VIRTUAL SPITFIRE

HANDBOOK

Erasmus+

VIRTUAL SPITFIRE HANDBOOK

Exploring Cultural Heritage for Adult Learning using Virtual Reality

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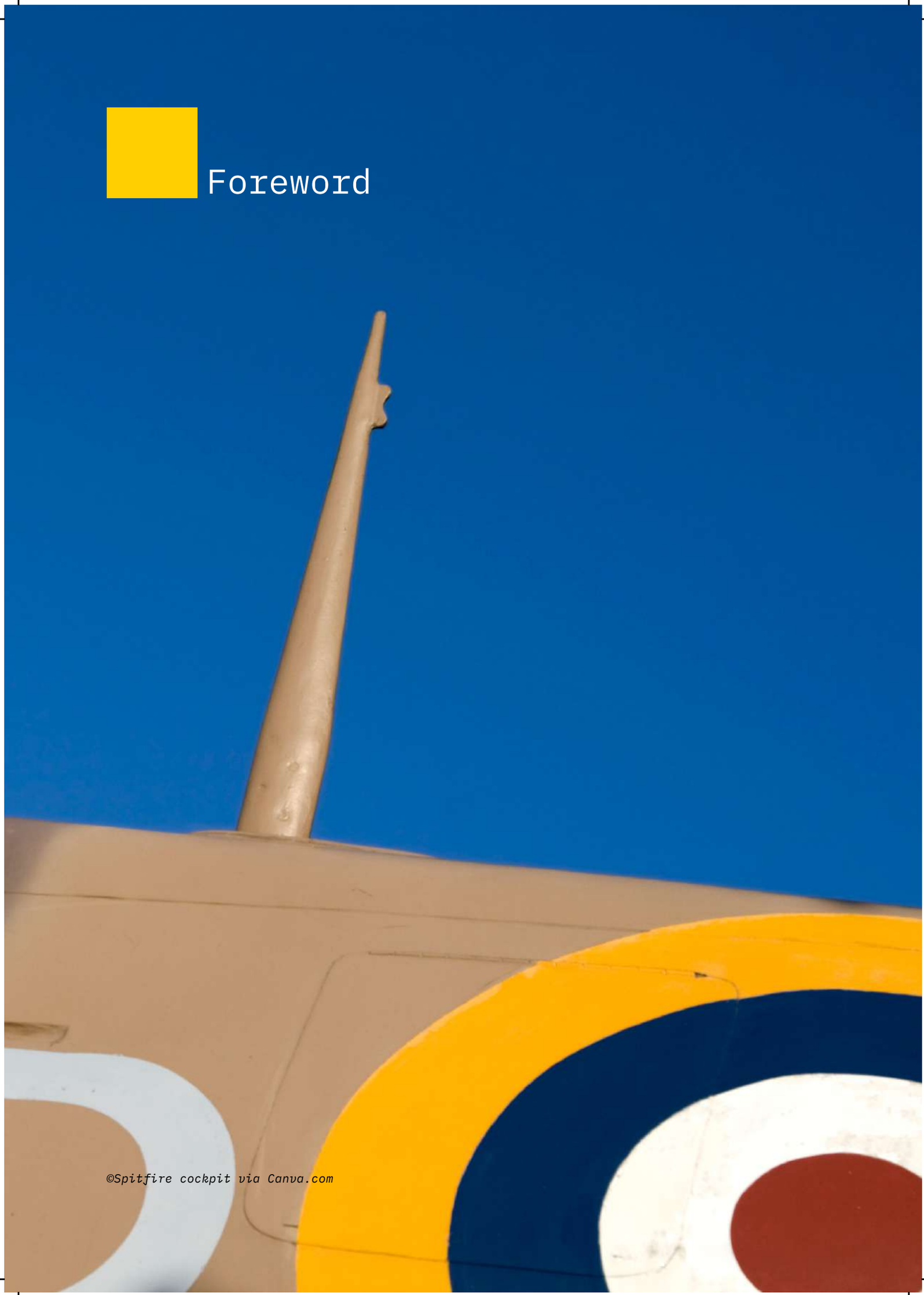


©Spitfire cockpit via Canva.com

The Supermarine Spitfire is a symbol of resilience and hope in adversity in the United Kingdom and beyond. It is fitting that I am drafting this foreword to the Handbook, as the sitting M.P in a constituency that is home to the old Castle Bromwich Spitfire and Lancaster Factory and now the main manufacturing hub for Jaguar motor cars.

Virtual Spitfire is a wide ranging program of adult education, exploring how industrial landscapes and artefacts have grown and declined across a shared European canvass over the last two centuries and how museums, galleries and virtual reality tools can be used as a platform for delivering adult learning, both formal and informal.

The essays and introduction included are wide ranging in the geography they cover, the industries featured together with their individual histories and heritage. However, there is a common narrative that is common to each:

- That these different places have distinct industrial landscapes that have grown, declined and adapted to new economic and social contexts.
- They leave a legacy of immense heritage value for learning, understating local histories.
- That out of industrial heritage we see a cultural legacy through powerful symbols and icons.
- That exploring the heritage of industries can enable adult education and heritage professionals to reach out and inspire learning from people with no formal qualifications and fewer opportunities.
- That the use of Virtual Reality is a breakthrough in enabling access to learning and exploring heritage.

In conclusion it is wonderful to see the cooperation of four European countries around shared themes leading to the generation of knowledge that can be applied in adult leaning. I believe that this can make a difference to learners' lives and help them see that the industrial landscapes can be viewed with pride and inspiring the next generation of industrial pioneers.

Rt Hon. Jack Dromey, M.P.
Erdington Constituency

Abstract

©Spitfire close encounter, Peter Vahlersvik via Canva.com

The essays contained in this publication are drawn from the collective experience of partners from diverse parts of Europe have found many common themes:

That places in which industrial landscapes developed over time witness growth and decline, employment and unemployment, sometimes being replaced with different industries and sometimes different purposes such as housing and retail. All leave behind industrial legacies through buildings, sculptures and artwork together with a collective community memories built on stories and recollections shared by the families of the workers who made the machinery work. For example, this is seen in Castle Bromwich in the introductory and second essay produced by Spitfire Services and Support.

The authors are united in their belief in the immense value of heritage to empower learning opportunity based upon the study of local industries. Industries which, on face value, appear ordinary but often are a source of local pride, shared experience and tradition. This is seen in the third essay by Petra Patrimonia from Corsica which gives examples of pedagogical programs based on electrical industries and Symplexis based in Athens who take us on an educational journey looking at gas production. This publication shows how industrial heritage is reinforced by powerful symbols that often transcend the detail of the sweat and toil of the workers or the detailed design and logistics of factories and supply chains that gave birth to them.

This features in input by Spitfire Services and Support about the Spitfire aircraft and Jaguar motor car production and their relevance to the local area. The Swedish partner Elderberry AB invites us “kill our darlings” in the essay Deconstructing Icons and takes this concept this further, rooting icons and symbols in their historical context alongside their inherent prejudices and limitations.

Further we explore how the heritage of working-class industries can enable adult education and heritage professionals to reach out and inspire learning from people with fewer qualifications and less opportunities which can help their employment prospects. Within this the role and use of informal learning is seen as critical.

The project is based upon the use of Virtual Reality for adult educational purposes. ELS based in Coventry show how the technology is a breakthrough in enabling access to learning and exploring heritage. ELS provides a plain English guide to accessing and using VR tools.

The Supermarine Spitfire – European Icon and Cultural Heritage Metaphor

Ifor Jones and Ray Goodwin, Spitfire Services and Support

The Supermarine Spitfire is a single-seat fighter aircraft used by the Royal Air Force and other allied countries before, during and after World War II.

The Sentinel, Sculpture by Tim Tolkien, Spitfire Island, Castle Vale, 2017

July 2020 was the 80th anniversary of the start of the Battle of Britain. The role of the Spitfire and its pilots in preventing the invasion of Britain through Hitler's Operation Sea Lion is epitomized by Churchill's often quoted statement from his speech to the House of Commons in August 1940: "Never in the history of mankind has so much been owed by so many to so few".

Inevitably, the interest in the Spitfire and the bravery of the "few" featured strongly in the press and wider coverage, as the anniversary was marked this year, though the impact of the Covid 19 pandemic in communities such as Castle Bromwich, where many of the aeroplanes were built, meant that public celebrations to mark the anniversary were muted.

At the start of the Battle of Britain the Royal Air Force (RAF) had 640 Spitfires and Hurricanes, roughly a quarter of the Luftwaffe's bombers and fighter aircraft. To balance out this and this significant numerical disadvantage, Britain mobilised a major effort to increase the production of fighter planes and bombers to catch up and to surpass production levels in Germany. The scale of this manufacturing effort is often overlooked standing in the shadow of the feats of the pilots and the cult iconic form the Spitfire has accrued over the years. Credit is also owed to the engineers, workers and test pilots, many of whom were women, in factories where production was increased at an incredible pace over a short period of time.

Virtual Spitfire is a pan European exploration of heritage and how this is shaped by places, technological innovation and cultural engagement. We initially conceived of the title Virtual Spitfire project for two reasons. Firstly, because the lead partner in the project has its office adjacent to the old Castle Bromwich aerodrome where so many Spitfires were test-flown and a half kilometre from the factory that produced them. Secondly, we wanted to explore the unique history of industrial heritage of this small quarter of Birmingham which loomed large in the history of Birmingham in the early and middle part of the twentieth century.

We realised in our informal discussions that all four countries represented in the programme shared a common experience of the Spitfire:

- In the UK, the Castle Bromwich Spitfire and Hurricane Factory– where over 12,000 Spitfires were produced up to and beyond the Second World War.
- In Sweden, from a crashed Spitfire in the Second World War to the purchase of the aircraft by the Swedish government between 1948 and the mid '50's.
- In Greece, Spitfire's were purchased by the Greek government after the war and on January 2020 from the Hellenic Air Force Museum a Supermarine Spitfire Mk.IXc MJ755 flew for the first time since 1953 following a two year restoration. This aeroplane had been built in Castle Bromwich in 1943.
- A Free French fighter squadron equipped with a Spitfire landed in Corsica a played a part in the liberation of Southern France.

We have, therefore, developed and use the Spitfire as an example of an icon that goes beyond just its specific historical connotation and the role it played in a theatre of war (though this is touched upon) to one that plays out in a wider theatre of cultural heritage. To provide context and a shared framework of the cultural symbolism and heritage of the Spitfire we have produced a profile of the Spitfire in each of the four countries involved in the program.

Castle Bromwich Aeroplane Factory

©Birmingham Museums, 201514.2, Photograph Album, Castle Bromwich Aeroplane Factory, CCO – Public Domain

Completed in 1939, Castle Bromwich Aeroplane Factory was the largest aircraft production plant in wartime Britain and became the main manufacturing source of the two most successful British aircraft types of the war, the Supermarine Spitfire and the Avro Lancaster. The site is now owned by Jaguar Land Rover.

Sweden's Spitfire

The Swedish Airforce (Flygvapnet) purchased 50 Vickers Armstrong Spitfires for use as reconnaissance between 1948 and 1954. This is explored in detail in the Review of Spitfire in Sweden by Mikael Forslund. The book explores the Spitfire as a living legend including a crash in Harjedalen Provence in 1945, appearances in Swedish air shows in the 1980s featuring British owned Spitfires.

The French Spitfire, in Corsica

451 Squadron, a Royal Australian Air Force fighter squadron was active out of Corsica.

The Greek Spitfire – Supermarine Spitfire 7555

In January 2020, the Hellenic Air Force Museum's Supermarine Spitfire was restored in the Biggin Hill Heritage Hangar commissioned by the Icarus Foundation. It had been built at Supermarine Spitfire's Castle Bromwich Factory in 1943 giving a direct link between two of the partners in this programme.

Sources:

- *'Supermarine Spitfire', (Wikipedia), en.m.wikipedia, accessed 9, November 2020.*
- *Spitfire in Sweden, The Legendary Spitfire, 80 Years 1936-2016, Miachael Forslund, MMP Books, 2017.*
- *No,.451 Squadron RAAF, Australian War Memorial, www.awm.gov.au. Accessed 20 December 2020.*
- *Greek Spitfire MJ755 returns to the skies – World Warbird News. www.worldwarbirdnews.com. Accessed 20 December 2020.*

Virtual Reality and Cultural Heritage as Tools for Adult Education

Laetitia Maison (Petra Patrimonia, Corsica)

The context for this essay is of accelerating industrial production, which is expected to be ever more profitable, and where industrial environments are continually transferred, transformed or abandoned. Obsolete industrial systems are dismantled, the machines scrapped, and at best stored and consequently a depth of technical knowledge disappears.

The situation of technical and industrial heritage today raises questions, both from the point of view of its management and its promotion in museums and heritage sites and from the point of view of the intrinsic aging of the technical information contained in the collections, archives and places of heritage. This knowledge, testimony to the past, ages very quickly. The challenge is to capitalize on historical technical knowledge in a digital and dynamic form, such as virtual reality (VR), and make such knowledge accessible for use in museology and educational programs.

The approach presented in this essay consists of harnessing VR as a tool to provide education relating to cultural heritage and for understanding the values of cultural heritage. Indeed, VR allows people to immerse themselves in a 100% virtual learning environment. Through virtual reality, it makes it easier to better understand complex historical and technical phenomena.

Many industrial sites across France are now transformed into museums, centers for scientific culture, eco-museums, and workshop-museums. They tell the story of women and men at work in urban and rural areas since the advent of industry from coal mines, copper factories, hat-making workshops, copper works representing a multitude of places, activities, technologies, and communities with the goal of preserving and revealing their stories– their heritage.

Values of Industrial Heritage

Industrial heritage reveals evidence which has had and continues to have profound historical consequences. The reasons for protecting industrial heritage are based on the universal value of the sum-total of its multiple sites, rather than just on the distinctiveness of individual sites, notwithstanding the unique stories they each may reveal.

Industrial heritage has a social value, recreating and valuing the lives of ordinary men and women and giving them an important sense of identity. In the history of industry, engineering and construction, it also has a scientific and technical value. Moreover, it can also have aesthetic value for the quality of its architecture, design, or conception.

These values are intrinsic to the site itself, to its structures, to its components, to its industrial landscape, to its documentation and to the intangible recollection of human memories.

The loss of knowledge of particular know-how, typology of sites or landscapes places an urgency to retain and recapture these where possible and the oldest and pioneering examples have special value as examples.

A new form of creation: VR is gradually changing our ability to see and experience and this immersive experience has entered the world of culture and museums in recent years. This provides visitors with new experiences giving an additional dimension to the exhibitions.

Educational immersion

If museums now offer spaces dedicated to virtual reality, some cultural establishments go further by offering virtual tours. To cope with the growing public interest in digital technology, and the importance of screens, some museums have set up virtual reality tours of their galleries. Without having to move, curious people can discover works that they may not have the opportunity to see within the welcoming walls of the physical museum. In addition Internet users around the world can access, with a single click, a universal museum without any physical existence.

The passing of time, conflicts and major societal changes have weakened and destroyed certain parts of our architectural heritage. We can now reconstruct these places digitally and VR gives us the opportunity to go back in time to rediscover the former splendor of these buildings. An experience offered in particular at the Antique Theater of Orange https://www.theatre-antique.com/fr/home, in the Vaucluse. Visitors can, thanks to a virtual headset, discover a "digital reconstruction of the construction of the theater from the foundation of the city of Arausio until its inauguration". Immersed in the First century before Christ, they can rediscover the "majestic decoration" of the time.

Virtual reality at the service of heritage: the startup Rendr

Who has ever wanted to travel through time? Today, it is now possible with the startup Rendr https://startup.orange.com/fr/start up/rendr/ [1], which offers an innovative tourism experience. They invite you to discover what will be the possible future of your next experiences of visiting heritage sites and also to discover this dynamic startup that puts VR at the service of heritage.
In order to combine VR and heritage, 360 ° vision, Bluetooth beacon (also called beacon), VR, synthetic imagery, artificial intelligence and cloud computing are the technologies used by the startup to highlight the historical heritage of cities. All these technologies are combined to concoct a unique in-house technology that places virtual reality at the service of heritage.

The principle is simple. Equipped with a virtual reality headset and a VR-compatible smartphone, the visitor travels through a place and visualizes it in an earlier era in immersive virtual reality. The smartphone uses the VRlib application, which will become "Legendr" in March 2019, with which the visitor

1_Rendr specializes in virtual tour experiences of remarkable sites. Its first product, developed and distributed in partnership with Orange, is VRLIB. This solution dedicated to tourist offices brings the historical heritage of a city to life to make it accessible to visitors.

visualizes a synthetic image reconstruction of the place. Bluetooth beacons, invisible to the visitor's eye, are placed along the route. They are immediately spotted by the visitor's smartphone as they pass. They then allow access to voice content adapted to the history of the site. This application of virtual reality is thus in the service of heritage.

The benefits of this principle are numerous. The visitor has access to an enriched visit thanks to an innovative cultural mediation. The in-situ visualization of the same place in an earlier period is simply astounding. The content is adapted according to the audience (level of information, languages). The visitor no longer has an audio guide to collect at the reception of the structure. A VR headset is given to him/her.

French cultural heritage through virtual reality: some case studies

Memorial de Caen / https://www.memorial-caen.fr/le-musee

The Caen Memorial offers an immersive virtual reality overview of Normandy and its historic sites. On the website, the following is explained: “To understand the European 20th century is to understand our times, our news. But to understand it, we must understand the chain of three World and European wars.

Source:

https://www.memorial-caen.fr/le-musee/le-debarquement-et-la-bataille-de-normandie/la-bataille-de-normandie/#la-liberation-de-caen

Immersive room 360°

Source:

https://www.histoireeurope360.com/

Loigny-la-Bataille / http://www.museedelaguerre1870.fr/fr/le-champ-de-bataille-en-realite-virtuelle/

On the website, the following is explained: “Tactile tablets are available at the museum reception and allow the combat of December 2, 1870 to be reconstructed using virtual reality. The principle is simple: several desks are installed in different places on the battlefield. The visitor scans these desks using his tablet. Virtual reality then makes it possible to reconstruct the battlefield and the village of Loigny as they were in 1870.
The French, Prussian and Bavarian soldiers come alive and the visitor discovers the noise and the fury of the fighting: the clashes in the village cemetery (now disappeared), the shells which explode in the fields, the infantry charges which cross the plain...
Many heritage sites use virtual reality, but Loigny-la-Bataille is one of the first places of memory (along with the Normandy landing beaches) to use this technique to reconstruct a military confrontation”.

Source:

http://www.museedelaguerre1870.fr/fr/le-champ-de-bataille-en-realite-virtuelle/

Sources:

- *Adone V. (2018). Virtual reality at the service of heritage. https://mbamci.com/realite-virtuelle-service-patrimoine/*
- *CILAC.(2020). Heritage: definition and history. https://www.cilac.com/definition-histoire*
- *CNC(2018). Virtual reality at the service of culture and heritage. https://www.cnc.fr/creation-numerique/actualites/la-realite-virtuelle-au-service-de-la-culture-et-du-patrimoine_826196*
- *Laroche F. et al. (2007). How to bring the industrial heritage to life. http://florent.laroche.free.fr/recherche/publis-SPI/20070208%20AIP%20La%20Plagne%202007%20F.Laroche_V9.pdf*
- *Paule L. (2019). What place for virtual reality in education? https://blog.laval-virtual.com/quelle-place-pour-la-realite-virtuelle-dans-education/*

Educational Initiatives Targeting Adults with Fewer Opportunities

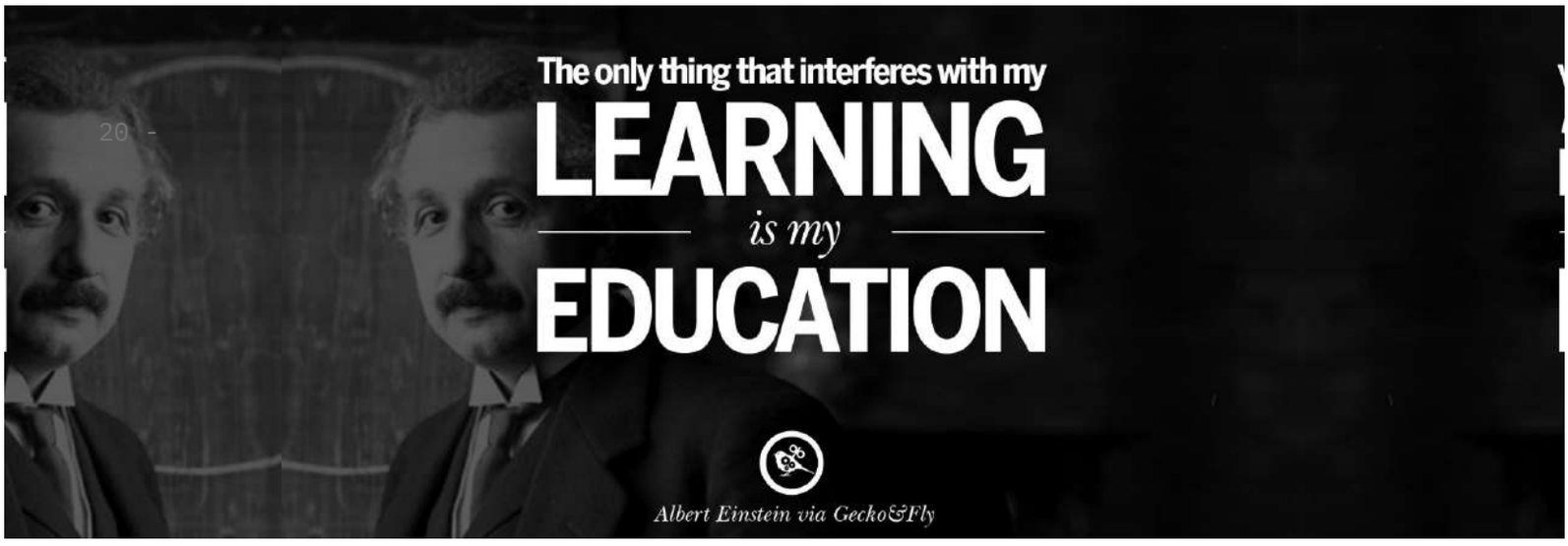
Christina Bonarou (Symplexis)

©Adult education via Canva.com

Virtual Spitfire aims to support adults living in post-industrial areas, and especially those with lower qualifications and fewer opportunities, in acquiring and developing basic key-competences. This aim is supported by a professional development course for adult educators and cultural heritage professionals. This essay provides a theoretical overview of tailored educational initiatives to support this aim, followed by practical examples where museums and cultural sites have offered attractive opportunities, often with the use of new technologies, making non-formal or informal learning more engaging and effective.

Education, learning and the role of contemporary museums

The desire to learn is natural and learning, whether intentionally or unintentionally, can happen anywhere, at any time and at any age! The above mentioned quote by Albert Einstein opens an interesting discussion about the nature of education and learning and sets our course to explore the role of the museums and heritage sites as learning environments, where adults – who learn differently from children– make up a large part of their visitors.



Contemporary museums are not only focused on preserving and curating valuable exhibits and artefacts, but also function as educational and cultural institutions, organising various non-formal educational programs and cultural events. But most and above all, they “invite” learning quietly and discreetly rather than “demand” it, which is why they are distinct from schools and other formal educational settings and are recognised as “free choice” and informal environments of active learning. Intentional and goal-directed learning [2], usually understood as “formal education”, is typically provided by a specific

2_Koutsika G., “Informal Learning in Museums: Opportunities and Risks”. MUSEUM ID, https://museum-id.com/informal-learning-museums-opportunities-risks-gina-koutsika & Harvard Graduate School of Education (2005), “Learning in museums”. Usable knowledge: Relevant research for today’s educators, https://www.gse.harvard.edu/news/uk/05/09/learning-museums-0

institution, it has a pre-determined structure and often leads to a certification. It is an activity more “traditional” and more “passive”, since it generally refers to a limited phase in childhood and youth, dedicated mainly to the promotion of a person’s working life. “Non-formal education” is also intentional but usually provided outside formal settings (e.g. school, university) and although rarely leads to certification, most of the times has learning objectives or outcomes. On the other hand, “informal education” or just learning, does not follow a plan neither offers a certification; it is incidental and considered as more “active” and participatory; an activity accessible to all, which extends to all areas and stages of a person’s life, results from daily actions related to family, friends, work or leisure, however encompasses personal, social and professional goals. Contemporary museums combine active and/or passive learning with personal agency, which considers the ways in which learners take charge of their own learning experiences. Active learning occurs when people stretch their minds to interact with the information and experiences at hand, while passive learning takes place, for instance, when a visitor stands in front of a painting, immersed in a flow of sensations.

Museums, galleries and heritage sites, including post-industrial ones, allow adults to reconnect with learning and enrich their cultural experience, while at the same time can contribute to family and intergenerational learning, as a vital component of the lifelong learning process[3] . In addition, they can support vulnerable social groups and adults with low/medium qualifications/skills (including digital ones) to upskill and/or reskill and become more qualified and confident in a range of areas. This is especially the case for adults with fewer opportunities; enhancing their digital competencies through engaging learning can help them increase their employability, achieve a higher income, and facilitate social inclusion.

Motivating adults to take advantage of learning opportunities

Despite the number and variety of initiatives and projects to upgrade the skills of persons with fewer opportunities and in greater need of development, the engagement of this cohort remains low. The most important strategy here is to shift the focus from the group to the individual and from the formal to more informal. This means that we should equip people with the skills to be more self-sufficient and find methods to attract them to different types of learning through the creation and use of interesting, simple adult training tools adapted to the needs of low skilled adults[4].

Various studies, following the definition commonly used in European countries, identify low-qualified workers, as people who have not successfully completed at least three years of education or formal vocational training after finishing compulsory schooling. However, in a few countries, low-qualified workers are sometimes defined in terms of those employed in jobs requiring low skill levels,

3_Lord, B. (2007), The Manual of Museum Learning, Rowman Altamira.
4_Černikienė, G. (2020), “How to Motivate Low-Qualified and Low-skilled Adults to Use the Opportunities of Lifelong Learning?”, European Commission: EPALE - Electronic Platform for Adult Learning in Europe, https://epale.ec.europa.eu/en/content/how-motivate-low-qualified-and-low-skilled-adults-use-opportunities-lifelong-learning

particularly when considering wage levels or the terms and conditions of employment. Nevertheless, even in these countries, it is recognised that low-skilled jobs are not always occupied by workers with low educational levels– and indeed, vice versa[5].Thus, the relevant focus should be on those with low qualifications and fewer opportunities rather than on jobs that can be performed without needing to have high skill levels.

The UNESCO Institute for Lifelong Learning[6] mentions that a wide range of factors, such as gender inequality, physical or mental disability, and low socio-economic status, contributes to existing vulnerabilities, while there are also other critical issues, which vary according to the context (e.g. rural, urban, industrial, post-conflict or post-disaster). In addition, the European Institute for Gender Equality[7] , defines disadvantaged groups as "groups of persons that experience a higher risk of poverty, social exclusion, discrimination and violence than the general population, including, but not limited to, ethnic minorities, migrants, and people with disabilities, isolated elderly people and children".

In this part of the essay, we summarise the seven action points, proposed in a recent study by OECD[8] aiming to create more and better learning opportunities for adults with low skills.

1. Find creative ways to reach out to potential learners

- Actively reach out to them in the places they frequent (e.g. workplaces, community institutions, public spaces).
- Identify actors that have established links with adults with low skills.
- Build the capacity of these actors to inform adults and encourage them to take up learning opportunities.

2. Offer holistic and personalised advice and guidance

- Develop holistic advice and guidance services specifically for low skilled adults.
- Set-up one-stop shops and establish partnerships with other organisations serving those adults to ensure that they get holistic advice.
- Ensure that services, tailored to each adult's needs, are provided by qualified staff.

5_Eurofound/European Foundation for the Improvement of Living and Working Conditions (2009).Low-qualified workers in Europe, authors: T. Ward, F. Sanoussi, M. Kullander and I. Biletta ,https://www.eurofound.europa.eu/publications/report/2009/low-qualified-workers-in-europe

6_UNESCO Institute for Lifelong Learning (UIL), https://uil.unesco.org/literacy/vulnerable-groups & UIL's publications, policy briefs, global reports, https://uil.unesco.org/publications

7_EIGE/ European Institute for Gender Equality (2020), Glossary & Thesaurus: "Disadvantaged Groups", https://eige.europa.eu/thesaurus/terms/1083?lang=en

8_OECD/ Organisation for Economic Co-operation and Development (2019), Getting Skills Right: Engaging low-skilled adults in learning,www.oecd.org/employment/emp/engaging-low-skilled-adults-2019.pdf

3. Create interesting and relevant learning opportunities

- Consider how adults learn: learning opportunities should be practical, problem-oriented, and closely linked to the (work) context of the learner.
- Offer blended learning opportunities, which give learners the option to choose a way that works best for them.
- Ensure that the learning mode is appropriate for the target group, make learning enjoyable (e.g. through gamification), and provide additional support where needed (e.g. for online learning).

4. Recognise existing skills

- Give adults access to skill recognition procedures. Many adults with low skills are anything but “low skilled”: they may have low literacy/numeracy/digital levels, but at the same time they possess a range of other valuable skills such as the ability to drive different vehicles or care for customers.
- Offer hands-on advice and guidance services that help adults navigate and prepare for the recognition process.
- Use employers to raise awareness of recognition procedures.

5. Provide modular learning opportunities

- Structure each adult learning program to consist of several self-contained learning modules.
- Provide adults with micro-credentials for successfully completing individual modules and allow them to combine these to achieve a full qualification.
- Give adults the opportunity to choose modules from different types of provision to create their individual learning path.

6. Give people time off to participate in learning

- Offer education and training leaves, either by law or through collective/bilateral agreements with employers.
- Compensate learners and employers for foregone earnings and social security contributions during the time of leave (partially/in full).
- Make provisions for self-employed adults.

7. Provide financial support

- Provide targeted financial incentives and consider all costs (direct & indirect) of training participation when designing these incentives.
- Set-up mechanisms to inform adults about the financial support available.

Inspiring museum adult learning program & case studies

In August 2017, the UK National Support Service, supported by colleagues from across Europe, brought together a collection of inspiring case studies, best practices and projects highlighting the impact and benefits that museums and galleries can have on adult learning, enriching the sense of community, supporting health and well-being and enhancing skills and employability[9]. Some indicative examples follow.

©European Commission, EPALE Blog, 2017

Digitorials (digital advertorials)

by the Städel Museum, Frankfurt, informing visitors about every new exhibition in advance, contributing at the same time to the digital education of users. With high-resolution pictures of the exhibits, close-ups and additional specialist texts, people can get prepared for the exhibition, but also experience aspects of it in advance.
http://www.staedelmuseum.de/en/digital-offers

And for those who want more, there is the e-learning-course "Art History Online – The Städel Course on Modern Art.
http://onlinekurs.staedelmuseum.de

9_National Support Service UK (2017), "Celebrating Museums & Galleries as a learning environment for adult education", European Commission: EPALE/ Electronic Platform for Adult Learning in Europe. Click on the weblink of the EPALE blog to see an interactive table and find out more about the case studies, https://epale.ec.europa.eu/en/blog/celebrating-museums-galleries-learning-environment-adult-education.
See also Specht, I. (2017). "A different perspective on adult education and museums". EC: EPALE https://epale.ec.europa.eu/en/blog/different-perspective-adult-education-and-museums

Virtual tours

by the Bode-Museum, Berlin and online collections by the Rijksmuseums, Amsterdam.
http://bode360.smb.museum
https://www.rijksmuseum.nl/en/rijksstudio

“Unforgettable” special guided tours

by Dutch museums making art accessible for people with dementia and their loved ones.
https://epale.ec.europa.eu/en/node/40016

“Activities for special guests”

by the Van Abbemuseum, Eindhoven, where visitors and museum staff learn from each other in an educational program for persons with special needs, that makes the museum more inclusive, open and accessible to everyone.
https://epale.ec.europa.eu/en/node/40014

Language and integration courses,e.g. “Meet and Speak”, Bundeskunsthalle

Bonn; “Stadt Land Fluss (Town Country River)”–Language Support in the Museum, Minden Museum. Learning and practicing a new language in a relaxed environment, reflecting on one’s own culture, talking to others about similarities and differences– museums can offer the adult education sector all this and more.

“Find Your Passion”

monthly craft workshop by the Wakefield Museum, UK, allowing adults to book individually rather than committing to a course and explore a new craft, inspired by something in the museum collection– often using historical technique or style.
https://epale.ec.europa.eu/en/blog/wakefield-museum-find-your-passion-adult-craft-workshops

“Community Access Scheme”

by the Kensington Palace, UK, offering free entry and practical advice and support for exploring the palace to adult community groups and education providers, targeting especially those who would not normally visit the palace or see it as a place of interest for them.
https://www.hrp.org.uk/kensington-palace/whats-on/community-access-scheme

In any case, we should always keep in mind that adults’ participation in such initiatives depends on motivational factors, which in turn rely on social perceptions of usefulness or relevance and of course entertainment and recreation!

Deconstructing Icons

David Powell, Karl David Långbacka - Elderberry AB

Humanity, throughout history, has disproportionately placed the burdens of war and violence on young adults. Social, cultural, and economic forces all contribute to young people being used to commit acts of violence for the “good” of, or to defend society. This is reinforced by normative expectations in many societies that young adults are inherently violent and dangerous.

Let us remember that the Spitfire aeroplane was a highly efficient weapon of war, mostly flown by young adults trying to kill other young adults. To the British the Spitfire has become an icon of resistance to fascism, “the few” and of victory led by Winston Churchill, in a time when democracy in Europe was threatened. This may not be the symbol a Spitfire represents to other countries or to individuals or their families who lost their lives because of their deadly force. However, it would be safe to say that all countries will have a similar icon or figure representing similar values. Viewing young adults as agents of change and peace challenges and questions such traditional concepts.

©Carl Frederick Reuterswärd. Non-Violence, Sergelgatan Stockholm Copyright Wikimedia Commons

Museums and heritage organisations often need to display and tell stories and representations of the technology of war. Many do great work in this area without glorifying war itself. It is interesting to note that the Imperial war

Museum and Greek War Museum, not without controversy, identify as Peace museums. We could also look at how the British National Maritime museum tries to balance the displays of the might of the Royal Navy and its warships with how that navy was used to promote and protect transportation of eleven million Africans into slavery.

A visit to the Deutsches Teknikmuseum in Berlin lets us explore the technology of the Nazi war machine but does not shy away from discussing the difficult stories of Germany's past. One of my strongest museum experiences was when I found myself wandering through the collection of steam trains and being impressed by the magnificent engineering. I found myself on the back of a broken-down old wagon and could not quite work out its significance. Climbing down from the wagon I read the display about the role that the German railways had played in the Holocaust. I had been on a cattle wagon that transported Jews to the gas chambers.

Germany developed the process of Vergangenheitsbewältigung, in an attempt to deal with its Nazi shame. The process began at the end of the 1960's, after two decades of collective memory loss, by confronting the horrendous crimes by confronting the horrendous crimes of the Third Reich rather than trying to forget them. It allowed something positive to grow from a negative legacy: Germany's rehabilitation and reconstruction into a strong western democracy. "Germany's culture of remembrance could inspire countries such as Britain which sometimes have difficulty understanding that in order to transform the weight of the past into wealth, it must confront history's shadows– not ignore them".

https://www.theguardian.com/commentisfree/2020/jun/23/germans-know-toppling-statues-confront-past-britain-empire-nazism

Icons, images and representations of heritage, at the time of writing, have become central to discussions about the place many young adults have in society. Black Lives Matter protesters tearing down statues of slave traders

or Confederate generals and far right "Protect the Monuments" protesters gathering to protect the statue of Churchill, highlights the issues that heritage professionals have to deal with when engaging with communities.
Knowledge and understanding of the complexities of history on both sides of the political spectrum are often on the level of; Churchill was a hero and saviour or Churchill was a racist and we should put him in a museum where we can forget about history. Any historical narrative is more complicated and nuanced and the gap in knowledge between the historian or heritage professional and the public is often large.
Churchill was of course an extremely diverse and complicated persona. For example; he escaped from captivity, whilst serving as a war correspondent in South Africa during the Boer war and wrote a best-selling book about the experience, he was the only British minister ever to put armed troops onto the streets of mainland Britain and sent armed gunboats to the river Mersey, killing two protesters during the 1911 transport strike, (my Grandmother in Liverpool never forgave him), he led the debacle at Gallipoli and deaths of thousands of troops and then himself joined the army and served in the trenches in Flanders during WW1, he was of course the central figure in the stand against the Nazis in World War Two and saving the Nazis in World War

Jews loading onto trains at the Umschlagplats in Warsaw. Unknown Author Public Domain.

Two and saving Britain and Europe from fascism and dictatorship, at the same sacrificing hundreds of thousands to famine in Bengal to feed the war effort. A lesser known fact– the post war government led by Churchill built more social council housing than any other government before or since. We can ask was Churchill a racist, a saviour or even a social reformer? The answer of course,

like all history is not simple and needs exploring. In Elderberry's training "A Fat Man on a Horse" we explore public art, which includes of course statues. We try to show that every generation exhibits public art to present a narrative on how they themselves want to be seen or how they see themselves. In almost every city throughout the West you will see a large white man on a horse pointing with his finger or a sabre at some far-off place or foe. It represents a patriarchal, hierarchal society of 100 or more years ago. You can look at public art in any city or town and ask; when was the first time that ordinary working people were represented, when was the first time women (if not a goddess or queen) were represented in public art?

During the 1800s public art was a place for representing the achievements of men: scientists, politicians, empire builders. Not until the 20th Century were women represented but still in a minority. Florence Nightingale statue was raised 1915 (60 years after her great works in the Crimea), Emily Pankhurst 1930 (and now threatened with removal from Parliament square) and statues of working people did not appear until monuments were raised to the fallen of the First World War in the 1920's.

Statue of Millicent Fawcett president of the National Union of Women's Suffrage Societies in 1920, raised 2018.
Photo Gary Knight Copyright Free

Every country has a strong emotional attachment to their national icons. If the Spitfire has become a symbol of national identity for the British, what then of our partners in the Virtual Spitfire project from Sweden, Greece, and France?

Perhaps the most controversial icons in the world belongs to Greece– the Parthenon marbles. The campaign to return Elgin's booty to Greece has run for 200 years and today, the marbles have become a symbolic of a wider question that sees many museums collections of as nothing more than theft.
The argument is that for not only sentimental and nationalistic reasons, but for artistic, aesthetic, and intellectual ones – the marbles need to be seen with the extraordinary building from which they have been taken.

The discussion states that artefacts should stay in their original locations and only have meaning in their original context. The counter argument if followed through to its logical conclusion would mean that every museum in the world would need to close. Every artefact, masterpiece or mundane, would be returned to its place of origin. This would counter the actual reasons for museums

to exist, which is that collections of heritage make us see more, they put objects in a larger context, they let us explore connections and open us up to more holistic ways of seeing. Museums claim that artefacts and even history are a part of humanity's collective heritage, a global property, and therefore belong to no one.

In France, as in all former imperial European powers, museums have a strong relationship in their major collections to national identity and to a former colonial past. As far back as the First Empire under Napoleon, the Louvre was expanded several times to contain the confiscated treasures of the aristocracy, the church and then the war booty of French conquests in Europe, the Americas and Africa. Recent presidents have understood all too well the link between cultural heritage and national identity.
Since the 1970s, immigration has been one of the main issues discussed throughout the presidential campaigns in France. Given the Charlie Hebdo attacks, the attacks in November 2015 through to the time of writing, and the recent "refugee crisis," this will most likely continue to be the case. Georges Pompidou had his controversial cultural centre. Valéry Gisgard d'Estaing instigated the Musée d'Orsay. Jacques Chirac got his showcase of indigenous art at Musée du quaiBranly, where the collection consists of items from former French colonies in of Africa, Asia, Oceania, and the Americas. Items that had been gathered by French explorers, missionaries, scientists, and ethnologists and previously considered made by so-called primitive peoples without their own culture or science and when non-European art was considered exotic art.
In 2018, the museum was at the centre of a debate about the repatriation of objects that were removed from former French colonies. In between François Mitterrand left his imprint on Paris with a buildings that included the Louvre pyramid, Bastille Opera, and Arch at la Défense.
Nicholas Sarkozy tried to create a new museum dedicated to French history, linked for a short period to a newly formed Ministry for Immigration and

Elgin Marbles, Parthenon Frieze, British Museum: Copyright CC

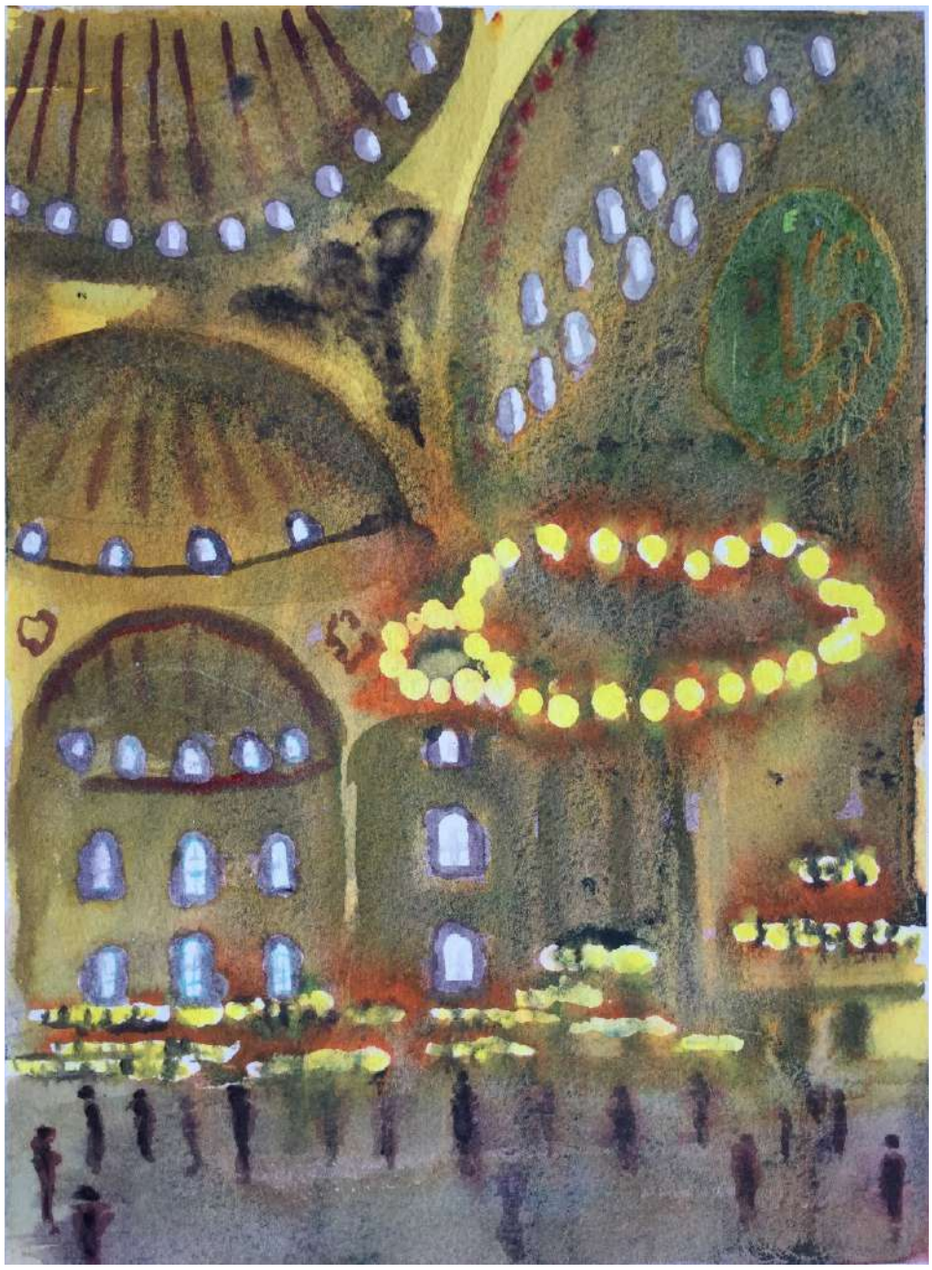
National Identity, in an attempt to win back right-wing voters. In Sweden, the discussion about deconstructing the nations' Icons has been active for many years. The country has a relatively new museum law from 2017 that regulates the activities within the general museum system. The law stipulates that museums and heritage sites, receiving public funding, must actively manage their collections to achieve the present-day goals of the institution.

This has in some case led to the reduction of collections and removal of artefacts based upon the ethical and moral standards of the present day. Some believe that redacting the museum and removing objects out of their collections is morally wrong and run counter to museum ethical principles and risks undermining the museums' trust capital with the public. Others consider redaction and removal as a natural part of active collection management and emphasize that thinning out is a prerequisite for the museum collection to be able to continue to grow, be enriched and maintained in the future.
In recent years, the Swedish museum and heritage sector has also been characterised by several political and media debates on the theme of democracy. The discussion has mostly been about diversity of representation in museum collections and the question of which groups are included in or excluded from cultural heritage.
The Swedish Army Museum's exhibition (opened in 2015) "Power and Honesty", part of the museum's permanent exhibition, problematises museums' power to choose what to collect and conserve and relate about the objects in the collections. Power and Honesty is the result of the Army Museum's self - critical examination of collecting activities throughout history, but also an attempt to challenge the museum's visitors to start thinking about why certain artefacts and ideas are collected in museums and others are forgotten.

Many Swedish museums are old institutions with a background in the early 20th century peasant, urban and bourgeois culture. Today values are quite different. In 1879, when the Swedish Army Museum opened it was considered important to collect artefacts used in war and trophies captured in war. The exhibition asks: What does it look like today? How has the view of the collections changed over the years?
Power and Honesty is an exhibition that wants to show who has the power to choose what history becomes. What is collected and preserved for posterity and why? What if the story started with you?

Museums and archives collect and store large amounts of documents, artefacts, and images and when preserved together they create an image of history. It is of course impossible to collect everything and that which is not collected can be lost forever. Events that are not documented are eventually forgotten. What determines what is collected and conserved and therefore which stories are heard?

If the museums begin to collect objects and stories that contain a wider dimension of the present, the activity will lay the foundation for a more multifaceted and inclusive writing of history reflecting a more multifaceted and inclusive society. Perhaps then the women of the future, children, immigrants, LGBTQ people, the disabled and many other groups will not have to experience the same rootlessness in relation to their own group's history when they visit a museum. People with a "controversial" history will then beportrayed in a more nuanced way, while the knowledge of these groups and / or



Sketch of Haga Sophia Copyright David Powell
Hagia Sophia one of the most iconic building in world heritage for both Christians and Muslims. It was built as a Christian church and is for many still the centre of Orthodox Christianity. For 500 years after the conquest of Constantinople by the Ottomans it was used as a mosque in Istanbul. After decades of slaughter, ethnic cleansing between Christians and Muslims in the Balkans and Anatolia in the early years of the 20th century, it could be seen as an act of genius, perhaps even a move towards peace and reconciliation when Mustafa Kemal Ataturk turned it into …….A museum.

phenomena can be deepened and preserved for posterity. You cannot understand the present and the future by writing about history. Through the Virtual Spitfire project, we hope to develop in young adults the key competences needed to explore some of the complexities of historical narratives associated with their local cultural ad industrial heritage.

This can be used as side text.

Basic Guide for Trainers Looking to Introduce Virtual Reality (VR) into their online or face to face training program

eLearning Studios (ELS)

©VR via Canva.com

Virtual Reality (VR) and how it can be used in training

Virtual reality (VR) is an experience taking place within simulated and immersive environments that can be either like or completely different from the real world. Applications of VR can include entertainment (i.e. gaming), virtual meetings and education (i.e. medical or military training).
VR's most immediately recognisable component is the head mounted display (HMD). Human beings are visual creatures, and display technology is often the single biggest difference between immersive VR systems and traditional user interfaces.
VR has multiple uses in training i.e. scientific and engineering data, architecture to weather models. In aviation, medicine, and the military, Virtual Reality training is an attractive alternative to live training with expensive equipment, dangerous situations, or sensitive technology.
Virtual reality typically incorporates auditory and video feedback but may also allow other types of sensory and force feedback through haptic technology which can create an experience of touch by applying forces, vibrations, or motions to the user. Some of the key features of VR are:

- VR learning is immersive – focused/attentive,
- Memorable – long term memory,
- Experiential learning – higher thinking order.

Man wearing VR glasses to see simulate welding steel pipe for training using haptic device

Approaches for creating VR training simulations
360 VR

360-degree VR (360-degree virtual reality) is an audio-visual simulation of an altered, augmented or substituted environment that surrounds the user, allowing 360-degree VR can be used for many purposes other than entertainment. Virtual reality technology can be used in most kinds of training that involve a physical environment, including pilot and driver training (as well as actual piloting or driving), surgery, and undersea and space exploration via remote-control robots.
Some of the key features of 360 VR:

- Immersive – the world seen in 360 degrees, learners' senses needs to be dynamic
- Provides learners with different scenarios
- Sensory trainingg

Examples of the types of interactive activities you can create in 360 VR:

Role Playing – create branching narratives to train your learners with real-life situations.
Virtual Tours – you can add interactive hotspots on your 360° videos and start building immersive tours. These can include pop up information, videos, text, and images etc.
Quizzes – some tools will enable you to create multiple choice questions and track scores across your experience.
60° Live Events – you can engage your learners with real time multi-user interactions.

Basic process for creating 360 VR training simulations:

1. Select a 360 VR creation tool
2. Upload your panoramic 360 VR images and videos. Images should be in a standard panoramic format (ie .jpg, .png, .tiff) and videos should be .mp4s. Architects/Engineers/BIM Professionals may also be able to use computer generated VR from software companies.
3. Add navigation links and 'hotspots'. Navigation links enable learners to seamlessly travel from room-to-room or area to area. Hotspots can be added to highlight certain features using overlaid images, videos, text, or audio narration. Typically, hotspots should highlight features not readily apparent from the 360 images.
4. Add questions (if your tool allows). You can add multiple choice questions and feedback to engage the learners.

5. Brand your app and create an app icon. You may also want to create a splash image/video, and home screen.
&. Publish and deploy. There are many ways to deploy 360 VR training simulations, some of the more popular ways include iTunes Store, Google P Play Store, Web Embed VR, branded Google Cardboard headsets, and via high quality VR headsets.

CGI VR

This form of VR uses computer generated graphics (CGI). It can be quite costly and often requires a team of different people with different skills to create. This form of VR works particularly well for the following:

- Recreating an experience of something that is no longer there for example interacting with characters in an historical scenario.
- Experiencing the impossible, for example becoming someone else and seeing the world through their eyes or becoming something else such as a molecule travelling through the body.
- Training in potentially dangerous situations. Learners can train in dangerous situations without putting themselves in harm's way, such as dealing with an office fire, handling hazardous chemicals, working at heights, or operating dangerous machinery.

CGI can also be combined with 360 videos.

Images from ELS

Virtual Reality-based training (VRBT)

Virtual reality-based training (VRBT), or VR learning, is an interactive and immersive teaching method that employs technology to provide virtual scenarios to simulate situations that might occur in actual settings.
Virtual Reality aims to be a completely immersive experience that brings the end user to a simulated reality by stimulating their senses of sight and hearing in order to imagine, enhance and extend ‘what’s not there’ and allow the user to interact and co-author the narrative.

What equipment is needed to deliver?

There are different options depending on your budget, the quality of the experience you want to provide and the type of functionality you want learners to have in the VR simulation.

Smartphone vs. standalone vs. tethered Carboard or Mobile headsets designed for use with smartphones (e.g. Merge VR, Blitzwolf VR)

These are an affordable option and work well where you may need to reach lots of trainees in different locations and may need to post headsets, or have a lower budget and want to provide headset for larger numbers of trainees. The quality of the experience and interaction capability is somewhat reduced compared with the other options and quality can vary dramatically depending on the type of VR headset used.

Standalone headsets (e.g. Oculus Go, Oculus Quest, Vive Focus, Pico)

These headsets do not require a mobile phone, have no external wires and no other hardware is required. They offer a high-quality experience and increased interactive capability using hand controllers. This option can work well for blended training programs where VR is part of a face to face training program and where a smaller number of headsets are required e.g. ten. They are portable and can also work well where facilitators move to different locations and want to take the headsets with them. This option is often most recommended as it provides a high-quality experience that is portable and is in the mid-price range.

Tethered headsets designed for use with a desktop computer or console (e.g. Oculus Rift, HTC Vive)

Tethered headsets are designed for use with a desktop computer or console and sensors which must be place at a certain distance apart in a room and so are not easily portable. They offer an exceptional VR experience and are typically the most expensive option. This option is good if you have a designated VR training space.

Blending VR with other types of training

Researched theories of learning generally agree that people learn best by doing. In particular, where the learning involves a natural goal, a prediction of how that goal can be achieved, an action that attempts to realize the predication, a result that violates the prediction and an analysis of the expectation failure and the long-term encoding of modified predication into long-term memory.

Learning a new skill can take hours of training and practice. Combining VR with traditional training or e-learning has the following benefits:

- Learners can gain knowledge from traditional training or e-learning and then practice applying that knowledge in a VR environment in 10-15-minute VR modules.
- Learners can improve and develop skills more quickly because they are first learning in a more familiar environment such as in a training room, company setting or online and then are able to practice their new skills in the safety of the virtual world.
- VR offers the opportunity to test skills in a safe environment.
- The visual format, contextual cues and immersive characteristics of VR help improve the quality and speed of learning and can enable humans to retain information longer than with traditional training. Using VR creates memories as if humans had done something before which helps embed the learning.
- Learners can get a training experience in situations that are potentially dangerous, impossible (e.g. travelling through the body) or costly to replicate in real life.

Integrating VR into training programs Online with VR

Learners can complete online modules and they can then practice in VR what they are learning at key points throughout the online course. A tutorial video and/or 1-2-page guide on setting up and getting familiar with using VR is important to prepare the learner and explain elements such as:

- What to expect and any physical space requirements.
- How to access the virtual training.
- How to navigate around the different VR environments.
- How the features work.
- How to interact with buttons (do they hover over an action button, click their controller to action it or select a button using 'virtual hands' if the headset and controller has this feature?)
- What the hand controller buttons do (if using a headset with a hand controller).
- How long the VR experience will last.

Instructor led face-to-face session

Knowledge, concepts, processes, and methods can be taught through instructor-led classroom-based activities, discussions, and presentations. They can then practice in VR what they have learnt at points throughout the training or towards the end of the training session, either in breakout areas or as a take home exercise. Skills testing can also be delivered through a VR scenario.

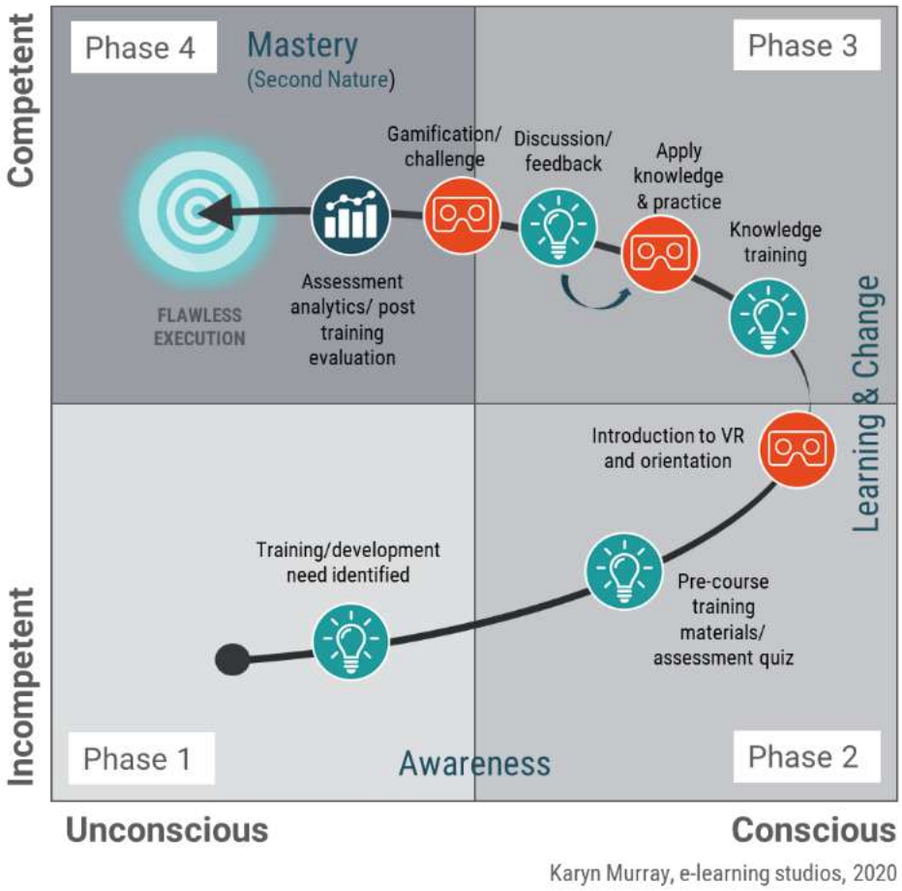
Preparing learners to use VR

As some learners will not have used VR before it is recommended that time be allocated to introducing learners to VR and giving them guidance before doing any learning activity. Many VR learning simulations will contain a tutorial designed to help learners familiarise themselves with the environment and using the features. The aim is for the learners to focus on the learning rather than the technology. Any training performed in VR needs to be well structured, so that the user knows exactly what to do once in VR, which buttons to press and how to complete scenarios etc. In addition, a pdf guide provided before the training session can help learners know what to expect.
Tips:

- Not all learners will be willing to use a VR headset so a solution is to make the VR components optional, where learners can opt-in to do VR.
- A small portion of trainees who try VR for the first time will feel slight motion sickness. Although usually not severe, it is worth being aware of and warning learners of this before they try the VR training. Generally,discomfort(sometimes called motion sickness) is caused by the VR environment around the user moving, while they remain static - it confuses their inner equilibrium. As headsets and the design of the experiences improves this is being significantly reduced.
- Try to limit the time spent in VR to around 8-15 minutes per session, beyond this, learners can start to feel discomfort or dizziness.

The four stages of competence and where VR can assist in the process of change towards mastery…

The four stages of competence model[i] suggests that individuals are initially unaware of how little they know, or unconscious of their incompetence. As they recognise their incompetence, they consciously acquire a skill, then consciously use it. Eventually, the skill can be utilised without it being consciously thought through: the individual is said to have then acquired unconscious competence.
The model on the right illustrates the four stages of competence and provides an example of how VR can be incorporated into a blended training program:

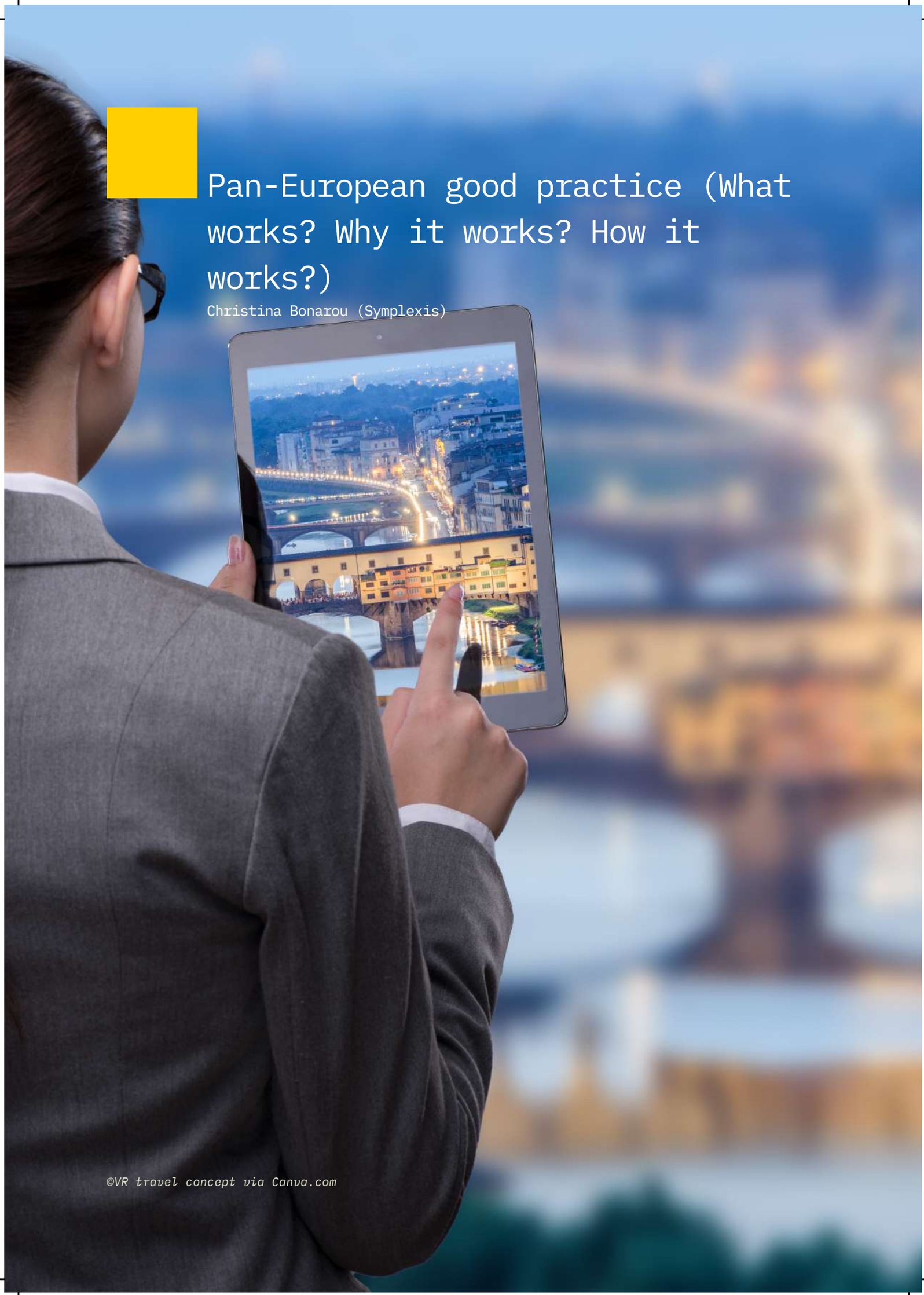


Metrics and tracking

It is possible to measure and track a range of learners' usage, skills and behaviour patterns where tracking is built into the VR learning simulation and there is a system in place for collecting data and producing reports. This might be in the form of a Learner Management System (LMS) or (VR management System) VRMS which has xAPI incorporated. Examples of tracking include performance and assessed activities, behavioural patterns, heart rate and head tracking or eye contact with virtual avatars. These metrics can provide valuable insights into the effectiveness of the training, learner progress and development and metrics for evaluation purposes.

Pan-European good practice (What works? Why it works? How it works?)

Christina Bonarou (Symplexis)



©VR travel concept via Canva.com

In this chapter, Virtual Spitfire aims to explore new participatory and intercultural approaches to heritage, focusing on pan-European good practices using VR in adult education, as well as on educational initiatives targeting adults with fewer opportunities.

The Industrial Gas Museum in Athens, Greece[10]

Back in time: The old Gasworks in Athens

Source: https://gasmuseum.gr/index.php/press-kit

In 2013, the first Industrial Gas Museum of Athens opened to the public to promote and protect a monument of industrial heritage that provided energy and lighting to the capital for about 130 years.
The Industrial Gas Museum is a unique historical site of great industrial heritage and is in Technopolis City of Athens, an open city centre cultural heritage site. The museum is a member of ICOM (International Council of Museums), ERIH (European Route of Industrial Heritage) and the Network of Museums and Cultural Institutions of Athens. The museum's activities coexist harmoniously with the events of the Technopolis City of Athens, currently a meeting point for cultural events with over 700,000 visitors annually.

10_All information for this part of the essay come from the official website of the Greek National Tourism Organisation (GNTO/EOT): Visit Greece, "Industrial Gas Museum" and the official website of the Industrial Gas Museum, City of Athens http://www.visitgreece.gr/en/culture/museums/industrial_gas_museum & https://gasmuseum.gr/index.php/en

Source:
http://www.visitgreece.gr/en/culture/museums/industrial_gas_museum

The Industrial Gas Museum through its activities (e.g. museum tour, theatrical guided tour, VR tour, app, Do-It-Yourself art lab etc.) aims at becoming an attractive cultural destination for different age groups and interests. Its official website is available on https://gasmuseum.gr

A visit to the Industrial Gas Museum & educational programs

What is gas? How is it produced? What is the history and the operation of the old gasworks that provided light and energy to the city of Athens for more than 130 years? A visit to the Industrial Gas Museum includes a museum path with 13 stops in specific parts of the plant. Through this path, visitors can follow the production line of the lighting gas, admire the old machinery, discover the role of entrepreneurs and that of factory workers, learn about the working conditions and become familiar with concepts such as industrial heritage and archaeology. The collection of the Industrial Gas Museum includes a significant number of relevant to the gas production devices, tools, machinery and equipment (gas meters, cookers, water heaters, lights etc.) as well as factory items and a plethora of audio-visual material.

Much of this material has been digitalized and will soon be available to the public through the digital collection of the Museum.

For any Athenian or visitor to the city who wants to follow the museum path at the old Gasworks, there are guided tours for adults and students. Visitors can even book a theatrical tour in English to have a thoroughly entertaining, enjoyable and amusing time!

In addition, on the museum's website there is available a short online guided tour in Greek, with English subtitles and with sign language interpretation, specially designed for adult and children aged 9 years and older, deaf, hearing or hearing-impaired people.

Family Tour in the Museum

Source:
https://gasmuseum.gr/index.php/press-kit

Apart from these tours, the Industrial Gas Museum offers a series of educational programs for schools and families.

Through its Educational Programs ("The children explore the museum in 'Gazi[11]', "The Mystery of Gas light",

11_Gazi is the name of this neighbourhood of Athens, surrounding the old Athens gasworks, which is the industrial museum and exhibition space "Technopolis", next to Keramikos and close to the Acropolis.

"The Black Treasure Hunt", "Young workers are trained", "Mass production", "The factory + we" "Give your lights!", "Don't throw it away!", etc.), participants work in groups and stimulate their imagination discovering, through interactive activities, the history and importance of the old Athens Gasworks. For example, the museum is introducing a unique- regarding the Greek museums- tour for the senses ("Smell, Look, Feel, Listen, Taste!"), turning the learning process into an exciting experience! It is worth mentioning events such as "Sundays at Technopolis for all" with free admission and the joint activity of the members of the Network of Museums and Cultural Institutions of Athens "Our Athens" with free admission activities for adult visitors.

Educational program: "A city in the dark"

Source: https://gasmuseum.gr/index.php/press-kit

Creative learning for adults

A great opportunity for creative learning, apart from the guided tours, is the "Black Treasure Hunt" - the adult and exciting version of the favourite educational program for children, uncovering the secrets of the old Athens Gasworks through riddles and hints.

Take a self-guided tour using an app

As visitors can read on the landing page of the museum's website, there is also the opportunity to take a self-guided tour based on an award-winning storytelling concept developed by Clio Muse https://cliomusetours.com/tours/discover-the-industrial-gas-museum.
Visitors can enjoy each multilingual tour by using their smartphone or tablet at their own pace even if they are offline. The interactive map on their screen will guide them step-by-step as they explore all points of interest along their route. Each stop comes with a selection of our signature stories allowing visitors to tailor the tour experience to their personal interests and schedule.

After downloading the free Clio Muse app, users can access this tour and activate it any moment they wish and repeat it any time. To best enjoy their multimedia self-guided tour (comprising maps, video, audio, and text) the use of headphones is recommended.

VR Tour: The journey to Greek Industry goes on…!

In January 2018 a colourful and exciting journey to the Greek industry has begun through the historic exhibition "160 years made in Greece" that was held in Technopolis City of Athens and the Industrial Gas Museum and was completed in March after having attracted more than 18.000 visitors of all ages. For the first time, in that extent, 160 years of Greek Industry were revived, from 1857 to this day along with three sectors with eight fields, 120 industries and more than 800 items.

Heritage and Renewal in Castle Bromwich, Birmingham

Ifor Jones and Ray Goodwin, Spitfire Services and Support

Castle Bromwich and Castle Vale are used interchangeably. Castle Bromwich, historically, is a parish that was situated in Birmingham, but which transferred (in part) to Solihull Metropolitan Council in 1974. The original parish includes the land where the Spitfire and Hurricane Factory, the Castle Bromwich Aerodrome and Castle Vale estate are situated. This land remained in Birmingham, under the jurisdiction of Birmingham City Council, in the local government transfer arrangements of 1974. The Castle Vale estate was named in a competition held in the 1960s when the new estate was built.

Virtual Spitfire explores how innovation drives development, shapes communities and place and creates a heritage that can inspire future generations. This essay provides the foundation for an exploration of heritage and culture, how this provides a rich source for informal and formal adult learning and how this can be accessed through new Virtual Reality tools. It does so in a small corner of some eight square kilometres in Castle Bromwich in North East Birmingham over one hundred and twenty years from 1900 to 2020. In the first part of our essay we present an overview of this period exploring how one place has played a different role on the international, national, and regional stages all leading to the development of an area of significant manufacturing heritage. We also explore the development of the largest built housing estates in the West Midlands, its quick demise and subsequent successful regeneration. Finally, the

Sentinel by Tim Tolkien. 2017. A sculpture on Spitfire Island at the junction of Chester Road and the A47, adjacent to the Jaguar Castle Bromwich plant, which built Spitfires during the Second World War. Photo courtesy of The Pioneer Group, successor body to the Castle Vale Housing trust.

essay highlights our planning, including the learning outcomes and methodology for an informal learning program to explore two themes from the one hundred years plus of industrial heritage with members of the local community and interested stakeholders during the first two quarters of 2021.

Overview of 120 years of proud manufacturing in Castle Bromwich

Castle Bromwich Aerodrome was developed as an airfield north of Castle Bromwich in the West Midlands on ground used as playing fields. In 1909, Castle Bromwich witnessed the first powered aircraft flight in the Midlands shortly after the first aircraft flight in Britain. Later the land was used by the British Army to train pilots and following the end of the First World War, it was retained for military use.

In 1920 the British Industries Fair opened in Castle Bromwich Aerodrome continuing for close on forty years until 1958. During this time, it hosted more visitors than any other attraction in the UK and some sources described it as the greatest trade fair in the world. A historical reflection by Chris Upton of the Birmingham Mail reflected that "Castle Bromwich (railway station) welcomed a remarkable procession of VIPs, including half a dozen Kings and Queens of England, and the heads of state of dozens of others (and was) …easily the largest trade fair on
the planet."

Following the decision to build the new Birmingham airport in Elmdon (and not in Castle Bromwich), the site was kept for the RAF for use as a fighter station. With the breakout of the Second World War, a site just between the aerodrome and the iconic Fort Dunlop factory was chosen as factory site to produce Spitfires and Hurricanes. This soon became the largest factory building military aircraft in the country. It had a workforce of some 12,000 people spread out over some 400 acres of land. During its production cycle it turned out over 12,000 Spitfires, more than more than half the total produced. We held an informal discussion session in Castle Vale in 2019 with several older residents, who had been centrally involved in the regeneration of the estate in the 1990's and early 2000's. We reflected first on the connections of the estate and the regeneration process and the leadership and agency they provided in the physical transformation of their place and explored the role of this large estate in providing a workforce to the factories that are situated in this part of outer Birmingham. We discussed the current relationship between the estate and one of the principal factories in the area where Jaguar motor cars are built and the need to strengthen the relationship between the plant and the estate getting more residents working in the factory. This led to a recollection by one of the residents whose parents had worked at the Spitfire and Hurricane factory in the early fifties. At that point the estate had yet to be built and was still an aerodrome with its workers drawn from a wider span of neighbourhoods from Aston and Nechells to the south, the newly built Bromford estate to its east, the parish area of Castle Bromwich and Minworth and Erdington to the North.

The story recounted with most enthusiasm was based on what he had been told by his parents– how in the 1940s that when the Spitfires finished at the factory they would be towed across, what is now the busy arterial Tyburn Road, to the Castle Bromwich aerodrome to be flown by test pilots. The Birmingham Mail has celebrated the antics of the most notorious of these test these test pilots- Alex Henshaw who was responsible for a team of 25 pilots. Flying over 2,300 Spitfires in his time he famously flew a Spitfire down a major thoroughfare

in the city centre exercising an upside-down manoeuvre.
At the end of Second World War the airfield was used as a training station with some civilian flights and the factory being sold to produce motor vehicles. The airfield was closed and the site, including the land used for the British Industries Fair was sold to Birmingham City Council in the late fifties.
For a generation the twin sites of Castle Bromwich aerodrome and the Spitfire and Hurricane Factory, separated by the Chester Road, had worked in tandem as a civil and military aerodrome, as a site hosting one of the greatest Trade Fairs of the 20th Century and most significant of UK factories producing the iconic Spitfire and Hurricane Aircraft. The Spitfire Gallery in Birmingham's Think Tank was created in around 2010 to celebrate the key role both the Spitfire and Hurricane in the Second World War and to recognise the role of the Castle Bromwich factory. This has played a key role in profiling the importance of Castle Bromwich within the industrial heritage of Birmingham and in its wider role in supplying the aircraft that were so critical in the Battle of Britain but also Spitfires that were acquired by European countries after the War.
After the ending of production of the Spitfire and Hurricane Factory became home to a car factory building three UK iconic models, Rovers, Triumphs and the Jaguar moving in the 1980s to the exclusive production of Jaguars up until 2020.
The land for the aerodrome and British Industries Fair was used to build the then largest council estate in the country with the purpose of meeting the demand for decent housing following clearance of back-to-back slum housing in inner city Birmingham after the Second World War.
The estate was envisaged as a new housing utopia built using modern methods of construction and a Radburn layout[12] and comprised a mix of tower blocks, maisonettes, low rise and houses alongside retail facilities and schools. In less the twenty years this utopia had become

12_Radburn design followed the masterplan principles of Clarence Stein, who sought to create a 'garden city for the motor age' in 1929. The principles used separated cars and pedestrians where "the entire layout was predicated on cul-de-sacs and the street network was confined to history". Urban Idiocy: Brilliant ideas that ruined our cities, AoU, January 2015

The new Castle Vale Estate in the 1960s, Photo stock Castle Vale Housing Action Trust.

what was described as a no-go housing estate, where people did not want to live, visit or work accompanied by high levels of unemployment typical of manufacturing outer city areas in English cities in the 1980s. In the early 1990s the City Council accessed regeneration funding to fundamentally transform the estate demolishing most of the tower blocks, refurbishing low-rise maisonettes and building some 1500 houses so that the forgotten wasteland pockmarked by towers had become a dignified low-rise estate. (No Longer Notorious, see sources).

During the housing regeneration program overseen by a Housing Trust with residents on the Board. Following a resident's ballot there was an overwhelming majority for it to be managed by a community housing association. This body has ensured that through on-going investment and a continued focus on social and economic regeneration the benefits of the £200m investment has been sustained so that the estate has retained its popularity with high waiting lists and buoyant housing market to access a home and live in a pleasant neighbourhood. At the same time despite the difficulties for car manufacturing seen elsewhere in Birmingham in the early noughties at MG Rover and Leyland DAF, significant investment was leveraged in the Castle Bromwich Jaguar plan from 2011 onwards and despite at the time of writing some further economic uncertainties with Brexit and now the Pandemic further investment is being made at the Castle Bromwich with the view to producing the first all-electric Jaguar saloons at some point in 2021.

Through Castle Vale's local partnership arrangements, put in place through the legacy arrangements to housing regeneration, there is a renewed vision to reconnect the twin hubs of the aerodrome (now the regenerated housing estate) and the Castle Bromwich car factory as the engines for local growth in North East East Birmingham. Several ambitious programs are being planned to make this happen.

This includes:

- Capitalising on new emerging transport infrastructure including High Speed Two which is running approximately 800 metres from the estate and a new local train station at the site of the long closed Castle Bromwich train station alongside an investment in walking and cycling paths.
- Working with major employers including HS2, Jaguar Land Rover, Commonwealth Games to a new future workforce drawn from Castle Vale estate and other surrounding residential areas.
- Creating a new heritage space on the site of the aerodrome celebrating the story of endeavour and innovation in Castle Bromwich.

The landscape of Castle Bromwich has seen continuous evolution of its industrial landscape and land use over the last 120 years:

- One of the first aerodromes in the UK.
- A site of one of the World's largest and high profile International Trade Fares.
- A factory producing Spitfires and Hurricanes, with test flights taking place in the adjacent Aerodrome.
- A factory producing some of the most iconic and successful UK car models the Jaguar.
- The site of one of the largest new housing estates in the UK built to meet acute housing needs following slum clearance after the Second World Ward.
- Following the quick decline of the new estate its successful regeneration and one of Birmingham's most popular housing estates.

Currently, there is not a single narrative that pieces together this rich tapestry where its significant historical contribution and role is celebrated and explored. There are, however, several separate narratives linked to different episodes and different parts of the story and some of this is captured in the Spitfire Gallery in the city centre or the Jaguar Heritage Trust in Warwickshire.

What stood out in our conversation with resident leaders is that they hold with pride a memory of the place and the narrative as a whole and displayed a yearning for a single heritage program to bring all of this together.

An informal learning program to explore the industrial heritage and culture of Castle Vale

Between January and July in 2021[13] an informal learning project is planned for residents, the wider community and interested parties including former employees at the Jaguar Plant and residents who engaged with the regeneration of Castle Vale estate to explore the history of this small district of North East Birmingham over the last century. We will run this from Castle Vale library over a 12-week period. It will build on the discussions held with residents during 2019 and explore some of the themes that were surfaced in depth particularly the yearning to create a single narrative of place for Castle Bromwich / Castle Vale.

The aim is to pick on two themes and eras focussing on the production of the Spitfire and the regeneration of the housing estate in two six-week modules. Each course segment will be led by a facilitator with expertise in the subject matter with clearly defined learning outcomes both for the learner and a body of insight generated from the learning process. We will utilise established methodologies used for informal learning. The outcomes will be summarised for the Pan European Best Practice chapter in the Handbook and for shaping a potential Virtual Reality Narrative. They will also help steer the development of our shared vision of a Heritage space in Farnborough Fields.

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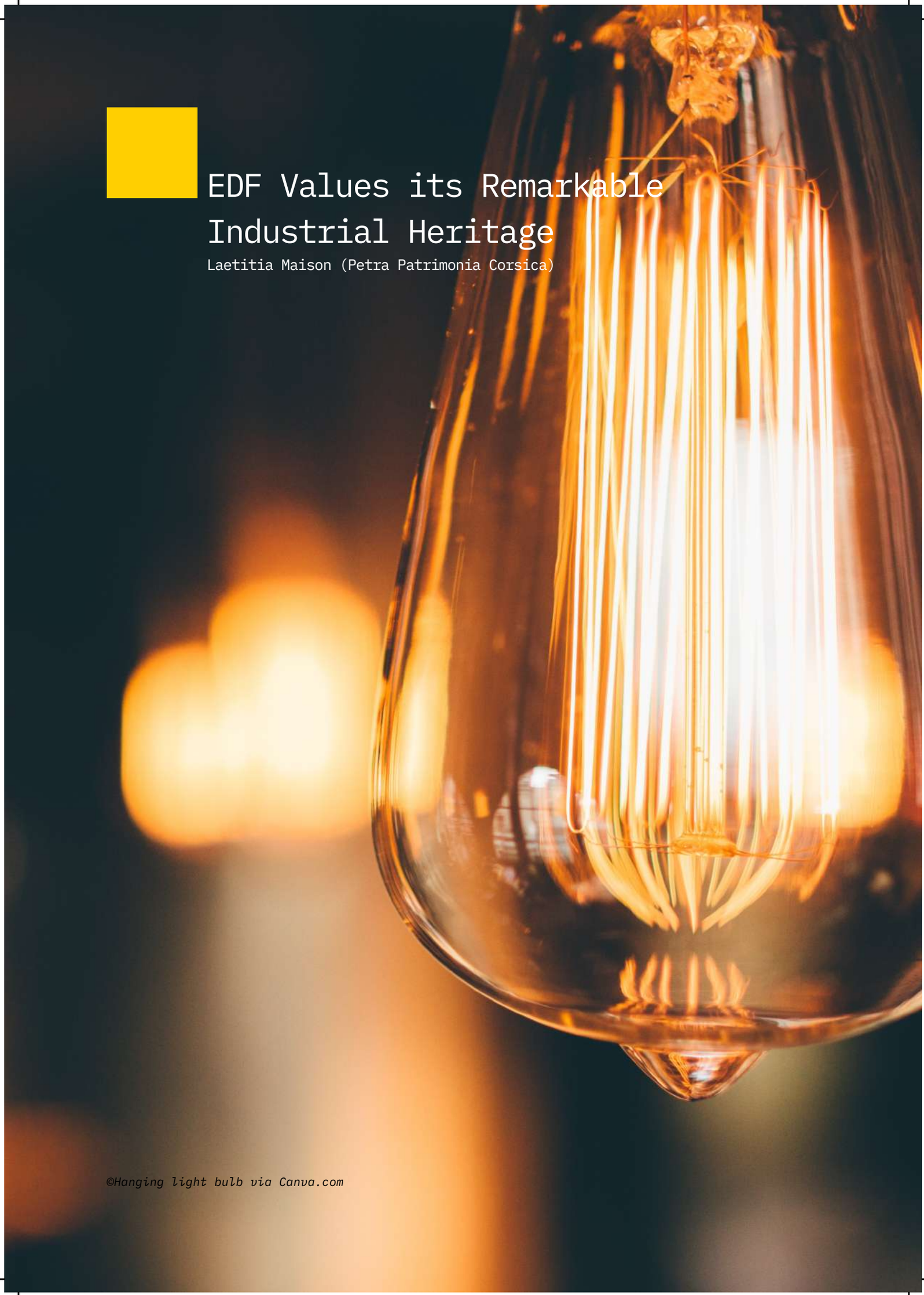
13_This was originally scheduled to run in March to the summer of 2020 but has been rescheduled because of Covid-19.

EDF Values its Remarkable Industrial Heritage

Laetitia Maison (Petra Patrimonia Corsica)



©Hanging light bulb via Canva.com

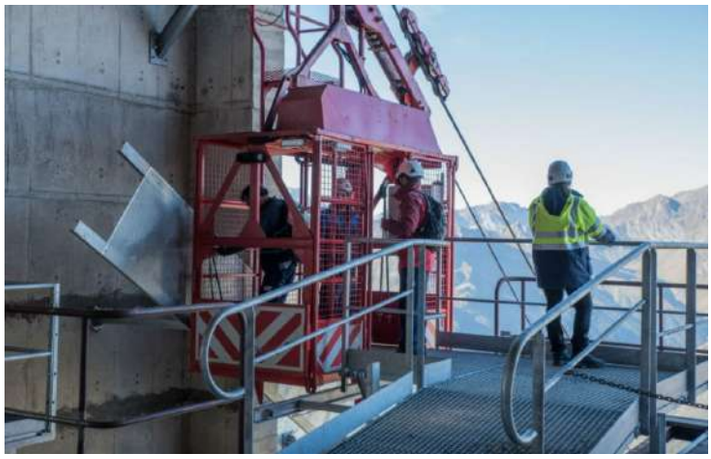
The history of electricity is a great human adventure, a scientific and technical epic, developed by EDF (What does EDF stand for?) for more than 70 years. To share this story, EDF invites the public to discover the emblematic sites of its industrial heritage with an original artistic and cultural program, called Odyss Elec.
The visitor can discover the emblematic and atypical sites of industrial heritage. Equipped with a unique architecture, witnesses to great technical and human challenges, they tell in their own way the fabulous history of electricity and help us to understand the industrial developments, which are shaping the world of tomorrow.
The EDF group, as an electrical producer and world leader in low-carbon energies, has always cultivated a tradition of welcoming and opening its production sites. Through this new promotion program, it is committed to sharing all the richness of this historical heritage, and to strengthening its support for two museums in France, custodians of unique collections of electrical heritage.
Located near major cities, these emblematic sites are places of electricity production, new ideas and culture. Illuminations of the chimneys of the Le Havre power station, light show on France's first nuclear power plant in Chinon, or even historical guided tours of the Bazacle hydroelectric power plant in Toulouse, all contribute to the economic and tourist attractiveness of France and its Regions.
By bringing together industry, innovation, and creation, EDF tells an odyssey, the electric odyssey, and invites us to discover the great adventures of electricity through the original program Odyss Elec.
Unveiled gradually, this artistic and cultural program is part of a historical logic of partnership with professionals in heritage, culture, and industrial tourism. But also, with local or international artists who have always sublimated these extraordinary works.
As part of the European Year of Cultural Heritage, EDF offers original activities and events, adapted to each of its exceptional sites: light shows, temporary exhibitions or perennial, guided tours and thematic conferences, virtual reality experiences, etc.
Emotion and pedagogy are at the heart of the Odyss Elec program which invites the public to a dialogue between Art, History, and Industry in the network of emblematic sites of EDF's industrial heritage.

Nuclear power plant in Chinon, Indre-et-Loire - Light show on the Chinon nuclear power plant by Xavier Popy

Source: https://www.edf.fr/

Odyss Elec, EDF's heritage and industrial odyssey

Light shows, temporary or permanent exhibitions, guided tours, thematic conferences, virtual reality experiences...emotion and education are at the heart of the Odyss Elec program which invites the public to a dialogue between Art, History and Industry in the network of emblematic sites of EDF's industrial heritage.



The Pragnères Cable Car

Source: EDF https://www.edf.fr/-Jean-Marie Taddei

Artistic programming, virtual reality and web series... EDF tells the electric odyssey in an original way.

Source: EDF https://www.edf.fr/

DF appropriates virtual reality to boost industrial tourism

In the Pyrenees, EDF has decided to mobilize several regional start-ups to offer new experiences based on digital technologies to visitors to its hydroelectric plants. Virtual reality and augmented reality demonstrations in Pragnères (65) and Saint-Lary, in the Hautes-Pyrénées. The Pragnères (65) cable car will soon be open to the public in virtual reality.
EDF has long opened its production sites to the public, with a predilection for its dams and hydroelectric plants. "It has even become a national benchmark in terms of industrial tourism", welcomes Christian Caussidery, director of the EDF agency "Une Rivière, un Territoire - Valleys of the Pyrenees and Tarn", based in Tarbes (Hautes- Pyrenees) and Foix (Ariège). But as with all other tourist activities, you need to know how to renew yourself. To revitalise activities within its discovery spaces, EDF has therefore decided to mobilize new digital technologies to develop new tools that are both educational and fun. On the program: augmented reality and virtual reality, with two first demonstrators, available this summer, in Saint-Lary and Pragnères, in the Hautes-Pyrénées.

Immersion in virtual reality in Pragnères

In the Discovery Area of the Pragnères hydroelectric plant, a unique virtual reality experience will be offered. Commissioned in 1954, the Pragnères power station, the largest hydropower plant in the Pyrenees range, is part of a complex system in the heart of the Gavarnie Valleys. For this development, there are 40 kilometers of galleries, four dams, around thirty water intakes, a production plant and two pumping stations.

Thanks to the project developed in partnership with the digital agency Otidea (7 employees, 550,000 euros in turnover), based in Tarbes, visitors, equipped with helmets and glasses will be able to "follow", in less than 10 minutes, the entire flow of water, from mountain lakes to turbines, through galleries and penstocks. Highlight: a spectacular virtual walk with the cable car to the high-altitude pumping station, reserved for transport by EDF teams. "'Wow!' Effect guaranteed ", insists Christian Caussidery.
These first two demonstrators came into service at the end of July 2019 and were tested throughout the summer by passing visitors. Other projects are already in the works, including a life-size discovery game around the Sabart hydroelectric plant, in Ariège. A project under development with the Ariège digital creation and production agency Digitanie. The playground still offers many possibilities. In the great South-West alone, EDF Hydro is responsible for the operation and maintenance of 73 dams and 121 hydroelectric power stations spread over around ten departments.
The history of electricity is a great human adventure, a scientific and technical epic, carried by EDF for more than 70 years. From this history, great inventions were born and were inspired and developed from fabulous factories. To tell this part of French industrial heritage, EDF is launching a series of original and sometimes offbeat cultural initiatives.
As the group explains in a press release: "emotion and pedagogy are at the heart of the unique artistic and cultural programming".

Elec Odyssey

Called Odyss Elec, this new program invites the public to a dialogue between art, history, and industry. Sometimes exhibition spaces, interpretation centers or ephemeral places, the emblematic sites managed by EDF will gradually unveil new visitor experiences. Highlight the first French nuclear power plant in Chinon, illuminate the impressive chimneys of the Le Havre thermal power plant or even discover the secrets of the Garonne told from the exceptional point of view of the Bazacle hydroelectric power station in Toulouse...so many experiences offered visitors for a dive into the history of electricity, told as part of the Odyss Elec program.

Virtual reality and video web series

At the 2018 EHD, an animated film was also released in virtual reality. "The fabulous history of electricity" offers a journey into the artistic universe of Clément Soulmagnon. This film, which was shown to visitors at most of the emblematic sites throughout the Heritage Days weekend, will be shown again at the many events to come.
Finally, a web series, made up of 10 video clips of 1 minute each, has been broadcast on social networks since Saturday, September 15, 2018. Based on anecdotes, archival documents and unpublished images, this web series traces the history of iconic sites and industrial museums supported by EDF.

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Using Virtual Reality in Heritage eLearning

Studios (ELS) and Elderberry AB

©Virtual reality via Canva.com

Physical vs Virtual Exhibitions in Heritage

“Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits”. This is how Article 27 of the Universal Declaration of Human Rights proclaimed by the General Assembly of the United Nations in 1948 reads. Concepts of participation in the arts and culture and of access to heritage as a fundamental right of all people and the idea that citizens should participate not only in cultural activities, but in the very management and curation of culture and cultural heritage have emerged.
The conclusions drawn by the Council of the European Union on participatory governance of cultural heritage and the EU Commission Communication “Towards and integrated approach to cultural heritage in Europe” published in 2014 identifies cultural heritage as a strategic resource for a sustainable Europe, acknowledge its social dimension and underline the importance of activating synergies across different stakeholders to safeguard and valorise it. They also recognise the importance of transparent and participatory governance systems to be shared with the people to whom heritage ultimately belongs.
Studies however by for example ICOM and the British Art Council show that this is far from the case and many groups within society are essentially excluded from arts and culture.
Since the beginnings of the internet heritage sites and museums have been looking to exploit on-line exhibitions, to reach out with their stories to a wider base. This has not been without problems and unfortunately the debate has often been at a level of the “competition” between the physical exhibition vs the digital exhibition. Unsurprisingly in a cash- strapped sector it has been a battle about resources.

Earlier in the history of the internet, digital exhibitions were criticised for being over simplified or the dumbing down of the content. This was because they were designed to be experienced on a much smaller medium: a small rectangular piece of glass. The written and visual content had to be refined into a linear narrative to be easily navigated and communicated. Such were the limitations of the website, based digital exhibition. They were however successful in such things as linking to educational material or accessing research before and follow up after a visit. They were also successful in linking very easily to large archives of material that a visitor would never otherwise get to see. Accessibility via digital means allows museums and heritage organizations to increase participation in ways which were unthinkable of until only a few years ago. Museums can reach a new and different audience if compared to traditional visitors. Exploiting new technologies allows them to tailor information to visitors’ specific characteristics, interests and needs and complement physical visits with additional materials to be used in remote.
Physical exhibitions and visiting heritage sites and museums have been promoted over digital exhibitions as immersions in a real life, physical, sometimes tactile environment. Physical exhibitions, like most storytelling mediums, are linear or progressive in nature, they allow visitors to wander freely. Although most and especially historical exhibitions are presented chronologically to the visitor. Being physically in a museum forces a kind of awareness informed by the surroundings such as fellow visitors, noise levels, seating areas, wall colour, and temperature. These surroundings are all crafted by the museum’s designers to influence the visitor experience, encourage curiosity, spark investigation, and inspire connection. Exhibitions are just one of media for

©Virtual reality via Canva.com

telling stories in addition to books, films, interviews, podcasts, music, and the performing arts, among others. What makes exhibitions stand out is their ability to immerse their audience and be telling their story bring added value to society physically or virtually.

A relative newcomer to the field of exhibitions are Virtual Reality Exhibitions. VR exhibitions whilst retaining the positives of digital media can now include some of the pluses of physical exhibitions. It is important to remember though that this should not really be seen as a competition between to media but as two distinct media or art forms that sometimes complement each other, sometimes not, which should be allowed to develop and be used in their own unique way.

The Framework Convention on the Value of Cultural Heritage for Society (Faro Convention) underlines the need to involve everyone in society in the process of defining and managing cultural heritage, describing a “heritage community” as consisting of “people who value specific aspects of cultural heritage which they wish, within the framework of public action, to sustain and transmit to future generations”.

Cultural heritage organisations and museums should, therefore, strive to be inclusive and accessible to all, accessibility being a precondition for participation. Accessibility however is a multifaceted concept: physical, intellectual, financial, social, emotional, attitudinal etc. Many barriers prevent people from participating in culture and heritage and access to heritage as a fundamental right of all and the need to encourage a people-centred approach are central to the research, technical and training aspect of this project Accessibility starts well before reaching the museum or heritage site and getting to the venue can already represent a challenge for some potential visitors for practical or economic reasons. Museums and heritage site can also be inaccessible (flights of stairs, lack of ramps, etc.) which make them for unreachable people with disabilities.

If people cannot go to the museum or heritage site, then the museum or heritage site goes to people. There are many examples of this in Europe were organisations have been operating to take collections out to the communities which museums fail to reach; women's groups from the large social housing projects, users of mental health services, black community groups, refugees and asylum seekers, unemployed, homeless etc. and some have proved to be an extraordinary resource for public engagement and community involvement, making connections between the objects and individuals and groups.

A major drawback of this concept and the reason why some co-curation projects and community/heritage partnerships (community groups coming in to explore collections and use them in their own exhibitions) are less than successful is

that people outside of the museum and heritage profession do not usually have the expertise to develop collections and exhibitions using their own interpretations. Interpretation - Cognitive Accessibility Choosing an object, whether exceptional or ordinary, to be part of a museum collection and displaying it in the museum galleries is a deliberate action which gives it a special status and the reasons for the choice itself can become part of a narrative which throws light on the history of the collection and the meaning of the artefact itself. Interpretation is traditionally the task of experts or curators, who are the authoritative voice of museums. However, in recent years, more and more museums working in an intercultural perspective have increasingly started to re-examine and re-assess existing collections using different perspectives, which include the viewpoint of individuals and communities. Local communities can supply information regarding its history and community context, the museum can responded by setting up a programme with the objective of working collaboratively with communities and academics– to explore the meaning of objects and share stories, beliefs and opinions around them.
We would propose part of the Virtual Spitfire project would include basic training and key competences covering basic Interpretation and story-telling skills for “Heritage Champions” or individuals who could serve as a link between the heritage organisation and the community. Such a training which would include for example writing workshops to help put any digital content (in this case the production of a Spitfire) in context.

What can Virtual Exhibitions offer?

We want to show how VR can be used dynamically in managing technological change in a heritage or educational organisation. Using VR interactive scenarios where the use of technologies within the company will be demonstrated and the participants can interact and collaborate with both colleagues and virtual agents. By taking part in these virtual scenarios, employees can experience different real-life situations and experience the advantages of technological change in a more hands-on way. This could make them more likely to embrace change within the organisation as it will no longer be a completely abstract concept. Immersive – world seen in 360 degrees; learners’ senses need to be dynamic Provides learners with different scenarios.

Sensory training 360-degree VR (360-degree virtual reality) is an audio-visual simulation of an altered, augmented or substituted environment that surrounds the user, allowing them to look around them in all directions, just as they can in real life. 360-degree VR can be used for many purposes other than entertainment. The virtual reality technology can be used in most kinds of training that involve a physical environment, including pilot and driver training (as well as actual piloting or driving), surgery, and undersea and space exploration via remote-control robots.
Virtual Reality has been widely used for the prevention and promotion of Cultural Heritage in the form of standalone applications targeting people who are not able to visit museums in place. These productions are mostly made by larger institutions at enormous cost. With technology advances, and price reductions it is now possible for many more to be able to use applications to exploit different types of emerging technologies. Recent developments in Virtual Reality (VR) hardware resulted in reduced cost in acquiring VR equipment that enables the widespread immersive visualization and interaction in virtual environments. The use of Virtual Reality systems in Heritage is a now economically and technically viable.

Using free software an apps

A complete VR exhibition and tour can now be made to a good professional standard using open-source and free software.
The first stage of the process involves scanning real artefacts into 3D models for digital representations. This can be done with a myriad of Apps such as Trnio. https://www.trnio.com/ Here is an example of an ancient amphora scanned at the Museum at Thira on Santorini.

Screen shot

The next phase of the digitization process is divided into two main tasks, namely the 3D scanning phase and the post-processing phase. The scan can then be processed using the free open source MeshLab software (http://meshlab.sourceforge.net/) so that artefacts can be stitched together so that complete 3D models of each item are produced. The scans can then be used to build virtual museum to display the 3D models. Users can use either a VR head mounted display or a PowerWall to navigate the virtual worlds. 3D scans, photos, texts etc. can then be uploaded into a free programs such as https://www.artsteps.com/ in order to complete the exhibition.

Screen shot

Technology development within heritage and educational organisations takes time and commitment of personnel and resources is an ongoing process rather than something that shows immediate results. As a result, this kind of technological development is sometimes avoided, or indifferently embraced.

Fast changing technologies and old-school mentalities among staff makes it harder to convince people to change. Companies should find ways to effectively manage and promote technological change as adopting the right technology will, in the end, help grow a business and make everyone’s job easier.

The Virtual Spitfire project will off a main VR production supported by a series of eLearning Webquests helping young adults upskill and develop new key competences. Some examples will include:

- Taking photos inside and outside
- Making Videos inside and outside (Two instructional videos will be produced by ELD)
- Making 3d scans of an object and digital printing
- Complete an exhibition using Artsteps
- Interviewing staff at heritage sites and museums
- Interpreting Exhibitions - The first interpreting act in an exhibition is that of writing a caption which gives information about the object, the subject represented, the materials used and sometimes its history and the reasons why it became part of the collection.
- Writing texts and Labels - Texts for panels, labels and captions are written by specialists for specialists, overestimating the basic knowledge of the public. In order to avoid the mistake of presenting texts which are too complex and represent an intellectual barrier for visitors, museum professionals now can rely on many publications, guidelines, guidebooks, etc. which illustrate how to write effective texts for museums
- Writing Stories - Developing a narrative which tells about the culture that produced the objects, the contexts from which they originate, but also their meaning in contemporary societies.

Contributing Partners

Partner Organisation Overviews and Essay Synopsis

Website:
www.Spitfireservices.org.uk

Castle Vale – Key to our Roots, Integral to our Future
Key to Spitfire Advice and Support Service's success and identity are its origins as a "grassroots", resident-led, community welfare organisation embedded in the heart of Castle Vale. As the organisation has grown and changed over recent years, there have been many challenges which have to be dealt with sensitively so that the organisation continues to have its core values at its centre. These values are integral to who and what we are and we hope that they still reflect our rich past, our hectic and exciting present and they will still be appropriate to the work we aim to undertake in the future.

Our core values are:

- To contribute to the reduction in social exclusion in Castle Vale and the wider community.
- To actively promote volunteering and citizenship among all groups.
- To actively promote sustainable development within groups and organisations.
- To represent residents within our local communities on a wide range of issues and to advocate on their behalf.
- To encourage self-advocacy among groups and individuals.
- To actively encourage and support the development of new and existing community groups.
- To actively support access to jobs, education and training.
- To support a broad range of issues that protects people's basic human rights.
- To encourage strength and resilience among the communities in which we work.

Essay(s) Summary

(a)
This introductory brief essay explores the accidental connection identified at the Kick Off meeting of the partnership; that each of the four countries had a relationship with the Supermarine Spitfire. Our interest transcends its purpose and utility as a fighter machine and more as a symbol and icon arising out of industrial production and the metaphor we have developed as partners in our exploration of industrial landscapes and heritage as learning tools through the lens of Virtual Reality.

(b)
This essay explores the evolution of a small area of a few hectares, which over a 120 years, developed a succession of industrial developments and land uses from an aerodrome, international trade fair to a modern housing estate. The

area has continuously reinvented itself and adapted; achieving international notoriety in the early and middle parts of the 20th century and more regional and city importance, as a residential area with some retained manufacturing, in the 21st century. It has left behind a remarkable sculpture by Tim Tolkien, nephew of JR Tolkien, of the Spitfire that dominates the skyline in this part of Birmingham. Perhaps more importantly, it has left stories deeply imbued in the social strata of the area where families who have been involved in the building of the Spitfire and later Jaguar still share their proud stories.

Uppsatser i sammandrag

(a)
Denna inledande korta uppsats utforskar den oavsiktliga koppling som vi kom underfund med vid partnerskapets kickoff-möte, det vill säga att vi insåg att vart och ett av de fyra länderna hade ett förhållande till Supermarine Spitfire. Vårt intresse frångår jaktplanets egentliga syfte och vi uppfattar Spifiren mer som en symbol och ikon som härrör sig från industriproduktion och som en metafor som vi har utvecklat tillsammans i vår utforskning av industriella landskap och arv som lärande verktyg genom den lins som utgörs av Virtual Reality.

(b)
Denna uppsats undersöker utvecklingen av ett litet område på några hektar, som under 120 år utvecklades från flygplansindustri med hangarer och internationella mässor till ett modernt bostadsområde. Området har kontinuerligt förnyat sig självt och anpassat sig från att ha varit internationellt känt under början och mitten av 1900-talet till ett bostadsområde med lokal och regional betydelse med en viss bibehållen tillverkning under 2000-talet. Det har efterlämnat en anmärkningsvärd skulptur av Tim Tolkien, brorson till JR Tolkien, av en Spitfire som dominerar horisonten i denna del av Birmingham. Ännu viktigare, det har lämnat historier djupt genomsyrande de sociala skikten i området inom de familjer som har varit inblandade i byggandet av Spitfire och senare Jaguar, familjer som fortfarande delar sina stolta historier.

Résumé des essais

(a)
Ce bref essai introductif explore le lien accidentel identifié lors de la réunion de lancement du partenariat; que chacun des quatre pays avait une relation avec le Supermarine Spitfire. Notre intérêt transcende son but et son utilité en tant que machine de combat et plus en tant que symbole et icône découlant de la production industrielle

et de la métaphore que nous avons développée en tant que partenaires dans notre exploration des paysages et du patrimoine industriels en tant qu'outils d'apprentissage à travers le prisme de la réalité virtuelle.

(b)
Cet essai explore l'évolution d'un petit territoire de quelques hectares, qui en 120 ans, a développé une succession de développements industriels et d'occupation des sols d'un aérodrome, salon international à un lotissement moderne. Le quartier s'est continuellement réinventé et adapté; atteindre une notoriété internationale au début et au milieu du 20e siècle et une importance plus régionale et urbaine, en tant que zone résidentielle avec une certaine fabrication conservée, au 21e siècle. Il a laissé derrière lui une sculpture remarquable de Tim Tolkien, neveu de JR Tolkien, du Spitfire qui domine l'horizon dans cette partie de Birmingham. Peut-être plus important encore, il a laissé des histoires profondément imprégnées dans les couches sociales de la région où les familles qui ont été impliquées dans la construction du Spitfire et plus tard Jaguar partagent encore leurs fières histoires.

Περιλήψεις δοκιμίων

(α)
Το πρώτο εισαγωγικό, σύντομο δοκίμιο εξερευνά την τυχαία σύνδεση που εντοπίστηκε στην εναρκτήρια σύσκεψη (kick-off meeting) των εταίρων της ευρωπαϊκής πρωτοβουλίας Virtual Spitfire, όπου καθεμία από τις τέσσερις χώρες (Ην. Βασίλειο, Γαλλία, Σουηδία, Ελλάδα) αποδείχθηκε ότι διατηρούσε σχέση με το αεροπλάνο Supermarine Spitfire. Το ενδιαφέρον μας φυσικά υπερβαίνει τον σκοπό και τη χρηστικότητά του αεροπλάνου ως «πολεμικής μηχανής» και εξελίσσεται, αναδεικνύοντάς το ως σύμβολο βιομηχανικής παραγωγής. Επίσης, το Spitfire αποτελεί στο πλαίσιο του έργου και «σχήμα μεταφορικό», ανταποκρινόμενο στο σκοπό της ευρωπαϊκής δράσης Virtual Spitfire, που αφορά στην ανάπτυξη δεξιοτήτων μέσα από την διερεύνηση τοπίων βιομηχανικής κληρονομιάς με τη χρήση εφαρμογών εικονικής πραγματικότητας.

(β)
Το δεύτερο δοκίμιο εξερευνά την εξέλιξη μιας μικρής περιοχής μερικών εκταρίων, η οποία, στην πάροδο 120 και πλέον χρόνων, είχε ποικίλες βιομηχανικές χρήσεις, όπως αεροδρόμιο, διεθνής εμπορική έκθεση και σύγχρονος οικισμός. Η περιοχή του Castle Vale συνέχισε να επανεφευρίσκει την ταυτότητά της και να προσαρμόζεται, αποκτώντας σημαντική φήμη στην αρχή και τα μέσα του 20ού αιώνα, ενώ τον 21ο αιώνα απέκτησε ακόμα μεγαλύτερη σημασία ως οικιστική περιοχή χάρη στην ύπαρξη ιστορικών κτηρίων. Άφησε δε ως παρακαταθήκη ένα εντυπωσιακό γλυπτό του Tim Tolkien, ανιψιού του JR Tolkien: το Spitfire που κυριαρχεί στον ορίζοντα αυτού του μέρους του Birmingham. Και το σημαντικότερο, άφησε ιστορίες βαθιά ριζωμένες στα κοινωνικά στρώματα της περιοχής, με οικογένειες που συμμετείχαν στη δημιουργία του Spitfire και αργότερα του αυτοκινήτου Jaguar και συνεχίζουν να μοιράζονται με υπερηφάνεια τις ιστορίες τους.

Website:
http://www.petrapatrimonia-corse.com/

Petra Patrimonia Corsica is an activity and employment cooperative specializing in supporting project leaders in the following professions:

- Built heritage, building and eco-construction - PETRA PATRIMONIA
- Agricultural, landscape and environmental heritage - PETRA PATRIMONIA FOLIA
- Maritime heritage and maritime professions - PETRA PATRIMONIA MARITIMA

Petra Patrimonia Corsica, provides an alternative to setting up a business, enabling project leaders to develop their activities within a legal, secure, educational & innovative framework. This framework makes it possible to concretely test the viability of a project (CAPE contract), and then develop their long term operating model within the cooperative, under the cover of a recently promoted statute (ION 2014-856 of July 31 2014 relating to the social and solidarity economy), that of entrepreneur-employee.

Petra Patrimonia Corsica is more widely involved in the:

- Development of all activities linked to the aforementioned businesses,
- Establishment of a resource and innovation center on high heritage and environmental quality and eco-construction,
- Execution of works, the carrying out of studies, the setting up of training actions and integration projects.

Our values

We adhere to fundamental cooperative values with the resolute desire to put people at the heart of actions and development. More broadly, the cooperative identity of Petra Patrimonia Corsica is defined by:

- Recognition of the dignity of work;
- The right to training, creativity and initiative;
- Responsibility in a shared project;
- The transparency and legitimacy of management and decision-making bodies;
- The sustainability of the business based on indivisible reserves, the cooperative's common heritage, allowing the independence of the business and its solidarity-based transmission between generations of cooperators;
- Openness to the world for a global vision and the sharing of experiences.

Essay(s) Summary

(a) Virtual reality as a tool to get education in cultural heritage
This essay explores how virtual reality can be utilized as a learning tool exploring cultural heritage, and understand the values of cultural heritage. It also provides some case studies of cultural heritage through virtual reality. The first case study uses an immersive room 360° projecting the Caen Memorial enabling visitors to understand the world through European wars: the First, the Second and the Cold War. The second case study uses virtual reality in a museum visit. These two case studies illustrate the previous content written in the essay.

(b)Pan European good practices
This essay is focused on EDF, the French electricity supplier. It presents how EDF values its industrial heritage, how it appropriates virtual reality to boost industrial tourism and how it uses virtual reality in industrial heritage through some immersions, virtual reality and web series.

Uppsatser i sammandrag

(a) Virtuell verklighet (VR) som ett verktyg för att få utbildning i kulturarv
Denna uppsats utforskar hur VR kan användas som ett inlärningsverktyg som utforskar kulturarv och förstå värdet av kulturarvet. Den ger också några fallstudier av kulturarv genom virtuell verklighet. Den första fallstudien använder ett immersivt 360 °-rum som projicerar Caen-minnesmärket och gör det möjligt för besökare att förstå världen genom de europeiska krigen: första och andra världskriget samt det kalla kriget. Den andra fallstudien använder VR vid ett museibesök. Dessa två fallstudier illustrerar det innehåll som tidigare skrivits i uppsatsen.

(b) Pan-europeisk god praxis
Denna uppsats fokuserar på EDF, den franska elleverantören. Den presenterar hur EDF värderar sitt industriella arv, hur EDF använder VR för att öka industriturismen och hur de använder VR i industriellt arv genom viss immersion, VR och webbserier.

Résumé des essais

a) La réalité virtuelle comme outil pour obtenir une éducation au patrimoine culturel (French)
Cet essai explore comment la réalité virtuelle peut être utilisée comme outil d’apprentissage en vue d’explorer le patrimoine culturel et d’en comprendre ses valeurs. L’essai

propose également des études de cas sur le patrimoine culturel à travers la réalité virtuelle. La première étude de cas dévoile une salle immersive à 360° qui projette le Mémorial de Caen. Cette projection a pour but de permettre aux visiteurs de comprendre le monde à travers les guerres européennes : la Première Guerre mondiale, la Seconde Guerre mondiale et la Guerre Froide. La deuxième étude de cas utilise la réalité virtuelle pour visiter un musée. Ces deux études de cas illustrent le contenu de l'essai démontré précédemment.

(b)Bonnes pratiques Pan Européennes
Cet essai est centré sur EDF, le fournisseur d'électricité français. Il présente comment EDF valorise son patrimoine industriel, comment il s'approprie la réalité virtuelle pour dynamiser le tourisme industriel et comment il utilise la réalité virtuelle dans le patrimoine industriel à travers quelques immersions, quelques réalités virtuelles et quelques web séries.

Περιλήψεις δοκιμίων

(α) Η εικονική πραγματικότητα ως εργαλείο εκπαίδευσης στην πολιτισμική κληρονομιά
Αυτό το δοκίμιο εξερευνά τον τρόπο με τον οποίο μπορεί να αξιοποιηθεί η εικονική πραγματικότητα ως μαθησιακό εργαλείο για τη διερεύνηση της πολιτισμικής κληρονομιάς και την κατανόηση των αξιών της. Παρέχει επίσης κάποιες μελέτες περιπτώσεων πολιτισμικής κληρονομιάς μέσω της χρήσης εικονικής πραγματικότητας. Στην πρώτη μελέτη περίπτωσης χρησιμοποιείται μια εμβυθιστική αίθουσα 360° (immersive room 360°) που προβάλλει το Caen Memorial και επιτρέπει στους επισκέπτες να κατανοήσουν τον κόσμο μέσω των πολέμων στην Ευρώπη: τον Πρώτο Παγκόσμιο, τον Δεύτερο Παγκόσμιο και τον Ψυχρό Πόλεμο. Στη δεύτερη μελέτη περίπτωσης χρησιμοποιείται η εικονική πραγματικότητα στο πλαίσιο μιας επίσκεψης σε μουσείο.

(β) Πανευρωπαϊκές «καλές πρακτικές»
Αυτό το δοκίμιο εστιάζει στην EDF, την Γαλλική εταιρεία παροχής ηλεκτρισμού. Παρουσιάζει τον τρόπο με τον οποίο η EDF εκτιμάει τη βιομηχανική κληρονομιά της, τον τρόπο με τον οποίο αξιοποιεί την εικονική πραγματικότητα για την ενίσχυση του βιομηχανικού τουρισμού και τον τρόπο με τον οποίο χρησιμοποιεί την εικονική πραγματικότητα για την ανάδειξη της βιομηχανικής κληρονομιάς, μέσω εμπειριών, εφαρμογών εικονικής πραγματικότητας και δικτυακών σειρών (web series).

Website:
https://symplexis.eu

Symplexis is a Greek not-for-profit organization that strives to ensure equal opportunities for all through actions and measures that build skills, empower and promote active engagement and participation focusing on the most vulnerable categories of the population and particularly those with fewer opportunities. Symplexis' mission is to elevate social cohesion through integrated actions and project-based activities that aim at promoting the inclusion of disadvantaged groups at risk of marginalization and exclusion, while promoting and protecting the rights of various types of population groups that face discrimination focusing on the empowerment and support of victims, awareness raising and information sharing at all level.
Symplexis' activity builds on user-led approaches and interventions around four main axes of expertise, namely:

- The social and economic inclusion of those most in need comprising a wide variety of activities aimed at reducing poverty, preventing marginalisation and promoting the sustainable integration of disadvantaged groups, particularly focusing on Third Country Nationals.
- The protection and promotion of human rights through activities and interventions that address the needs of a wide range of discriminated population groups, such as women, children and elderly people, victims of violence and human trafficking, the LGBTQI community, Roma and unaccompanied minors, migrants and asylum seekers/ refugees.
- Upskilling, capacity building and empowerment of vulnerable groups with the aim to promote equal access to formal and non-formal education for all and promote lifelong learning focusing on low-skills individuals that face difficulties in (re) the labour market.
- Child and youth development through actions and projects designed to reduce youth poverty, promote child protection and stimulate social inclusion and development.

Essay(s) Summary

(a) Educational initiatives targeting adults with fewer opportunities
Virtual Spitfire aims to support adults living in post industrial areas, and especially those with lower qualifications and fewer opportunities, in acquiring and developing basic key-competences through a professional development course for adult educators and cultural heritage professionals. This essay provides a theoretical overview of tailored educational initiatives to support this aim, followed by practical examples where museums and cultural sites have offered attractive opportunities, often with the use of new technologies, making non-formal or informal learning more engaging and effective.

(b) Symplexis contribution to the chapter “Pan-European good practices”
The unit focuses on The Industrial Gas Museum in Athens, Greece, discussing issues including a visit to the Industrial Gas Museum and its educational programmes, creative learning for adults, the possibility for visitors to take a self-guided tour using an app, as well as the virtual reality tour that is offered by the museum.

Symplexis uppsatser

(a) Utbildningsinitiativ riktade till vuxna med färre möjligheter r
Virtual Spitfire syftar till att stödja vuxna som bor i postindustriella områden, särskilt de med lägre kvalifikationer och färre möjligheter, i att förvärva och utveckla grundläggande nyckelkompetenser genom en professionell utvecklingskurs för vuxenutbildare och yrkesverksamma inom kulturarvet. Denna uppsats ger en teoretisk översikt över skräddarsydda utbildningsinitiativ för att stödja detta mål, följt av praktiska exempel där museer och kulturplatser har erbjudit attraktiva möjligheter, ofta med användning av ny teknik, vilket gör icke-formell eller informell inlärning mer engagerande och effektiv.

(b) Symplexis bidrag till kapitlet ”Pan-europeisk god praxis”
Enheten fokuserar på det Internationella gasmuseet i Aten, Grekland, genom att diskutera frågor som inkluderar ett besök på museet och dess utbildningsprogram, kreativt lärande för vuxna och möjlighet för besökare att ta en självstyrd rundtur med en app som erbjuds av museet.

Résumé des essais

(a) Initiatives éducatives ciblant les adultes ayant moins d'opportunités
Virtual Spitfire vise à aider les adultes vivant dans les zones post-industrielles, et en particulier ceux qui ont des qualifications inférieures et moins d'opportunités, à acquérir et à développer des compétences clés de base grâce à un cours de développement professionnel pour les éducateurs d'adultes et les professionnels du patrimoine culturel. Cet essai fournit un aperçu théorique des initiatives éducatives adaptées pour soutenir cet objectif, suivi d'exemples pratiques où les musées et les sites culturels ont offert des opportunités attrayantes, souvent grâce à l'utilisation de nouvelles technologies, rendant l'apprentissage non formel ou informel plus engageant et plus efficace.

(b) Contribution de Symplexis au chapitre “Bonnes pratiques Pan-Européennes”
L'unité se concentre sur le musée du gaz industriel à Athènes, en Grèce, en discutant de questions telles qu'une

visite du musée du gaz industriel et ses programmes éducatifs, l'apprentissage créatif pour les adultes, la possibilité pour les visiteurs de faire une visite autoguidée à l'aide d'une application, comme ainsi que la visite en réalité virtuelle proposée par le musée.

Περιλήψεις δοκιμίων

(α) Εκπαιδευτικές πρωτοβουλίες για ενήλικες με λιγότερες ευκαιρίες
Το Virtual Spitfire έχει ως στόχο την υποστήριξη ανθρώπων που ζουν σε μετα-βιομηχανικές περιοχές και ιδιαίτερα αυτών με χαμηλότερα προσόντα και λιγότερες ευκαιρίες. Ζητούμενο είναι η απόκτηση και η ανάπτυξη βασικών ικανοτήτων, μέσω ενός προγράμματος επαγγελματικής ανάπτυξης για εκπαιδευτές ενηλίκων και επαγγελματίες της πολιτισμικής κληρονομιάς. Αυτό το δοκίμιο παρέχει μια θεωρητική επισκόπηση προσαρμοσμένων εκπαιδευτικών πρωτοβουλιών και σχετικών δράσεων για την υποστήριξη αυτού ακριβώς του σκοπού. Επίσης αναλύονται πρακτικά παραδείγματα και μελέτες περίπτωσης, όπου μουσεία και πολιτιστικοί χώροι κατάφεραν να προσφέρουν ελκυστικές ευκαιρίες για μάθηση και ανάπτυξη δεξιοτήτων, με τη χρήση νέων τεχνολογιών, καθιστώντας κατ' αυτό τον τρόπο την ανεπίσημη ή μη επίσημη μάθηση (non-formal or informal learning) περισσότερο ενδιαφέρουσα και αποτελεσματική.

(β) Πανευρωπαϊκές «καλές πρακτικές»
Η ενότητα εστιάζει στο Βιομηχανικό Μουσείο Φωταερίου στην Αθήνα, Ελλάδα, παρουσιάζοντας επιμέρους θέματα, όπως: η επίσκεψη στο Βιομηχανικό Μουσείο Φωταερίου και τα εκπαιδευτικά του προγράμματα, οι ευκαιρίες δημιουργικής μάθησης για ενήλικες, η δυνατότητα που προσφέρεται στους επισκέπτες για αυτόνομη ξενάγηση με χρήση ειδικής εφαρμογής (app), καθώς και η δυνατότητα ξενάγησης που παρέχεται από το μουσείο με τη βοήθεια της εικονικής πραγματικότητας.

Website:
www.elderberry.nu

Elderberry AB www.elderberry.nu undertake teacher training and curriculum development, authoring, testing, editing and publishing within the following sectors; school, adult, VET, youth, arts, culture, heritage and special needs, often with socio-cultural and urban implications.

Members of staff are published (best-selling) educational authors. Elderberry AB has experience in developing training material for schools and colleges, special needs, arts, heritage, culture, environmental, migrants and refugees and advanced IT skills/coding and robotics. The company is experienced with traditional methods (ISBN) for educational material and training as with eLearning and mobile learning.

Elderberry AB specialise in developing and integrating contemporary educational methodology into their work such as; formal, informal and non-formal methodologies, multiple intelligences and incorporating a problem- and scenario-based approach.

Essay(s) Summary

Deconstructing Icons
David Powell, Karl David Långbacka – Elderberry AB
Humanity, throughout history, has disproportionately placed the burdens of war and violence on young adults. Social, cultural, and economic forces all contribute to young people being used to commit acts of violence for the “good” of, or to defend society. This is reinforced by normative expectations in many societies that young adults are inherently violent and dangerous.
Let us remember that the Spitfire aeroplane was a highly efficient weapon of war, mostly flown by young adults trying to kill other young adults. To the British the Spitfire has become an icon of resistance to fascism, “the few” and of victory led by Winston Churchill, in a time when democracy in Europe was threatened. This may not be the symbol a Spitfire represents to other countries or to individuals or their families who lost their lives because of their deadly force. However, it would be safe to say that all countries will have a similar icon or figure representing similar values. Viewing young adults as agents of change and peace challenges and questions such traditional concepts.
Museums and heritage organisations often need to display and tell stories and representations of the technology of war. Many do great work in this area without glorifying war itself. It is interesting to note that the Imperial War Museum and Greek War Museum, not without controversy, identify as Peace museums. We could also look at how the British National Maritime museum tries to balance the displays of the might of the Royal Navy and its warships with how that navy was used to promote and protect transportation of eleven million Africans into slavery.
In this essay we look at how national icons in the U.K., Sweden, Greece and France and discuss the role museums and heritage sites have in helping young adults make sense of such symbols.

Uppsatser i sammandrag

Att dekonstruera ikoner
David Powell, Karl David Långbacka - Elderberry Ab
Mänskligheten har genom historien på ett oproportionerligt sätt lagt bördan av krig och våld på unga vuxna. Sociala, kulturella och ekonomiska krafter bidrar alla till att unga

människor används för att begå våldshandlingar för "det goda" eller för att försvara samhället. Detta förstärks av normativa förväntningar i många samhällen om att unga vuxna i sig är våldsamma och farliga.
Låt oss komma ihåg att Spitfire-flygplanet var ett mycket effektivt krigsvapen, som oftast flögs av unga vuxna som försökte döda andra unga vuxna. För britterna har Spitfire blivit en ikon för motstånd mot fascismen, för "de få" och för en seger ledd av Winston Churchill i en tid då demokratin i Europa hotades. Detta kanske inte är just den symbolen som en Spitfire representerar för andra länder eller för individer eller deras familjer som förlorade sina liv på grund av flygplanets dödliga kraft. Det är dock säkert så att alla länder har en liknande ikon eller figur som representerar liknande värden. Som ser unga vuxna som agenter för förändring och fred och ifrågasätter traditionella begrepp.
Museer och kulturarv behöver ofta visa och berätta historier kring och framställa själva krigstekniken. Många gör ett bra arbete inom detta område utan att förhärliga kriget i sig. Det är intressant att notera att Imperial War Museum och Greek War Museum, inte utan kontroverser, identifieras som fredsmuseer. Vi kunde också lyfta fram hur British National Maritime museum försöker balansera visningen av Royal Navy och dess krigsfartyg med hur marinen användes för att främja och skydda transport av elva miljoner afrikaner till slaveri.
I denna uppsats tittar vi på hur nationella ikoner i Storbritannien, Sverige, Grekland och Frankrike diskuterar den roll som museer och kulturarv har för att hjälpa unga vuxna att förstå sådana symboler.

Résumé de l’essai

Déconstruire les icônes
David Powell, Karl David Långbacka – Elderberry AB
L'humanité, à travers l'histoire, a placé de manière disproportionnée le fardeau de la guerre et de la violence sur les jeunes adultes. Les forces sociales, culturelles et économiques contribuent toutes à ce que les jeunes soient utilisés pour commettre des actes de violence pour le «bien» de la société ou pour la défendre. Ceci est renforcé par les attentes normatives de nombreuses sociétés selon lesquelles les jeunes adultes sont intrinsèquement violents et dangereux.
Rappelons-nous que l'avion Spitfire était une arme de guerre très efficace, principalement pilotée par de jeunes adultes essayant de tuer d'autres jeunes adultes. Pour les Britanniques, le Spitfire est devenu une icône de la résistance au fascisme, de «quelques-uns» et de la victoire menée par Winston Churchill, à une époque où la démocratie en Europe était menacée. Ce n'est peut-être pas le symbole qu'un Spitfire représente pour d'autres pays ou pour des individus ou leurs familles qui ont perdu la vie à cause de leur force meurtrière. Cependant, il serait prudent de dire

que tous les pays auront une icône ou un chiffre similaire représentant des valeurs similaires. Considérer les jeunes adultes comme des agents de changement et de paix remet en question et remet en question ces concepts traditionnels.
Les musées et les organisations patrimoniales ont souvent besoin d'exposer et de raconter des histoires et des représentations de la technologie de la guerre. Beaucoup font un excellent travail dans ce domaine sans glorifier la guerre elle-même. Il est intéressant de noter que l'Imperial War Museum et le Greek War Museum, non sans controverse, s'identifient comme des musées de la paix. Nous pourrions également examiner comment le British National Maritime Museum tente d'équilibrer les démonstrations de la puissance de la Royal Navy et de ses navires de guerre avec la façon dont cette marine a été utilisée pour promouvoir et protéger le transport de onze millions d'Africains vers l'esclavage.
Dans cet essai, nous examinons comment les icônes nationales au Royaume-Uni, en Suède, en Grèce et en France et discutons du rôle des musées et des sites patrimoniaux pour aider les jeunes adultes à donner un sens à ces symboles.

Περίληψη δοκιμίου

Αποδομώντας τα σύμβολα
Η ανθρωπότητα, σε όλη την ιστορία της, έθετε δυσανάλογα τα βάρη του πολέμου και της βίας στους νεαρούς ενήλικες. Κοινωνικές, πολιτισμικές και οικονομικές δυνάμεις συμβάλλουν όλες στη «χρήση» των νέων ανθρώπων για τη διάπραξη περιστατικών βίας για το «καλό» της κοινωνίας ή την υπεράσπισή της. Αυτό ενισχύεται από τις κανονιστικές προσδοκίες πολλών κοινωνιών, κατά τις οποίες οι νεαροί ενήλικες είναι από τη φύση τους «βίαιοι και επικίνδυνοι».

Ας θυμηθούμε ότι το αεροπλάνο Spitfire ήταν ένα εξαιρετικά αποτελεσματικό πολεμικό όπλο, το οποίο πιλόταραν κυρίως νεαροί ενήλικες, προσπαθώντας να σκοτώσουν άλλους νεαρούς ενήλικες. Για τους Βρετανούς, το Spitfire υπήρξε σύμβολο αντίστασης στον φασισμό, σύμβολο «των λίγων» και σύμβολο της νίκης, επικεφαλής της οποίας ήταν ο Ουίνστον Τσόρτσιλ, σε μια εποχή που η δημοκρατία στην Ευρώπη ήταν υπό απειλή. Αυτός ο συμβολισμός του Spitfire ενδέχεται να μην είναι ο ίδιος για άλλες χώρες ή για άτομα ή τις οικογένειές τους που έχασαν τις ζωές τους λόγω της θανάσιμης ισχύς του. Ωστόσο, μπορούμε να πούμε ότι όλες οι χώρες έχουν ένα παρόμοιο σύμβολο ή στοιχείο που εκπροσωπεί παρόμοιες αξίες. Η αντιμετώπιση των νεαρών ενηλίκων ως φορέων της αλλαγής και της ειρήνης αμφισβητεί και προκαλεί τέτοιες παραδοσιακές αντιλήψεις.

Τα μουσεία και οι οργανισμοί κληρονομιάς χρειάζεται συχνά να προβάλουν και να αφηγούνται ιστορίες και αναπαραστάσεις της τεχνολογίας του πολέμου. Πολλοί κάνουν εξαιρετική δουλειά σε αυτόν τον τομέα, χωρίς να εγκωμιάζουν τον ίδιο τον πόλεμο. Είναι ενδιαφέρον ότι το Αυτοκρατορικό Πολεμικό Μουσείο (Imperial War Museum) και το Ελληνικό Πολεμικό Μουσείο αναγνωρίζονται ως μουσεία της Ειρήνης, εν μέσω αντιπαραθέσεων. Μπορούμε επίσης να

δούμε πώς το Βρετανικό Εθνικό Ναυτικό Μουσείο προσπαθεί να βρει μια ισορροπία ανάμεσα σε εκθέματα που προβάλλουν την ισχύ του Βασιλικού Ναυτικού και των πολεμικών του πλοίων και στον τρόπο με τον οποίο χρησιμοποιήθηκε το ναυτικό για την προώθηση και την προστασία της μεταφοράς έντεκα εκατομμυρίων Αφρικανών στη δουλεία. Σε αυτό το δοκίμιο εξετάζουμε τα εθνικά σύμβολα σε Ηνωμένο Βασίλειο, Σουηδία, Ελλάδα και Γαλλία και αναλύουμε τον ρόλο που διαδραματίζουν τα μουσεία και οι χώροι πολιτιστικής κληρονομιάς, βοηθώντας τους νεαρούς ενήλικες να κατανοήσουν αυτά τα σύμβολα.

Website:
www.e-learningstudios.com

eLearning Studios (ELS) is a limited company based in Coventry in the UK that specialises in designing and developing a range of innovative technology for learning, underpinned by sound pedagogy and performance metrics. Approaches include Virtual Reality (VR) Training, Serious Games, e-learning and mobile learning, Augmented Reality (AR) and blended learning.

Essay(s) summary

(a)
Using Virtual Reality in Heritage
eLearning Studios (ELS) and Elderberry AB
A relative newcomer to the field of exhibitions are Virtual Reality Exhibitions. VR exhibitions whilst retaining the positives of digital media can now include some of the pluses of physical exhibitions. It is important to remember though that this should not really be seen as a competition between to media but as two distinct media or art forms that sometimes complement each other, sometimes not, which should be allowed to develop and be used in their own unique way. We want to show how VR can be used dynamically in managing technological change in a heritage or educational organisation. Using VR interactive scenarios where the use of technologies within the organisation will be demonstrated and the participants can interact and collaborate with both colleagues and virtual agents. By taking part in these virtual scenarios, employees can experience different real-life situations and experience the advantages of technological change in a more hands-on way. This could make them more likely to embrace change within the organisation as it will no longer be a completely abstract concept. Immersive – world seen in 360 degrees; learners' senses need to be dynamic Provides learners with different scenarios Virtual Reality has been widely used for the prevention and promotion of Cultural Heritage in the form of standalone applications targeting people who are not able to visit museums in place. These productions are mostly made by larger institutions at enormous cost. With technology advances, and price reductions it is now possible for many more to be able to use applications to exploit different types of emerging technologies. Recent developments in Virtual Reality (VR) hardware resulted in

reduced cost in acquiring VR equipment that enables the widespread immersive visualization and interaction in virtual environments. The use of Virtual Reality systems in Heritage is a now economically and technically viable.

(b)
Basic Guide for Trainers Looking to Introduce Virtual Reality (VR) into their online or face to face training program.
Virtual reality (VR) is an experience taking place within simulated and immersive environments that can be either like or completely different from the real world. Applications of VR can include entertainment (i.e. gaming), virtual meetings and education (i.e. medical or military training). VR's most immediately recognisable component is the head mounted display (HMD). Human beings are visual creatures, and display technology is often the single biggest difference between immersive VR systems and traditional user interfaces.
VR has multiple uses in training i.e. scientific and engineering data, architecture to weather models. In aviation, medicine, and the military, Virtual Reality training is an attractive alternative to live training with expensive equipment, dangerous situations, or sensitive technology. In this text we show how Virtual reality can be used in training for adults, discuss approaches for creating VR training simulations and give Examples of the types of interactive activities you can create in VR. We also show what equipment is needed and how it can be integrated into mainstream training.

Uppsatser i sammandrag

(a)
Använda VR i kulturarv eLearning Studios (ELS) och Elderberry AB
En relativt nytillkommen aktör inom utställningsområdet är Virtual Reality Exhibitions. VR-utställningar kan nu, samtidigt som det positiva med digitala medier bibehålls, inkludera några av plussen med fysiska utställningar. Det är dock viktigt att komma ihåg att detta inte egentligen ska ses som en konkurrens mellan media utan som två distinkta medier eller konstformer som ibland kompletterar varandra, ibland inte, och som bör få utvecklas och användas på sitt eget unika sätt. Vi vill visa hur VR kan användas dynamiskt för att hantera teknisk förändring i ett kulturarv eller en utbildningsorganisation. Användningen av VR interaktiva scenarier inom organisationen kommer att demonstreras och deltagarna kan interagera och samarbeta med både kollegor och virtuella agenter. Genom att delta i dessa virtuella scenarier kan anställda uppleva olika verkliga situationer och uppleva fördelarna med teknisk förändring på ett mer praktiskt sätt. Detta kan göra dem mer benägna att anamma förändringar inom organisationen eftersom det inte längre kommer att vara ett helt abstrakt begrepp. För den immersiva världen sedd i 360 grader måste elevernas sinnen vara dynamiska då eleverna erbjuds olika scenarier. Virtual Reality har använts i stor utsträckning för att förebygga och främja kulturarv i form av fristående applikationer riktade till människor som inte kan besöka museer på plats. Dessa produktioner tillverkas mest av större institutioner till enorma kostnader. Med tekniska framsteg och prissänkningar är det nu möjligt för många fler att kunna använda applikationer

för att utnyttja olika typer av framväxande teknik. Den senaste utvecklingen av VR-hårdvara (Virtual Reality) har resulterat i minskade kostnader för att skaffa sådan VR-utrustning som möjliggör den omfattande visualiseringen och interaktionen i virtuella miljöer. Användningen av Virtual Reality-system är nu ekonomiskt och tekniskt genomförbar.

(b)
Grundläggande guide för tränare som vill introducera virtuell verklighet (VR) i sina online eller ansikte-mot-ansikte träningsprogram. Virtual reality (VR) är en upplevelse som äger rum i simulerade och immersiva miljöer som kan vara antingen lika eller helt annorlunda än den verkliga världen. Tillämpningar av VR kan inkludera underhållning (dvs. spel), virtuella möten och utbildning (dvs. medicinsk eller militär utbildning). VR: s mest omedelbart igenkännbara komponent är den huvudmonterade skärmen (HMD). Människor är visuella varelser, och displayteknik är ofta den största skillnaden mellan immersiva VR-system och traditionell användning. VR har flera användningsområden inom utbildning, allt från vetenskapliga och tekniska data eller arkitektur till vädermodeller. Inom flyg, medicin och militär är Virtual Reality-träning ett attraktivt alternativ till levande träning med dyr utrustning, farliga situationer eller känslig teknik. I den här texten visar vi hur virtuell verklighet kan användas i träning för vuxna, diskuterar metoder för att skapa VR-träningssimuleringar och ger exempel på de typer av interaktiva aktiviteter du kan skapa i VR. Vi visar också vilken utrustning som behövs och hur den kan integreras i vanlig utbildning.

Résumé des essais

a)
Utilisation de la réalité virtuelle dans le patrimoine
eLearning Studios (ELS) et Elderberry AB
Les expositions de réalité virtuelle sont un nouveau venu dans le domaine des expositions. Les expositions de réalité virtuelle tout en conservant les avantages des médias numériques peuvent désormais inclure certains des avantages des expositions physiques. Il est important de se rappeler cependant que cela ne doit pas vraiment être considéré comme une compétition entre les médias, mais comme deux médias ou formes d'art distincts qui se complètent parfois, parfois non, qui devraient être autorisés à se développer et à être utilisés à leur manière.
Nous voulons montrer comment la RV peut être utilisée de manière dynamique dans la gestion du changement technologique dans une organisation patrimoniale ou éducative. En utilisant des scénarios interactifs de RV où l'utilisation des technologies au sein de l'organisation sera démontrée et les participants peuvent interagir et collaborer avec des collègues et des agents virtuels. En prenant part à ces scénarios virtuels, les employés peuvent vivre différentes situations de la vie réelle et profiter des avantages du changement technologique de manière plus pratique. Cela pourrait les rendre plus susceptibles d'adopter le changement au sein de l'organisation car ce ne sera plus un concept complètement abstrait. Immersif - monde vu à 360 degrés; Les sens des apprenants doivent être dynamiques Fournit aux apprenants différents scénarios.

La réalité virtuelle a été largement utilisée pour la prévention et la promotion du patrimoine culturel sous la forme d'applications autonomes ciblant les personnes qui ne sont pas en mesure de visiter les musées sur place. Ces productions sont pour la plupart réalisées par de plus grandes institutions à un coût énorme. Avec les progrès technologiques et les réductions de prix, il est maintenant possible pour beaucoup d'autres de pouvoir utiliser des applications pour exploiter différents types de technologies émergentes. Les développements récents du matériel de réalité virtuelle (VR) ont entraîné une réduction des coûts d'acquisition d'équipement de réalité virtuelle qui permet une visualisation immersive et une interaction généralisées dans des environnements virtuels. L'utilisation de systèmes de réalité virtuelle dans le patrimoine est désormais économiquement et techniquement viable.

b)
Guide de base pour les formateurs souhaitant introduire la réalité virtuelle (RV) dans leur programme de formation en ligne ou en face à face.
La réalité virtuelle est une expérience qui se déroule dans des environnements simulés et immersifs qui peuvent être similaires ou complètement différents du monde réel. Les applications de la RV peuvent inclure le divertissement (c'est-à-dire les jeux), les réunions virtuelles et l'éducation (c'est-à-dire la formation médicale ou militaire).
Le composant le plus immédiatement reconnaissable de la réalité virtuelle est l'écran de tête (HMD). Les êtres humains sont des créatures visuelles et la technologie d'affichage est souvent la plus grande différence entre les systèmes de réalité virtuelle immersifs et les interfaces utilisateur traditionnelles.
La réalité virtuelle a de multiples utilisations dans la formation, c'est-à-dire les données scientifiques et techniques, l'architecture aux modèles météorologiques.
Dans l'aviation, la médecine et l'armée, la formation en réalité virtuelle est une alternative intéressante à la formation en direct avec un équipement coûteux, des situations dangereuses ou une technologie sensible. Dans ce texte, nous montrons comment la réalité virtuelle peut être utilisée dans la formation des adultes, discutons des approches pour créer des simulations d'entraînement en réalité virtuelle et donnons des exemples des types d'activités interactives que vous pouvez créer en réalité virtuelle. Nous montrons également quel équipement est nécessaire et comment il peut être intégré dans la formation générale.

Περιλήψεις δοκιμίων

(α)
Χρήση εικονικής πραγματικότητας στην κληρονομιά
eLearning Studios (ELS) και Elderberry AB
Μια σχετικά νέα άφιξη στο πεδίο των εκθέσεων είναι οι Εκθέσεις Εικονικής Πραγματικότητας (Virtual Reality/VR). Οι εκθέσεις VR διατηρούν τα θετικά στοιχεία των ψηφιακών μέσων και μπορούν πλέον να περιλαμβάνουν και θετικά στοιχεία των φυσικών εκθέσεων. Είναι σημαντικό να θυμόμαστε, ωστόσο, ότι αυτό δεν θα πρέπει να θεωρείται

ανταγωνισμός μεταξύ των μέσων, αλλά δύο διαφορετικά μέσα ή μορφές τέχνης που κάποιες φορές αλληλοσυμπληρώνονται και κάποιες φορές όχι, ωστόσο θα πρέπει να αναπτύσσονται και να χρησιμοποιούνται με τον δικό τους, μοναδικό τρόπο. Στο εν λόγω δοκίμιο θέλουμε να δείξουμε τους τρόπους με τους οποίους η εικονική πραγματικότητα μπορεί να χρησιμοποιηθεί δυναμικά στη διαχείριση της τεχνολογικής αλλαγής στο πλαίσιο οργανισμών που ασχολούνται με τον πολιτισμό ή την εκπαίδευση. Ειδικότερα θα συζητηθεί η αξιοποίηση διαδραστικών σεναρίων VR, όπου η χρήση των τεχνολογιών θα επιδεικνύεται και οι συμμετέχοντες θα μπορούν να αλληλεπιδρούν και να συνεργάζονται τόσο με συναδέλφους τους, όσο και με άλλους εικονικούς συνεργάτες. Συμμετέχοντας σε αυτά τα εικονικά σενάρια, οι εργαζόμενοι μπορούν να βιώσουν διαφορετικές καταστάσεις της πραγματικής ζωής και να απολαύσουν τα πλεονεκτήματα της τεχνολογικής αλλαγής με πρακτικότερο τρόπο. Αυτό είναι πιθανό να τους καταστήσει θετικότερους στην αποδοχή της αλλαγής εντός του οργανισμού, καθώς δεν θα πρόκειται πλέον για μια τελείως αφηρημένη αρχή. Εμβυθιστικός κόσμος σε 360 μοίρες, με τις αισθήσεις των εκπαιδευόμενων να καλούνται να λειτουργήσουν δυναμικά στο πλαίσιο διαφορετικών σεναρίων.

Η Εικονική Πραγματικότητα έχει χρησιμοποιηθεί ευρέως για την προστασία και την προώθηση της Πολιτιστικής Κληρονομιάς με τη μορφή ανεξάρτητων εφαρμογών που απευθύνονται σε άτομα, τα οποία δεν μπορούν να επισκεφτούν τα μουσεία. Αυτές οι παραγωγές οργανώνονται συνήθως από μεγαλύτερους οργανισμούς και έχουν τεράστιο κόστος. Καθώς η τεχνολογία εξελίσσεται και τα κόστη μειώνονται, πλέον όλο και περισσότεροι μπορούν να χρησιμοποιούν εφαρμογές και να αξιοποιούν τους διαφορετικούς τύπους των αναδυόμενων τεχνολογιών. Οι πρόσφατες εξελίξεις στο χώρο της Εικονικής Πραγματικότητας (VR) οδήγησαν σε μείωση του κόστους για την απόκτηση εξοπλισμού VR και διευκόλυναν την αλληλεπίδραση σε εικονικά περιβάλλοντα. Η χρήση των συστημάτων Εικονικής Πραγματικότητας στην Κληρονομιά είναι πλέον οικονομικά και τεχνικά εφικτή.

(β)
Βασικός οδηγός για εκπαιδευτές που θέλουν να εισάγουν την εικονική πραγματικότητα (VR) στο ηλεκτρονικό ή διά ζώσης εκπαιδευτικό τους πρόγραμμα
Η Εικονική Πραγματικότητα (VR) είναι μια εμπειρία που λαμβάνει χώρα εντός προσομοιωμένων και εμβυθιστικών περιβαλλόντων, που μπορούν να μοιάζουν με - ή να διαφέρουν πλήρως από- τον πραγματικό κόσμο. Οι εφαρμογές VR μπορούν να περιλαμβάνουν την ψυχαγωγία (π.χ. gaming), τις εικονικές συσκέψεις και την εκπαίδευση (π.χ. ιατρική ή στρατιωτική εκπαίδευση).

Το πλέον αναγνωρίσιμο εξάρτημα του VR είναι η μονάδα προβολής που προσαρμόζεται στο κεφάλι (HMD). Οι άνθρωποι είναι οπτικά πλάσματα και η τεχνολογία προβολής αποτελεί συχνά τη μεγαλύτερη διαφορά μεταξύ των εμβυθιστικών συστημάτων VR και των συμβατικών διεπαφών χρηστών.

Το VR έχει πολλαπλές χρήσεις στην εκπαίδευση, π.χ. αξιοποίηση επιστημονικών και μηχανολογικών δεδομένων, μετεωρολογικά μοντέλα κ.α. Στην αεροπορία, την ιατρική και τον στρατό, η εκπαίδευση μέσω Εικονικής Πραγματικότητας αποτελεί μια ελκυστική εναλλακτική επιλογή έναντι της διά ζώσης εκπαίδευσης, που περιλαμβάνει ακριβό εξοπλισμό, επικίνδυνες καταστάσεις ή ευαίσθητη τεχνολογία.

Σε αυτή την ενότητα παρουσιάζουμε τον τρόπο με τον οποίο μπορεί να χρησιμοποιηθεί η εικονική πραγματικότητα στην επιμόρφωση ενηλίκων, αναλύουμε προσεγγίσεις για τη δημιουργία εκπαιδευτικών προσομοιώσεων VR και παρέχουμε σχετικά παραδείγματα. Παρουσιάζουμε, επίσης, τον εξοπλισμό που χρειάζεται και τον τρόπο με τον οποίο μπορεί να ενταχθεί η εικονική πραγματικότητα στη βασική εκπαίδευση.

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