

WHAT DOES THE FUTURE LOOK LIKE?

**AN OVERVIEW OF EMERGING DIGITAL
TECHNOLOGIES**
BRIEFING PAPER

PATCH

Pembrokeshire Action To Combat Hardship

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Supporting Learning

Introduction

Across the third-sector, the quality and quantity of learning and development provision varies greatly. It is claimed that almost 50% of charities don't have a training budget (Cranfield Trust, 2023). For small organisations like PATCH, the idea of emerging technology seems distant and almost nonsensical. However, this briefing paper will attempt to explore how the latest technology can support and enhance learning provision across the charity. This paper will analyse and evaluate various pieces of emerging technology and their appropriateness for use in PATCH. At the end of this paper, there will be recommendation, with full costings, to adopt a 'micro-learning' suite.

External and Internal factors impacting learning and development provision

The political landscape in the United Kingdom has a phenomenal impact on the provision that organisations like PATCH can provide to their staff. Whilst the austerity policies over the last decade have seen demand for food banks sky-rocket (Jenkins *et al*, 2021), reduced funding and increased inflation have drained financial resources leading to very little investment in learning and development provision (Jewson *et al*, 2014). Socially, the situation is bleak. Research shows that shame and embarrassment are highly associated with food bank usage (Purdam *et al*, 2015; Garthwaite, 2016). This previewed shame could create a barrier to employees and volunteers accessing learning and development opportunities.

From a technological point of view, there is a huge 'digital divide' within the United Kingdom with over 10% of the population in 2019 still not using the internet (ONS, 2019). This is a significant factor for organisations like PATCH, where the digital skill or digital accessibility of the workforce is as yet unknown. Environmentally, climate change and sustainability is an ever-growing issue, which could potentially mean more learning and development provision is needed to educate the third-sector around this topic (Barker & Russell, 2020). From a legal standpoint, charities like PATCH must take into account the differing legal frameworks that apply to employees and volunteers (NCVO, 2022)

There are also a range of internal factors that can impact learning and development provision, as demonstrated in the below SWOT analysis:

Strengths

Flexibility - As an independent organisation, PATCH can create bespoke learning opportunities (Moliner & Murillo, 2021)

Motivation and Engagement – Volunteers are often driven by the purpose of the charity, so this may create a desire to undertake learning and development activities (Huang *et al*, 2022).

Weaknesses

Financial constraints – As a registered charity, PATCH's financial resources are limited and must be managed ethically. Often, this means directing funds to core costs such as the purchasing of food (Mair, 2012).

Skills and ability of the existing workforce – With only 2 paid employees, the organisation has a limited pool of specialists to deliver learning opportunities (Mapstone, 2022). Whilst the organisation also has a volunteer workforce of approximately 50, it is recommended that the ownership of any learning strategy is held by a paid member of staff.

Opportunities

Learning supported by Technology – PATCH has low-cost access to many digital learning platforms (CharityDigital, 2023) due to its non-profit status.

Partnership and volunteer time – Many educational institutions provide learning opportunities to charities for minimal costs (COWC, 2022).

Threats

Public perception – Studies show that donors want to see how their money is being spent (King *et al*, 2022). Charities need to exercise caution when spending donations on training instead of core costs as this may impact income streams.

Time and capacity – PATCH is a busy organisation, with many volunteers already stretched. Adding any learning and development provision must take into account the psychological wellbeing and engagement of participants (Armour and Barton, 2019).

With these factors in mind, it is important to consider the current learning and development provision at PATCH. At face value, there is very little in terms of a formal provision for learning & development. This has been noted at board meetings, particularly in the past few months (PATCH, 2023a). Whilst there is an ambition to create a learning and development strategy, there has been no serious proposal until now.

Importance of a learning culture

The CIPD highlight the importance of learning cultures by saying “workplaces need to invest in the learning and development of their workforce to stay future-fit in a complex world of work” (CIPD, 2020, page. 2). Additionally, organisations that have an embedded learning culture experience lower turnover rates and improved performance from employees (Lin & Huang, 2021). When considering the importance of a learning culture, charities need to be mindful that organisational effectiveness will often come second to providing core services (Gill, 2010).

With this in mind, small third-sector organisations like PATCH need to be innovative when cultivating a learning culture due to their financial constraints. This innovation could take the form of using existing staff experience and knowledge, or networking with similar organisations or partners (Brettel & Cleven, 2011).

How people learn

The concept of learning has been constantly researched and theorised throughout history. For organisations, it is vital to have a basic understanding of the main concepts. Whilst a Google search will provide an overwhelming number of results, below are four popular theories:

Constructivism was immortalised by Piaget (1964) who thought that learning was an 'storage and retrieval' process where people recognise patterns or solve problems sequentially. In some cases, this theory is useful, particularly when exploring how humans learn complex information (Arghode *et al*, 2017). However, some research argues that constructivism does not take into account the importance of factors like the learning environment or the technological tools that aid learning (Alanzi, 2016)

Cognitive learning theory is based around the principle that people learn through their social and environmental experiences, often with the help of a 'more knowledgeable other' (Vygotsky & Cole, 1978). Proponents of constructivism believe that learning is the assimilation of new knowledge followed by the subsequent accommodation of that knowledge in a suitable context, often being accommodated amongst or between existing knowledge in order to make sense of it (Clark, 2018). Critics of this theory state that it is too broad and has not been tested across a range of cultures (Alahmad, 2020)

Supporters of **Behaviourism** believe that learning happens through a response to environments, or stimuli from said environments (McLeod, 2023). Theories of behaviourism are rooted in the belief that learning consists of distinct 'building blocks' that come together to form a whole (Biddulph & Carr, 1999). Behaviourist theory becomes more credible when thinking about the forming of positive habits (Pinder *et al*, 2018) yet less credible when trying to explain the cognitive processes that happen inside the brain (Basel, 2013).

More recently, **Connectivism** has become a popular learning theory (Goldie, 2016). Connectivists like Siemens (2005) believe that learning takes place through and by networking. Connectivism is centred on the idea that learning is a process of connecting sources of information. Connectivist theory is a popular and note-worthy concept, especially in this digital age. However, there are some who argue that connectivism does not go far enough to explain how humans learn complex or abstract issues with any depth (Duke *et al*, 2013).

Main Findings

Microlearning

As the working world gets busier and faster, the expectation for learning and development activities to follow suit grows. Microlearning is where learning activities happen in concise, targeted surges (Leong *et al*, 2021). Advocates of microlearning believe that it works in the modern, fast-paced world and avoids the overload of information (Ngana, 2023). Research in neuroscience suggests that learning objectives taught over a longer period of time (rather than, for example, in a one-hour training session) are retained in the brain for much longer (Wimmer *et al*, 2018).

In many organisations, microlearning (sometimes called ‘bite sized’ learning) is split down into units (or ‘chunks’) (Manning *et al*, 2021). This can often allow for greater flexibility as it gives learners an element of choice and self-direction (Ahmed & Matu, 2021). Microlearning’s modular approach is supported by the constructivist learning theory noted in the previous section.

Microlearning is a flexible option for organisations, particularly ones that may not have the time, budget or capacity to host lengthy and costly training days.

Microlearning can often be facilitated digitally and can cater to employees that work different shift patterns, often being scheduled into their working day (Lohman, 2024).

Nevertheless, organisations must exercise caution when implementing microlearning. Maddox (2018) argues that many providers wrongly define microlearning as learning activities that have a short duration whereas it is in fact a learning activity that provides ‘just enough information to allow the learner to achieve a set objective’. Any learning modules should be carefully thought out and designed in order to be effective (Nanjappa *et al*, 2022).

Microlearning at PATCH: The Potential

There is a huge potential for microlearning to become part of PATCH’s learning and development provision. However, is microlearning in isolation enough? The board of directors has often pondered how they could deliver an effective induction to new volunteers. Could microlearning be the key to success? At face value,

microlearning may offer a competitive advantage compared with other local charities (Maltais, 2023).

In order to engage stakeholders, it is important that the microlearning content is aligned with the overall charity strategy and from feedback (Dineen, 2017). For example, internal data and anecdotal feedback suggest that there is a need for customer service training, particularly in the shop (PATCH, 2023b). This offers a potential topic for a microlearning activity. Microlearning also offers huge potential in terms of variety of formats. For example, one topic could be presented through storytelling, whereas the next could be presented through a case study or a quiz (Shail, 2019)

Podcasts

Podcasts have become increasingly popular in recent years (Marshall, 2023).

Podcasts consist of episodic audio files that can be either downloaded or streamed on many digital devices (Stanford, 2023). From a learning and development perspective, podcasts provide open access to individualised learning. Podcasts are often narratives and provide opportunities for complex learning topics to be broken down to digestible, entertaining and informative media (Shamburg *et al*, 2023). Perhaps the greatest argument for podcasts is their flexibility, allowing listeners to learn 'on-the-go'. Similarly, podcasts can often be produced much quicker than other training resources, such as eLearning modules or videos (Islam, 2007).

Some researchers argue that podcasts encourage continuous learning, particularly in language learning, which is often over and above the requirement placed by employers (Yaman, 2016). However, some critics argue that podcasts need to be of sufficient quality in order to be effective (König 2020, Hatfield, 2017). Podcasts can be produced and hosted fairly cheaply, making them attractive for organisations like PATCH.

Podcasts at PATCH: The Potential

There is much potential for using podcasts to enhance the learning and development provision at PATCH, yet there are many considerations that must be explored before any implementation.

Primarily, employee (and volunteer) engagement is key. Does PATCH have a true understanding of what the workforce wants and need? The short answer is 'not yet', although this can be easily remedied. Initially, PATCH should implement an informal learning needs analysis of its staff and volunteers. Research shows that this can be done through a short, free questionnaire (Grant, 2002).

The second consideration is content; what would be the most appropriate, effective and engaging content? There is an argument for curated content of pre-existing podcasts (Digital Learning Institute, 2023). On balance, there is a much stronger argument for creating original, personalised content (Brinson & Lemon, 2022). In order to engage stakeholders, staff and volunteers could be involved in the creating, narration and production of podcasts (Martin & Bollinger, 2018).

Mixed Reality

The learning and development sphere is rapidly being transformed by immersive technology like virtual reality (VR) and augmented reality (AR) – newly coined as mixed reality (MR) (Dalling & Schlittmeier, 2022). Virtual Reality is an immersive technology, usually facilitated by the wearing of a headset (Hamad & Jia, 2022) or through futuristic 'immersive rooms' like the one created at the University of Wales Trinity Saint David (UWTSD, 2023). Augmented Reality differs in that it overlays virtual images onto the real-world view of the user (Gillis, 2022). It is important to note that MR is not a new concept, however it has evolved at an exponential rate in the last few years (Martinez-Moles *et al*, 2022).

Virtual reality offers an exciting opportunity for learning and development provision. Being able to emulate real environments offers a whole new level of skill development in a safe, economical way. (Anthes *et al*, 2016). This is already a popular medium in the NHS, with examples from Great Western Hospitals NHS Trust where medics are using virtual reality headsets to train for sepsis prevention (Melvin, 2023).

Augmented reality works similarly and is already common in the aerospace industry (Safi *et al*, 2019). Much like VR, AR is often useful for technical mastery or skill

development. As demonstrated, mixed reality provision can be extremely useful. However, there are limitations to its implementation, particularly (but not limited to) cost.

Mixed Reality at PATCH: The Potential

In a small charity like PATCH, cost will always be a primary concern. Whilst there may be significant benefits to investing in mixed reality, PATCH needs to have surety that the return on investment will be worthwhile and will be of benefit to all stakeholders. Generally, there are examples of where mixed reality has been used to great effect in the non-profit sector. One such example comes from a Dutch organisation that uses waterproof virtual reality headsets to enable disabled people to virtually swim with dolphins (France-Presse, 2017). Another striking example was shown where an immersive video of a child fetching water for her family fetched millions of dollars for a particular charity (Swant, 2016). As impressive as these ideas sound, the reality is that many charities do not have the means or resources to translate ideas into action.

When exploring the implementation of mixed reality, there are legal & ethical considerations to evaluate. For example, some literature asserts that commercial virtual reality headsets do not permit users to personalise their body height (Wong *et al*, 2017). This ableist approach is unacceptable for disabled stakeholders. Whilst the last few years have seen increasing research into tackling accessibility issues for mixed reality users (Creed *et al*, 2023, Onelle, 2022), there is still a long way to go to ensure that these mediums are fair and equitable.

Artificial Intelligence, Machine Learning & ChatGPT

The growth of artificial intelligence and machine learning has been meteoric in recent years. The terms 'Artificial Intelligence', 'Machine Learning' and 'ChatGPT' are often used synonymously. This, however, is a misconception. Artificial Intelligence is the ability of machines (through data and algorithms) to solve problems at a much faster

rate than a human could (IBM, 2023). For the reader's convenience, Artificial Intelligence can be considered an umbrella term that encompasses machine learning and ChatGPT.

Machine learning is the process where machines can use their past experiences to make successful predictions (Bastanlar & Ozuysal, 2013). A common example of this is a classic Google search, where the search engine automatically predicts the rest of the user's sentence, based on data it has collected from the user's previous internet history (Nayak, 2022). Machine learning is also evident in chat-bots, employed by many businesses as their front-line customer service tool (Kumar *et al*, 2018). Companies have used machine learning (through chat-bots and other mediums) to improve their efficiency and scalability, Amazon's return process being a prime example (Bhanu, 2023).

Further to this, ChatGPT is, in basic terms, a highly advanced chatbot. Using what is known as a 'large language model', ChatGPT can create sophisticated, human-like language and dialogue based on the prompts entered by the user (OpenAi, 2022). Reading the above, it's easy to see how the term 'AI' is used to describe each of these components. For ease of reading, this paper will continue that trend and will use AI in the generic sense.

AI at PATCH: The Potential

For many, the potential of AI is exciting. The emergence of this technology provides many opportunities for learners, such as the opportunity to answer complex questions (Rahaman *et al*, 2023) or the opportunity to complete tasks faster and more efficiently (Samala *et al*, 2024).

Using AI, particularly a chatbot, as a support and signposting tool is an interesting concept. A national charity, *Is This Ok?*, answers clients questions and uses their answers to provide appropriate and pertinent signposting to further support (Is This Ok?, 2024). Whilst this model could be adopted at PATCH to answer client queries and reduce phone calls, we must question whether the demand for this outweighs the cost? Similarly, would this be seen as a novelty or extravagance that is not

befitting of a small, local foodbank?

On balance, whilst AI has enormous potential across the charity sector there must be realism and practicality. Whilst not precluding AI forever, it is not recommended that PATCH employ AI for learning and development provision at this moment in time.

Conclusion

Overall, the future of learning and development in workplaces is facing an exhilarating horizon, not least due to the innovative and creative emerging technology. This report has aimed to provide an overview of some emerging digital technologies and how these might have potential for application at PATCH. Generally, there are a number of emerging technologies that could provide a huge benefit to the organisation; however it is imperative that the recommendations of this report are realistic and appropriate to the industry and financial position that PATCH is in.

As such, this report has just one recommendation which can be found in the next section.

Recommendation and Implementation Plan

Recommendation 1: Create a microlearning suite, consisting of three learning experiences, that explore basic food hygiene.

As mentioned, PATCH has made errors on 26% of its random food safety spot checks in the past 12 months (PATCH, 2023c). This recommendation has been designed to combat this trend.

Phase 1 begins with robust stakeholder engagement and covers the 'unfreezing' part of Lewin's change model (Lewin, 1947). Initially, focus groups should be held with staff and volunteers. These will evaluate the current level of food hygiene knowledge should explore the accessibility needs of the participants. Using focus

groups in this way supports the theory of participatory learning (Bagnoli & Clark, 2010). Once this has been completed, the results will form the basis of the content and topic creation that is relevant to PATCH. Other stakeholders need to be considered here, namely service-users and donors. When thinking about these stakeholders, it is important to remember that the PATCH brand has a direct correlation to the number of donations received (Michel & Rieunier, 2011). PATCH prides itself on being a small, local and grass-roots charity and must be cautious not to be perceived as frivolously spending on high-tech learning experiences. To alleviate this perception, PATCH needs to ensure that this change is communicated in a positive, transparent way.

Following this, the first phase concludes with the development of bite-sized modules that are engaging and relevant to the topic.

Once the modules have been developed, the second phase consists of selecting the appropriate tools and piloting the microlearning programme. Broadly speaking, this covers the central 'change' phase of Lewin's aforementioned model. Whilst many large organisations may have budgets that allow for the creation of original microlearning platforms, it is imperative that expectations at PATCH are realistic, manageable and proportionate (Boswell & Kazimirski, 2016). As such, Phase 2 begins with the selection of an accessible and user-friendly platform. This report recommends using the EdApp platform which allows users to generate branded, bite-sized learning sessions accessible across a range of devices. As well as increasing skill knowledge, research has shown that EdApp has been successful at boosting user's listening and speaking skills (Putra, 2023).

Phase 3 is the 'refreeze' part of Lewin's model where feedback and evaluations feed into a continuous improvement cycle. Initially, feedback should be sought through both quantitative and qualitative measures. It is important to highlight the importance of anecdotal and informal comments (through informal conversations) as formative

feedback which should be fed into the evaluation process (Haber *et al*, 2014)

Crucially, the organisation needs to be satisfied that there is a positive return on investment for this initiative – which in this case would be a reduction in the errors of random food safety spot-checks. In turn, this will also reduce the risk of reputational damage, which has been shown to positively impact donations (Peng *et al*, 2019)

In terms of designing microlearning experiences that maximise engagement and learning, the organisation should be mindful of ‘cognitive load theory’. This theory states that a learner’s cognitive load is limited, therefore organisations should be mindful of this and only provide tailored, necessary learning that fits in with learner’s capacity (Schnotz & Kürschner, 2007). Microlearning fits in well with this theory by being agile and ‘in the flow of work’ (Hamilton *et al*, 2021). Microlearning also lends itself well to the neuroscientific context of the ‘spacing effect’, whereby information spaced over a period of time is retained better than a bulk of information received in one go (Sisti *et al*, 2007). In essence, microlearning (underpinned by evidence and theory) means that the process of knowledge acquisition is effective, engaging and impactful.

It would be remiss to omit the legal and ethical considerations when implementing microlearning through a third-party platform. Firstly, there is a need to ensure that any systems are compliant with Data Protection regulations. Once PATCH is satisfied that this is the case, it can complete a self-assessment online (ICO, 2023). PATCH must also be satisfied that the platform has taken steps to remove algorithmic bias, which has been known to occur in digital learning experiences (Baker & Hawn, 2023). From an accessibility standpoint, the platform offers visual cues, transcripts and alternative text suitable for screen readers (EdApp, 2024)

Evaluating the learning happens within the platform itself through a mixture of summative and formative assessment (EdApp, 2023a). The microlearning involves gaining virtual ‘stars’ which provide an element of gamification which is thought to improve learning outcomes (Bai *et al* 2020, Putz *et al*, 2020). Crucially, the organisation needs to be satisfied that there is a positive return on investment for this initiative – which in this case would be a reduction in the errors of random food

safety spot-checks. Overall, this aligns with Kirkpatrick's model of evaluation (MindTools, 2023).

To implement this system, there is a cost of £2.20 per user, per month (EdApp, 2023b). This equates to £792 per year based on a working estimate of 30 users. There is consideration to be given to the time cost involved, which equates to 30 minutes for each user, totalling 15 hours across the organisation over the year. There is also a time cost for the HR Trustee to set up training courses, equating to 10 hours in total, plus 2 hours for testing.

[Word Count - 3796](#)

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