

# **Aggregate, then Curate: Digital learning champions and informational resources**

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## **Abstract**

MOSI-ALONG is a project which investigates how formal and non-formal educational institutions can use social networking and media to help communities learn about, and thus nurture, online informational resources. It brings the curatorial and content creation expertise of a range of formal, informal and non-formal educational providers, which we term ‘digital learning champions’ (DLCs), to bear on processes of community inquiry. DLCs are engaged with through a range of offline and online media, helping communities develop resources that are relevant to their learning needs and interests. Community members judge the quality of their learning processes, and their use of technology, based on relevance, need, informal collaborative learning processes, individual skills and capacities. DLCs act as stewards (Wenger, White and Smith 2009) for the community’s resources, providing training, advice, content (pre-existing, or new), technologies and, ultimately, accreditation.

We present the ‘Aggregate-then-Curate’ model as a 7-step framework for how learning processes can be networked, using social media and face-to-face techniques. The process can be entered or left at various points, and a range of media can come into play at each stage. There are many reasons why individuals or communities might be motivated to engage with the process, including the desire to solve problems in a community, learn skills, gain some kind of accreditation or funding, or just through personal interest. Community identities may even be formed through such work.

Essentially then, the model is a description of *how social media can enable the creation of community-defined, object-centred and good-quality collections of informational resources*. The model could be picked up and used in other such connections between formal and informal learning processes, whether partners be community groups, museums, libraries, schools, universities or other digital learning champions.

## **Keywords**

Emergent learning model, social media, community learning, stewarding, online content

## **Background**

### **Introduction**

This paper presents results from the first phase of MOSI-ALONG, a project which was funded by JISC ([www.jisc.ac.uk](http://www.jisc.ac.uk)) as part of its ‘Developing Community Content’ programme. The project’s aim was to investigate the ways in which formal and non-formal educational institutions could use social networking and media to help communities learn about, and thus nurture, online informational resources. The project began in March 2011, with the first phase concluded over the summer, and the second in December 2011. A variety of organisations have participated, including the School of Education and Mimas at the University of Manchester; the Museum of Science and Industry in Manchester (MOSI); the Learning, Skills and Employment Network (LSEN); Peoples’ Voice Media (PVM); and several local community groups.

### **Communities, resources and learning**

Communities come in many forms, based around localities, an interest, activities, workplaces, ethnicity, sexuality or experiences. The notion of community implies that something is *shared* (Clarke 1996, p. 24). The word ‘community’ - like ‘communication’ - comes from the Latin *communis*, meaning to have or to hold in

common, so the phrase implies that members of the community share concerns, values, memories, perspectives on the world (Whitworth 2009, pp. 17-18). Generally, then, communities share *resources*. In a local community these include shops, schools, post offices, pubs, village halls, et cetera. Resources are sustainable only insofar as they are *used* by members of the community, and *defended* against external or internal threats. This is apparent with tangible resources (like shops), but less so with informational and digital resources, even though such resources are now highly significant to all communities and, like other resources, can be subject to degradation, pollution, and neglect. This kind of decline is reflected in Putnam's (2000) well-known thesis regarding the depreciation of many communities' *social capital*. A community that lacks good information - about itself, about issues that concern it, and organised in ways that members of the community can identify with and understand - is a community that will struggle to learn, and thus adapt to change as well as defend itself against threats (such as the loss of other resources). It is through learning that the informational resources of the community can be updated and enhanced, and go on to be shared with other communities who face problems of their own. Such processes are "opportunities to engage with challenging questions, to learn through participative investigations situated in everyday experiences, to articulate their ideas to others, and to make use of a variety of resources in multiple media" (Bishop et al, 2005, p. 122) and central to the notion of *community inquiry*, the ultimate aim of which is to develop a "critical, socially engaged intelligence, which enables individuals to understand and participate effectively in the affairs of their community in a collaborative effort to achieve a common good" (Bishop et al, 2005, p. 122).

On the surface, widespread digitisation and the use of Web 2.0 technologies should boost communities' ability to engage in community inquiry. In its ICT Work Programme 2009-10 document the EU observed that (p. 49): "New ways of expressing and representing cultural and scientific content in digital form are creating new opportunities for people to experience and share assets." But critics such as Keen (2007) and Thompson (2008) observe that the unmanaged spread and use of these technologies also leads to incoherence, a flood of irrelevant or low-quality information, and encourages parochialism. At best, the unmoderated Web 2.0 is a difficult place on which to find information of quality and relevance. Also, current paradigms of learning, cognition (Arias et al, 2001) and information validation (Whitworth 2009) are individualised.

Gurstein observes that a *community informatics* is required to combat the increasing fragmentation, and resultant centralization, of digital networks (and, thus, their capacity to aid community inquiry): one that can "specifically develop information, communications and networking systems which would provide the means for communities to be enabled and empowered and to effect action in the world. This approach would be directly parallel to the use of information, communication and networking technology for enabling and empowering 'corporations' (or as in the social networking context, 'individuals')" (Gurstein 2007, p. 21). Gurstein suggests that a practical community informatics (CI) would address the critiques of writers like Keen. It would accommodate those with essential skills, but would remain community-driven, focused on local learning needs, and validated within the community. A CI approach "is one which ideally begins with the local community identifying a need or a possible application and then beginning a process of working with those with the requisite skills to respond or to satisfy that need, always within a context where the local community is in control and is directing the process of its own technology enablement" (Gurstein 2007, p. 61). Thus, CI is central to community inquiry. CI requires, not just the development (or reorientation) of technologies, but a transformation of social and educational practice in response to technological changes (Gurstein 2007, p. 82).

### **The Emergent learning and Aggregate-then-Curate models**

How, then, can we bring together the notions of community inquiry (and informatics), resources, and learning, and consider their interaction in the holistic way demanded by CI (Gurstein 2007, pp. 30-31)?

It is the role of educational institutions that exist within and around communities to help support community inquiry, both through direct provision and less direct mechanisms of support (Gurstein 2007, p. 82). Such institutions may be *formal* (schools, universities, colleges, and any other institution which offers organised courses of teaching that have specified learning outcomes and are accredited in some form) or *non-formal* (galleries, museums, libraries, archives and some institutions like the Womens' Institute, which are formally constituted organisations and have an educational mandate, but which do not tend to offer organised courses of study). *Informal* learning opportunities also frequently open up within communities, but are spontaneous, unguided or casual. Different institutional types view resources in different ways. Different *types* of resources are created in each, and these are then subject to different forms of *provision*, of *organisation* and of *governance*. The relationship between them can be represented in the following table:

**Table 1: The Emergent Learning Model**

<b>INFORMAL</b>	<b>INFORMAL</b>	<b>NON-FORMAL</b>	<b>NON-FORMAL</b>	<b>FORMAL</b>	<b>FORMAL</b>
PEOPLE	PEOPLE	RESOURCES	RESOURCES	INSTITUTIONS	INSTITUTIONS
Individual	Social	Created	Provided	Adaptive	Accredited
Groups	Audiences	Media Templates	TV Programmes	Home	Classes
Aggregations	Groups	Learning Sequences	Learning Resources	Libraries, museums, etc.	Units
Individuals	Channels	Web 2.0 Tools	Set texts	Community	Qualifications
LEARNING----->			<-----EDUCATION		
People are how we scaffold organisation		Resources are how we scaffold learners		Institutions are how we scaffold accreditation	

A key distinction is represented by the two arrows flowing from “Learning” and “Education”. The right-to-left flows of education indicate the way in which the shaping of informational resources flows from the top-down. Formalised education flows start with an institution which offers accreditation, and then provides resources and groupings which meet that expressed goal. The left-to-right flow of learning starts with individuals and communities. In the spirit of CI, therefore, what we are interested in is how online resources are shaped by these bottom-up processes of community inquiry, and how Web 2.0 technologies mediate these processes.

As one moves to left or right in this diagram, information is *validated* differently. At the left side, validation is subjective, with the user of resources basing their filtering (see Luckin 2010) on personal preferences and motives. Moving to the right, they begin also make judgments based on what friends and colleagues use, or like, or admire, and, moving on, what have been provided by gatekeepers such as publishers, aggregating tools, curators and, eventually, accrediting institutions. Looked at as a whole, therefore, the value of informational resources is judged not merely by individuals, nor by formal institutions or communities, but an aggregation of all these perspectives, operating in objective, subjective and intersubjective ways (Whitworth 2009) as learning takes place, and summarised in the following 7-step model:

**Table 2: Aggregate then Curate**

<b>N o.</b>	<b>Stage</b>	<b>Involved parties</b>	<b>Measures of quality or value</b>
1	Identification	Participant	Individual, subjective
2	Initial aggregation	Participant, Community learning champion (see below)	Community-led, intersubjective
3	Digital creation	Participant, Digital learning champion	Technical, objective
4	Digital aggregation	Participant, DLC	Community-led, intersubjective
5	Sequencing	Participant, DLC	Curatorial, objective
6	Social media aggregation	Social media, DLC	Community-led, intersubjective
7	Accreditation	Many possible organisations	Formal, objective

Aggregate-then-curate is, essentially, a model of *how social media can enable the creation of community-defined, object-centred and good-quality collections of informational resources*. Ideally, the process has seven stages, each of which validates the quality of those which precede it.

*1 Identification:* The initial motivation for creating resources must come from the community participant, though this may be an individual, or a group: even if the motivation is in response to an external stimulus, e.g. a request to participate in a project. There will be at least one existing resource which the participant has in mind. This may be a physical object, a text (digital or otherwise), or tacit knowledge such as a skill, a personal narrative, etc. The resource belongs to the participant and not to the project or to the partner institutions.

*2 Initial Aggregation:* This stage is the start of the narrative process of telling stories or histories that connect together resources, showing links between them, appropriate groupings, potential learning pathways and so on. This is a social process that involves other members of the community, or what have been called “Community learning champions” (CLCs: see [www.communitylearningchampions.org.uk](http://www.communitylearningchampions.org.uk)), but does not have to involve digital media. Often, it will take place very informally, as community members validate one another’s opinions about what information is useful, sometimes explicitly but also often with reference to implicitly held, shared views - the sort of thing which binds people together in ‘communities’ in the first place. However, it may also involve more organised and/or formal processes.

*3 Digital Creation:* Once resources, and connections between them, have been identified by the community, some form of digital representation can be created. Even where some existing resources, identified then aggregated in stages 1-2, are already in digital form, the connections between them may need expressing as digital content in their own right. (Remember that this model is intended to describe the production of boundary objects that are in digital form. e-content. How often a resource collection process moves into the remaining, digital, stages after the first two steps have been undertaken is a question for further research, and touches on issues such as the existence of ‘digital divides’, refusal to engage with, or suspicion of, online media, and other barriers which will prevent community dialogues connecting with digital content creation in any way.)

It is worth taking a few paragraphs to reflect on the role CLCs play in a specifically *digital* environment: we use the term ‘Digital Learning Champions’ (DLCs). DLCs are, in effect, acting here as conduits for the principles of community informatics; they are at a different “developmental phase” in their work with, and experience of ICT, and can in turn help other members of the community participate in digital community inquiry (Rosson and Carroll 2005). DLCs directly support participants as they create digital resources, with a particular focus on its technical qualities e.g. if it is a video - is it audible? Properly focused? Is metadata correct? What is the appropriate media, style? Have third-party copyrights been violated?

A previous attempt to establish how learning communities help maintain the resources on which they depend was the work of Wenger, White and Smith (2009). They explain how communities nurture the digital habitats within which they communicate and learn, and recognise that the skills required to sustain the health of a community’s digital habitat are rarely distributed throughout the community as a whole. More commonly, the skills and capacity are invested in a subset of the community - sometimes, only one person. These individuals act as stewards for the community’s resources, and “take responsibility for a community’s technological resources for a time” (Wenger et al, 2009, p. 24). Stewarding does not depend on an “absolute expertise” with technology (ibid, p. 25) but involves an awareness of both the affordances of a technology and the needs and structures of the community (ibid, p. 26). It is a “creative practice” and a “critical part of community leadership, facilitating a community’s emergence or growth” (ibid, p. 25). Ideally, stewards should also seek to build the capacity for stewarding in others. A community with a limited number of stewards, perhaps only one individual, would suffer if that steward left the community for some reason.

Not all stewarding originates from within a community: often, such services are undertaken elsewhere. This does not have to be seen as undesirable. Indeed, it is, at least in part, the historic role of the formal and non-formal institutions mentioned above. But formal educational institutions, particularly universities, and non-formal cultural institutions like museums have historically presented and organised their informational resources in ways that do not necessarily make them accessible to members of certain communities. Processes such as requiring some kind of registration to access collections of resources discourages their use in informal learning, and often creates distinct barriers between the institution and the community around it. Effectively, these formalized learning resources are not becoming *boundary objects* for the community’s learning needs, and cannot be brought into its distributed problem solving processes (Star, 1989). Though formal and non-formal institutions curate and preserve informational resources, and help sustain their quality, this can be exclusionary. Members of a community, though they might benefit from access to resources and even be the subject of them,

may have played no role in establishing criteria of collection, quality, organisation, publication and so on. Thus, the divisions criticised by Keen, Thompson and others are perpetuated, rather than addressed by means of collaboration between institutions and communities.

Therefore, the stewarding role is ideally a combination. Community members judge the quality of their learning processes, and their use of technology, based on relevance, need, informal collaborative learning processes, individual skills and capacities. External partners can support this by acting as stewards in different ways, providing training, advice, content (pre-existing, or new), technologies and, ultimately, accreditation, as the different developmental phases within the community support each other (Rosson and Carroll 2009).

Returning to the Aggregate-then-Curate model:

*4 Digital Aggregation:* At this stage, resources are aggregated informally in a community-driven way. Digital aggregation involves using social links that either already exist (and may, or may not, have played a role in the initial aggregation at stage 2), or which are discovered at the digital creation stage. Once again, this process may be supported by a Digital Learning Champion.

*5 Digital Sequencing:* Sequencing is when the aggregation process takes on a more structured form. The collection of resources, in other words, begins to demonstrate its potential to solve problems or drive learning outcomes both within and outside the community. Learning pathways or other broader narratives begin to be addressed through the aggregation process in a coherent way.

This is the stage at which *curation* comes into play. The subjective and intersubjective values assigned to the community informational resources by individuals and other community members, are here validated by interests which are partly external - but which remain local, and familiar with the general context from which the resources emerged (this being a part of the quality judgments being made here). Technical curatorial solutions like resource maps may be used here (see McCown, Nelson and Van de Sompel 2009).

*6 Social Media Aggregation:* Their quality validated by a wide range of interests that remain local, resources that reach a certain standard - judged either by technical quality, informational quality, or widespread relevance and appeal - are then widely disseminated. The resources 'go viral' in some form or another. The community that is now validating them and assigning them value is now much wider in scope, and may exist in contexts that are quite distinct from that in which the resources initially emerged. Digital learning champions can still assist at this stage.

The effective use of a social media aggregator, such as a blog, or a wiki, or a more dedicated social media aggregator offered by a provider, would represent a shift in the participants mastery of a range of social media. This would indicate that they have a range of effective digital skills so that they could use them to curate digital content, as well as negotiate with a number of third parties including groups, such as local history groups, as well as cultural and educational institutions.

*7 Accreditation:* Collections of resources may be recognised as definitive, publishable, in need of protection, or other such formal recognition of their value (quality, distinctiveness, relevance). Individuals and communities may have their work on the resources recognised by the formal award of credit from an educational provider, or some other mark of status or achievement, perhaps an exhibition, further commissions, etc.

This model is an ideal. In reality, later stages are often never reached, and some may be bypassed, or take place without the participation of *effective* learning champions at stages 2-6. Hence the frequently-expressed concerns about a lack of quality, incoherence, irrelevance and other negative points about online resources.

## The MOSI-ALONG project

MOSI-ALONG originated in a desire to create, then evaluate, connections between communities and non-formal/formal educational institutions, focused on the creation of online content collections and using the Aggregate-then-Curate model as a basis for this evaluation. The stewarding, or DLC role was, initially, taken on by project partners with prior experience of working with collections in different ways, and who could therefore attend to different aspects of the *quality* of resources produced:

- Mimas, at the University of Manchester - a nationally-important data centre which, for example, curates the archives of the UK census. Mimas' role was to review the online, technical aspects of the project, and offer training to participants in the use of social media.
- Peoples' Voice Media (PVM), who offer training in video production, citizen journalism and so on.
- The Learning, Skills and Employment Network (LSEN), who have existing expertise in community learning and networking.
- The Museum of Science and Industry in Manchester (MOSI).

MOSI served as the institutional focus for the project, as its name implies (MOSI-ALONG: MOSI Ambient Learning Open Network Group). MOSI's physical and digital content collections are centred around Manchester's past, present and future contributions to the furthering of science and industry, particularly in textiles; engineering; rail travel; computing (Manchester University was home to the 'Baby', the first stored-program computer, a working replica of which is on display at MOSI); and aeronautics.

The key resource for the project to succeed was the participation of local communities. There was never an expectation that huge amounts of digital content would be produced in phase 1, nor a wide range of communities engaged. Instead, the aim was that this phase serve as a proof-of-concept, and we would only work with a small number of community groups and individuals. Participation was engaged through exploiting existing contacts, particularly through PVM and LSEN; the project blog ([mosialong.wordpress.com](http://mosialong.wordpress.com)) and hashtag (#mosialong); and a launch event in April 2011, to which a range of interested parties were invited, and which was featured in the local press.

These early engagements filtered through into the user requirements capture process, through questionnaires and interviews with participants at the launch event, follow up interviews with participants and through interviews with community participants at our Social Media Workshops. All this fed into the technical requirements for the project. A user centred design process (UCD) was used to:

- Identify and understand the needs and requirements of the local community – by speaking to participants and contacts from the launch event – follow up interviews – iteration and evaluation with participants from social media workshops
- Set up the MOSI-ALONG official Twitter, Flickr and YouTube channels for communication with stakeholders and community participants
- Baseline participant's skills from user interviews, their awareness of MOSI and its collections and what they want from the project. (This stage led us away from our initial focus, which was to develop a new tool, and we began to emphasise the use of existing social media software which may, or may not, have already formed part of our communities' digital habitats.)
- Prioritise resources in order to (1) educate participants on the use of social media through workshops and (2) to identify and evaluate appropriate tools to act as a bridge between community generated content created through social media and MOSI content.
- It was decided that we would use Twitter to be the primary application used to "bridge" and link to online content being produced as links to photos and videos within tweets can be viewed within the Twitter application without having to visit 3rd party sites like YouTube, Flickr.

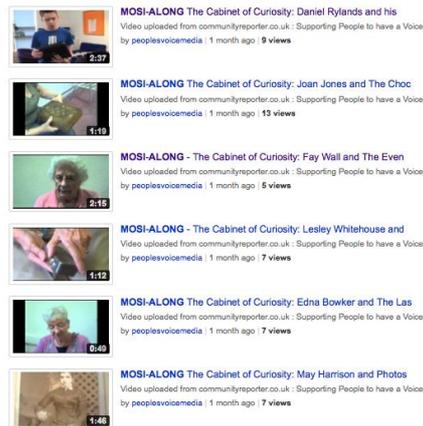
However, as community engagement spread, digital content creation and curation began to be driven by communities' own learning needs. For instance, ArcSpace are a Manchester group with an interest in sustainable cities and lifestyles. The connection which MOSI-ALONG brokered between them and the BBC brought the latter organisation into ArcSpace's learning processes as a DLC; but the learning processes remained generated by, and driven by, ArcSpace members. The process of generation and validation therefore became driven not by the project itself but by its associates (communities, and digital learning champions).

The project therefore needed to become evaluative. Interviews took place at the two DLC training sessions held in October and December, to first elicit from participants their current levels of engagement with digital content and the DLC agenda, and after the sessions, what they had learnt and would be applying in their future work.

## Produced content

The early phase of the project focused on the production, aggregation and curation of digital content.

### Figure 1: Example resources: MOSI-ALONG on YouTube (search for #mosialong)



Content was created, and aggregated using the hashtag #mosialong. These resources have been posted on social media such as Flickr and YouTube - see figure 1, a screen shot of some of the ‘Cabinets of Curiosity’ posted on the latter. This and other similar content now form part of the informational resources publicly available to communities in the Manchester area, and more broadly. It will continue to do so in the future, though the relevance of some texts will decline over time if they are not updated, in the way of all digital content.

### Evaluation of the learning process

This aspect of the project is of more concern in this paper. In the first run of training sessions, held in October 2011, amongst other things we elicited from participants their feelings on how they currently engaged with the early phases of the Aggregate-then-Curate process, and also what blocked them from doing so. Of particular interest here were the barriers which prevent people (the interviewees (DLCs) themselves, or the community learners they are trying to assist) engaging with the A-then-C model; these are drawn from the group discussions at the first training session:

- confidence.... “a lot of them [the learners] don’t see themselves as learning champions, so... it’s as much about improving people’s confidence in their own skills as in their IT skills”
- restrictive and inflexible models of what constitutes ‘training’ and how it can be offered/accessed
- lack of places to meet, some people rarely leave the house
- relative poverty
- lack of good English language or general communications skills
- lack of flexibility and interest from non-formal and formal educational institutions
- restrictions on the availability and/or exploitation of social media, e.g. formal policies or informal biases against Facebook et al
- ‘techies’ or other gatekeepers of digital content who restrict access to content and editing tools.

Many of these link together in a ‘vicious circle’. Potential content creators can be hard to reach in the first place, and/or they exist, but do not know about the DLCs: communication channels between communities and DLCs are not open at all, or lie dormant. If people do not self-identify as learners, then as learning champions, they will either not begin the A-then-C process at all (with stage 1, identification of potential resources) or they will stall at the earliest stages, not knowing how to share resources, assure their quality and relevance and begin the processes of *initial aggregation* and *digital creation*. They lack awareness of where DLCs can be found and how they can be used to enhance skills, boost confidence and manage technologies - that is, act as stewards (Wenger, White and Smith 2009). Thus, the DLC cannot work with the community on the *digital aggregation* and *digital curation* phase of the A-then-C model, nor expand the capacity for community members to undertake the stewarding role themselves. The *social media aggregation* phase is therefore never reached at all, or if it is, it happens by chance (a single resource happening to ‘go viral’, but for unpredictable reasons); an outcome which does not do anything to raise awareness of how community learners can achieve it, thus of how these lessons can be applied to improving the quality of other community-generated informational resources in the future.

Thus, the most immediate impact of MOSI-ALONG came with our introducing the community learners to the available social media tools and their possible applications. Here, MOSI-ALONG team members acted as DLCs, but with an explicit orientation towards building capacity in learners to become DLCs in their own right.

These impacts were measured by interviews, selected observations from which include the following:

- Julie, who works at a community centre, set up a new company Facebook page, which quickly brought them new contacts. Between the DLC training sessions, more community groups and local bands were using the centre and she believed this was linked to the increased use of social media.
- Barbara worked for a Local Authority and saw benefits to the training both inside and outside work. She said: *“The project has come at a time when I attended both a national event and a regional event which had elements of Digital Learning/Social Media within them. These, together with your sessions, have been extremely useful in extending knowledge and skills that I already possessed and giving me greater confidence to promote the use of Social Media and Flip Cameras within my paid and unpaid work. They have also helped me achieve a separate goal of formally beginning a Digital Champions group within my paid work – a pilot project will start next term. It is attending the above workshops and meeting other people which has kept the DC agenda nearer the top of my work priorities.”*
- Dee is a community development worker in a Manchester neighbourhood. She said that: *“I have extended my knowledge of social media networks and am using these tools regularly to share current information with residents and our own networks. The Twitter feed in particular is useful to promote local council/crime initiatives/seasonal information in a much less time-consuming way, i.e. linking/retweeting messages from the police and promoting events, conferences, funding and employment opportunities.... I hope to use our community website to ‘demystify’ useful social networking sites and offer assistance to residents who want to access these tools to find out information. I want to get the message across that using social media can be an accessible way to promote local concerns and to showcase achievements.... I hope to interview residents about current issues in the community using the Flip camera to give people an opportunity to voice their opinions and I will upload the interviews on the site.”*

In summary, as well as having some identifiably positive impacts on the work of community learners in the Manchester area, the 7-step Aggregate-then-Curate model is a conceptual framework for how communities can develop good-quality, validated and well-disseminated collections of online digital content, which can help them, and others, address learning needs. This model can have immediate impact in research into how community content can be developed, and practice in this area.

## Conclusion

DLCs work to keep community informational resources healthy and sustainable. Informational environments, and the processes of community inquiry which underpin them, depend not just on the quantity of information, but its *quality*. A community which is learning about the quality of its digital resources, and validating them in the objective, subjective and intersubjective ways which are embedded in the Aggregate-then-Curate model, is addressing the criticisms of ‘amateurism’ as propounded by Keen (2007). This kind of community inquiry is essential if communities are to retain their social capital (Gurstein 2007, p. 54). Aggregate-then-Curate is located firmly within the discipline of Community Informatics and is a way of designing learning processes that allow for the self-driven, but expert-informed, management of informational resources by communities.

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