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A departmental face to social media: Lessons learnt from promoting natural history collections at National Museum Cardiff



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Abstract

The Natural Sciences Department at Amgueddfa Cymru-National Museum Wales has been using social media to highlight its collections, research and events since 2011. Since then various platforms have been utilised, such as Twitter, Facebook, Storify, blog pages and Flickr to increase profile through social media. Over the last two years a change in working practices have ensured an increased following and consequently a raised awareness of the collections by followers. Information has been successfully inter-connected across different social media platforms and linked to more traditional media sources such as web pages, on-line databases and catalogues. Effective monitoring of outputs has enabled efforts for the presence of the whole department on social media to be streamlined, efficient and produce a wide range of successful products.

Keywords: Social media; Public engagement; Natural history museums; Twitter; Storify; Flickr; Blogs; Advocacy; New audiences

Introduction

The Natural Sciences Department at Amgueddfa Cymru-National Museum Wales has been using social media since 2011 to highlight its collections, research and events. Since then, its presence on social media has increased; not only in line with a global change in awareness of different social media platforms, but also due to a museological and cultural change encouraging staff to become more involved in social media activities. The power of social media in education, science communication and in connecting people has been clearly shown (Wilcox, 2012).

Although blogging via the Museum's web pages was the starting point for departmental social media activities, the springboard to a greater presence came from using Twitter. Originally the @CardiffCurator Twitter account was set-up for personal/sectional use, and as such focused on an area of interest towards taxidermy and birding.

However, in 2013, the decision was taken by the new @CardiffCurator twitter account manager, to transform it into one representing the whole department, its work and natural history collections, in a bid to broaden its appeal, and to spread the workload between curators. This transformation, although slow initially, has brought about huge knock-on effects associated with the number of people engaging with content.

During the first two years as a personal/birding account there was a steady increase in followers to around 100, whilst in the following two years after transformation, numbers rose more rapidly to over 2000. This rise was attributed to increased interest in the wider diversity of content being posted, covering all aspects of zoology, botany and geology. This was noted due to the change in composition of the audience (moving away from a mainly birding audience), which followed the account, and a change backed-up from demographic data from Twitter Analytics.

The following paper discusses the benefits of posting material on social media as a department, rather than from a personal perspective, and also details lessons learnt throughout this process for a large organization.

Methods
Framework

Posting material on social media via a department of over 30 staff members and additional honorary fellows poses unique issues in terms of organization. Therefore, the curators within the department adopted a tiered approach, having a lead curator to oversee the account, and champions within each section to help promote the supply and organization of content from other colleagues. A structured framework was additionally adopted to organize material in preparation for posting on social media platforms. This consists of:

- a) Social media folders on shared computer drives, allowing participants across the department to provide material.
- b) Basic 'Tweet Guides' (Fig 1) to provide information to those less familiar with social media and to give advice on tweet construction (e.g., number of characters, image formats etc.), hashtags and twitter handles/username.

c) Standardized forms (Fig 2) allowing users to provide batches of tweets that can be tweeted over a period of time by those who have direct access to the account.

d) A 'Tweet Diary' that lists events and days throughout the year and encourages staff to prepare material in advance. This includes occasions such as public holidays and celebrations (Easter, advent, Chinese New Year, Saint's days, Valentine's Day etc.), museum events, historical coincidences (#BornOnThisDay, #DiedOnThisDay, #PublishedOnThisDay) and National Days. These types of events have proven to be extremely good vehicles to highlight our collections, in an engaging way that audiences can relate to. This has also been shown for other museum social media accounts e.g. the weekly Tate weather feature (linking objects in the collection to the weather in London) allowing the public to engage with museum collections in a different way (Guerra & Pansters, 2014).

Hashtags

The usefulness of using hashtags in allowing users to find or aggregate information on a particular subject is well documented (for example, see Zambonini, 2010). They can be particularly useful for events and conferences, allowing delegates and those unable to attend to follow what is happening for the duration. This can often lead to those

Instructions for Tweeting

Specific Date to Tweet:

Type of Tweet	Number of Characters	Tweet Text (insert your text in the relevant row)	Web link address	Photo File name
Text only	140 (incl. spaces)		N/A	N/A
Text and photograph	117		N/A	
Text and web address	~117			N/A
Text, Photograph and web address	~95			

Things to Consider:

1. Add a photograph (recommended, up to 4, JPEG or PNG), animated GIF (max 3MB) or a web-link?
2. Add a Twitter handle e.g. @Museum_Cardiff or @AmgueddfaCymru (This will alert the organisation of your tweet and allow users to link to the organisation twitter profiles if they want more information)?
3. Add a Hashtag e.g. #FossilFriday #WormWednesday #Creaturesfbts (no spaces, capitals at the start of each word can make it clearer to read, although are not necessary) (this will allow people to search for all tweets on this subject)?
4. Count Twitter handles and Hashtags in your number of characters (use the Word Count tool in Word: Characters (with spaces))
5. Do you have Welsh Text?
6. Ideal photo file size ~ 500K

Things to tweet about: Natural history events/Talks/ Tours, New species/Publications, Blog posts & Newspaper articles/Interesting Specimens/Research Expeditions/Surveys, Collection Stories.

E-mail to:
Katie.Mortimer-Jones@museumwales.ac.uk – **General Natural History (@CardiffCurator)**
Annette.Townsend@musueumwales.ac.uk – **Natural History Conservation (@NatHistConserve)**

List of Useful Twitter names:

@Museum_Cardiff	@NewportMuseum	@Nat_SCA
@AmgueddfaCymru	@WelshMuseumsFed	@kidsinmuseums
@Amgueddfa_Lib (Museum Library)	@museum_news (Museum's Association)	@MuseumCdf_Learn (Learning Department)
@AskACurator	@3dFossils (GB 3d Fossils Online)	@LinkinCollWales (Linking Collections Project)
@NHM_London	@OPALnature	@CardiffNats (Cardiff Naturalists' Society)

Fig. 1. Basic tweet guides utilised to help staff construct tweets.

Tweet Text	Web link address	Photo File name	Theme	Date to tweet
<i>Murex scolopax</i> - Indian Ocean. Described by the Welsh naturalist L. W. Dillwyn in 1817. Lectotype. #MolluscMonday #MTC	N/A	M_scolopax_type	Types	
Lewis Weston Dillwyn mollusc collection @AmgueddfaCymru #MolluscMonday	http://www.museumwales.ac.uk/2755/		Collections	
Newest mollusc holotypes @AmgueddfaCymru, <i>I. mackayi</i> & <i>T. scotiae</i> . Indicators of cold seep at Hatton-Rockall Basin.	http://wwwnews.live.bbc.co.uk/news/uk-scotland-highlands-islands-25528522		Types	

Fig. 2. Tweet forms, allowing staff across the department to provide material for posting on social media.

hashtags trending on the Twitter homepage; for example, the General Meeting of the American Society for Microbiology (Bik & Goldstein, 2013), and recently the NatSCA 'Museums Unleashed' conference at MShed in May 2015 (#NATSCA2015).

Hashtags have been very effective for increasing engagement with natural history subjects too. Popular weekly hashtags such as #FossilFriday show how hashtags can increase engagement opportunities for Museum tweeters, and this certainly has been the case for the @CardiffCurator account. Tweets containing weekly hashtags such as those listed below often make up the Top Tweet or Top Media Tweet of the month, as recorded by Twitter Analytics. The popularity and success of weekly hashtags is also evidenced by the proliferation of natural history hashtags for every day of the week, for example:

#MineralMonday	#BotanicMonday
#MolluscMonday	#TrilobiteTuesday
#WormWednesday	#WeevilWednesday
#ThinSectionThursday	#FungusFriday
#SpiderSaturday	#ScienceSunday

Of course, there are also hashtags and events which come up yearly, such as #AskACurator and #MuseumSelfieDay, which have a global following. Additionally we have found that utilising subjects/hashtags that are currently trending on Twitter to highlight collections can increase the audience viewing our tweets.

The added benefit of using hashtags is that they often give tweets longevity, something which is particularly useful given the 'here today, gone tomorrow' pace of platforms like Twitter. Often, tweets that include hashtags are retweeted days or weeks after their first appearance, as users search for particular subjects.

Storify

Another useful tool for giving longevity to information on Twitter is through the use of Storify. This platform allows you to create cohesive stories and

timelines through the aggregation of tweets, images, videos, blogs etc. from a variety of different social media platforms and web-links. Elements used in Storify must already be accessible online; so, for example, unpublished images required for a story must be made publicly available first, although text can be added directly. It is particularly beneficial for preserving tweets before they become archived by Twitter (Bik & Goldstein, 2013). It is also a valuable tool for evaluation purposes, bringing together peoples' opinions on a particular topic to highlight achievements. For examples of how it can be used in a natural history museum perspective to highlight specimens and collections, see Mortimer *et al.* (2014; 2015). Finally, Storify can also be used to highlight public engagement activities and conferences by aggregating live tweets.

Flickr

Amgueddfa Cymru-National Museum Wales have had a presence on Flickr since 2008, but more recently a Natural History album under the umbrella of the organization's account has been produced, to show stories and objects from the collections and research. As Flickr is an image and video hosting website, the stories chosen for inclusion have a strong visual focus. One of the advantages of using Flickr is that more information can be added to image captions than is possible on other platforms. Links to hashtags/twitter campaigns, blogs and web-links can also be included, thus connecting material across the social media network. Flickr is also a useful tool for embedding images for use with other social media platforms such as Storify (see above).

Blogs

Although blogging has been the social media format that the department has been involved in longest, it is perhaps the one that needs a higher level of engagement to build up a following. Blog posts are published through the Museum's web pages, and on average natural history blogs are currently posted around 1-3 times a month. Blogging provides an opportunity to add more content than is possible with other platforms such as Twitter, however, blogs are often more time consuming to con-

struct. Often blogs are more fitting for certain types of engagement such as fieldwork diaries, reports on outreach events, new projects, social history stories detailing collectors, specimen stories and new acquisitions to name but a few. Members of staff from each section within the department have the capacity to post blogs, thus providing greater opportunities and ease for blogging across the department. There has been a notable increase across the institution in the number of blogs being written now that blog posts are advertised on the homepage of the organization's webpage.

Connected face

The department has endeavoured to connect material on different platforms across the social media network (Fig 3). For example, tweets are amalgamated and published on Storify, linking in relevant information from websites and images (e.g. from Flickr) to make a more cohesive story. The posting of these stories can then form the basis for blogs and further tweets, producing an interconnected network. However, the content and nature of the material published is altered depending on the nature and audience associated with the relevant platform. In this case one size really doesn't fit all; different platforms have varying demographics associated with them and thus material should be tailored to suit (see for example, Duggan *et al.*, 2015: 5). This approach ensures a wider range of coverage, and reduces the amount of work needed by adapting previously existing content. In other cases where there is a target audience in mind, it is beneficial to select specific platforms that are known to have a high number of users from this audience. Young adults for instance have a tendency to use different social media platforms than those used by older adults (Lenhart *et al.*, 2010).

Vehicles for engagement

A variety of vehicles have been successfully used to promote the natural history collections at Amgueddfa Cymru-National Museum Wales. The first is by utilising a Natural Sciences mascot called Arthur the *Arthropleura*, a model of the largest in-

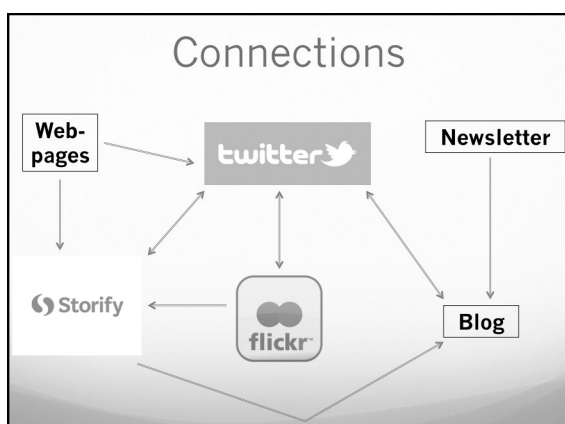


Fig. 3. The connected network of social media outputs posted by the department.

vertebrate ever known to have lived on land. Museum mascots (#MuseumMascots) have been successfully used by several natural history collections as a way of engaging audiences e.g.

@OisinTheDeer,
Diplodocus carnegii (@NHM_Dippy),
 George the Gorilla (@George_Gorilla),
 Tolson Half Pig (@TolsonHalf_Pig).

Unlike these mascots Arthur does not have his own individual account, however, he is utilised to promote galleries and exhibitions (even crossing over disciplines, Fig 4), external events such as the Royal Horticultural Society (RHS) show in Cardiff, and internal activities such as open days (Fig 5), and parts of the natural history collections. His adventures have produced a lot of attention both from followers of our social media outputs but also from the media (published on BBC Wales online for example) and are a way of engaging new and more varied audiences.

Analysis

Good analysis has been vital in gaining a greater and more successful presence on social media. Through understanding what aspects have been successful, future content has been adapted and streamlined, and has been a fundamental part in increasing engagement rates and followers. For instance retweets have risen by 370%, tweet favourites by 511% and followers by 1900 over the last two years for Twitter alone. The department have been actively monitoring and analysing our social media outputs for several years.

Initially, data collection for our Twitter account was done by hand, looking at number of retweets, favourites and potential audience figures (i.e. the number of followers of those that retweeted us +



Fig. 4. Arthur the *Arthropleura* on his adventures, promoting different parts of the Museum.



Fig. 5. Arthur the *Arthropleura*, being used to promote external events such as the RHS show, Cardiff.

the audience of our account). Whilst this was useful in giving an insight into those tweets that had a greater number of impressions (the times a user is served a Tweet in timeline or search results), it did not provide insight into how/whether people were engaging with content, outside of retweeting or adding the tweet to their favourites list. The advent of social media analytics has enabled us to delve deeper into the analysis. Examples are the Twitter Analytics Dashboard that started in 2014, a free resource from Twitter enabling users to look at the performance of tweets; and Google analytics for web analytics. This has enabled us to look at, for example, whether tweet construction (e.g. number/type of pictures, presence of web-links/hashtags, text style etc.) and day/time of day of tweeting, impacts the number of engagements. The data is then benchmarked against twitter accounts across the organization, via the Digital Media Department. Tweet bulletins and tweet-ups (an event whereby people who use Twitter get together) help to share best practice ideas across the organization.

The @CardiffCurator twitter account currently has the largest number of followers of any of the departmental accounts at Amgueddfa Cymru and the lessons learnt over the last two years have been shared and followed by other accounts as a case of best practice. Benchmarking options are available with some analytical packages (such as Google analytics), allowing comparison of effectiveness with those in the same industry. However, some analytical options are only available in premium analytical packages and as yet this is not something that we have investigated ourselves.

The impact of changes to the account can also be assessed, e.g. when changing profile text or images it is possible to see whether this increases or decreases the number of engagements. Analytics vary between platforms and this means that comparisons between platforms can be difficult. At present, 'number of views' is the only metric that we calculate for both Storify and Flickr. However, the successfulness of material on Twitter often reflects whether it is used on other platforms. Blog metrics are collected by the Digital Media Department using Google Analytics.

The data has been additionally useful in encouraging more people to provide content (i.e. showing the reach of social media) and in evaluation of the benefits, against time inputted into social media activities. This is often important for justification of time spent to management. Analytics also enables account administrators to understand the profile of their followers, and to see who is engaging with content. For instance, 64% of our Twitter audience enjoy sport, so tweets that connect our collections with major sporting events have often led to high numbers of engagements (e.g. 10.7% engagement rate for a tweet highlighting the start of the Six Nations 2015). Knowing the locality of followers, allows you to select times when the target audience is on-line. Seventy-two % of our Twitter followers are UK based, but 9% are from the USA, so tweets celebrating the 4th of July for instance would be time-shifted to meet the American market.

Whilst automatically calculated metrics have enabled us to delve deeper into understanding how people are engaging with our content, hand calculated statistics have given us a deeper insight into

Number of Images	Average number of Impressions	Average number of engagements	Average engagement rate %
0	275.5	6.6	4.08
1	1201.5	37.7	3.31
2	1251.6	29.6	2.84
3	1393.9	54.7	3.56
4	1684.3	50.9	3.22

Table 1. Average number of impressions, engagements and engagement rate (%) for tweets containing between 0-4 images tweeted during July 2015 from the @CardiffCurator Twitter account.

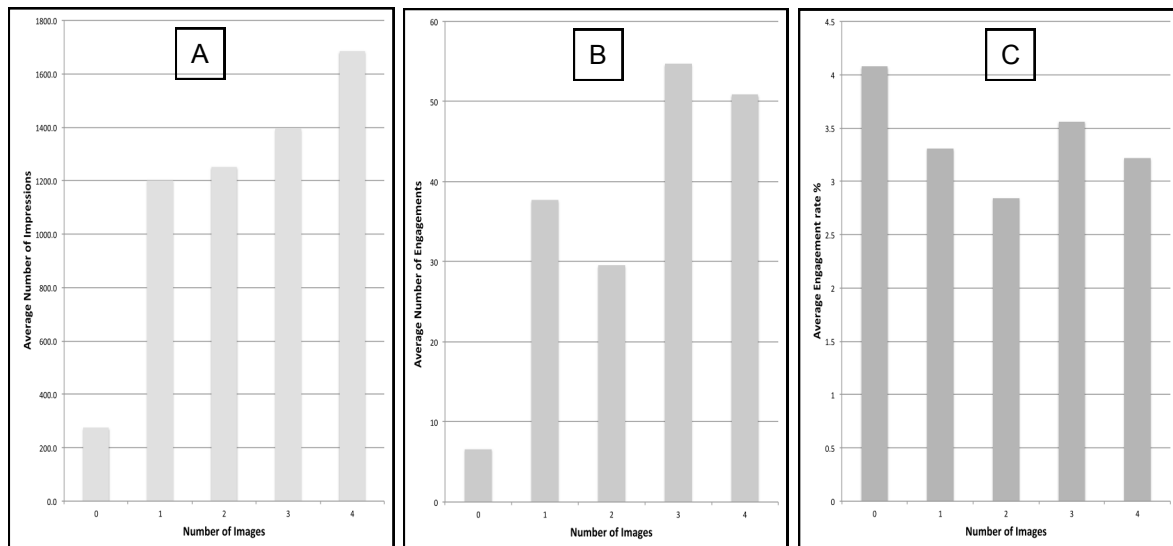


Fig. 6. (A) Average number of impressions, (B) engagements and (C) engagement rate (%) for tweets containing between 0-4 images tweeted during July 2015 from the @CardiffCurator Twitter account.

who is engaging with content and additional reasons as to why some tweets are more successful. Thus, we have found it prudent to add additional data to the metrics provided by automated analytics (see Appendix 1), detailing for example, the tweet composition (whether any media is attached and in what format e.g. number of images etc.) and examples of accounts that retweeted us, which may have an impact on the success of the tweet. This has allowed contributors to look for reasons why engagement rates may be higher or lower for some tweets.

Whilst it is too early to say definitively which tweet compositions are the most successful, certainly the addition of images seems to increase engagement rates hugely. This enables tweets to stand out more clearly on a user's timeline, which is important given the often fast pace of viewing. Stadd (2014) found that users engaged at a rate 5X higher when an image was included. Similarly, recent data collected in July 2015 from our Twitter account found a much higher number of impressions and engagements for tweets that included a picture than those that didn't (see Table and Figs 6a and 6b). However, the average engagement rate for the latter was actually higher (Fig 6c), indicating that a large proportion of those seeing the tweets actually engaged with them. This may be explained by that fact the majority of tweets without images from the @CardiffCurator account tend to be related to enquiries and their answers. Therefore they may not have a broad appeal but those directly interested in the enquiry were more likely to engage with them. However, it should be noted that the number of tweets without images included in this analysis was relatively small.

Anecdotal evidence from collating statistics seemed to suggest that the addition of more images also increased engagement rates e.g. in order

to view all images easily users will click on images to expand them. Our data (Fig 6) shows that the average number of impressions gained is highest for tweets containing four images, whilst the average number of engagements and average engagement rate (excluding those without images) suggests that having three images per tweet is slightly better. At present this is based on a relatively small data set, and this will continue to be analysed. Whilst bright and colourful images do seem to attract attention, the importance of a tweet's wording shouldn't be overlooked. Table 2 contains data for four sample tweets, which utilised engaging angles or non-natural history related text to introduce the specimens and objects. All four tweets received relatively high engagement levels, which highlights the importance of good text alongside good images. Image orientation can also affect engagement rates, for instance, when we tweeted an image of a diatom in a landscape orientation with Welsh language text (812 impressions and 28 engagements) after the same image in portrait orientation with English text (570 impressions and 14 engagement) it received higher engagement rates. Twitter analytics shows that we generally receive a greater number of impressions for English language tweets than those in the Welsh language, indicating the image orientation was likely to be the contributing factor to the higher number of engagements. Although image orientation is something that could be tested further, anecdotal evidence (pers. comm. Sara Huws) supports this. This is therefore an important consideration with Twitter given that pictures in a portrait orientation will be displayed in a landscape letterbox, often obscuring important parts of the image.

Since using an integrated metrics system over the last six months, retweets have risen by 69%, favourites by 77% and number of followers by 27%. Whilst automatically calculated analytics are ex-

Tweet Text	Tweet Link	Impres- sions	Total Engage- ments
Food of the dinosaurs, a Jurassic cycad	https://twitter.com/CardiffCurator/status/523009522672361472	2,764	76
An evolutionary champion for #FossilFriday. 170 million year old Ginkgo, and one from our car park @Museum_Cardiff	https://twitter.com/CardiffCurator/status/492566426117734400	682	113
Candy-striped mint humbugs? No, Cretaceous corals from Cambridge! Smillitrochus angulate for #FossilFriday	https://twitter.com/CardiffCurator/status/568689695254835200	15,426	365
19 th Century fossil bryozoan slides from the Victorian bryozoologist and corset-maker George R. Vine #FossilFriday	https://twitter.com/CardiffCurator/status/505252162931556352	2713	88

Table 2. Total number of impressions and engagements for sample tweets from the @CardiffCurator Twitter account.

remely important for producing data, the addition of data by hand does give an added benefit and level of understanding. Although more time-consuming, it gives a greater sense of who is engaging with content. It is important to analyse the time spent on additional analytics compared to the benefits gained, to decide whether it is beneficial. On average, 1-2 hours per month are spent on analytics for the @CardiffCurator account, the associated benefits of which have been deemed to make it worthwhile. Twitter analytics has shown that it is important to look at a variety of metrics to determine how successful your presence on Twitter is. For instance, whilst number of followers of an account is important, it is more important to look at the number of people actually viewing material and engaging with it.

Day and time posted and inclusion of hashtags and Twitter handles undoubtedly have a great effect on engagement rates. We have found that early mornings, lunch times and evenings can often be busy periods with a lot of people both tweeting and viewing tweets. Whilst busy times may increase the level of engagements due to the number of people on Twitter, it can also mean that tweets are lost in the high volume of material being posted. Although daytime and weekends are often slow, fewer tweets are generally posted so tweets can have a high number of impressions and engagement rates. Seeing engagement rates in real time via analytical software, such as the Twitter Analytics Dashboard, is important for observing the effect of

timings for different accounts. Whilst this pattern has been observed for @CardiffCurator, it is likely that different accounts will have varying demographics and different audience patterns.

Thinking and working in new ways

There is a great potential for much of the work that goes on behind the scenes in museums to be highlighted on social media. See for example, Freedman (2015) for examples of how and why NatSCA members use Twitter for promoting collections, networking with colleagues across the museum community and also opening up the often hidden world of museum stores and conservation labs. Museum professionals do not necessarily foresee how interesting and engaging even simple day-to-day activities are to those outside the confines of the museum walls. However, the success of tweets (in terms of engagement rates) highlighting these areas emphasises the public's interest in what we do. 'Careers and the world of work' and 'How scientists work' are important threads in the science curriculum (see, Department for Children, Education, Lifelong Learning and Skills, 2008 page 9 for instance) and presenting what goes on behind the scenes via social media is a great way of promoting this. Mortimer (2015) and Plant (2015) illustrate ways that the Department have promoted the work of scientists at the Museum.

Benefits of tweeting as a department

There are several benefits of tweeting as a department, as opposed to having individuals tweeting from different accounts. The main benefit is that once the system is set up, it reduces the amount of time and effort on any one individual and ensures that there is a constant stream of tweets, rather than flourishes of tweets fitted around the workload of individuals. It ensures that tweets are constructed by individual curators, who are specialists in a particular area rather than generalists, and ensures a variety of topics and styles are utilised to interest different demographics. If support is available to individuals who are less confident in the use of social media (i.e. those less likely to have their own Twitter accounts), it means that they are more likely to provide material, which adds to the diversity of content on the account. Certainly, for us, adopting this methodology has increased the number providing content significantly. Tweeting via a known or recognised department can often give credence to material being posted and a professional slant. It is also important that care is taken to give each curator an individual face and voice through their contributions, by allowing them to write their own tweets, post their own photos and by letting them choose the subject matter.

This method of departmental tweeting has been useful and beneficial for our department of over 30 members of staff, however, alternatives such as allowing individuals to use their personal Twitter accounts to share information about collections and their research are often utilised in other museums (often under the umbrella of organizational social

media policies providing guidance). Whilst this option may be preferable and more efficient in smaller organizations, it may not be the ideal option in larger organizations, particularly where there are limits on the number of accounts allowed. Large numbers of accounts can make it difficult to monitor what is being tweeted about/from the organization, and also in calculating the impact/success of using social media to highlight collections. Additionally, it can be tricky to successfully blur or separate the lines between employee's work and personal lives, so departmental accounts can give a viable option for institutional tweeting.

A further benefit of setting up a departmental account is that the account stays with an organization and is not effected by the movement of staff to and from roles. If personal accounts are utilised to build up the twitter presence of collections, this can be lost if the account holder moves to a new organization. Thus new staff may have to restart the process of developing an audience for the collection.

Helping hand

Setting up a departmental account can be problematic initially, particularly for those new to social media. There is often a lack of knowledge of the best way to create material (e.g. how to construct a tweet of 140 characters, how to make content engaging/relevant to the target audience and more successful), what is suitable for each platform and a lack of understanding of the importance and usefulness of social media. There are also practicality issues such as finding time to produce content and adapting methods to deal with the flow of content between curators and those posting material. Thus getting everybody involved and on-board takes time. Providing good support can make a huge difference to bridging this gap during initial stages. This can be done effectively using social media champions to impart training/knowledge (for instance, guidelines from Guerra & Pansters, 2014: 31 about constructing tweets) and feedback, and having a framework in place to organize material as discussed above. Once people are on-board it is important to keep momentum by providing feedback on the effectiveness of posts via analytics. This is done for the @CardiffCurator account by making data available in a readily accessible format each month for staff across the department and providing regular updates at departmental meetings to discuss best practice and ideas.

Conclusions

The journey to having a departmental face on social media has been challenging but has highlighted the huge benefits of using these platforms in promoting collections and their importance, research and events. The Twitter account for example, regularly receives between 150,000 and 175,000 impressions each month, acquainting to some 5,000 per day. Whilst not all users will engage with content, it is clear that this provides us with a large audience that potentially may not oth-

erwise engage with our collections physically, either through museum visits or loans.

Additionally, it is an effective vehicle to answer enquiries and an ideal way to become connected with a variety of different communities (other museums, our local community or natural history societies for example). Many enquiries received are from people outside of the museum network from broad demographics. It is a great way to communicate with different audiences and a good way to look at the interdisciplinary facets (such as art, social history etc.) of our collections. This can be clearly shown from the variety of followers engaging with content, something that can be ascertained when calculating metrics by hand. Often the different angles that we look at collection objects from via social media is one that engages broad audiences. #SciArt is just one example of how people from different backgrounds can share a common interest in the same specimen as specimens are often both beautiful and interesting. Learning what audiences find engaging on social media also provides insight for other engagement activities such as open days and behind the scenes tours.

Effective teamwork, good communication and togetherness are vital to build a departmental profile. It is also prudent to link in with other departmental accounts across the organization in addition to the main institutional account(s) to get feedback, share good practice ideas and benchmark. Effective and strong branding is important for raising profiles, and this can be achieved by promoting logos on T-shirts, tablecloths and advocacy cards.

This case study provides information about techniques that have been beneficial for a departmental account in a National Museum promoting natural history collections. Whilst this may not be totally applicable to individuals working with smaller collections, many of the vehicles and techniques used may be useful.

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References

- Bik, H. M. & Goldstein, M. C. 2013. An introduction to social media for Scientists, *PLOS Biology*, 11(4): pp.1-8.
- Department for Children, Education, Lifelong Learning and Skills. 2008. *Science in the National Curriculum for Wales*, Cardiff: Welsh Assembly Government, 26.
- Duggan, M., Ellison, N. B., Lampe, C., Lenhart, A. & Madden, M. 2015. *Social Media Update 2014* [Online], <http://www.pewinternet.org/2015/01/09/social-media-update-2014/> [accessed 11 August 2015].
- Freedman, J. 2015. *Social media – unleashing museum collections and their curators* [Online], <http://advisor.museumsandheritage.com/industry/social-media-unleashing-museum-collections-and-their-curators/> [accessed 20 November 2015].
- Guerra, R. & Pansters, F. 2014. *Museum Analytics Action Research Project (ARP)*. Utrecht: INTK, p.39.
- Lenhart, A., Purcell, K. Smith, A. & Zickuhr, K. 2010. *Social media and mobile internet use among teens and young adults*, Washington: Pew Internet & American Life Project, p.37.
- Mortimer, K. 2015. *Worms that Dig* [Online], <http://www.museumwales.ac.uk/blog/2015-02-24/Worms-that-Dig/> [accessed 11 August 2015].
- Mortimer, K., Mackie, A. S. Y. & Darbyshire, T. 2015. *Worms for Wednesday* [Online], <https://storify.com/CardiffCurator/worms-for-Wednesday> [accessed 5 June 2015].
- Mortimer, K., Wood, H. & Gallichan, J. 2014. *Magnificent Molluscs* [Online], <https://storify.com/CardiffCurator/monday-for-molluscs> [accessed 5 June 2015].
- Plant, A. 2015. *Adrian in the Amazon - final part* [Online], <http://www.museumwales.ac.uk/blog/2015-05-01/Adrian-in-the-Amazon---final-part> [accessed 11 August 2015].
- Stadd, A. 2014. *Tweets with photos drive much higher engagement across all metrics* [Online], <http://www.adweek.com/socialtimes/tweets-with-photos/495601> [accessed 10 August 2015].
- Stewart, E. P. 2010. Twitter and your organization, in *Twitter for Museums: Strategies and tactics for success. A collection of Essays*. Edinburgh: Museums Etc: pp.44-63.
- Wilcox, C. 2012. Guest Editorial: It's Time To e-Volve: Taking Responsibility for Science Communication in a Digital Age, *Biological Bulletin*, 222: pp.85-87.
- Zambonini, D. 2010. Starting out with Twitter, in *Twitter for Museums: Strategies and tactics for success. A collection of Essays*. Edinburgh: MuseumsEtc: pp.64-89.

Useful links:

Google Analytics: <https://www.google.co.uk/analytics/>
 Twitter Analytics: <https://analytics.twitter.com>

Appendix

Part of the Tweet Metrics for the @CardiffCurator Twitter account from July 2015 generated through the Twitter Analytics dashboard with added information on the number of images included in each tweet, and details of certain accounts that retweeted us. Spread sheet formatted for easier consumption by departmental staff.

Information from the Twitter Analytics dashboard for July 2015 for the @CardiffCurator Twitter account

July 2015 • 31 days

TWEET HIGHLIGHTS

Top Tweet earned 6,942 impressions

Under Armour! Read all about the new Scaly-foot gastropod in our collection!
#MolluscMonday
 museumwales.ac.uk/blog/2015-07-1...
 pic.twitter.com/616EThwDR7



↳ 45 ★ 55

View Tweet activity

View all Tweet activity

Top mention earned 89 engagements



NatHistConservation
 @NatHistConserve · Jul 6

@DrJonesWales carefully handling our Great Auk egg on a visit to the @CardiffCurator collections! pic.twitter.com/6dsjkp9R95



↳ 5 ★ 6

View Tweet

JULY 2015 SUMMARY

Tweets	Tweet impressions
136	176K
Profile visits	Mentions
4,778	111
New followers	
126	

Top Follower followed by 44.8K people



Cardiff University ✓
 @cardiffuni | FOLLOWS YOU

Cardiff is an innovative university conducting world-leading research and providing an educationally outstanding student experience. Yn Gymraeg: @prifysgolCdydd

View profile

View followers dashboard

Top media Tweet earned 5,996 impressions

Family workshops this Saturday @Museum_Cardiff for #IYL2015 watch the invisible glow of plants with @cardiffuni pic.twitter.com/sy1RIEUys9



↳ 10 ★ 2

View Tweet activity

View all Tweet activity

Tweet activity

July 2015 Export data

Your Tweets earned **183.5K impressions** over this 31 day period

YOUR TWEETS
During this 31 day period, you earned **5.9K impressions** per day.

Tweets	Top Tweets	Tweets and replies	Promoted	Impressions	Engagements	Engagement rate
	Cardiff Curator @CardiffCurator · Jul 31 Answer: Living Dead & a secret apology from Snape using language of flowers: I bitterly regret Lily's death #HarryPotter View Tweet activity	303	5	1.7%		
	Cardiff Curator @CardiffCurator · Jul 31 Asphodel root + Wormwood infusion = Draught of Living Dead or Shrinking Potion? Happy Birthday #HarryPotter pic.twitter.com/dsAL53K7NZ View Tweet activity	747	25	3.3%		
	Cardiff Curator @CardiffCurator · Jul 31 Hermione knows Monkshood & Wolfsbane=same plant #HarryPotter #BornOnThisDay Deadly:use with care in potions pic.twitter.com/qJvCRHvy5I View Tweet activity	379	14	3.7%		
	Cardiff Curator @CardiffCurator · Jul 31 Come meet Harry the lobster @Capitol_Cardiff #ISpyNature pic.twitter.com/9XI5yWFPKb View Tweet activity	436	27	6.2%		
	Cardiff Curator @CardiffCurator · Jul 31 Come see our @Museum_Cardiff scientists in the @Capitol_Cardiff today! pic.twitter.com/8CeyvDnDih View Tweet activity	573	15	2.6%		
	Cardiff Curator @CardiffCurator · Jul 31 We heard strange noises coming from the #herbarium Yikes, Screaming Mandrakes! Happy Birthday #HarryPotter pic.twitter.com/nDG40mqta View Tweet activity	1,340	48	3.6%		
	Cardiff Curator @CardiffCurator · Jul 31 Copies of Natur Cymru issue with New Welsh Dino article for sale in @Museum_Cardiff @Siop_Amgueddfa #FossilFriday pic.twitter.com/ji2ApJSc4 View Tweet activity	522	15	2.9%		
	Cardiff Curator @CardiffCurator · Jul 31 Shopping @Capitol_Cardiff today? Why not come along & say hello to our scientists and their #ISpyNature pop-up museum pic.twitter.com/47TE0CKbyz View Tweet activity	1,299	33	2.5%		
	Cardiff Curator @CardiffCurator · Jul 31 Toadstones from heads of toads to protect against poison, or fish teeth used to crush shells on #FossilFriday ? pic.twitter.com/Qy2iMjkDBI	511	34	6.7%		

Engagements

Showing 31 days with daily frequency

ENGAGEMENT RATE
1.8% Jul 31 2.3% engagement rate

LINK CLICKS

547 Jul 31 22 link clicks

On average, you earned 18 link clicks per day

RETWEETS

841 Jul 31 42 Retweets

On average, you earned 27 Retweets per day

FAVORITES

745 Jul 31 50 favorites

On average, you earned 24 favorites per day

REPLIES

52

On average, you earned 2 replies per day

YOUR TWEETS

During this 31 day period, you earned **5.9K impressions** per day.