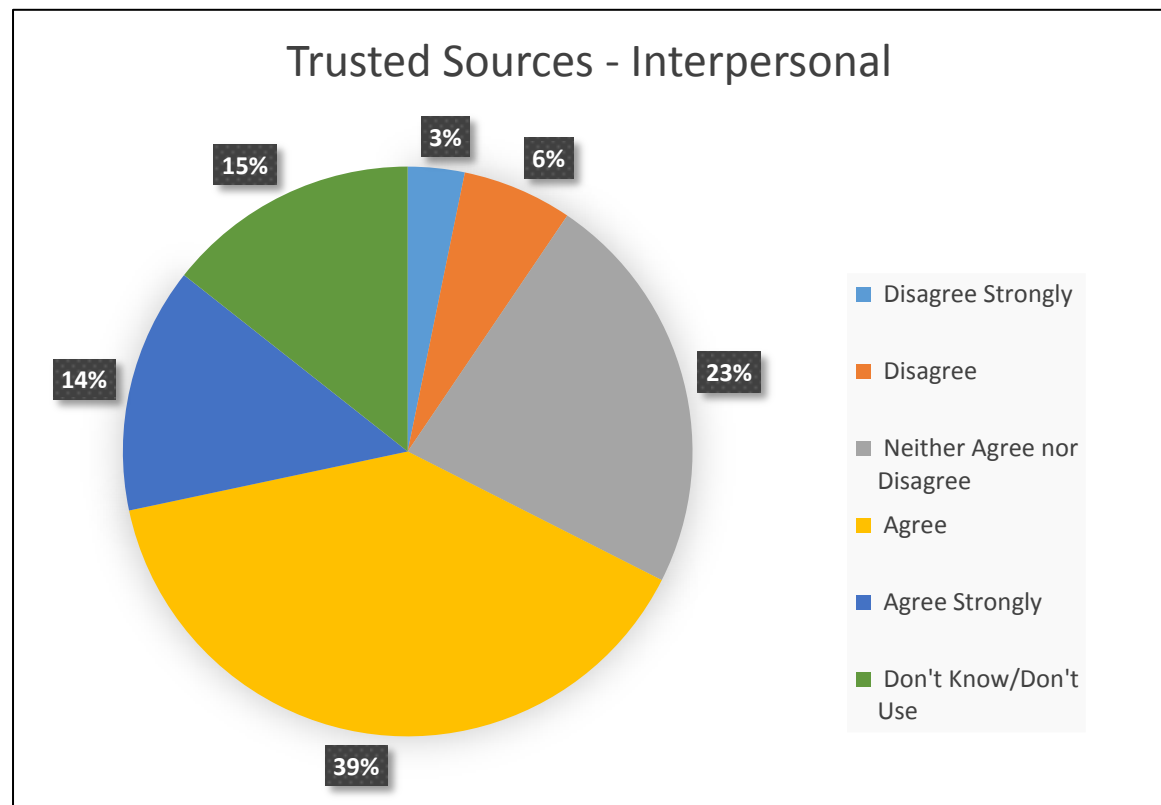
- JORUM.
- The Student Room.
- Social media e.g. Facebook.
- JISC.
- Medication website.
- Wikipedia.
- NHS Leadership Academy.
- Respondents' university website or LMS.
- UK university websites in general.
- International university websites.
- Respondents' organisation website.
- Health Education England.
- Skills for Care.
- British Medical Journal Clinical Evidence.
- Blogs by healthcare professionals in respondents' field/specialty/area of practice.
- Blogs by patients in respondents' field/specialty/area of practice.
- Charity/third sector websites relating to respondents' field/specialty/area of practice.
- Academy and institute websites relating to respondents' field/specialty/area of practice e.g. Academy for Healthcare Science, Academy of Medical Educators, Academy of Medical Royal Colleges, and the Academy of Fabulous NHS Stuff.

Overall, among the three different categories of information sources, the highest level of trust is achieved by interpersonal channels (53.17%). Traditional media sources (43.19%) come next, followed by online sources (33.42%).

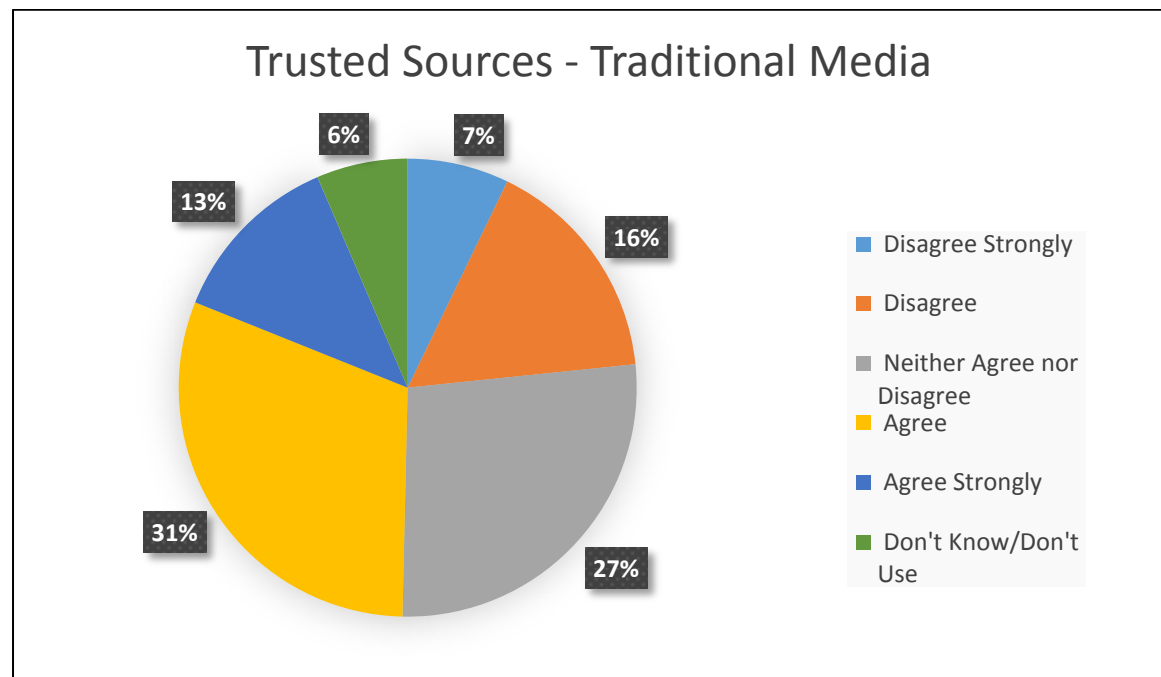
Within each category, teachers/trainers/educationalists are regarded as the most trusted source of information within the interpersonal sources of information, print journals relating to respondents' field/specialty/area of practice are most trusted within the traditional media, and Royal College or Similar Professional Body Website, Health Education England, the National Institute for Health and Care Excellence (NICE), and respondents' organisation website achieve the highest level of trust within the online sources.

Health Education England
Discovery report

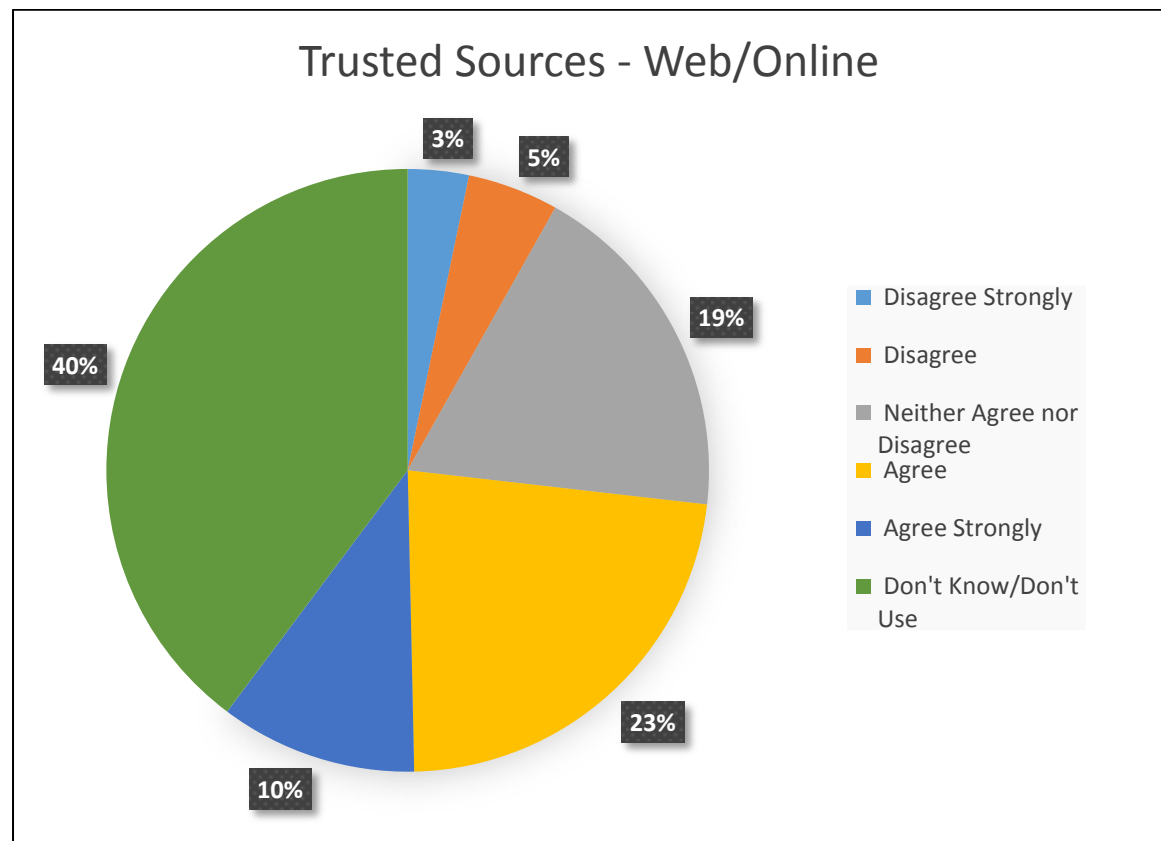




More than half of respondents (53%) trust the interpersonal sources of learning and education information. 23% appear undecided.



Participants' perceptions of the trustworthiness of traditional media are spread among 44% who feel that they can trust traditional media sources, less than half of them (27%) who have no clear view, and an almost equal number of participants (23%) who don't feel that this category of information sources is trustworthy.



Interestingly, 40% of respondents have indicated that they either don't know or don't use the online sources of learning and education information. 33% feel that they trust the web/online sources and only 8% don't actually trust a learning information when it comes from an online source.

These results demonstrate that a majority of people still primarily rely on interpersonal channels (people in their peer group and personal network) for sharing learning and training information and resources.

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7 APPENDIX: ONE-TO-ONE INTERVIEWS

A series of one-to-one interviews were conducted with a number of individuals selected by HEE across the NHS in order to better understand their needs. While every effort was made to acquire a cross section of people from the four audience groups previously identified by HEE, most of the interviewees put forward for this research activity were at a fairly late stage in their career, or not spending significant amount of time in learning activities. It is likely, therefore, that their training needs, expectations and experiences will differ significantly from those of individuals who are at an earlier stage in their career. Therefore, the analysis in this report reflects assumptions and perceptions of the behaviour of this group via those who have contact with them.

A total of 15 interviews were conducted, each interview being recorded with the full knowledge and consent of the interviewee, under the assurance that their comments would remain completely anonymous and that at no time would anyone except the individual conducting the interviews be aware of which person had made specific comments. Throughout this section the text will refer to the context of statements when providing direct quotes to highlight issues identified. However, to protect anonymity the interviews were randomised before being numbered.

For this research stream, the following people were recruited by HEE and agreed to be interviewed, selected from a wide departmental spread within the healthcare sector, with job titles such as:

- Head of Digital
- General Practitioner
- TEL Lead
- Senior Programme Manager
- Principal Psychotherapist
- Education Resource Developer
- Lead Paramedic
- Consultant Anaesthetist
- Senior Clinical Skills and Simulation Facilitator
- Learning Technologies Lead Facilitator

Note – some job titles have been withheld to protect anonymity

7.1 Approach

All interviews were conducted over the telephone, with the interviewer making notes as the interview progressed. On average, each interview lasted for approximately 60 minutes. Interview

scripts were designed in conjunction with HEE to be semi-structured to allow for additional insights into the following broad areas:

- Job role and summary of general duties.
- How do they currently look for information related to their studies and/or their job, and which are their primary sources?
- What are their thoughts about these sources – both positive and negative?
- How do they establish trust in an online resource and the source of that resource?
- Do they feel that they and/or their learners have the skills needed to find relevant information?
- What are their thoughts on the sharing of information with others within the NHS?

The full question set and interview script appears at the end of this appendix.

7.2 Summary

The aim of these interviews was to identify how interviewees are using technology as part of their learning or teaching. A total of 15 one-to-one interviews were conducted, with interviewees coming from a range of backgrounds across the healthcare sector. A large majority came from the trainer, educator or commissioner background, or were from senior positions in their profession, and were not spending a significant part of their time training. A caveat of these findings is that we were unable to talk directly to learners who were in junior roles and therefore perceptions of learning behaviour were captured second hand by talking to educators and trainers.

One of the key findings from these interviews is that interviewees believe they already have access to the information they need. However, they have to triangulate sources by accessing a wide variety of available services such as local Trust LMS, any VLE available to NHS staff, websites specific to a learner's Royal College, as well as wider internet-based studying. They utilise a multitude of systems to support their learning and training needs, including online web services, Trust LMS, social media, email, and paper-based systems. This suggests that users are adapting currently available systems to suit their needs.

On this point, it was noticed by trainers that the use of social media such as Facebook and Twitter is increasing year on year, and there is generally the expectation from learners that any teaching materials now be distributed via social media rather than placed on an LMS for learners to access themselves. Indeed, it was generally preferred by trainers that they distribute their training material to learners using email or social media so they can ensure that students will see this material.

There was concern, from the perspective of the majority of interviewees who largely come from a trainer/educator/commission background, over the ability of the majority of learners to search for, and find relevant information. They perceived that most learners did not have sophisticated search skills. This was also echoed by learners themselves. However, with appropriate training into the use of search engines, Boolean operators, and practice, it was generally believed that these skills levels could be improved.

Somewhat related to this was the ability of a service user to establish trust in both a resource and its source, with concern from more experienced interviewees about the abilities of learners to identify not only useful pieces of information, but also information that is reliable and based more on evidence than an opinion. There is the feeling by some that users should simply be given the information that they need rather than having to 'hunt' for it. This is of importance for information garnered from outside of the 'walled garden' of the NHS and associated colleges and schools.

In terms of learning styles, there seems to be a strong preference for face-to-face learning within the NHS regardless of an individual's role or experience level. Indeed, findings from these interviews shows that the more specialised an individual is, the stronger the preference for this face-to-face training, with more specialised roles such as doctors, preferring to be given hands-on training rather than traditional 'lecture-based' learning. Interestingly, trainers also expressed this preference as they feel that this approach better meets the learning needs of their trainees.

7.3 Interview observations and insights

We have grouped our findings from these interviews into the following seven broad categories:

- Learning Styles
- Learning Needs
- Learning Material and Learning Style
- Searching for Information
- Trust in Information and Sources of Information

These are detailed in the following sections.

7.3.1 Learning styles

Most of the statutory and mandatory training is available on Trusts' LMS, and there is a preference for learners to undertake this learning online:

"They will have been advised to enrol onto certain courses. Certainly all the mandatory learning is on the LMS and they're told to do it."

However, outside of this mandatory training, it was observed that there was a preference for learning undertaken within the NHS to be very much 'hands-on' and face-to-face rather than using purely digital or traditional 'lecture-based' learning:

"I'd ask the F1 doctors 'What would you like to be taught?' and many of them want very practical stuff as they want to put into practice what they've learned"

"Likewise with the medical students we'd actually go and see a patient on the ward...to put it [their knowledge and teaching] into practice...synthesising a whole range of stuff; your communication, your examination technique, your bedside manner, all those things, making it real in the workplace"

"I think it has to be face-to-face. It's going to be a real challenge. There's going to be a bias towards people who are accessing [learning materials] that way [(online)], [but] I think you do have to have regular meetings; I think it has to be face-to-face."

When asked how slides were distributed to learners, it was most common for trainers to pass lecture notes and slides, as well as related material to learners via email, but increasingly this is done via social media such as Facebook, Twitter, or WhatsApp or social media groups that the learners had set up themselves:

"I envisage [the use of Twitter] ...because I have been to meetings about this...the use of Twitter...that can be one of the ways that is available."

One interviewee stated that they were a strong user of Twitter for their studies, find it useful, and actively follow several reputable people and the links that they post:

"...[I] follow quite a lot of sim[ulation] specialists on Twitter, and when they post links on Twitter, that then leads me into sort of environments where I would explore and look at what's going on internationally, so I find Twitter brilliant."

However, there was some concern raised about the use and availability of social media, particularly for those who are not highly digitally literate because:

"[not everyone] will have access to those [social media resources], and one of the more difficult things is getting permission to post the course material online."

"If you have someone who is resistant to using that sort of thing, they'll eventually get marginalised, until they're...sat in front of the computer and made to do it."

One particular trainer, when asked if there was something more that could be done to help them improve how they distribute material did state that they can see the value of using social media, but feel that they would like to be given some training in how to use such tools as part of their training;

"I would say, yes, to some extent, I would say that I am used to Twitter, even though not as much...for any newer technology...I have difficulty, [and so] for that reason there will always be that need for keeping up with that. During my courses, I felt that I needed to learn [to use] it, and I had to learn through my colleagues."

Interpersonal relationships were seen as a useful learning method, particularly for those who had access to highly trained individuals both within their organisation and externally, via networking:

"...is the main guy that does most of the international training. I've been to workshops with him, I've seen him at conferences, I've been to dinner with him, and we've developed the links with him and his team in Finland. There's parachute projects set up in New York...and I've spoken at the conference there."

"I've made a lot of links in Australia. In fact, I've got an Australian visitor here tomorrow, and they're keen on developing these links."

"There are web pages that we use...like the hearing voices group set up by service users, so I get a lot of papers from that which I find useful."

7.3.2 Learning needs

Of those interviewees who were asked directly "are your needs or learners' needs being met by currently available systems" some comments included:

"I've got access through NHS systems, access directly through my Trust's systems, and I've got access through the HEI [Higher Education Institution] systems I'm studying with, as well as the whole world wide web, so yeah; there's enough options for me to go on and find resources."

They pointed to cross-referencing a number of different resources, albeit with problems and issues around how those resources were accessed:

"I think the needs are met with some caveats [around] access; the information is there all the time and I can access it, but whether or not I can access it all the time, within the NHS is doubtful. For various reasons, it is blocked within the NHS, policies and things like that. I can get around that by doing most of the work at home."

"To some extent the same issues [around accessing information] would be there as well, but apart from that, they are increasingly getting more and more information online through different portals. So, the information is available, but whether it is optimal or not is a different question."

The comments also suggest there are a plethora of different official and external sources being used.

“There is an awareness of what the user’s needs are, and there’s lots of training going into training people and making them aware of what’s out there, but I think there’s always scope for more, and as systems evolve, needs evolve, so it’s not something that’s perfect.”

Users pointed to the potential for systems to be improved in tandem with the needs of users and the usefulness of a system which adapts over time to meet changing user needs.

“Well, I think...given that people aren’t failing their training, then they probably are [being met] because...at least the assessment of that process is showing that things are working because people are not...people are progressing through their careers, you know, going up the hierarchy and passing exams.”

From a trainer’s perspective, a way of measuring whether online learning system provisions are sufficient or not, is by whether the students are passing their exams. However, this statement may not take into account the supplementary activities, or holistic nature of healthcare training being interdependent on digital systems.

Some commissioners we spoke to felt that their needs are not being met 100% as it can be difficult to get all of the information they need:

“In an ideal world, I think it could be tidier. There could be a trustworthy, single go to place, but everything is out there and could certainly be got at, but as I said, in an ideal world, there would be the one go to, reliable, trustworthy place.”

Interestingly, it was commented that the needs of some of the stakeholders are not being met, for example universities that have ‘partnered’ with Trusts, due to outdated systems:

“out of date computers not being good enough for the task.”

One instructor said that they felt their needs were not being met because of a lack of pedagogical context, which could be useful to know in terms of designing online learning and teaching resources for any future service:

“...lack of knowledge about what goes into effective teaching. I think there is the general ignorance about how education should be delivered. Often when you’re asked to step in and teach, [there’s no information about] who I’m presenting it to, what I’m supposed to be presenting, do I have what I need to deliver the session, how long it is.”

Time for study seems to be an issue for learners, with many not having the time they need while at work to undertake their studies, relying instead on studying in their own time at home in the evenings and weekends. This is recognised by trainers, who will:

“Spoon-feed them. This team all works well beyond the call of duty, they work additional hours, and they do not need to be, you know, fluffed around, they need to have it there for them to access it and to be able to use it. They have families; they don’t want to be

doing this at home...really and truly people have lives and want to be using them accordingly."

This position is supported by interviewee #11 who works with trainers and learners. Asked whether or not learners had the time needed in work to study, they stated:

"I would genuinely say as a person managing [job details removed for anonymity] and looks after learners, and myself currently doing a Master's, and as a person with, three children, I really think...I honestly think we haven't [got the time], which is really sad, and I really think that we all do our best and try to fit it around our job."

This is further supported by interviewee #4 who felt that learners didn't have the time (nor the skills) needed to effectively search for, or to share, information, and often sought the easiest, simplest piece of information they could find, which limited the chances of success of any feature for the sharing of information and resources:

"I think it's an interesting idea, but if you factor in the pressure on people's time, and people's inclination to take the lowest hanging fruit, I think the combination of those two things means it's unlikely that such a thing [resource sharing feature] would end up being as useful as it could be."

Indeed, recognising the problem of lack of time, and in order to counter this problem, one particular Trust has taken the initiative and created a series of 'bite-sized' courses for their staff that can be taken in around 30 minutes and can be scheduled more easily as a result:

"No, I don't think time [for study] is put to the side within the NHS; I think we're expected to work around our normal duties. We've tried to accommodate their learning by giving them small timeslots to attend which allows them to just nip out while being on duty for half an hour."

This suggests that any future solutions developed in the online teaching and learning realm, should take into account this theme of time constraints available for learning activity.

7.3.3 Learning material and learning style

The interviewees typically selected information from a variety of sources, not only a Trust's LMS. There do seem to be differences in which sources are used, depending on whether the individual is at an early stage in their healthcare career or a later stage. Later-stage-career interviewees are more inclined to use resources such as Royal College sites, university subscribed ATHENS, or paid portals such as PubMed or Medline. When discussing how they access resources for their studies, interviewee #9 (a qualified doctor) stated:

"I would naturally fall to those, probably early on, in the searching and then as I start to pull out references, that's when I might resort to Google Scholar to actually go and find it. I've got all things like EMJ, BMJ, Nurse Education, all those sorts of websites and electronic repositories favourited so I'd go to those."

Similarly, for their CPD, interviewee #3 commented that;

"I quite regularly use online training activities, that is again CPD, very useful CPD activities which are now on our association of [job role removed] website [which are available] to our members of the association...a lot of important meetings are uploaded and the lectures are uploaded and anyone can access."

Likewise, interviewee #13 stated that;

"The immediate thing that comes to mind, and I use it a lot, is through the British Medical Journal, BMJ learning."

Interviewee #5 noted, when discussing nurses' training, that;

"They do look at some of the YouTube stuff, well, as you know, there's an awful lot on YouTube."

7.3.4 Searching for information

Most of the interviewees we spoke to felt that the users (who were their students and other learners) of existing systems did not have the skills needed to effectively hunt for, or to find, the information that they needed.

"No. Because they just go for the easy option. They would quite literally just type something into Google. That's what they've been doing forever. [Although] They're absolutely capable of finding an answer, I don't necessarily think it's a quality or accurate answer."

The trustworthiness of the source and the ability to qualify it as something authoritative is a point of difficulty in searching behaviour.

"Unfortunately, most people don't even have the skills about how to use an advanced search tool in the first place...people do what they always do and look at the ones on the first page; they aren't by any means the best, but they come at the top of the list."

"All the evidence that we have from the data we've collected is that if you're not on the first page, then you might as well not be there at all."

As mentioned earlier, it was felt by one interviewee that at least part of the reason for this lack of skills is a lack of time;

"We spoon-feed them [because] they work additional hours, and they do not need to be, you know, fluffed around, they need to have it there for them to access it and to be able to use it."

One interviewee (#8) suggested that there would be differences in search ability between younger and older users, with younger users being more able when searching online:

"I think it's an age thing that. Well, I wouldn't say yes for my mother, but I would definitely for my daughter, because they look [for information] in different ways."

However, it was felt by some that although people lacked the skills needed, given enough time and/or training, their search skills would improve:

"It [can take] quite a bit to work through this with them and go through the more formal searching route and using the principles of applying [Boolean operators] to hone down their searching [skills]. Formalising that as an early academic module, and teaching them the principles of how to find evidence and test its reliability and validity [can overcome this]."

And others mentioned the presence of technology, but the need for training to use it:

"I actually think that although we've got a generation coming through who are very comfortable with technology, the actual skills needed are lacking...[However] I would hope that most of the main professional groups would have some kind of training in searching for evidence and so on."

Related to the issue of lack of user skills, the limitations of the LMSs and their search features were seen as at least part of this problem.

"I don't think anyone would use the [Health Education England] VLE by choice. When you try to access the various menus and sub menus you find you're not really getting the information you need, and there is a search button, but the search doesn't really work...it doesn't tend to bring up stuff, which you know is there, but you just can't find it."

"At the moment, it is taking learners longer to find relevant sources...we do have a team here developing it as much as they can...but...it's not working as it should as it's taking learners longer to find things."

Compounding the problem of general lack of search skills, was the sheer volume of information that the users of any online service are presented with and need to sift through when searching in order to find relevant information, which was identified by the majority of interviewees.

"[The problem is] the volume of things that's out there. So you put something into Google and... you know...And also the fact that the top answers are the advertisements and the sponsored results..."

“Sometimes if you’re looking for a very specific piece of information, and sometimes that can be hard to get...Finding and discerning which one [piece of information] is actually useful...which one is official...you just don’t know which one is reliable.”

Finding what you need is a particular issue in designing a search in the system and will need to be taken into account for successful implementation of any service.

“I think if you’re using some kind of online repository, some kind of online resource to scope that evidence base for a particular topic, which I think people would be...it’s finding...it’s pinpointing what you want, without it being overwhelming.”

“Obviously the internet and information overload is so vast...”

“Sometimes there can be so much information out there. How do you identify the really relevant stuff?”

7.3.5 Trust in sources and information

One of the main areas of concern raised by all interviewees was that of trust; this applies to the information/resource on that service, and also to the creators and publishers of that information/resource. Information that is held within the Trust’s LMS or from a recognised NHS source or on a Royal College website, is seen as trustworthy, as this has been typically written by experts, or has received prior approval for use within the NHS:

“...the only things that then go on the LMS has been approved by the subject matter experts (sic), so it’s not open to anybody, it’s very restricted who can put things on there.”

“There is a whole slew? of organisations within the NHS who are developing course content. The Royal College of Physicians have their own e-learning offering which is aimed at GPs. We also have on going conversations with the Royal College of Nursing who have said...there is the need to improve the quality of some courses that is available to their members (sic).”

“I’m looking at stuff on NHS Choices, I’m going to trust that because I know it’s going to have that, it’s got that evidence based...the information is going to be relevant, it’s going to be current, so I’m going to trust that.”

However, as discussed earlier, information related to training and education is typically sourced from a variety of services, a number of which are outside of the NHS. In these situations, trust was established in different ways, including checking to see whether or not the information being posted was also posted elsewhere:

“If it’s supported by a number of sources; if the information given on that page is repeated, or replicated, or someone has given the same information somewhere else...”

"I guess the first thing would be to try and find a secondary source that is saying the same [thing]."

In addition to the use of multiple sources, often if the source of the information is well known or is a subject matter expert, then their information is generally seen as reliable; both when posted within the NHS and when posted outside of the NHS:

"It's about reputation; if you can establish a reputation that what you provide is correct, upfront, honest, truthful, you can build that trust."

"If they have some standing in the field, you know, is a well-known expert in their field, then I have some trust in them."

"If it's authored by someone who is an expert in [their field], then I'm going to put more trust in that than I would someone else."

"If I saw who it was that posted it up, there are certain people [I would trust] because I know them."

"It's once again on the personal level. Most of the information [I get], I have through personal contacts."

However, the issue here is that most of the interviewees were well established in their careers, and are typically more experienced with searching for information, and will often have more personal contacts with people who are posting information. To counter this bias, we also asked how would those whose careers are less well established know to trust a resource. Suggestions for this largely revolved around a ratings system of some sorts – for example a simple star rating system:

"I think a star rating system could be used."

Or a slightly lengthier Trip Advisor style rating:

"I think if it's a number of rating questions, say five rating questions, where they [the students] just have to click on one to five, that and maybe a comment box at the bottom."

As well as actual text reviews by users of the service;

"Like everybody else, I look at reviews, and I would certainly want to read some of those reviews and try to see a little bit below the surface."

However, there is some concern over the usefulness of these ratings, with one interviewee being concerned about the risk of only negative reviews being left;

"You have to be a bit careful with things like that [a review system] because occasionally you get people who complete things like that more 'cos they are not happy with something rather than are happy with something."

Another interviewee commented that they don't see the use of a star rating as people tend to leave either one star or five star reviews, nothing in between;

"With any postings things, with any surveys, you get the very good and the very bad, [but] you don't get a lot of the average in the middle of it."

To overcome this, this interviewee suggested the use of a binary 'Useful' or 'Not Useful' rating system.

One final alternative suggested by one of the interviewees was to 'peer review' any information that was posted, and prioritising information that has higher ratings;

"Everything is thrown in at level one, but for it to move from level one to level two [which is higher rated], it has to be peer reviewed by the individuals using the site, the system."

7.4 Full text of interview script

Thanks for taking the time to talk to me today. My name is <name> and I work for a digital communications agency called Reading Room. We're working on behalf of Health Education England looking at how people access online learning and teaching resources. The aim of this interview is to identify needs and explore how people are using and accessing technology as part of their learning and/or teaching.

We wanted to talk to you today to get your personal thoughts on how you access or distribute learning materials, how much of this happens digitally, and how you use and/or share resources.

If it's ok with you, I'd like to record this interview just for this project's purposes and this won't be shared anywhere. If you would prefer for this not to happen, or if there are questions you are uncomfortable with, please let me know. Is this ok with you? If so, let's begin.

1. Can you explain to me briefly what you do; your job role, the settings where you work (community, Trust, GP practice etc.), what field/area or specialism you're working in.
2. What kind of digital or online tools you generally use at home or for work? How would you typically get any information you needed?
3. Where would you generally go to find resources to help you with any learning (for example if you needed to learn something for work or professional development or for your training programme)?
4. How often would you search for resources online either as part of your job directly, or to help you to better do your job/training? Is some of this mandatory or optional?
5. What do you feel these websites get right? How do you feel they could be improved?
6. Are there any other websites/options that you use for accessing teaching/learning resources online?
7. Is there any website or online system that you prefer over the others?

8. Can you tell me about a website or online system you recently accessed that you felt really helped you to teach/learn? What did you find useful about it?
9. Can you tell me about a negative experience you've had recently with a website or online system? What made this a bad experience?
10. Are there any websites that you trust more than others? Why do you trust this/them more?
11. How do you think that a website or particular piece of information can be shown to be trustworthy?
12. What devices do you typically use to access information that is online?
13. Tell me a little about where you usually are when accessing these websites. *e.g. At home? At work? Whilst travelling?*
14. What are some of the challenges you face when accessing online information? How would you like to see these challenges dealt with?
15. Do you feel you have the necessary skills to access resources online?
16. How confident are you in your ability to find websites and information that are useful or relevant to your work?
17. Is there anything that you feel can be done to help you with this?
18. Do you create teaching/learning resources yourself? Do you distribute or share these? How and how widely?
19. Do you feel that other healthcare users of online resources would be willing to share resources and material themselves? Why/why not?
20. What do you feel can be done to encourage users to share those resources that they feel are useful?
21. Which of the following categories would you say you fall into – you may be in one, more or all – learner, teacher/trainer, educationalist, commissioner?

8 APPENDIX: ETHNOGRAPHIC STUDY

8.1 Approach

This appendix contains the field notes from an ethnographic study written in the form of narrative observation and notes from a range of learners and educators in the live setting.

We spent the majority of a day at each of the selected three settings nominated and secured by HEE to gain access to a busy GP practice, a community mental health learner's setting and a patient simulation training exercise in three areas of the country; Maidstone, Ashford and Doncaster.

We acted as self-reflexive participant-observers to discover more about people, specific groups and how people are influenced by their environment and the usage of any digital tools when learning and education activities are taking place.

The researcher is identified as British and resident in London working for Reading Room with little first-hand healthcare education experience.

Primarily, we undertook a combination of observation and talking to people using an unstructured interview type, in some cases participating in the activity and in others more passively.

Conclusions arise from informal and formal interviews with people we met during the studies, helped by interpretations of existing online learning services to weave together a view to elucidate the community's values, behaviours, problems, and prospects.

8.2 Summary of findings

The main insights gathered in this piece of research were:

- TEL resources complemented the face-to-face or experientially based learning and teaching, rather than replacing the need for a tutor.
 - During such learning experiences, sharing of TEL resources was often via Google (search for "x") or through reference to known content and tools on specialist websites. In general, the resources were seen by users as valuable.
 - Reflective sharing of thoughts and experiences in this context straight after, or during a demonstration or simulation captured in-the-moment learnings most effectively.
 - Dialogue with a senior professional or a trainer was seen as being of great value.
- Across the different practice settings, the types of training and learning that occurred were diverse in subject area, but the commonalities were that the value of in-person training was seen as most valuable.

- Digital and online training services were also used for modular based e-learning, and self-driven learning:
 - There is a distinction between mandatory and complementary usage of such systems; in some cases, tutors were using such a system as a way to monitor a student's progress, in other cases individuals were using them to study policy documents to increase their own level of skill in a particular area.
 - There were some cases where self-driven training is being used to complement other training activities, or to satisfy the need for specific knowledge in the very short term (a 'just in time' training approach).
 - When using self-driven learning, healthcare professionals might need to know sources of the content to validate a finding or establish trust.

- There is an opportunity to capture 'born-digital' resources, such as the use of a recorded video-link session or printed resources which can be stored or shared online for other audiences.
- Some settings aimed to address the 'theory-practice' gap through simulated environments.
- Some users were clearly quite sophisticated in their search for information and resources and actively engaged mobile devices to search for sources of information to help them with their learning.
- Trainers often wish to share or push out relevant information to their students, and there were a variety of approaches to this including email, social media, word of mouth as part of a lecture or training activity and even paper handouts.
- Some work to investigate the digital literacy of different types of users could be valuable, as some learners, especially those who were at a very early stage of their career and from a younger demographic, were perceived to have better search skills, better navigation and generally a more sophisticated approach to interacting with digital and multi-media resources. Meanwhile, those who were more senior had their library of go to digital and online health-related resources that they know and trust.
- Our observation suggested that in general, users have a high level of digital literacy. They tend to have smart-phones, can use Google for constructing searches, and employ their own work-around to obtain the specific information they need. They also do see the benefit of TEL. This suggests that a failure to engage users with existing e-learning and TEL resources is not down to the digital literacy of the audience, but could be caused by other factors, including: lack of engaging, high quality content; a lack of trust in unrecognised materials; low awareness of national/centralised resource libraries; poorly designed interfaces for finding resources; or just a lack of time to engage with new systems and content.

8.3 Live patient simulation training

8.3.1 Background

This training environment took place in Doncaster, in a purpose built patient simulation lab with the aim of 'bridging the theory-practice gap'. Principles around this aim were displayed on posters around the centre.

There was a main classroom and two wards, one of which was viewable by two-way mirror and the other via a live video link. About 11 learners attended this day-time session, comprising multi-disciplinary attendees and (Intrathecal Cytotoxic Chemotherapy) ITC nurses. The basis of the lesson was in how to perform emergency tracheostomies, with two trainers running the session.

Groups of learners were selected for role-play and asked to enact a scenario with a manikin equipped with technology to simulate a real person in a state of medical danger.

The live video link up projected the images of what was happening in the ward into the main classroom of learners, who discussed and reflected upon the scenario and what they would have done.

8.3.2 Technology and the learning environment

The main classroom was equipped with vital stats monitors, which were only noticed later on by learners, as it was positioned towards the back of the room (*'oh look, there's also a monitor'*), but it wasn't immediately obvious that this was part of the simulation set-up.

After the scenario had taken place, the trainers came back in to re-cap and reflect around feelings, emotions and procedures. They also played back some of the captured video, which was called 'Encoded Media' but it was not clear whether this was NHS created technology. This was then saved in a video library but there was no further mention of whether the video would be shared with students for self-study or whether this would be stored online for future access.

During the scenario review by trainer – she went through stages of procedures and reflecting, demonstration with hands, showing air coming out of mouth etc. and it was necessarily a face-to-face demonstrative type of training, which is about variability, ambiguity of applying theoretic models to live situations.

8.3.3 Resource sharing

The use of a single A4 hardcopy flow chart to guide learners was used, and paper resources were also distributed. It was not mentioned whether these resources were also available online. During the session there were references to websites, *tracheostomy.org* and *tracheostomy safety project*. The trainer asked people to go online and to find their local policy as this varies from Trust to Trust. Although advice was given to direct users towards resources, it was not shown on a screen projection or anywhere else.

As the trainer was referring to online learning resources, a student took out a smartphone *'What do I need to look for? What should I search? It's better if I do this straight away so I've got it.'* A couple of learners demonstrated this behaviour of trying to capture resources as they were being mentioned, but there seemed to be a missed opportunity to share these lists by e-mail or in another way. The trainer mentioned the need to run this type of training to ensure competencies are being met. Via an interesting article in the national audit of tracheostomy care – Right Track, a learner asked *'If I Google the Right Track in Google will it come out?'* *'Where can I find this info?'*

Certificates and paper questionnaires were given out to capture feedback at the end of the session, which encompassed a mix of reflective discussion, video-supported observation learning, hardcopy resources and the creation of digital resources and verbal pointers towards helpful learning materials and policy online.

8.4 General practitioners' surgery

8.4.1 Background

The surgery is based near Ashford. A majority of patients who visited on the day were from an older age range. It is a close-knit community and healthcare professionals seem to know their patients and their history and family well. There are around 5 GPs, each with different background specialisms and who have been at the practice from 1 to 7 years.

During the day, we observed a range of patients' appointments and were able to spend time with the nurse and were also introduced to the different types of digital technologies used in this healthcare setting. While no explicit top-down teaching or learning activity was taking place, on-going professional training and the surgery's use as an environment for shadowing and training for junior doctors were described.

8.4.2 Digital services and tools

As a surgery, the technology they used was considered very good, *'designed by GPs for GPs'* and they felt lucky in that respect. It was felt that *'hospitals had to deal with massive amount of duplication.'*

Some GPs had dual screens on their consulting desks to aid in describing to their patients what they were diagnosed with. This was because they had observed intergenerational differences in the way patients interact with digital resources of information – *'younger patients have read everything about it on Wikipedia, so I have a second screen so we can look at it together'* and older patients regarded the GP as the single point of truth of advice and didn't trust online resources, nor wanted the doctor to be interacting with a mobile device.

Sources of information include eMedicine, PubMed, MiMs – which doctors used to verify information – were seen as an aid to self-learning. Doctors triangulated their sources of information and generally knew which sources could be trusted and which couldn't. Those trusted tended to be publicly available sources via Google and they were confident in their search abilities. Other GPs also supplemented their knowledge with books on pharmaceuticals.

8.4.3 A setting for learning and training

At the practice, they also had monthly learning sessions where they could discuss cases that have arisen in the surgery. Several of the GPs have undergone training themselves to become trainers, and these were via systems that were largely e-learning modular based systems, which they completed *'at home, in the time I can get'*, reflecting a common theme of lacking time resource to commit to training.

Junior medics attend the surgery to observe and receive a lot of online training *'but nothing can compare to coming out with us'* in the context of learning from live patient settings. It was seen as a two-way learning process in terms of how students perceive the delivery of standards of consultation and the qualified educators seeing what is happening in health education. Foundation level learners were perceived to have excellent digital skills and had encountered online patient simulators and types of resources that the qualified doctors had not received during their training; this varied Trust by Trust.

There was a perception that there are 'vocational' and careerist' healthcare professionals with the latter focused on passing exams and that the surgery had a *'more postmodern approach'* in delivering patient care.

Some staff had a view that some of the national guidance they receive on training was not relevant or unsuitable within their local context. There was an acknowledgment that prescriptive mandatory and non-specific online learning should take account of regional contexts. An example

given was mandatory training on Female Genital Mutilation (FGM), which was seen by some staff as being a lower priority in rural Kent than it might be in central London or other large cities, and not something they thought all staff should have to learn about.

8.4.4 Different systems for different professionals

We were able to look at an online resource and training repository designed by Kent and Medway NHS Social Care Partnership Trust for nurses to access a list of training courses which were both mandatory and complementary for their profession. One nurse explained that she had needed to undergo some training for infection control in order to bring the standards up at the practice and that there were also other options outside of her remit that she could look at on the site if she felt she was interested in it or had a future need to.

The site included personalisation options, a log-in area, a social and community sharing area and the ability to log her completed courses. She said *'It's useful for me to be in touch with the other nurses in my area, they know the issues around here.'*

She mentioned that it was a useful tool for her, but had been told every year for the past four years that there was a limited life-span for the resources as the Trust may no longer fund it. She was uncertain as to what would replace this. It looked as though some usability and user experience considerations had been taken into account to help nurses with access to information that they need.

One GP showed us a system from one of the Royal Colleges, as he was supervising a few students. It was a database that had issues for him, as it wasn't user friendly. The system required him to capture in granular detail all aspects of the student's competencies and he explained that this was incredibly time consuming, not least because usability and user experience was not making it easy for him to navigate. This made sense for the Royal College as a business in order to be able to run analytics on the success of the students, but made it hard and time-consuming for him as a trainer. He also mentioned that he found teaching resources online from various places, and noted that there could be issues with intellectual property and governance if a resource sharing service were to be developed. Email was used to communicate as well as face-to-face in these contexts.

Issues around version control and who governs overarching systems was also seen as a risk for quality of information for any future service he could envisage.

8.5 Community mental health training

8.5.1 Background

This was a non-mandatory community mental health training session aimed at family counsellors; healthcare professionals involved in delivering therapy to families facing complex situations with one or more members. 10 places are open, and attendees had either booked in advance or been booked onto the course by a colleague. They had not met or interacted with the trainer in advance.

For the session in question there were six participants from a variety of backgrounds. All of them were involved in delivering therapy. Some had re-trained and had come from diverse areas such as a kitchen-fitting business, HR, recruitment, while others were involved in lecturing or delivering training to other learners in their everyday jobs.

8.5.2 Modes of learning

Necessarily, this type of learning was delivered in-person and normally involved a volunteer family who would be counselled in an adjoining room and using a live video-link using an HEE funded wide angle video camera which takes into the frame the interactions of everyone in the room. Learners would be able to see the session unfold live. The trainer would then return to the room and reflect on what could have been done better.

There might be an opportunity to digitise sessions by recording the footage from the live video link, although there are sensitivities around confidentiality and use of individual cases would clearly need considering. Families were giving consent on the understanding that there were students observing on a video link, but they might be more reluctant to take part if they believed they were also being recorded.

Although the session clearly was using technology to enhance learning, in terms of the live video link, it is possible that the people involved, both the tutor and the students, do not regard this to be a use of TEL.

The offering of such training was resource dependent on both the offer and the ability of learners to attend. It was said to be 'a luxury in this Trust' and learners who were present said they could attend because they weren't working at the time.

The mode of learning in this case involved an hour's worth of discussion of theoretical models involving complex and intellectual subject matter, followed by a live role-play session essential for collaborative/participant interaction.

There were hardcopy documents passed around but no mention of online or digital resources.

8.5.3 Accessing resources

There was not a sense that users interacted digitally with the subject matter as part of learning or made reference to online learning materials.

Professional skills were developed via cases and the 'lived' experience and reflecting with colleagues was seen as most valuable.

A certificate was available at the end of the six-week course to recognise completion, but training was not mandatory. It seems that there is a necessary emphasis on patient-therapist interactions and that resources in this case would apply to theory, rather than practice.

There were opportunities where digital resources could be shared to support self-study, or the use of discussion forums to continue to discuss the cases they had seen beyond the session itself, although this is based on the opinion of the observer rather than being something specifically asked for by participants.

9 APPENDIX: TECHNICAL REVIEW WITH INFORMATION SYSTEMS

The purpose of the Technical Review was to understand the current system architecture and review it against the GDS Digital Service Standard.

9.1 Technological and systems comparison desk research

This section aims to assess and describe available comparative systems, their technology and usage in the learning and education environment.

9.1.1 Times Educational Supplement (TES)

This is an example of a community forum, one of the recommendations listed earlier in the report.

Website: <https://www.tes.com/teaching-resources>

What does the service provide?

- Supplements the magazine, provides a digital platform for teachers (and other registered users) to share teaching and learning resources, including lesson plans, worksheets, presentations, videos and provide insight through blog posts.

Who is the target audience?

- Secondary education teachers and trainee teachers.

Number of users

- 7.9 million registered users, as of March 2016.

Technology platform:

- Open Source using Drupal CMS.

What is the reputation of the service? What special features does it provide for its users?

- TES had a magazine circulation of around 58,000 in 2014.
- There is a separate magazine for Scotland (TESS) and for Wales (until 2011).
- Data from the national readership survey 2015 suggested that annual readership of the magazine was 362,000 with 90% of readers in the ABC1 classes.
- The TES website is now home to "the world's largest online community of teachers", with 7.9 million registered users as of March 2016.
- As of March 2016, more than 1.5 million pieces of content had been uploaded.
- In 2012 the PPA (Professional Publishers Association) awarded the TES website "digital product of the year" for the third year in a row.

- One of the main perceived benefits to this model is that it is a community of practice, with teachers uploading their own resources, so there is an expected level of credibility there. Resources are also shared globally (as a result of the TES Global “brand”) so it is perceived to encourage the sharing of new teaching techniques worldwide, not just nationally.
- TES teacher advisory board is a group of teachers used by TES to give support and feedback on features, give an added level of quality assessment to resources; the website also contains bios of each teacher on the panel.
- The longevity of the magazine and its association with The Times newspaper has helped reinforce its credibility as a high standard teaching resource. It started as a supplement in The Times, then became a publication in its own right in 1914 and the legacy of the magazine appears to have had an impact on the quality and perception of the online resource, which sees itself as an extension of the magazine.
- To upload resources teachers must be registered with TES.
- Uploaded resources are rated by users using a starring system; people can also leave comments in the review section.

9.1.2 NHS eLearning Repository

This is an example of a centralised LMS, used to enhance education.

<https://www.elearningrepository.nhs.uk/>

What does the service provide?

- Search and discover platform to support the discovery and sharing of e-learning objects and learning resources held both within the Repository and in external locations.
- The aim is to provide a platform for personal learning, support the discovery of “learning objects” and incorporate tools to support reflective practice and lifelong learning.
- The service provides a platform to house e-learning resources.
- Uses taxonomies to support access to e-learning objects.

Who is the target audience?

- NHS Trusts, National Library for Health (including health librarians).
- Higher education institutions.
- Other partner organisations (social services).
- Individual practitioners.
- Doctors of all grades and specialties.
- Nurses.

- Occupational health.
- Psychologists.
- Technical staff, admin and management staff.
- Learning technologists, educators and trainers, commissioners.

Number of users

- >3000 users, as of 8/11/16.
- The NHS eLearning Repository access policy mirrors that of NHS OpenAthens. Authenticated access is available to NHS England staff eligible for OpenAthens access. This includes staff within the "NHS Family". No definitive number is listed on the open section of the website.

Technology platform

- Open Source using Drupal CMS.

What is the reputation of the service – what does it do well/not so well?

- The service has a notice and take-down policy which notes that: the eLearning Repository team shall use all reasonable care and diligence in making e-learning objects available, we provide no warranty regarding the accuracy of the materials found in the eLearning Repository or their fitness for any particular purpose.
- There is also an expectation that users will help police the quality and legality of resources within the website, stating: "to help us maintain a high quality, please inform us if you suspect a resource is inaccurate or in breach of copyright."

9.1.3 NHS Networks

This is an example of a forum already in use to help users share resources and communicate.

<https://www.networks.nhs.uk/>

What does the service provide?

- Formed in 2005 to promote the development of networking in the health service. NHS Networks is a free resource dedicated to helping people get together to share ideas and improve the health service for all those who work in and use it.
- Its aim is to support innovation and improvement in health and care, and the role of networks in promoting learning and change. To provide a common space in which leaders, clinicians, managers and support staff and their partners beyond the NHS can explore ideas, pool experience, solve problems and share information.

What is the reputation of the service – what does it do well/not so well?

- News and virtual networking site for the NHS.
- NHS Networks is run by Primary Care Commissioning CIC (PCC), a not-for-profit social business which provides training, development and advisory services to NHS organisations.
- The service, which is free to all, is funded exclusively by PCC as part of its commitment to support improvement and the spread of good practice.
- NHS Networks is a free service that allows individuals and organisations to set up and run networks online either to replace or complement face-to-face meetings.
- Members use the service to share documents, run discussion forums and find other people with similar interests.
- Networks can be open to all or members only.

Who is the target audience?

- Clinicians.
- Supporting services, such as pharmacists.
- Physiotherapists and occupational therapists.
- Managers, administrators and other leaders and support staff.
- External partners (social care in particular).

Number of users

- Over 100,000 registered , membership has grown by 35% in the year 2015-2016. They produce a weekly newsletter with more than 49,000 subscribers.

Technology platform

- Open Source using Plone CMS.

What is the reputation of the service – what does it do well/not so well

- The web-based service is not constrained by firewalls and individual organisations' IT systems, making it useful for connecting across organisational boundaries.

9.2 HEE Technology Landscape

This section seeks to reflect on the existing technology landscape and issues surrounding systems in use.

The current technical landscape supporting e-learning within the NHS is very complex. Users from Acute Trusts, Mental Health Trusts, GP surgeries and social care wishing to access e-learning or share learning resources are able to use e-learning services at a “local” level such as a Trust’s LMS or access centralised services at a regional or national level. In addition, there are

Health Education England Discovery report

resources and training material available via the internet as well as material from Royal Colleges and Health Education Libraries.

Fig 1. Shows the complex relationship of these systems and their interoperability.

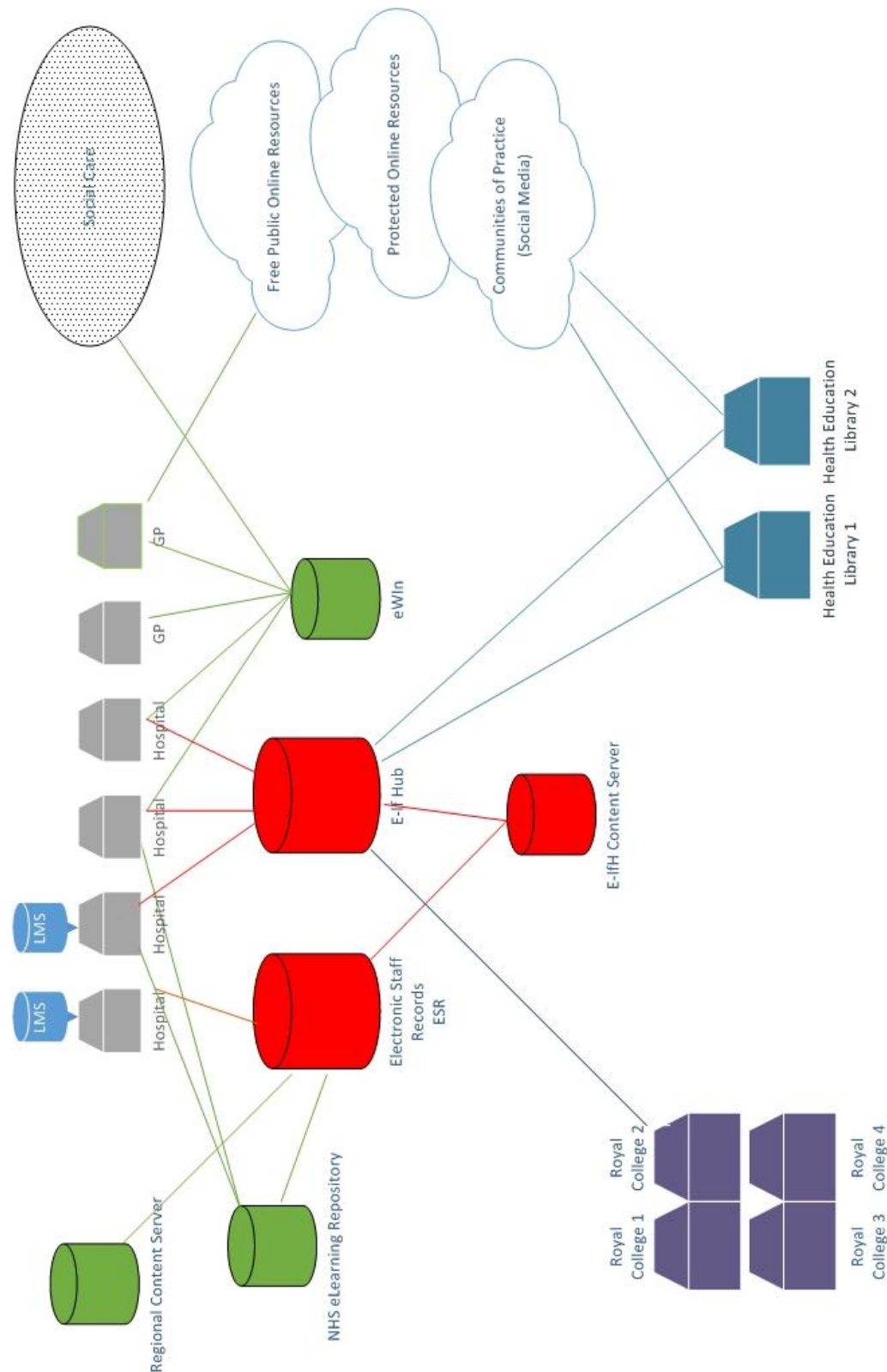
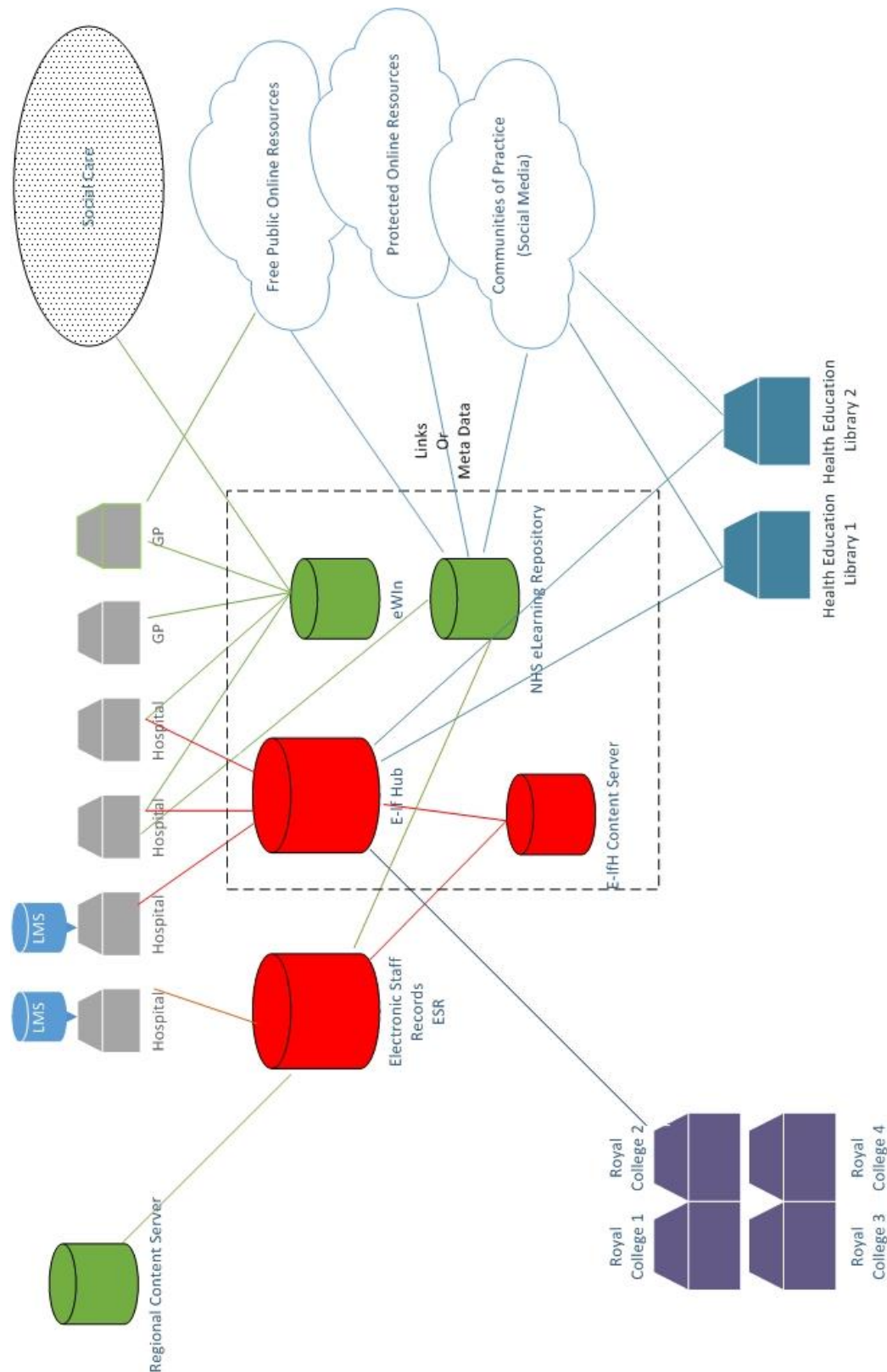


Fig 2 highlights the three systems that could be replaced by the development or adoption of a shared learning service that could act as a national centralised e-learning resources platform.



9.3 Current Hosting and Technology Stacks

Electronic Staff Records (ESR) – Oracle Business Suite hosted by IBM.

eWin – Drupal CMS, Open Source Stack, Hosted on Microsoft Azure Cloud.

e-LfH Content Hub – Windows .Net stack hosted on AWS Cloud.

e-LfH Content Server– Windows .Net stack hosted on AWS Cloud.

eLearning Repository – Drupal CMS. Open Source stack hosted with third party company.

Regional Content Servers – Multiple providers of Windows .Net stack and Open Source stack hosted with cloud hosting providers.

Although there is no set standard in both technology stack and hosting arrangements for the services in Figure 2, this gives HEE the option to consider all technologies and hosting setups. Especially the adoption of open source and cloud hosting solutions - point 9 of the GDS Digital Service Standard.