Designing Curation for Student Engagement

Raphael Hallett, *Keele University*, r.hallett@keele.ac.uk
Nicholas Grindle, *University College London*, n.grindle@ucl.ac.uk

Abstract

In this article we discuss the ways students currently engage with, and navigate through, their learning resources. Working from the argument that students now read and research in ways that privilege assembly, visualisation and interconnection, we propose that questions of student engagement can be opened up profitably by concentrating on a particular trope of learning and assembly. That trope is 'curation' and we explore how this approach and activity might be used to enhance student learning, creativity and ownership. In our discussion we explore particular theories of curation, 'bricolage' and collaborative assembly, and explain ways in which these are directly relevant to today's patterns and habits of student scholarship. After offering case-studies of curation pedagogy at the scales of module, programme, project and institution, we conclude by visualising and explaining our 'curation learning cycle'. In this way, we tie theory, case-studies and taxonomy together to propose a curriculum design approach that heightens student learning and explores new economies of engagement.

Introduction

Discussions of student engagement in a digital age of learning are reaching a fresh level of urgency. Spectres of digital distraction occupy the minds of those who design learning programmes and learning spaces (Aaron & Lipton, 2017, McCoy, 2016) and a recent JISC challenge to the higher education community resonates with the question "what should our next generation learning environments do?" (JISC, 2017), implying a current deficit. Whilst more positive scholarship on digital learning continues to argue that online platforms can transform student experiences of connectivity and reflexivity (Kahn 2014, 2017), we are also in the grip of a sector-wide anxiety about the rigour and value of student engagement in digitally augmented spaces.

Many of these debates centre on the contested impact of digital devices (bring-your-own and integrated) on classroom attention and learning (e.g. May and Elder 2018), or muse on the dubious quality of VLE design, accessibility and user experience in further and higher education (Parsons, 2017). Our intervention in this debate takes a different approach, looking at student learning habits rather than learning sites or tools as our starting point. We concentrate, first, on the ways students currently engage with, and navigate through, their learning resources. Working from the argument that students now read and research in ways that privilege assembly, visualisation and interconnection, we propose that questions of student engagement can be opened up profitably by concentrating on a particular trope of learning and assembly. That trope is curation, and we explore how this activity might be used to enhance student learning, creativity and ownership, and set the scene for a distinct pedagogy.

We explore particular theories of curation, 'bricolage' and collaborative assembly, and explain ways in which these are directly relevant to today's patterns and habits of student scholarship. After offering case-studies of 'curation pedagogy' at the scales of module, programme, project and institution, we conclude by visualising and explaining our 'curation learning cycle'. Ambitiously, our curation learning cycle opens up a broader question. If the idea of curation allows us to think radically about students' 'investment' in their work, can we suggest a new economic metaphorics of learning: stages of investment, production, legacy and inheritance that might re-frame the way we describe the 'student as producer'? Exploring these fundamental questions, we tie theory, case-studies and taxonomy together to propose a curriculum design approach that might change the way we understand the collective 'value' and longevity of student work.

Curation Practice, Curation Pedagogy

Curating is an exceptionally powerful way to engage students. "it forces you to commit to your work', asserts a PhD student at UCL, describing her experience of arranging and showing paintings. This assertion recalls William Perry's placement of 'commitment' as the pinnacle of intellectual and ethical development (Perry 1970). More recent studies suggest that curation can be more effective as a means to engage students in processes of assessment and feedback than almost any other activity (McDowell et al 2006).

Curating will be familiar as a term to most readers through its association with art galleries and museums, and learning to curate is a core developmental objective in Museum Studies. Its presence in the wider educational literature is less prominent. There has been discussion of the way curation activities engage students in studio-based subjects (eg. Petrie 2011, and the special issue of *Visual Inquiry* (vol.6:1), 2017), but perhaps surprisingly there is little discussion of what many might consider to be the exemplary instance of curation-based student engagement activity, the art and design final degree show (see Littlewood & Wyatt-Livesley 2016 for a student-authored perspective).

More popular have been case studies of how gallery and museum environments can host curating activities as a means of engaging students. Cathy Elliott's case study 'Poverty at the Art Museum' in the present issue of *Student Engagement in Higher Education Journal* shows how she uses a university art collection to help students analyse different conceptions of poverty (Elliott 2019). Other examples focus on subjects that are perhaps more readily associated with objects and display, including anthropology, fine art, and art history (Rodgers 2015; Sand et al 2017; Grindle & Thomas 2017).

Digital Curation

During the last 20 years, a sub-genre of educational and cultural scholarship has emerged on the impact and potential of 'digital curation', which we (following the HEA) will define as 'a creative process; the bringing together of a tapestry of digital artefacts to construct new meaning or provide alternative perspectives' (HEA 2017). This has taken its lead from discipline-specific reflection on teaching practices in

media, design and fine art, 'natural' homes for both physical and digital curation. Beyond disciplinary specialism, curation also adds a fresh strand to the pedagogical debate around constructionism: it suggests a powerful online space for discovery-led learning where students effectively use previously collected information to develop fresh knowledge (Kafai and Resnick, 1996). In his seminal work on constructionist learning, *Mindstorms: Children, Computers, and Powerful Ideas*, Papert celebrates an external facing and curatorial form of learning when he argues that:

> *the construction that takes place 'in the head' often happens especially felicitously when it is supported by construction of a more public sort 'in the world': a sand castle or a cake, a Lego house or a corporation, a computer program, a poem, or a theory of the universe […] what I mean by 'in the world' is that the product can be shown, discussed, examined, probed, and admired. It is out there.* (Papert 1993, 142).

Recent interest in the power of online curation has also emerged from scholarship that focuses on digital behaviours and literacies: student habits of online study, reading and knowledge production. In this strand, writers point - in tones varying between utopianism and apocalypse - to a generation of learners engaged in intense, repeated routines of assemblage, collage and classification as the dominant or default modes of learning (Carr 2011, Papson 2014). It is this set of 'curatorial' learning activities that we wish to investigate more fully.

If students, studying online, are increasingly engaged (productively or otherwise) in a set of behaviours that privilege assembly, arrangement and the spatio-visual classification of knowledge and resources, then this must have profound consequences. If student 'reading' has become more a form of online curation and display than a practice of linear analysis or notation (Clayson, 2008), then our attention must turn not just to the way students are studying, but also to the way we present and nurture their learning resources. What are the frames and technologies of instruction that we must create, and inhabit, to meet and engage our students?

To this urgent question we add a line of inquiry that draws out the question of student engagement. In particular, we must address the augmented spaces in which engaged learning can be promoted and expressed (Middleton 2018, Fung 2017). By providing students with spaces of creative assembly, sites in which they experience a heightened sense of ownership and connectedness, and platforms that promise a visible legacy for their outputs, can we promote better learning? Might a commitment to 'creative curation' as a pedagogy radically transform levels of student engagement?

Defining engagement and a new economy of student practice

In this paper we will propose a 'curation learning cycle', suggesting that it can be used to nurture heightened engagement via an economy of student ownership, co-production and legacy. But how do we understand engagement, and what do we mean by an 'economy' of student practice? The active participation of students in their learning and development has been and continues to be the single most important factor in the burgeoning interest in curation as an educational practice. Moreover, the existing literature on digital curation, which has so inspired us, has

gravitated around one theme that is especially relevant to our own discussion of student engagement: partnership.

Staff-student partnership figures in many discussions of curating, not least because, in a digital and physical environment, curating often depends on a significant investment in educational infrastructure and resources. The relationships between staff, students, institutions and the wider community in that investment come to the fore. Our discussion and case studies show how these partnerships can lead to wonderfully productive outcomes - a significant return on educational investment - but also acknowledges that this productivity is not without its risks and failures.

Our own starting point was not, in fact, about student engagement per se. After we had heard each other talk about 'digital literacy' and 'curating the curriculum', we fell into a discussion about the way that university assessment procedures often systematically obliterate the products of student learning. Questions of preserving student ownership of work, and the role of digital environments in enabling ownership and inheritance of that work, quickly came to the fore of our conversation. We found that extending an economic metaphor, familiar from Neary's model of the 'student as producer' would allow us to capture both the context of our discussion and the cycle of student engagement we think is immanent in curation activities (Neary et al 2014). In this article we use the language of franchise, investment, dividend, and legacy to broaden current conceptions of student engagement beyond 'production' to other stages of 'economic' benefit. We return to these points in more detail in our conclusion, but now pick up the thread of 'curation as learning'.

Understanding 'Bricolage'

Whilst 'collage' and 'montage' are processes that have a specific fine art, art history and media studies currency, we can also search for discipline-neutral concepts to offer a theory of curation as a learning process. A term for understanding the shaping of learning and the curation of meaning, 'bricolage' has a significant heritage. Levi-Strauss (1966) gave theoretical agency to 'bricolage' when he used it to describe the structure of mythical thought, using it as a metaphor to describe a 'crafty', do-it-yourself process of combining extant ideas. The 'bricoleur', he says, uses a 'heterogeneous repertoire' of resources drawn quickly from those at hand, often to create 'brilliant unforeseen results on the intellectual plane'. Since then, bricolage has been taken up as a powerful concept and metaphor for understanding interdisciplinary research methods and has been applied to theorise the way communities of designers, entrepreneurs and teaching scholars produce knowledge networks and products (e.g. Kincheloe 2001, Lincoln 2001).

For our purpose, its refreshed application to understand digital learning is especially fruitful. Offering a prophetic address at the *American Association for Higher Education* conference in 1999, John Seely Brown took up the concept once more and used it to imagine the lifelong learners of the 21st century:

> *Today's systems are built up through an extensive sense of bricolage—by cobbling or 'wiring' together fragments and extending or modifying such fragments when necessary. The catch is that if you are going to become a successful bricoleur of the 21st century, a bricoleur of the*

> *virtual rather than of the physical, than as you borrow things you have to be able to decide whether or not to believe or trust those things* (Seely Brown 1999)

In this rhetorical flourish, Seely Brown captures many of the excitements and concerns of our digital literacy debates today. Inaugurated intriguingly as Deloitte's 'Chief of Confusion', he returned to 'bricolage' and student learning in a more recent interview, arguing that "this ability to build new frames - to unlearn old frames and build new ones - is why we need to do much more with play. They've got to be willing to tinker, tinker, tinker: and pretty soon students will make sense of the world." (Seely Brown 2015). It is exactly this sense of re-framing knowledge, of accommodating but then re-presenting inherited learning, that makes 'bricolage' such an attractive learning metaphor. It is one, too, that is closely linked to the mechanics and aspirations of digital curation, which offers even greater fluidity and creativity than its physical counterpart:

> *Our students are certainly more adept bricoleurs than we are. They are creative assemblers. They learn by appropriating culture, dismantling and putting it back together. Students are comfortable sampling, ripping, mashing, and remixing as well as multitasking.* (Papson 2014, 387).

What evidence, then, of this exciting, but contested, mode of digital productivity, in our Universities? Digital curation, as a mode of engagement using digital data, tools and methods, is enabling new forms of scholarship and teaching in all subjects. JISC's 'Digital capabilities' framework identifies curation as a key component of information literacy, and of digital identity management (JISC 2017). The Higher Education Academy notes that: "Curation is not a new academic method – the selection and framing of information has always been a core component of academic practice and student learning" (HEA 2017, citing Mihailidis and Cohen 2013). This statement is true, but it glosses over curation's distinctive feature, which is that it deals in artefacts, whether digital (such as Padlet boards) or physical (such as photographs in an album), rather than more implicit or elusive forms of knowledge. It is the fact that curation deals with defined objects, rather than information in the abstract, that makes it so compellingly relevant to any discussion of student engagement (Mihailidis and Cohen 2013).

As scholarship in object-based learning has shown, working with artefacts is an effective way of realising two key conditions of effective learning as set out in constructivist pedagogy: turning learning from an individual to a social experience (since objects are more obviously co-produced and co-presented) and broadening the focus from cognitive activity alone, to include a wider range of craft-like skills and competencies (Chatterjee, Hannan, and Thomson 2015). Even the terms used to describe student engagement in object-based learning, such as 'rummaging' and 'foraging' are close to the search-and-gather processes of 'bricolage' and share many of the its playful and tactile resonances (Woodall 2015).

Evaluating Curation: Portfolio Assessments

Discussions about digital curation have brought portfolios into prominence as an assessment type by which diverse or tangentially related student outputs may be

connected, and new meanings generated. Clarke and Boud argue that if attention is given to the curation of portfolios, these assessment types can retain their traditional summative purpose (to demonstrate achievement) at the same time as serving a developmental purpose (curation for feedback and reflection):

> *The student's task [they argue] is to draw together appropriate pieces of evidence and justify their inclusion for different purposes … Like the curator of a museum exhibit, students must create a clear theme or purpose, carefully select pieces for display while forgoing others, edit their work and construct a discourse that communicates and/or justifies the theme to succinctly guide the reader to make sense of what is presented and direct their attention to the salient features that require a response.* (Clarke & Boud 2016, 483).

This means that 'consideration is given to the need to bring curation skills and feedback processes to the forefront of portfolio practices' (Clarke & Boud 2016). The effect is to put students in a new relationship with their work, in a way similar to the educator, or curator, as O'Donoghue's compellingly argues:

> *One might suggest that curators and educators are engaged in outsider practices to some degree insofar as they tend to come to art that has already occurred to engage with it again, but differently, and oftentimes in ways impossible to predict at the time of its initial production.* (O'Donoghue 2017, 6).

This new attention to portfolios has been characterised by a stress on 'a whole-of-programme approach', whereby the portfolio is added to and curated throughout a students' time in university (Clarke and Boud 2016). Such an approach allows the student both to produce artefacts – coursework essays, lab reports, project outputs, blog posts, and so on - but also, via the act of curating their outputs, to develop an 'outsider' relationship to their work, and a distance and perspective that helps them reflect upon it. The 'distance' offered by this reflective and iterated engagement with resources can allow for a more intense sense of ownership for the student. Having invested their time in reflecting on, repackaging and re-presenting their outputs, students establish a repeated claim over their work, a developing sense of care and possession that can be both individual and collective.

Fung has called for assessment practices that allow students to engage with a range of internal and external audiences. Arguing that when used to engage different audiences, student work effectively becomes "outputs from their research and enquiry", Fung sees the 'curated summative portfolio' as the best means of reviewing work, learning from feedback, developing a holistic view of their work and a richer understanding of the discipline, and presenting a reflective narrative of their development (Fung 2017, 108-9).

Excitingly, this recent work on portfolios recognises the value of curation for student engagement in all disciplines, not just those traditionally associated with studio practices or object-based enquiry. At the heart of this potential is curating's ability to help students make connections between the elements of their learning, which enhance their understanding. "The act of curating, at its most basic, is about connecting" (Obrist 2015, 1). This curator's view is echoed in recent literature on whole-curriculum design. Fung's notion of 'showcase portfolios' is a centrepiece of her wider vision for 'A Connected Curriculum for Higher Education'. Healey's

observation that "integrative learning is about making connections" points to curating's potential value as a core activity in capstone projects that demonstrate the achievements of students-as-researchers (Healey et al 2013, 15).

One point largely overlooked in the literature on curation is the fact that many students (though not all) already inhabit and revel in spaces of digital curation in their working and social lives, and it is unlikely that digital assemblage is activity or scholarly method we have to laboriously impose on them. Papson's portrait of students as expert "assemblers" and "remixers" (Papson 2014, 387) is echoed by a growing literature recognising that students transition to higher education with more than just a predilection for digital tinkering: they often come imbued with a refined (or at least well-habituated) set of curatorial skills, nurtured within online platforms, of (self) display, collective topology and communal dissemination. Students use curating daily via social media to express their opinion, classify their tastes and showcase their developing identities. And they often do this by 'repurposing' existing media resources in 'crafty' scenes of digital curation.

As educators, we might sometimes scorn the transience of the outputs and the dubious usefulness of the ensuing content. But the energetic proclivity - and aptitude - of students for this curation is apparent, showcased on a quotidian basis within communal sites of classification and display (Ahern 2016). Instagram, Pinterest, Flickr, Padlet and countless other digital platforms and apps operate as catalysts for this now-familiar but often very creative curation. Deuze, citing Chandler, recognises that to inhabit these digital spaces is to authentically nurture the activities and skills of the 'bricoleur':

> Digital culture consists of the practices and beliefs of the bricoleur [...] "The bricoleur's strategies are constrained not only by pragmatic considerations such as suitability-to-purpose and readiness-to-hand but by the experience and competence of the individual in selecting and using 'appropriate' materials" (Chandler, 1998). Bricolage simultaneously consists of repurposing and refashioning the old while using and making the new (Deuze 2006, 71).

In the context of academic study and development, curation has a strongly personal as well as collaborative dimension, allowing the student to explore their own scholarly identity as well as connect to networks of productivity. This has led bodies such as JISC to specifically take note of curating's relation to wellbeing and personal safety (JISC 2017), noting that there is an etiquette and an ethics of digital curation that is important to the broader student experience.

The note of caution about well-being is well placed. How do we address the charge that digital curation increases the pressure to curate ourselves (ie. present ourselves for judgement by others) in every area of our lives? It is a concern so widespread as to be raised by a recent 'Thought for the Day' presenter on BBC Radio 4 (18 October 2017), while the final competence listed in JISC's own 'Digital Capabilities' framework is "The capacity to look after personal health, safety, relationships and work-life balance in digital settings" (JISC 2017). Digital curation provides an ideal opportunity to raise these issues in dialogue with students, as they begin to build their online assemblies of argument, data and resource. A further helping factor will be to align curation activities with recognised good practice in assessment,

emphasising activities where it is largely the students' learning (rather than their online 'selves') that is being curated, showcased and assessed.

There is no doubt extra pressure and anxiety involved when a student is asked to work consistently in a collaborative, public and 'exposed' setting, whether online or not, so it is crucial that students have the opportunity to review and manage their scholarly identity within supportive communities and carefully designed assessments, and not fret overly about their performance and self-image (Donelan and Kear, 2016). Our focus should be on the opportunities that curation offers students, both for good practice in digital identity management and wellbeing, and for supportive online collaboration.

Curation Case studies

We propose that rigorous pedagogies to support 'digital curation' can lead to heightened levels of student engagement, research and ownership in relation to their academic output, and lead to liberating forms of student output and legacy. As part of our argument we draw out several curriculum 'case-studies' of student-led curation:

a. 'Object Lessons'

Given our paper focuses on digital curating, a case study in which the lecturer abandons an online curation activity in favour of a face to face exhibition might be unexpected. But this is what happened in a UCL module called 'Object Lessons' on the innovative BASc programme. As well as introducing students to different disciplinary perspectives regarding objects, the module uses objects to help students develop their ability to construct meanings and test theories (Kador, Chatterjee & Hannan 2017). Early iterations of the module had students devise a themed exhibition of objects drawn from UCL's zoological, Egyptology, and art collections, and host it on the (then) institutional portfolio platform, which was inaccessible for anyone outside the institution.

The module leader observed that his students struggled to address their work at an audience that was purely notional. A collaborative review with a student who had recently taken the module led to the decision to change the virtual exhibition to a 'real' one, displaying the physical objects in one of the university's museum spaces. It was hoped that in this way the students could address a more specific audience, and thereby gain a better understanding of how the activity was relevant to their study and the module's aims.

Students have a sharp sense of how digital activity may, or may not, be relevant to their studies. Our point here is not to suggest that virtual curating doesn't have the same potential to engage students as displaying physical objects in a physical environment. Instead, we wish to point out the importance of making the assessment authentic by challenging students to engage with audiences. This curatorial optionality - of using assembly to reach a digital or 'real' audience - inspired significant debate and engagement for our students.

b. Collaboration and re-framing

Collaborative curation can be energised, at module level, by insisting on particular research objectives and outcomes. Frustrated by the high quality, but usually internal and individualised loop of student learning in the Humanities (often a narrow pathway from tutor to students, and back via conventional, individual assessment, to tutor) the University of Leeds has departed from convention and designed a second-year undergraduate module, <u>Research Placement</u>, that demands different learning dynamics.

Responding to project briefs set by external (and local) organisations, businesses and charities, students are set to work in cross-Faculty, interdisciplinary groups to respond to the research need. They co-design negotiated outputs that range across heritage trails, online repositories, curated film showings, exhibitions and public engagement reports. The curatorial dimension can here be absolutely explicit in many cases, since students learn how to assemble and present data, knowledge and representations - often in digital as well as hard copy form - in a public-facing way: "As we developed our thoughts were introduced to a wider pool of resources, such as archives, interviews, blogs, and it was refreshing to not be confined to the library…" (student researcher, 2013)

The shared editing responsibilities, the online project management tools, the 'bricolage' process of accumulating, coding and representing public opinion and feedback: these forms of 'open' scholarly craftsmanship are often absented or internalised by more conventional, lone scholar work patterns. During this kind of module, students operate consistently in a collaborative space: they encounter the project 'pitches' as a set of online challenges, negotiate project groupings in class, define their roles and take care of different elements of liaison under a collective eye that includes the gaze of external stakeholders.

The curatorial activity lies in the assemblage and organisation of skills and roles, as much as in the curation and re-presentation of knowledge itself: "this module has developed my skills of motivation [...] Working within a close knit group has made me realise the importance of including everyone in decision making and ensuring that voices are heard" (student researcher, 2014). The digital aspects of curation in such modules - the online negotiation, project management platforms and output showcases, for example - add important dimensions of ownership, legacy and longevity to students' work.

c. Staff-student partnerships

Curation activities also offer a great potential for partnership. The literature on curating in museum and gallery contexts offers a number of examples of initiatives where partnerships develop between students, academic staff, and museum specialists. In some cases, these can be deemed successful partnerships, in terms defined by Cook-Sather et al of respect, reciprocity, and shared responsibility (Cook-Sather et al 2014). But quite often it can be a fraught business, and put simply, the challenge is to 'engage in a more complex set of relationships involving genuine dialogue' (Cook-Sather et al 2014, 8). Digital curation, we suggest, can groan under the same burden. This is especially true in digital humanities, when in addition to the

challenges of partnership with students, the distinctions between custodians of objects and the scholars who study them has hitherto been nice and clear but are now changing 'in light of new expectations and emerging practices' (Sabharwal 2017). In this light, Sweeney et al (2017) offer an interesting study of how a US university met the challenges of partnership. Sweeney and her colleagues, all librarians, asked:

> [H]ow can we create a culture of partnership among faculty and student researchers and library staff in which the challenges of digital curation are understood as shared research challenges rather than functional details of purely "technical" implementation? (Sweeney et al 2017, 322).

Their solution was to integrate a data management system with a web publishing tool, in this case WordPress, and 'design a series of tools and workflows meant to enable the library and its partners to work together to build sustainable digital projects'. The whole thing – repository and tools – was called Community Enhanced Respository for Engaged Scholarship (CERES). The outcome was that the university library was able to 'provid[e] project teams and research groups with excellent long-term curation of digital project materials while also enabling them to develop space to publish their projects on the web'.

One of its key functions is to help students learn. In one of the case studies cited, a professor 'suggested a collaboration with the Digital Scholarship Group (which includes both undergraduate and graduate students) to use CERES as a framework to create and publish an almanac of digital exhibits describing early African American life in Boston and New England'. The students' work, as published in the Almanac, was also used in a different course, on Public History, offering cross-cohort and cross-disciplinary legacies.

A platform such as CampusPress offers great potential as a site for engagement and a means of realising an institution's ambitions to be a community of learners. But if an institution is to realise its aspirations for democratic citizenship, it needs to create a way for staff to be engaged too. In their report 'Enhancing Student Engagement in Decision Making', Collins et al (2016) note:

> The driver of the HEI as a democratic entity is … wider than student engagement solely. It also relates to staff engagement, and the involvement of students and staff in decision-making processes (Collins et al 2016, 7).[i]

This means that our attention in digital curation must be on the digital environment as a space for partnership, where the student voice can be heard together with others (Barnett 2000). A flexible and more public 'front-end' therefore has great potential to offer a richer environment for the curation and dissemination of digital research objects created by academic staff, library and museum collections staff, digital education specialists, students, or – most excitingly – any combination of these groups working in partnership.

The Curation Learning Cycle

To distil our arguments, we propose the following 'curation learning cycle', suggesting that it can be used to nurture a heightened economy of student ownership, co-production and legacy. Whilst we are primarily interested in digital curation, we have retained the more general term so that the taxonomy can have wider application to tangible forms of curation:
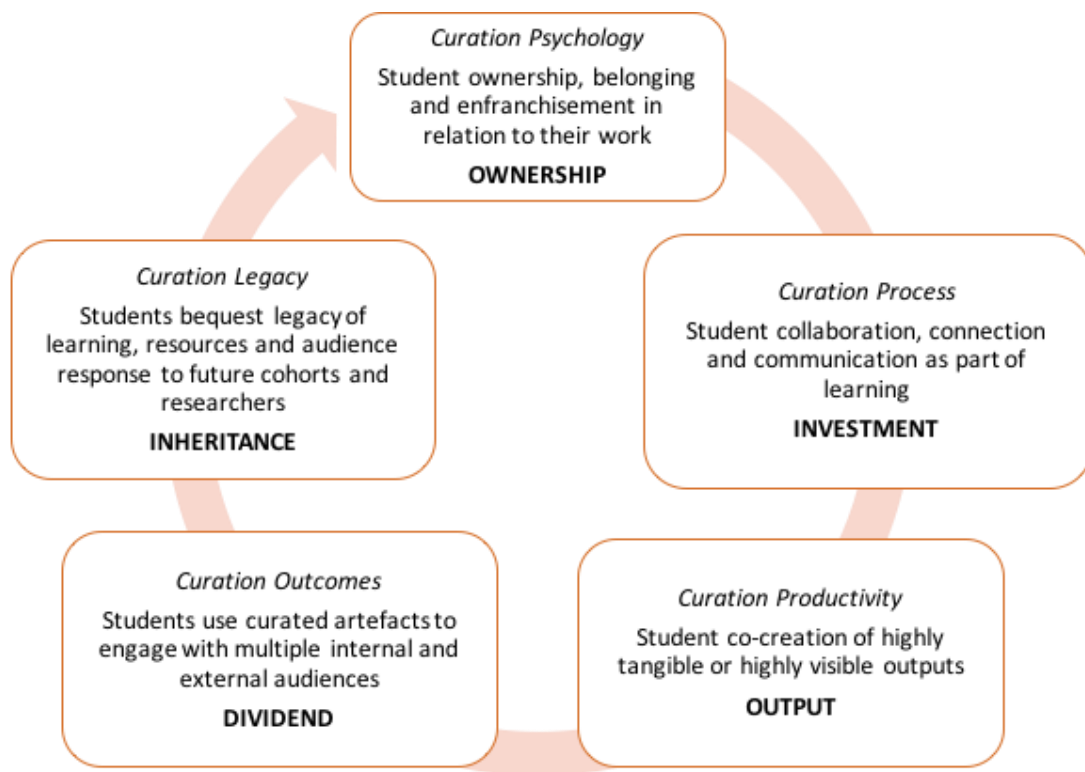

Fig. 1: Hallett & Grindle curation learning-cycle

Curation at each level, we claim, fosters student ownership (stage 1) because it allows students to conceive of a subject, a space and a set of resources (whether digital, physical or blended) as theirs. Curation fosters intellectual ownership of a subject because it enables new (and sometimes original) connections between topics, themes and issues that in themselves may already be well known but separately understood. Students echo Obrist's observation that curating is simply about connecting. "It [her curated work] is meaningful, it's not just an essay", said a final-year undergraduate; "[public display] forces you to commit to your work", reflected a PhD student. Curating offers a space in which students not only find and develop their agency but handle their own pedagogical disturbance (Barnett 2000), since the challenges of curating seem like their own challenges, rather than those imposed by an alien assessment regime.

Ownership is a crucial issue because a condition of successful engagement has to be that the students feel enfranchised (stage 1) as part of their learning. Worryingly, the dominant language of assessment in Higher Education is still one that is profoundly disempowering for the student. Usually, obscure criteria are set by others,

formats are tightly circumscribed, deadlines imposed without consultation and the student's identity anonymised as part of the process of marking. There are reasons for each of these steps (some of them very defensible) but the overall effect is surely to undermine agency and control, to separate the student from the system that assesses their learning. Most disconcertingly, the language we currently use to describe students' relation to their completed work is one of dispossession. Essays are 'handed in' or 'handed over', students 'submit' their projects; work is 'returned' in summary fashion before the student is instructed to 'move on' to a different set of modules. In terms that have more in common with criminal amnesty and policing, than with learning, students are routinely asked to 'turn in' their work for analysis or deposit it through VLE portals, to be processed for impurity before marking.

Individually trivial, perhaps, but collectively, these examples of assessment rhetoric speak of sacrifice, submission and the handover of suspect packages. What's more, those packages are often rendered quickly invisible in the process: exams are stored away out of sight, module VLEs are purged of electronic assignments each year, the essay is offered a scrappy pigeon-hole residency after being scanned by one person only. Why should we expect a student to invest their identity in their work when assessment procedures de-value and obscure their intellectual and emotional ownership of it?

Curating offers a greater degree of ongoing ownership, since by allowing students to shape, process and repackage their work, it creates precisely the right conditions for students to invest (stage 2) in their work. Cook-Sather et al note that 'research consistently demonstrates that students will work hard and engage deeply [we would say 'invest'] when they experience learning as personally meaningful' (Cook-Sather et al 2014, 11). This is a much more positive and creative way of conceiving student engagement than thinking about it solely in terms of effort and 'time on task' (Gibbs 2010, 23). The evidence from students is that when given ownership of a task (and, in curating, of the space in which it emerges) they are more engaged. 'To be able to use sources in a different way meant we could actually build on them', said a first-year undergraduate about their blog and podcast. Sweeney et al, discussing a much larger digital initiative, noted:

> *Indeed, one particularly valuable outcome of this pilot [the Early Black Boston Digital Almanac] was a demonstration of how classroom projects of this type could build on one another and accumulate value over time, strengthening the students' investment in their contribution* (Sweeney et al 2017, 332).

A greater degree of ownership also means that students are more likely to invest in those relationships and activities that are not part of their work per se but which have a critical impact and bearing on their learning and development. In Knight's words:

> *Engagement does not simply equate to the amount of involvement in and time on task, important though that is. It extends to learners' engagement in communities of practice, to their involvement in a variety of networks and to the amount and quality of interchanges with others* (Knight 2002, 275, quoted in Fung 2017, 125).

Collective curating, in particular, fosters these connections and networks (stage 2) and digital creativity allows these to be built without boundaries as the curation process develops. Participation in an online curating space may also encourage students to adopt a perspective that transcends the boundaries of subject matter, modules, and learning outcomes. Fung's call for programme-wide "showcase portfolios" as a mode of holistic assessment is likely to prove an effective way to encourage habits of curation that foster investment in interdisciplinary relationships and practices of communal learning (Fung 2017, 125-28).

In our learning case studies above, we have tried to present a range of different curation outputs (stage 3) spanning both digital and physical artefacts. The characteristics that bind their diverse nature together is their tangible presence or digital visibility. The powerful presence of curation outputs means that students work towards them with greater investment and commitment. Evidence suggests that while marks for completed work will always be important for students, it is far from being the only anticipated return on their investment. An informal survey of 27 undergraduate and graduate fine art students preparing their final degree shows at UCL revealed that only two students identified staff as the sole audience they had in mind. It was also noticeable that graduate students identified themselves as an audience for peers' work. In other words, students with a greater degree of experience in curating and exhibiting their work evidenced a deeper sense of what we might call 'engagement consciousness': understanding what and who their work is for.

A significant point here is that outward-facing activities, where students produce artefacts for audiences other than their tutor, not only afford greater opportunities for investment, but also offer greater dividends (stage 4) than many traditional kinds of learning activity and assessment. Pushing our economic metaphor further, and imagining stakeholders in assessment as intellectual shareholders, we can see the value of curated work rise as the 'profit' of student investment is shared and re-invested. Digital artefacts, in particular, can be quickly and easily disseminated to multiple audiences: public, employer, peer as well as academic, and the profit is shared and may (with the right reception) multiply further.

To summarise, learners invest more (intellectually, academically and emotionally) in learning outputs that have a legacy or bequest (stage 5) and a visible value beyond the 'closed or restricted economy' of the university, and beyond the conventional assessment types that colonise it. This legacy can be in the form of long-lasting effects, or what we might call a tacit legacy. For most students, a more immediately relevant form of bequest is not an effect, but an explicit legacy. One of the most commonly voiced frustrations about online learning environments, even those that the student can customise and develop through their degree programme such as PebblePad, is that they are transient and vulnerable spaces, where either the student or their work is quickly 'jettisoned' when the module or programme is complete. For the hours of intellectual labour they put in, students now want something they can curate and showcase (stages 4 and 5) to different audiences, and take away after they graduate. The appreciate a legacy from their investment. As discussed, curated and preserved student outputs given a clear legacy are radically different to the potentially alienating mechanisms of assessment which brusquely appropriate a student's work or make it vanish entirely.

There is huge amount of further work to do here in relation to institutional curriculum design. We need to find mechanisms where the legacy of student work can be celebrated, showcased and preserved, whilst ameliorating persistent worries around plagiarism, malpractice or crude imitation. But there's also a great opportunity here, since activities in which students are involved in the creation, development, and curation of digital objects can be more closely connected with a University's holdings – of data, of objects, of research resources. Universities are stakeholders in the curation learning cycle, too: how better to display your authentic excellence in research, teaching and learning than by preserving and showcasing the legacy of your students' scholarly activity? The marketing and recruitment benefits of institutional curation are not hard to imagine, either.

A final semantic strand of legacy is 'something left over from a previous era but still in active existence' (OED). The emphasis here less on the artefact itself, and more on the ways that a something bequeathed can be developed further by the educator as a form of learning inheritance (stage 5) to be used by future module and programme cohorts. The most well-known pedagogic support for this is Hasok Chang's 'mechanism of inheritance': 'each year students receive a body of work produced by the previous group of students and make improvements and additions to it; this process can be repeated until publishable materials are produced' (Chang 2005). Co-construction, in this sense, takes on a temporal dimension: the learning community becomes a republic of letters that experiences a specifically historical sense of self-realisation.

Curated outputs that are tailored to multiple audiences and that 'survive' as a legacy of student achievement offer a powerful feedback loop to inspire engagement and confidence within the next student cohort. Bequeathed student work (stage 5) in that sense, offers the next generation of students models, partial products, assemblages to work with: an evolving and inherited 'bricolage' to craft new knowledge from. These inherited resources, close to hand in a module VLE, then offer momentum for a fresh layer of creativity and collective ownership (stage 1, as the cycle refreshes).

For this to happen to the best possible advantage, universities will have to invest themselves, and take the step of initiating curricular change in order to engage students in the production of outputs that span more than a single module or year. This may be appropriate in long-term projects such as that described by Chang, but also in service-based and 'engaged' civic learning where multiple cohorts may develop ongoing partnerships with groups or communities external to the university. The advantages of co-curation accrue not only to students, but also to departments and programmes who are able to advertise their work and its relevance, and attract the attention of future potential students and partners.

Conclusion: exploring new economies of engagement

Our curation learning cycle is drawn to epitomise the main tenets of our argument in this article, but also to set the scene for the elaboration and contestation of the model we have provided. Our taxonomy nods towards the Kolb's learning cycle (1976) in its emphasis on concrete experience and experimentation, and echoes the Healey-Jenkins matrix (2005) in emphasising the movement from research reception

to research co-production within the frame of curation. It also adds specific nuances to the constructionist pedagogy of student learning, reminding readers of the status of physical and digital artefacts and their impact on learner engagement.

We wish to draw explicit attention to the metaphors we use when we describe student learning and engagement. At a time of disquiet about the colonisation of higher education by a 'neoliberal' language of learning gain, added value and the metrics of consumer satisfaction, our use of economic metaphors is pointedly self-conscious. By deploying ideas of ownership, investment, outputs, dividends and legacy, we hope we are helping to make the collective learning (and not commercial) value of curation activity clearer to our readers.

Perhaps more importantly, we also hope that we are shifting the use of this economic rhetoric in a new direction. Properly described as an unrestricted and de-centred economy of co-production, student-led curation places the ownership and legacy of learning firmly in the hands of the learners themselves. It demonstrates how value accrues to co-operative endeavours over time, more so than to individual enterprise. In doing so, the pedagogy of curation, we argue, liberates students' work from those assessment practices and learning spaces that might be seen to appropriate, divest or de-value it.

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