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ARTICLE

Co-curate: Working with Schools and Communities to Add Value to Open Collections

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Co-Curate North East is a cross-disciplinary initiative involving Newcastle University and partner organisations, working with schools and community groups in the North East of England. Co-curation builds on the concept of the 'ecomuseum' model for heritage based around a virtual territory, social memory and participative input from the wider population. The project also leverages open licencing and facilities to harvest and repurpose collections of photographs, video clips, and other artefacts. Technologies were developed to support co-production and co-curation, including facilities to combine ('Mashup') materials from formal collections of museums and archives with Open Access (OA) content from informal community-based resources. The purpose of this paper is to provide an overview of the technologies used and developed during the project, with a particular focus on how Open collections were used, in both formal and informal educational contexts.

A diverse range of community and school groups participated in the project, including a large-scale pilot with a High School which integrated use of the Website as part of an 'enquiry-based' scheme of work over several weeks, culminating in the students giving an exhibition in a prominent regional gallery. Levels of knowledge of copyright and licensing varied between groups, but were generally low. Issues around copyright and licenses were a major component of ongoing discussion with groups as part of the co-curation process.

Co-Curate is an innovative project using OA materials in a range of educational and cultural settings.

Keywords: Co-Production; Co-Curation; Open Licencing; Creative Commons; Online Environments

Introduction and Context

Co-Curate North East is a cross-disciplinary initiative involving Newcastle University and partner organisations, working with schools and community groups in the North of England. Technologies have been used to support co-production and co-curation, including use of a platform to combine the use of materials from formal museum and archive collections with informal community based resources. The 18 month project was funded by the Arts and Humanities Research Council as part of the Digital Transformations in Community Research Co-Production call of the Connected Communities Programme (Connected Communities, 2016).

Co-production and co-curation are an important focus in Heritage research and practice (Stevens, Flinn & Shepherd, 2010; Morse, Macpherson & Robinson, 2013). Traditional museums may be considered as being the combination of physical buildings, heritage collections curated by expert staff, and public visitors. However, the concept of the 'ecomuseum' (Davis, 1999; Corsane, Davis, Hawke & Stefano, 2009) provides a new model for heritage based around a virtual territory, social memory and input from the wider population. Co-production also resonates with social constructivist philosophies in Education, where the learner creates meaning by being actively involved in the social learning process (Vygotsky, 1978; Wertsch, 1997), in contrast to instructor-led teaching where the individual learner has a more passive and receptive role.

Emerging technologies provide new affordances for Co-production and co-curation, such as the ability to add personal comments and memories to digital artefacts from formal collections, or to created 'mash-ups' of content from multiple collections. In addition, the growth in open licensing, including Open Educational Resources, and open practice in general are enablers for these practices.

The Co-Curate platform (https://co-curate.ncl.ac.uk/) builds on previous JISC-funded work with Dynamic Learning Maps (DLM) (Learning Maps, 2015; Cotterill et al., 2011) and related OER Rapid Innovation projects (Hardy et al., 2012). The project also builds on work in Arts and Cultures, such as the Northumbrian Exchanges

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(Northumbrian Exchanges, 2015), and Education Research. The aims of the Co-Curate project were 1) to establish effective methods and strategies for co-curating knowledge on collections and archives through engagement with a range of communities, 2) to develop innovative research and learning strategies to support this co-curation process, 3) to harness and develop new technologies to seamlessly connect learners to multiple sources of data and information from museums and open data, 4) to create self-sustaining private and public online spaces or communities in which synchronous and asynchronous intergenerational and international collaboration can reside, 5) to promote the notion of 'citizen researchers' in the context of using heritage collections and archives.

The purpose of this paper is to provide an overview of the technologies used and developed, with a particular focus on how Open collections were used, in both formal and informal educational contexts, and to share initial findings in relation to stakeholders knowledge and perceptions of both using and contributing Open licensed materials.

Methods and Materials

Harvesting Collections

The first phase of work was to develop automated methods to harvest information about collections specific to the North East region, using the Application Programme Interface (APIs) of Flickr, Youtube, and Europeana (Flikr, 2015; YouTube, 2015; Europeana, 2015). These included collections from Tyne and Wear Archives and Museums (TWAM), one of the project partners, held in Europeana and in a Flickr album. The information harvested includes the license information, copyright owner and description for each photograph and video. This 'meta information' is stored in an online database along with the urls of the photographs, videos and thumbnail images, which are not held directly by Co-Curate. The process was designed to be automated (regularly refreshed) and extensible (easy to add additional collections using the supported APIs, without requiring software changes). The photographs, videos and thumbnail images are not stored directly by Co-Curate, but embedded from the remote source.

Website

Extensive changes were made to the 'base' DLM interface, particularly the 'grid view' to preview images (see **Figure 1**) and the introduction of communities. Early in the project it was clear that stakeholders had very diverse requirements, therefore preference settings were developed so that communities could be set-up to be either private or open/visible to the wider public. Most pages are public and can be viewed without logging onto the site. Authentication (including social login using Google or Twitter) is required to edit or comment. Over 1,000 topics were added for the main public community; the hierarchical taxonomy being predominantly places (cities, districts, towns, villages etc.), years, and selected historical/cultural topics (e.g. heritage sites, industry and work, music and dance, World War 1, health etc.). The site was designed so that, as new pages are added, it organically extends the hierarchical taxonomy. Communities in the site can add their own specific taxonomy.

When viewing resource details license information is clearly shown (**Figure 2**). In the case of Creative Commons licenses these link to the appropriate license description on the Creative Commons Website.

To support co-production / co-curation people can:

- Add and edit pages
- Add resources to pages
  - Add resources from the existing collection

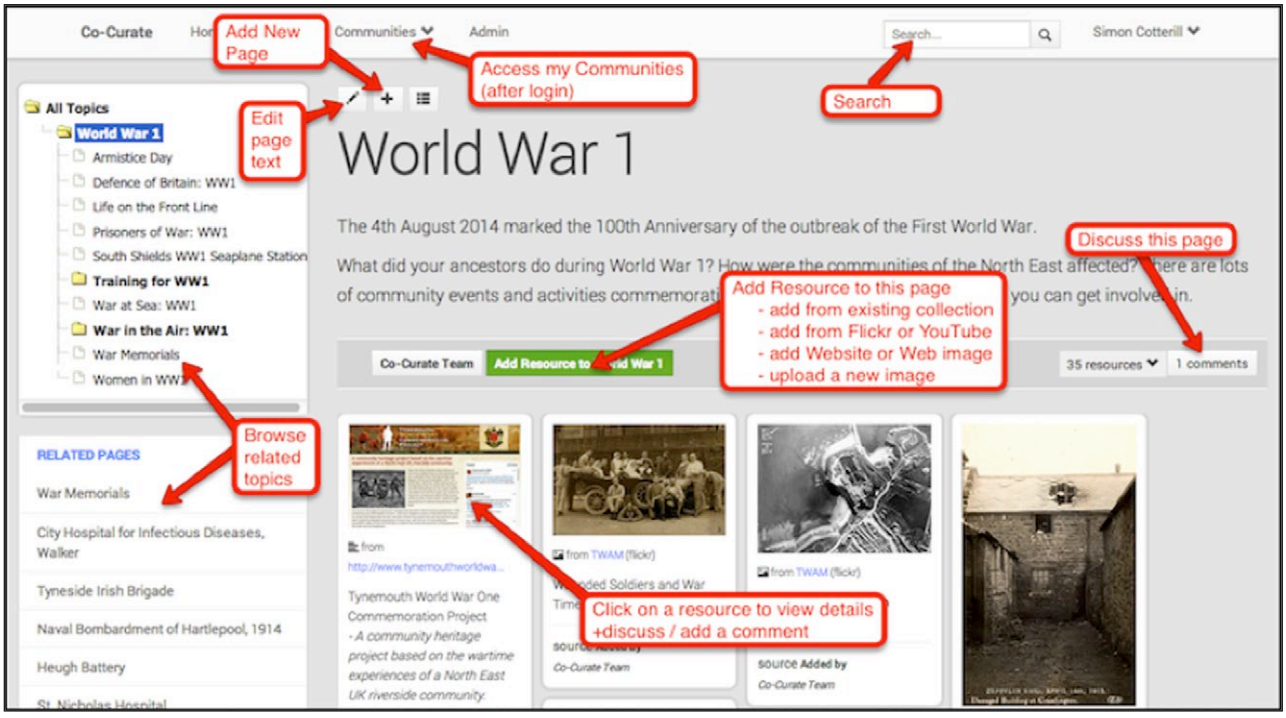

Figure 1: Overview of a page in Co-Curate.

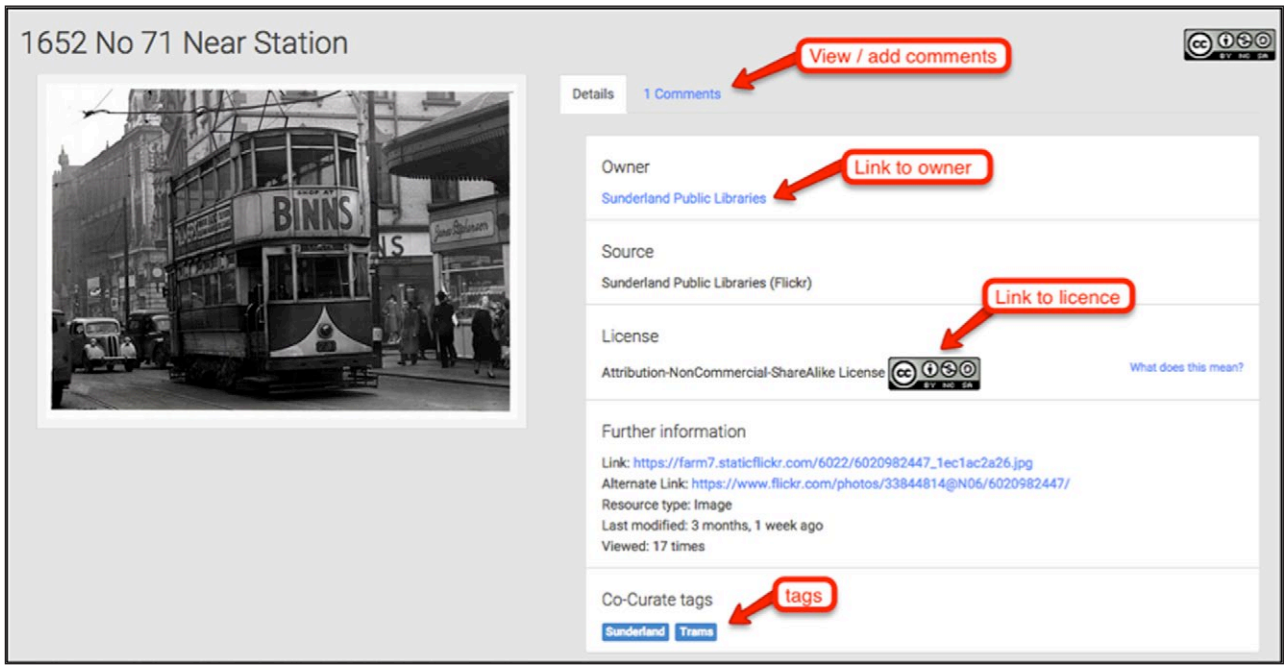

Figure 2: Viewing resource details - including license information.

- Add pictures/videos from Flickr/YouTube
- Add links to external Websites + descriptions
- Upload images

- Comment on pages
- Comment on resources (pictures, videos, Website links etc.)
- Tag resources to the Co-Curate taxonomy

People can add pages (aka topics) and edit these, in a Wiki-like fashion. You can add resources from a mixture of sources to public pages. The system also allows you to add ad-hoc resources from the Web or upload your own resources, with a choice of license options, including All Rights Reserved, but with the default set to CC BY-NC 2.0. When images are uploaded these are stored remotely in Flickr, via the API along with the user-specified license.

Many enhancements have been made to the Website in response to feedback requests from communities. Google Analytics were applied to the Website from January 2015. Analysis of usage was undertaken on 24th March 2015, near the end of the funded project period, and again 6 months later.

Engagement with Schools and Community Groups

The project team worked with a diverse range of community and school groups on co-curation activities, which included variable use of the Website and other technologies (notably 3D scanning/printing). Copyright and licensing were 'hot topics' for most groups and the project ran a workshop on this with an external specialist (Korn, 2015). One of the largest pilots was with George Stephenson High School, involving 220 students and 10 teachers in a scheme of work over a term, which included enquiry-based learning involving use of the Website. Each class took on a different topic relating to regional history or culture. They were tasked with producing a display including photographs from the collections, for an exhibition in a prominent public gallery. Students in each group were given different roles (research, design, image selection etc.). Some of the teaching sessions were co-facilitated by members of the project team from Arts and Cultures, Education, and Learning Technology. In addition to training in using the Website students received guidance on copyright and images used for the displays were strictly limited to those that were openly licensed, or for which permission was granted. In addition to the main task of producing the displays students also had specific assignments; one of which was interviewing a relative from another generation about a cultural/historical topic and recoding this on a related resource in Co-Curate. A seperate group of pupils from Cambo First School worked with Special Collections at Newcastle University Library and as part of a scheme of work over several weeks produced 'Our Wallington', as part of the Co-Curate NE project (Newcastle University Library, 2015), though only with peripheral involvement with the Website. The project team also engaged with numerous community groups. The project team used a 'theory of change' framework (Laing & Todd, 2015) to work prospectively with stakeholders to define and evaluate desired outcomes for each community group.

Results

At March 2015 the site included over 20,800 resources (summary in Appendix 1; see Supplementary File 1) and 1,124 topic pages. Of the resources, 18,119 are harvested from 16 collections (not all Openly licensed). Community added content and resources (excluding those added by the project team) are summarized in **Figure 3**. For the first three months of 2015 there were 40,293 page views

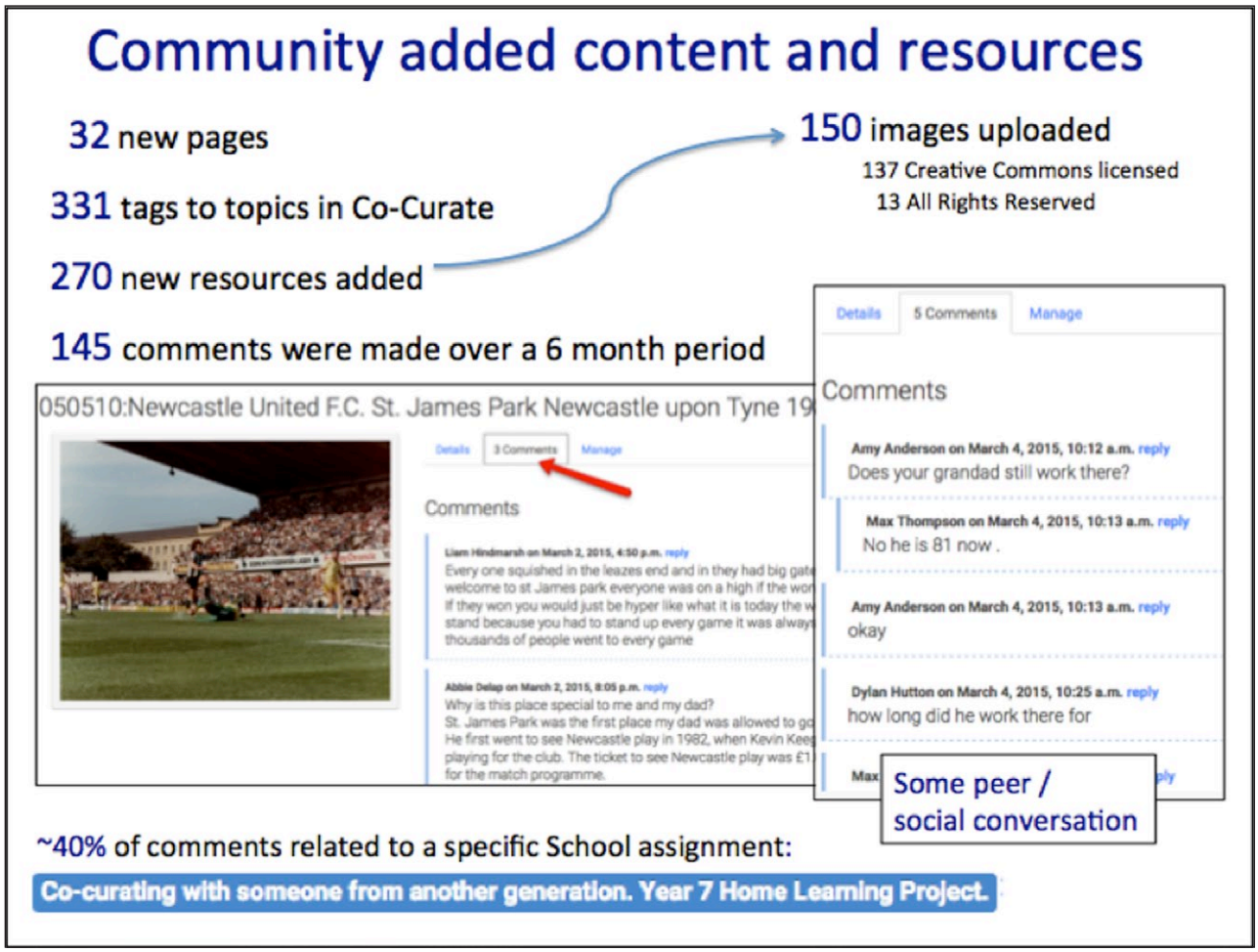

Figure 3: Summary of community added content (excluding project team).

by 2,666 individuals. There were 3,949 sessions in which an average of 10.2 pages were viewed per session over an average of eight minutes per session. 92% of users were from the UK, with approximately 85% being from locations in the North East region. In addition to access via login accounts created for community members, 24 'unknown' people logged on using social authentication (via Google or Twitter).

Of the top 10 most frequently viewed media (**Figure 4**) five were images from Museum/Library collections, four images were community added, and one video was added by the project team.

Copyright

Levels of knowledge of copyright and licensing varied amongst the different communities, but were generally low. Community groups were almost universally keen to use Openly Licensed from collections, but some were reluctant to make their materials Openly Licensed, or in some cases even publically accessible. On the other hand, some groups were keen on making their materials Open Access from the onset.

Issues around copyright and licenses were a major component of ongoing discussion with virtually all groups as part of the co-curation process. A workshop on copyright organized for the project was well attended. A recurring theme was that sets of physical photographs/materials had been collected over many years, which community groups want to digitize, but these are often problematic in that many resources are 'orphaned' in the sense that their owner cannot be readily identified and therefore copyright is uncertain.

Most of the school-based students had a good awareness about not automatically trusting all Web-based sources, but few had any prior understanding of copyright and issues relating to re-use of digital materials.

After the formal project

One of the aims of Co-Curate was to produce a sustainable on-going community resource, beyond the 18 month funding period. Over the first 6 months since the formal end of the project there has been moderate continuing access to the site; 8,164 individuals made 40,946 page views. Content has continued to grow; 1,977 resources were added via the feeds from the collections (see Appendix 1, in Supplementary File 1). In addition, 1,955 resources and 422 topics (pages) were manually added by individual users. The new topics included 136 locations, 87 maps (embedded Google Maps), 28 dates, and 10 about a specific historical person. However, of 58% the resources added and 78% of topics were added by the project team. There were15 comments submitted to the

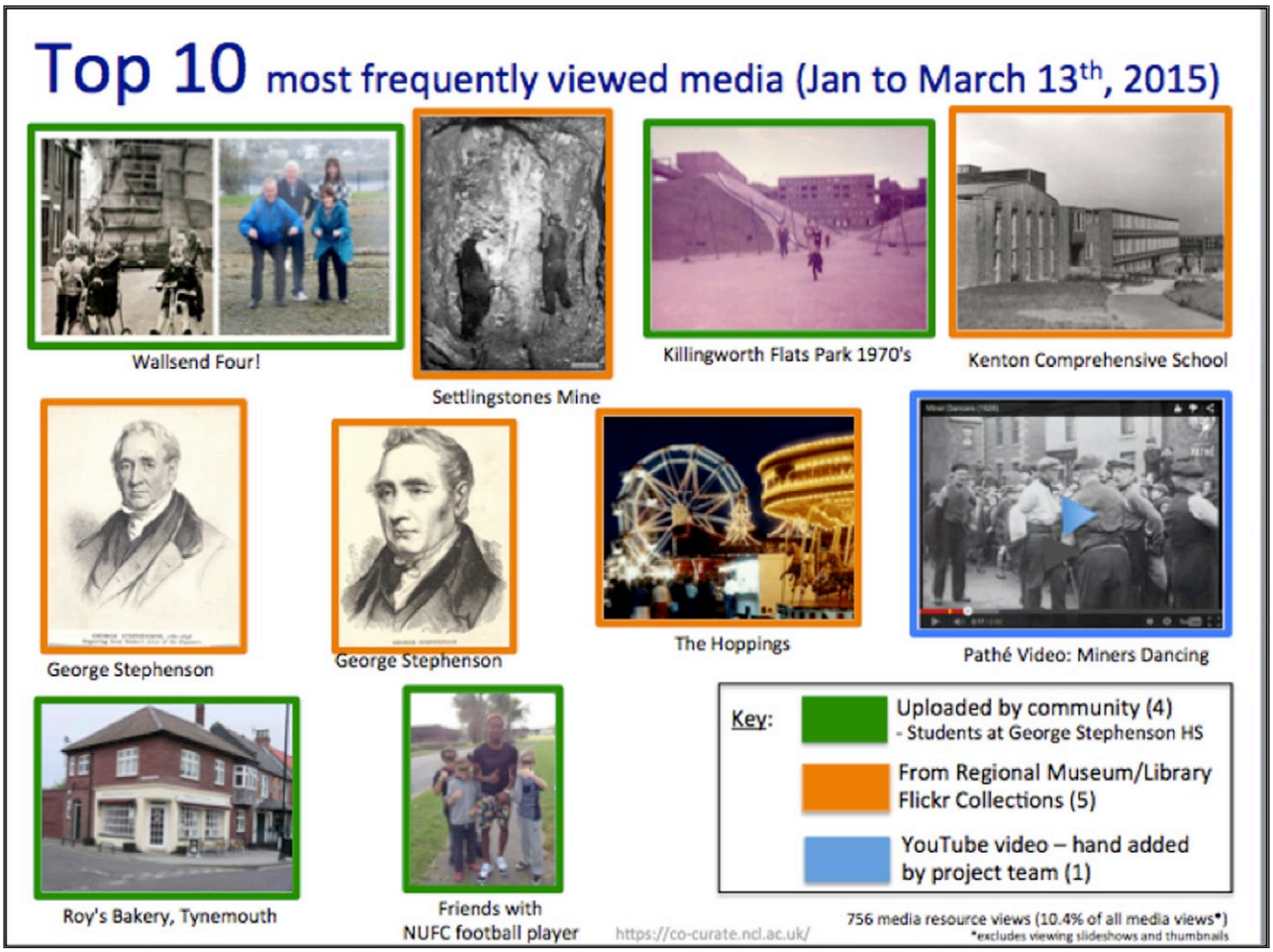

Figure 4: Most frequently viewed media on Co-Curate North East.

site of which nine were by a member of the project team. A teacher and a small number of students at George Stephenson High School went on to use the site for background research before undertaking a cycle tour of historic places in Tyneside. One of the partner schools is in contact regarding further use of Co-Curate, but this is still in discussion following a change in the main staff contact.

Discussion

The Co-Curate North East project aims to support co-production and co-curation, including use of materials from museum and archive collections mixed with informal community input. The process can add value to OA collections; for example the addition of personal narratives to historical photographs adds rich contextual information. The tagging and linking between related topics and resources also adds value. The creation of 'mashups' can mix content from different collections and can include community added content. Regardless of academic value, personal comment and social discussion may increase perceived relevance and interest in the collections, encouraging their use by a wider audience.

Open Licensing and Ethical and Legal Considerations

Co-Curate has helped raise awareness and understanding of copyright and Open Licenses with the communities, both through a dedicated workshop on licensing and through discussions on this topic during the project. Hopefully this will translate into many of the students and community practitioners openly licensing their photographs and composite educational materials in the future. It was notable in the High School pilot that a student contacted a collection owner to seek permission to use an image, purely under their own initiative. Other students then followed this good practice.

The work of students in selecting and creating collections is an educational process, but the outputs themselves (including annotations added by the students, any uploads of new materials, the overall collection itself) could be considered an educational resource in its own right. This brings challenges because a collection, which includes a 'mashup' from different sources is likely to have components with a range of different licenses. As such, granting an overarching open license needs careful consideration. There may be complex layers of permissions/licenses as mashups and composite objects are included in other mashups.

To date there haven't been any issues with uploading of inappropriate content or known/reported copyright violations. The risk management includes the use of an explicit takedown policy. To date there haven't been inappropriate comments or 'wiki vandalism' to publically editable text – however, this was a worry that

came up in some initial discussions with communities. There were two cases where students added content in the 'wrong' topic page (non-malicious). Therefore we did bring in the ability to protect pages to make core pages (help information, pages about the project etc.) non editable. There was also an administrative function to roll-back content.

Ethical and legal issues related to working with children and their access and use of such systems are highly complex. There was a great deal of discussion with schools about use of closed vs. open communities. Also, for young children accounts could be limited to teachers who upload on behalf of students. Accounts with display names that are first name only or fully anonymised are also possible. However, one school decided to use students' full names, emphasising responsibility and accountability, seen as important learning points for the students' future use of social media. The approach was valued by many parents, who were able to view their children's work and even contribute to the wider Co-Curate activities. There are also potential issues of children granting open licenses to images they upload. The publishing of 3D scanned objects produced in the project also raise complex issues. Permissions/license may be needed to make and print a 3D scan, but then the 'copy' can be considered a new object in its own right. Also, beyond the focus of copyright belonging to the photographer there are more legal and ethical issues to consider (Quentin-Baxter, Williams, Hardy & Vernon, 2013).

Selection and Specificity

In the project we were highly selective in the use of collections in order to maintain relevance and specificity to the North East region. A key limitation was that many other excellent collections in the region were only partially online and many were on platforms that aren't easily 'discoverable' in the sense that they don't have an API. Initial investigation into harvesting from wider sources using search terms from the taxonomy weren't taken forward because search results included many non-region-specific resources and sometimes inappropriate resources. For example, a YouTube search for "Newcastle+ship building" included videos relating to Newcastle in Australia and searching for "Durham+history" in Flickr included many results for Durham, Ohio. We did not use bulk selection based on geo-tagging, largely due to time constraints, but also because results occasionally included inappropriate results, such as nude/semi-nude images.

However, the regional specificity of collections did create tensions during the project because national and international events (e.g. World War 1) and phenomena (e.g 1960's fashion) are of strong relevance to the region's history and culture. Therefore, later in the project we added some non-region-specific collections and extended the search facility to be able to differentiate between regional and national/international collections. Another constraint is that we only looked at a small number of APIs because of the limited duration of the project (18 months). Other APIs, such as those for MemoryBox, and Vimeo would have been useful – the main mitigation for this being that people can use embedded code to include external resources in their pages.

Educational Perspectives

Much of the engagement with schools within the Co-Curate project were in the context of relatively large schemes of work, in which there was varying use of the Website. The use of content on the site on a more granular basis to supplement individual lessons was not really explored in the project, but there may be great potential to build classroom resources around resources on the Website to bring local/regional perspectives into curricula. Learning on a community/group level was also addressed as part of the 'theory of change' evaluation, for example showing how community groups learned about copyright/licensing and modified practice.

Co-Curate makes extensive use of openly licensed photographs and videos. Many of the historical photographs and film clips from the formal collections have annotations explaining context and history, which enhance their value as educational materials. These are very granular compared to OERs, which can be entire modules, including structure and pedagogy. The lack of intrinsic pedagogy means the resources are very flexible and easy to re-use by teachers for different purposes and suitable for independent learning and Enquiry-based activities and even unstructured 'self-organised learning' (Mitra, Leat, Dolan & Crawley, 2010). The Co-Curate platform itself has features that can support independent discovery and 'serendipitous learning' – with links between topics providing different pathways taken according to personal interest.

Third Spaces and Co-Curation

This paper is primarily focused on the use of Co-Curate in relation to openly licensed materials. However, the concepts of 'co-curation' and 'co-production' should be discussed as they were central to the project. Co-Curation is broad ranging and not universally defined; beyond the activities described above, the project team have provided a more detailed overview of the scope of co-curation as a social activity (Hudson, 2015; Hudson, Cotterill & Webster, 2015). The project built on the idea that digital platforms and 'social machines' need to be co-designed or interactively designed with Universities, heritage collections, institutions and universities all being involved. These may be considered 'Third spaces':

> *"Co-production of research can support the emergence of new types of interaction and new democratic spaces. Universities are not autonomous enclaves or entities but they do offer the possibility for the development of new experimental spaces of interactivity both metaphorically and in actuality. In those spaces we can both discover and elaborate new coalitions and new possibilities – they are what we might call 'third spaces' – territories, which are not governed and controlled by any of the contending and collaborating partners. The innovative work at Peoples Collections Wales around spaces for civic engagement and community modelling are also significant "(Hudson, 2015).*

Whilst not being mutually dependent, the philosophies behind these 'third spaces' have some similarities and overlap with those around open access and open practice. There is also a need for 'generous interfaces' for Digital Cultural Collections (Whitelaw, 2015), supporting alternative visualisation of digital collections, with rich, browsable interfaces that reveal the scale and complexity of the collection(s).

On a small scale Co-Curate is one of a number of initiatives taking steps in these directions. Building on an existing DLM platform the interface and data practices of the Co-Curate Website evolved considerably during the project with input from heritage and museum specialists, educationalists, learning technologists and the community partners. Whilst the interface changed considerably during the project, one of the core features of the original DLM - the ability to make connections between topics, remains important to the site. This provides the structure (hierarchical taxonomies) but also the ability for people to make their own connections between any of the topics and provides a different way of 'tagging' recourses, compared to most other Websites. The site also built on previous OER projects, providing a means to 'mash up' (mix) resources from a range of different sources and display explicit licencing information, where available.

Heritage and Cultural Perspectives

The development of social platforms and third spaces gives the potential to facilitate a new generation of 'citizen researchers', with easily access to heritage resources that are relevant and meaningful to them. Beyond the technology, the regional focus is a distinctive feature of the Co-Curate site and many of the project participants were keen to build a space that contributed to a 'sense of place' (Lloyd & Corsane, 2014).

However, there are many challenges in achieving such ideals. The degree to which the public is aware of these emerging social sites and 'third spaces' may be limited. Also, the public's confidence in accessing and knowing how to use heritage materials is debatable, and the optimal level of support from heritage professionals is largely unknown. With the 'mash up' approach Co-Curate is interesting in that it brings together museum, library and archive collections and mixes these with community-held heritage (Lloyd, 2014). One potential criticism, based on the nature of photographic content, is a bias towards places and 'things', rather than people and social/cultural issues – but the hope is that over time social commentary, memories and discussion are added to enrich these. Moreover, archives and collections are not 'neutral' and often reflect social power relationships (Povinelli, 2011).

One of the challenges for museum and heritage professionals is that much of the community memory sharing is happening across hundreds of photo sharing groups (with over 15 Facebook and Flickr groups for sharing old photographs for specific localities in the North East of England). It is highly problematic for professionals to engage with these active groups because they tend to be closed and are often based on inappropriate sharing of non-Openly licensed materials.

As a multi-disciplinary initiative, it took a long time for the different parties to build a mutual understanding. There were different perspectives from the different specialisms – in addition to the community-based groups. As such, it took time to build a common understanding of terminology and core concepts, particularly 'co-curation', which itself encompasses a range of other concepts, and for which there is no single universal definition. Expectations of the platform developed also varied widely between groups. Given the limited duration and resource of the project, there was a difficult balance between waiting for community groups to define their own aims and requirements, rather than providing a level of direction, whereby some groups wanted a clear 'task'.

Continuity

A key challenge of limited duration projects is impact and ongoing use after the end of the formal funded period, particularly as project staff move on to new responsibilities. Sustainability of the Website was considered at the design stage with the intention that many features can be 'self-managed', such as the bulk creation of accounts for schools/communities and the management of resources and page content. The decision to store uploaded images remotely in Flickr provides efficiency and makes resources durable and more accessible to wider audiences - though some community groups focused on private collections were not keen on this. Probably of more importance than the technology is the continuation of practices – curation of existing collections and creating and sharing materials with the wider community. The ongoing project evaluation includes a Theory of Change process and analysis. The 'legacy' will hopefully include learning and practice in relation to copyright and licensing, with greater use of Creative Commons licensing.

After the formal project period the use of the Website has switched towards informal use by individuals, as much as a platform for co-curation in formal education or group settings. It is still to be seen whether the social/interaction facilities of the site will be widely used, or whether it will become more of a regional 'reference' site. Many of the previous serial projects of heritage organisations are disjointed/isolated and their Open content is hard to find because of low search rankings. Sites like Co-Curate, which actively link to these, have the potential to bring them together and make outputs more prominent.

Conclusion

Co-Curate is an innovative project using OA collections and other materials in a range of educational and cultural settings. The concepts of 'co-curation' and 'co-production' are rapidly evolving and are applied to a variety of practices. Whilst these practices do not necessarily include a digital element (the output might be a play for example), the Co-Curate project provides an exemplar of how online platforms can be used to mix formal collections with community generated content, including within educational settings. The Co-Curate Website and other online co-curation initiatives are dependent on, and aim to encourage, open practice. They also have the potential to add value to and generate increased interest in OA collections.

https://co-curate.ncl.ac.uk/

Supplementary Files

The supplementary files for this article can be found as follows:

- **Supplementary File 1:** Appendix 1. http://dx.doi.org/10.5334/jime.414.s1

Competing Interests

The authors declare that they have no competing interests.

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