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Herzberg, hygiene and the motivation to reuse: Towards a three-factor theory to explain motivation to share and use OER

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Abstract: The list of barriers and enablers identified as influencing the use of open educational resources (OER) is extensive. However, factors and influences relating to reuse have often been noted within projects operating within a short time span, or subject to other specific conditions which limit generalizability. Evidence of reuse in practice has often emerged as isolated examples or anecdotes independent of context. While technical barriers and enablers to reuse have been well addressed in literature on reuse, from reusable learning objects (RLO) to OER, less attention has been given to the purpose of reuse and the motivation of those who choose to share or use reusable learning resources. Which factors have impact or influence on reuse, and how they relate to each other, is largely unexplored.

This paper draws on a longitudinal cross case comparison of five facilitation initiatives within UK HE which represented differing approaches to reuse activity (i.e. sharing and use) (Pegler, 2012). Coding and comparison in that research identified 222 factors related to reuse and suggested three broad and distinctive categories representing the type of factor associated with reuse activity (or lack) within project and other contexts. These were: Technical (the technical or technological systems or processes supporting reuse, including licensing and rights issues); Quality (the way in which sharers or users may establish or interpret the quality of one resource or reuse service relative to another); and Motivation (the purpose or motive underlying engagement with the activity and the conditions that this may suggest). The relatively independent effect of these factors, and the way they appear to influence reuse, recalls the classic two factor theory of motivation by Herzberg (1968).

Keywords: Herzberg, motivation, reuse, repurposing, OER, RLO, learning objects, IPR, copyright, reward and recognition, quality, hygiene, influence

Introduction

Open educational resources (OER) have been linked with reusable learning

objects, with OER described as RLOs with open licenses (Wiley, 2009, Lamb, 2009, Robertson, 2010). Both OER and RLO initiatives have been associated with a range of objectives emphasising transformation of education through sharing and reuse. Without achieving reuse (sharing + use in a new context) the primary objectives of OER, as with RLO, cannot be realised. Reuse is a cycle, with *use* following on from *supply* to create a sustainable process. It is unsurprising that one of the most significant barriers to supply and use of RLO (the restrictiveness of conventional rights arrangements) has been addressed as a priority within OER. Although there continue to be arguments about the effectiveness of open licenses as the optimal long term solution, their introduction addresses the uncertainly about permission to reuse that conventional copyright erects. The experience of the RePRODUCE programme, 20 JISC-funded projects in UK HE which aimed to include at least 50% reused content within specific courses, demonstrated that clearing resources with conventional rights for reuse in formal university teaching created a large overhead in terms of time, uncertainty and risk (Earney, 2010).

Casey (2008), reflecting on the experiences of reuse facilitation within UK HE suggested that rights acted as a 'lightning conductor' in sharing resources, focusing anxieties on a single issue. This is an effective metaphor, as addressing intellectual property rights (IPR) barriers has dominated discussion about reuse practice for many years. Rights issues have deflected attention from other barriers and enablers which may have significant effects on reuse. Non-rights concerns now need to be identified, understood, and where they prove significant, addressed.

This paper draws on case-based research conducted across five reuse contexts within UK higher education, representing a span of initiatives over an eight year period (Pegler, 2012). The cases ranged from a project exploring personal and informal reuse strategies with focus on blogs and wikis, to activity underpinning formal national and institutional repositories. Reuse activity noted (i.e. sharing and/or use), included personal/institutional; formal/informal; distance/blended learning scope of activity. The cases also included reuse activity at different scales: course/module; intra-institutional (departmental); geographical (regional and national); and intra-disciplinary). Each of the cases was directed at facilitating reuse of digital online resources, or using reusable resources, within UK higher education. They included open educational resource and reusable learning object examples.

The case research was grounded in an extensive literature review and recorded interviews or observations with educators involved in both sides of reuse activity (sharing and use). Participants were asked questions about their experiences and expectations of reuse, their preferences and practices to identify factors which could affect reuse within their contexts. From this context-specific research 222 factors were identified from coding of interview and observation transcripts, and reference to project documentation and evaluations. These factors represented a broad spread of observations or comments, primarily by participants within interviews, relating to factors which had potential to affect decisions to share or use reusable resources such as OER. Repetition of factors within each case were not recorded separately, although note was made of the extent of the repetition. What was derived was a broad list of factors across five separate and distinctive contexts.

Coding, sorting and comparison of the factors resulted in identification of three broad classifications. Whether discussing RLOs or OERs, 221 (i.e. all but one) of the comments and observations about reuse noted across could be classified as relating to Technical, Quality and/or Motivation concerns or conditions. This paper describes this classification as a 'Three-factor theory of reuse' drawing parallels with the Two-Factor theory developed by Herzberg (1968) which

described the operation of job satisfaction at work. The three factor reuse theory suggests that each class of factors has the potential to affect supply and/or use, yet in its operation is distinct and largely independent of the other classes.

Twenty-one semi-structured interviews with 24 participants in reuse facilitation activity, and a further two data capture suite observations with potential users selecting and commenting on resources for reuse were recorded and transcribed, then coded, to identify potential drivers and enablers of reuse for each context. The method focused on noting diversity, or spread, of factors for each case. This produced a comprehensive list prior to classification, which included factors which were mentioned by a single participant within a single project. It was noted that some comments related to the technical features and potential of the systems and processes (these became described as Technical factors). A larger group of factors related to how selection and choice between alternatives might be addressed, identifying a number of approaches or concerns relating to Quality. A further set of factors, most of which could not be described as Technical or Quality factors, or not solely so, addressed the reasons for resource reuse and informed the conditions under which reuse would occur. These were described as Motivation factors, and this class included the widest diversity (115 factors). In contrast the technical factors were the least diverse (75 factors). This may reflect the emphasis placed in projects on addressing Technical factors, and the volume of research and commentary on issues such as metadata and licensing, resulting in an established technical vocabulary around reuse.

To explore the relative importance of factors identified as relating to motivation, these were drawn on to create questions within an online survey circulated from May-September 2011 by the Open Resources: Influence on Learners and Educators (ORIOLE) project. Answers based on the first 160 responses to the survey (received during May 2011) are analysed in this paper to compare the perception of different motivational factors within a wider population of educators. A selection of the factors was also presented as a deck of cards, to explore factor interconnection and the differences that reuse context introduces.

Identification and classification of factors

The cases studied occurred between 2003 and 2010 and included: a national disciplinary repository; an Open University course made of reusable resources; departmental and institutional repositories; regional and discipline based community sharing and personal informal resource management and reuse. All resources were intended for use by educators, with one case (an institutional repository) being used directly by students in addition to educators.

The 'long list' of factors was identified through analysis of transcripts of interviews and data capture suite observation involving 23 potential users of resources or facilitators of reuse (both RLO and OER activity) and 32 students within the OU course constructed of learning objects. These students were themselves trainers and educators engaged in elearning. All of the examples of reuse researched involved use of online technology to share, and usually also to use, the resources. The interviews were semi-structured and invited comment about sharing and reuse within the context of the facilitation initiative, drawing on direct experience of the case or its reusable products. Comments recorded and noted were then compared with issues raised in meetings and other documentation concerning the cases (e.g. project reports). Where a factor was identified as significant in these sources and not referred to in the interviews it was incorporated into the list. Where the same issue was noted repeatedly (e.g. by several interviewees, or within interview and at a meeting and/or in project documentation) the repetition was noted, but the factor was recorded once, to

support focus on the diversity of the factors within each case.

The list of 222 factors which had potential to relate to reuse were coded, initially to identify groups of linked factors (e.g. those relating to metadata, control of a shared resource, rights concerns, etc). As the factors related both to sharing activity and (re)use activity, even when grouped in this way, the list was both complex and unwieldy. Sorting was therefore attempted on the basis of broader themes, derived from clustering and comparing groupings and the common features across groups. This process identified three broad classes of factor, into which all but one of the factors could be classified (221), with most factors (158) fitting within one class only. There factor classes or themes are described in Table 1 below:

Figure 1: The three classes of factors

TECHNICAL factors	These included technical concerns about metadata and rights, e.g. how resource descriptions were recorded and shared, what form of license was chosen, etc. Technical-only factors were distinctive in being separate from factors centred on evaluating the resource, or those relating directly to the purpose of the sharing/use activity, although the purpose may influence the technical option. These factors related not only to technical problems (e.g. how to identify a resource), but also technical solutions. Technical solutions might also seek to address problems relating to Quality, e.g. through rating systems.
QUALITY factors	These usually related to the resource used or shared, although they could also refer to the quality of the service, e.g. the user-friendliness of the repository interface. In that case they overlapped with Technical issues (e.g. a single comment about quality of metadata could be classified as both a technical and quality factor). The quality of the resource could also connect to the motivation to use it (e.g. expensive multimedia, representing rare content or unusual presentation could be classed as relating to both quality and motivation factors).
MOTIVATION factors	These related to the *purposes* informing the decision to engage in reuse (sharing or use), or leading to decisions or preferences about the *conditions* under which reuse occurs. Those could impact on Quality or Technical decisions. For example, if sharing was motivated by a desire to showcase institutional or individual work, decisions about controlling any outputs could follow. The quality of resources shared for this purpose would be likely to be high, and may not represent resources used in teaching. The context in and purpose for which reuse occurs can thus be strongly and specifically connected whether the activity is sharing or use.

Motivation offered the largest spread of factors noted (115 of the 222 factors identified) and the largest proportion of factors associated with only one class (i.e. motivation only) classification was applied to 67 (30%) of factors.

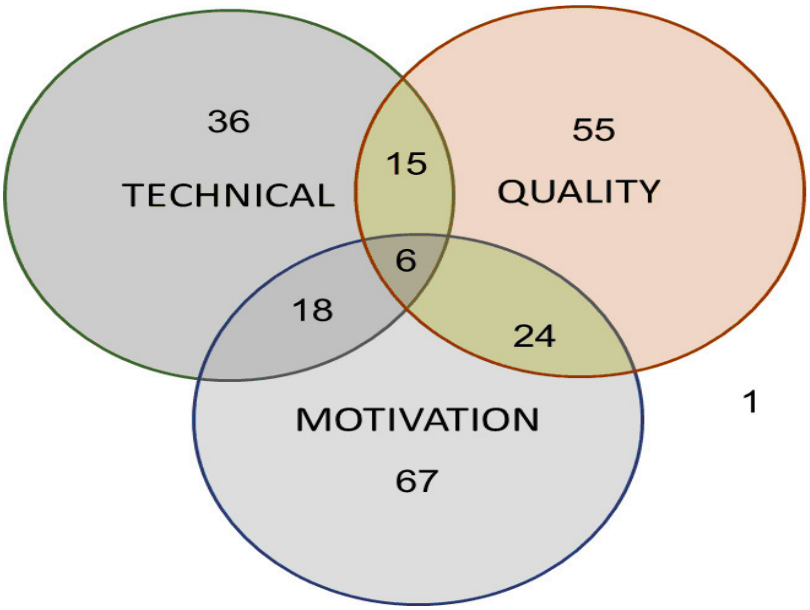
This high level of variety could reflect a high degree of uncertainty about what contributes to motivation to reuse, as well as the association with context. This has been a relatively unexplored area of reuse activity. It could also be an effect of semi-structured interviews and observations, where the researcher probed for more examples or explanation of answers where the interviewee expressed uncertainty or mentioned factors not previously encountered. The same participant might offer several, sometimes conflicting, suggestions of why they chose to share or use, or why they chose not to. All these suggestions were recorded if they appeared to be factors in the decision to reuse.

Three distinct factor types?

Re-coding the factors using the three-factor classification resulted in 71% (158) fitting within a single category with some overlap between classes for the others. Of the factors that overlapped, only six (3%) were located within all three classes. Examination of these established that they were particularly general comments. For example 'Would be useful to allow comments on the objects [resources] while reviewing' was one of these statements. Although this suggests a technical modification to the repository commented on, it could also suggest a purpose for which this functionality was required (motivation) and a preference for resources which featured this function (quality). Statements that were capable of classification in all three classes were general or vague in nature and could perhaps be disaggregated into individual factors, although in interviews they were expressed and recorded as a single concept. A further factor was not classified in any category: 'Changing teaching practices towards sharing and reuse takes time'. This led to the decision to exclude these seven from the analysis, leaving a set of 195 factors.

The classification of the 222 factors and the relationship between these is shown in Figure 2. The pattern of overlap between categories shows that while factors were sometimes classified across more than one class most factors were classified independently of others. This suggested distinctiveness in the categories adopted.

Figure 2: Statements/issues falling within one or more of the classifications



How Technical, Quality and Motivation factors relate to reuse

The widespread reuse of digital online resources in technically efficient ways has often been described as a Holy Grail within elearning (Weller 2004, Ferguson et al. 2007). The ability to reuse resources and personalise the learner experience based on reuse have been important justifications for expenditure on content management systems from the UKeUniversity onwards (Carusi, et al., 2004). Reuse has often been associated with elearning, not because reuse does not occur within other forms of learning and teaching, but because the scope of reuse is different when learning and teaching occurs online. The digital online format allows many users to access the same resource without compromising access for others and without consumption of the original. Reuse of learning resources within UK HE has also been recognised for some time (Boyle, 2003) as relying on some element of technologically-mediated repurposing or adaptation of resources to re-contextualise them. This ideal of potential to repurpose continues in discussion of reuse of OER, (e.g. Kernohan, 2010), with Bissell (2011) suggesting that the license adopted should be as open as possible to facilitate making of derivatives.

So, while reuse can occur offline, for example printing out a resource and using the printed copy, with reuse of OER there is inevitably an assumption of educator-led decision-making within a technical-mediated system. While the technical systems that support reuse are becoming more user-friendly, effective use of formal repositories to share resources still requires a high order of skill relative to other technology use by teaching staff, particularly if there is to be modification of the resource. Reuse also requires additional technical skill in understanding the licensing options for sharing OER and in classification and description of resources.

The technical features of reuse, relate to the infrastructure, process and/or systems which impact on how reuse is facilitated or occurs. They are not primarily features of the resource, but of the environment which the educational content occupies and its relationship to that environment (Pegler, 2012). Although 18 factors identified as related to motivation were also classed as technical factors (e.g. the adverse effect of extensive metadata on motivating to share), they were *extrinsic* factors relating to reuse. These established, or failed to establish, a technical environment in which reuse could occur. In this sense Technical factors appear to operate as a hygiene or maintenance factors, as described by Herzberg (1968).

> *"The growth or motivator factors that are intrinsic to the job are: achievement, recognition for achievement, the work itself, responsibility, and growth or advancement. The dissatisfaction avoidance or hygiene (KITA) factors that are extrinsic to the job include: company policy and administration, supervision, interpersonal relationships, working conditions, salary, status, and security." (Herzberg, 1968)*

Herzberg suggested that the *extrinsic* factors, what he called 'hygiene factors' if absent, or available at an inappropriate level, would create dissatisfaction. He noted that hygiene factors can create activity (which he calls 'movement'); however he used the acronym KITA ('kick in the ass') to describe the carrot/stick impetus to performing which arises from extrinsic prompts, underlining the un-sustainability of this effect. He suggested that once removed the carrot or stick would no longer have an effect on reuse. Academics could be required to deposit resources within an institutional repository or VLE, but this would be a hygiene factor rather than a motivator in terms of reuse. They may

perform (move) in the required manner, but without the intrinsic desire to sustain and improve on performance associated with motivation.

It is possible that in reuse facilitation, where the educator is also a researcher into educational technology, or otherwise actively interested in the technical aspects of reuse, the opportunity to try out a particular technical feature would be *motivated* by the technical. However this also would generate atypical and unsustainable reuse activity.

The Quality category grouped those factors and issues, which reflected concerns or judgements about quality. These could be offered as a reason to choose, or not choose, a resource. Quality factors and assumptions provided a means of selecting between alternatives. They could relate to both the service and the resources, with quality *of the resource* an *intrinsic* factor overlapping with Motivation, to offer a reason for reuse (Figure 3).

While Technical factors can be objectively demonstrated, Quality factors are often subjective. While some aspects of quality can be objectively measured (e.g. the popularity of the resource based on numbers of downloads or citations), most others cannot, as agreement on the measure varies with context. The overlap with Technical and Motivation issues suggests (Figure 2) that Quality is a factor class which has potential to both satisfy (when the quality is good) or dissatisfy (when the quality is poor). It can act as both incentive and deterrent. One of the issues peculiar to reuse of learning resources, in contrast with reuse of research resources, is the relative lack of control over quality retained by the creator of the resource. There is the potential for the reused learning resource to be modified. This can lead to improvement, as new versions are created, but can also adversely affect the resource quality.

The third set of factors has been described here as Motivation, and represents the factors which make the individual, group, or organisation, wish to engage with reuse as an activity, or wish to use a specific resource. These factors describe what motivates reuse. Research into motivation has attracted relatively little attention from funders of reuse, perhaps because (as Figure 3 suggests) it is under the control of the individual and is difficult to measure.

Figure 3: Comparison of classifications

	Technical	Quality	Motivation
Intrinsic or Extrinsic control?	Extrinsic	Can be either	Intrinsic
Quantifiable?	Yes	Some aspects (e.g. when last updated)	No
Hygiene factor or motivator?	Hygiene	Can be either	Motivator
Affects?	Service/Process	Resource (mainly)	Person

While reuse can be influenced, to some extent, by KITA hygiene factors (e.g. requirements to deposit as OER as a condition of funding), unless the desire to reuse becomes an intrinsic motivator this short term effect would be likely to cease when the funding is no longer available. The creation of very desirable (quality) resources, or establishing a useful repository service, are general project aspirations which seek to secure longer term shifts towards reuse.

The re-user (sharer or user) represents in terms of motivation something akin to the 'black box' of marketing theory on consumer behaviour (Kotler,1999). That is, the precise reasons why someone should choose to share or use resources across different contexts are not visible or obvious, being transformed from stimuli into response via the consumer (black box). Some actions are thought to have a positive effect on reuse behaviour, for example reward and recognition. This is often expressed as a way of bringing sharing of teaching outputs into line with the rewards for publishing research outputs.

There are persistent assumptions, even given a lack of research evidence, that technical efficiency and access to better quality resources will motivate reuse. An example of these arguments appears in the PortsmouthUniversity's Department for Curriculum and Quality Enhancement blog (Malik, 2010). This suggests that the benefits of reuse for educators are: gaining access to a wider range of material; being able to repurpose and reuse rather than developing from scratch; saving time which they can use productively in research and tutoring students; and helping foster collaborations beyond their own university. There is a further comment that sharing is a way to drive up the quality of the teaching material that teaching staff produce. While these could clearly be viewed as benefits, the question remains as to whether these are motivators of reuse. These benefits appear to principally apply to the institution, sector and learners, rather than the educator. However, the investment in learning new skills, in remaking existing resources (to replace others with which s/he is already familiar) and time spent searching and evaluating content, is additional effort required of the educator.

Further exploration of reuse motivation

Potential influences on reuse identified from the literature and the factors listing described above informed questions within an online survey circulated by the Open Resources: Influence on Learners and Educators (ORIOLE) project during May 2011.

The survey URL and information were circulated across a number of mailing lists within UK HE including several institutional mailing lists (e.g. Open University, OxfordUniversity and University of Bradford) as well as OER-specific discussion lists such as JISCMAIL OER-Discuss. The link was further circulated via Twitter and blogs. Responses received were primarily from the UK (129, 85%) with most identifying their primary employer as Higher Education (133, 88%), of which 20 (13%) worked principally in distance education at HE level. Other types of employment represented were FE/Vocational Education (14, 9%), other post-16 education (1), School (2), Other government or Sector organization (2) and Other educational providers (3). Twenty four (16%) worked for more than one employer, with most of these (10, 7%) noting distance education in HE as their secondary occupation. This paper draws on the 160 complete surveys recorded by 27 May 2011. This is a high level of response for an extensive survey which required 15-30 minutes to complete and which filtered out those not involved in designing and creating or selecting, adapting/using/reusing learning resources. (A PDF copy of the survey is available at http://bit.ly/zmnhsO)

The focus in this paper is on the answers to two questions addressing motivation to reuse (Q8a) and motivation to share (Q12b), for which 152 responses were recorded. Respondents were asked to rate each factor as having a positive influence, no effect/not applicable or a negative influence. The coverage of the questions is summarized in Figure 4.

Figure 4: Influences on reuse (adaptation/repurposing) existing resources and sharing

Motivation for resources reuse	Motivation for sharing resources
Possibility of reward	Possibility of reward
Rare or unusual resource	Rare or unusual resource
My project/department/institution requires this	My project/department/institution requires this
My reputation is improved	My reputation is improved
The reputation of my team/department/institution is enhanced	The reputation of my team/department/institution is enhanced
Develops my research activity or interests	Develops my research activity or interests
Opens my work to comment/review etc.	Opens my work to comment/review etc.
Online, so increases my audience	Increases my audience
Increases use of resources	Increases use of resources
Reuse is a good thing to do	Reuse is a good thing to do
Good for my professional development	Good for my professional development
This will save me time	This will save me time
I would need extra resources or support to create it	I would need extra resources or support to create it
This is more efficient, it saves money	This is more efficient, it saves money
Student learning quality is improved	Student learning quality is improved
Better looking than I could make myself	Quality of the resource is improved by sharing it
Technically more complex than I could create	

Respondents were asked to describe their current role, choosing from a list of six non-exclusive categories (Figure 5 provides a breakdown of the responses). The largest group (87, 58%) had a Teaching role, which is consistent with the active filtering out of those not involved in resource reuse activity. However, it should be noted that teaching staff were not the only respondents producing resources, with 89% (138) designing or creating learning resources (other than

commercially published ones) for use with students. A slightly smaller proportion (127, 84%) identified that they were using resources (other than commercially published ones) with students. By excluding commercially produced resources, the survey sought to concentrate on the type of resources which respondents had control over sharing or using without the bounds of publisher copyright conditions and other restrictions.

Figure 5: Respondents - type of role

Teaching	92	58%
Research	60	37%
Learning technology support	46	30%
Staff development	42	27%
Library staff	43	27%
Other (please specify)	16	9%

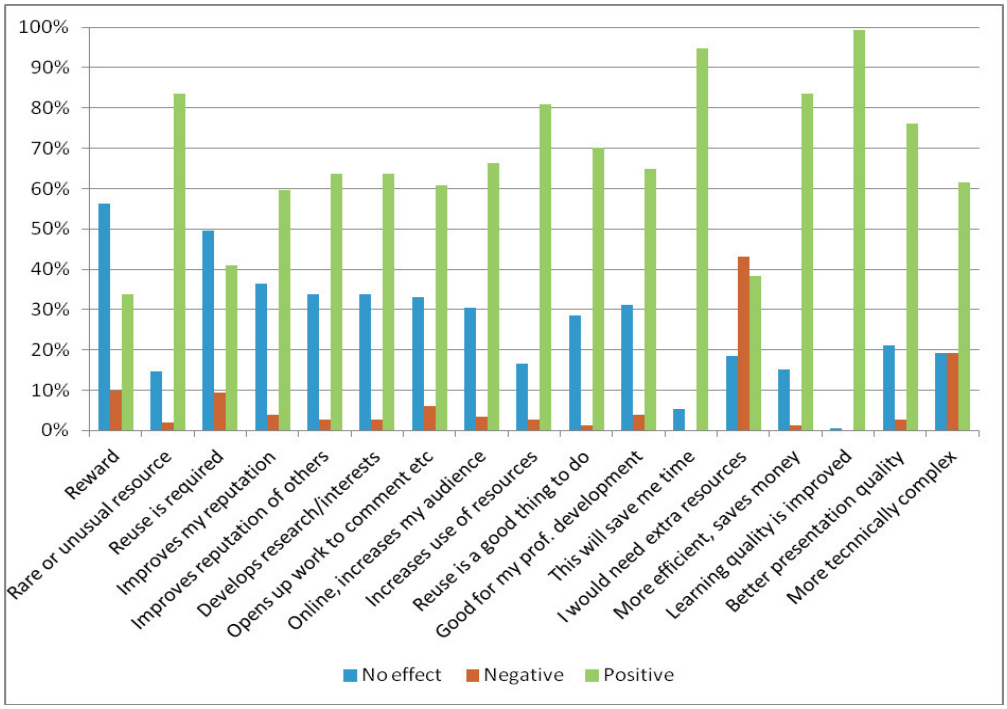
Given the method of disseminating information about the survey (online mailing lists) it could be expected that respondents would be likely to be engaged with elearning and drawn from communities already actively involved in OER activity. With over 80 UK HE institutions involved in Phase 1 of the JISC/HEA OER programme (2009/10) and with new participants in the second stage, there was already a wide spread of OER activity within UK HE by Spring 2011. Forty-six (30%) of the respondents were currently working on a project where there was a requirement by funders to share or reuse educational content (i.e. resources used in learning and teaching). Responses from those linked to reuse projects and those not linked are compared below.

Using reusable resources: which 'motivators' have appeal?

Figure 6 shows the answers to 17 questions asking respondents to rate factors as having a positive or negative effect on motivation to reuse of existing resources (in contrast to creating new ones). The question was presented as a card sort activity with three options including rating factors as having no effect/not applicable. As the chart shows, only two motivators were identified as having no negative effects for this group. These were saving time and improvement to the quality of the student learning. Reinforcing the value of time saved, the suggestion that extra resource would be required to reuse resources was rated as being a strongly negative 'motivator'.

The other motivator which attracted relatively strong negative ratings and weak positive ratings relative to no effect/not applicable was the possibility of reward. As Figure 6 shows, this also appeared as a relatively ineffective positive influence (motivator) for sharing. The nature of the 'reward' was not stated and this may have an impact on its potential as a motivator.

Figure 6: Relative effect of different motivators to use resources



If the appeal of a motivator needs to exceed the effect of its combined negative and no effect score (the non-positive score), the third non-motivator noted in this survey was being required to reuse. The effect was -19% relative to the non-positive effects (the combined negative and no-effect scores). This appears to be a Herzberg KITA hygiene factor, rather than a motivator.

In contrast the strongest motivators for reuse, in addition to the previously mentioned improvement to quality of student learning and saving of time were: where this was efficient and saved money and where the resource was rare or unusual. Both were rated as 67% more popular than their non-positive scores. Appearing almost as strongly motivational was the prospect that reuse would be more efficient and increase use of resources (a 62% increase beyond non-positive score).

As noted above, 30% of the respondents were already required to share resources as part of involvement in a project. The positive/non-positive ratings for the two groups (not currently working on a reuse project and working on a reuse project) were compared. In most cases the difference in positive ratings was 5% or less. However for four of the suggested motivators there was a more marked difference in opinion between the two groups as shown in Figure 7. Those associated with reuse projects were more likely (a difference of 21% and 9% respectively) to rate the opening up of work to comment and possibility of reward as positive incentives to engage with reuse. They were less likely (-12% and -11% respectively) to rate the increase in audience from being online, or the potential to increase the use made of resources as positive.

Figure 7: Differences in perception of motivation effects - Reuse-Required project staff and others compared

	Currently associated with reuse project	Not currently associated with reuse project	
	Rated as +ve	Rated as +ve	Difference
Reward	40%	31%	9%
Opens up work to comment etc	76%	55%	21%
Online, increases my audience	58%	70%	-12%
Increases use of resources	73%	84%	-11%

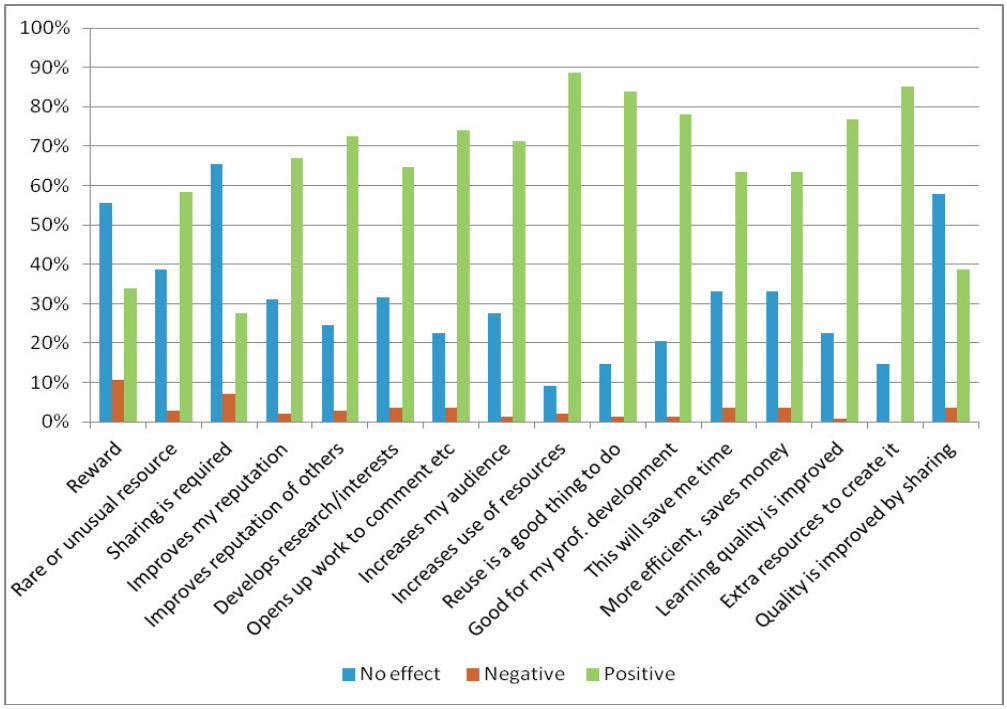
These differences could be accounted for by the variation in experience of reuse across these two groups, with those involved in projects perhaps more aware of the usefulness of commenting and review as an outcome of reuse. It may be that for the two less positive ratings, project staff were answering from the perspective of staff who already reuse resources online and either do not agree with these possible effects, or do not value them. Project staff may not be involved in designing, creating, selecting, adapting, use/reusing resources outside of the project.

The difference in ratings of the desirability of reward for reuse suggests that those who are involved in projects see a greater need for reward, than others. The nature of the reward was not stated in the survey, and the wording of the question was 'Possibility of a reward'. It may be that those not working on projects were more doubtful about the reality of the reward, or the practicality of offering this. The difference in this case (the least marked difference in Figure 7) represents only five respondents but it does suggest that offering reward, similar to Herzberg's conclusions about increased salary, is not the most effective motivator.

Sharing reusable resources: which 'motivators' have appeal?

The second of the questions on motivation addressed motivation to share (Q12b) and used largely the same wording and same factors as those noted above about reuse (Q6a). However there were differences in the way that the same motivators were perceived when directed at encouraging sharing, as illustrated in Figure 8.

Figure 8: Relative effect of different motivators to share resources



Notable are the few examples of high negative ratings. The only exception being reward as a motivator which attracted the same proportions of positive/negative/no effect (not applicable) ratings as when applied to reuse. This suggested that sharing as a requirement was even less popular than reuse as a requirement.

In comparing the rating for the two types of behaviour (sharing and use which together constitute reuse) there are four particularly marked differences. Perhaps unsurprisingly, when asked to consider motivation for sharing, saving time was less positively rated (63% compared with 95%), and saving money was also less positively rated (63% compared with 84%). These differences may suggest that it is less likely that those asked to share can see how they might save time or money through sharing and that connection is easier to see when contemplating use.

The other two differences related to rare and unusual resources and improved quality of learning. While rare and unusual resources were considered to be a very positive motivator when considering use, sharing such resources was apparently less desirable (58% positive ratings compared with 83%). This could suggest that there may be reluctance to share rare and unusual resources, which presents a dilemma as these are resources which are in demand for reuse. It could however suggest that this is not applicable for the respondent as they do not expect to have resources of this type to share. The rating 'No effect' and 'Not applicable' were combined in these questions and the -25% difference between the ratings of this 'motivator' for the two stages of reuse activity

(sharing in contrast with use) is accounted for by a matching rise in the 'No effect/Not applicable rating' rather than any rise in ratings of this as a negative factor. That suggests that is a matter of supply rather than motivation.

There may be concerns by respondents that the resources that they could share would not be of a significantly high quality, although expecting those they reuse to be of good quality. Quality is the last of the four main differences between the two sets of ratings, with those thinking that learning quality would be improved by sharing showing a minus 23% drop when compared to those who thought this effect would follow from use (77% compared with 99%). Again the difference between these two ratings is accounted for by an increase in the 'No effect/Not applicable' ratings. Taken together these two differences support observations noted within the UK OER community (Pegler, 2010) which suggested anxiety about the quality of resources available for sharing by their creators. When compared with the resources available through funded projects, the quality of resources created by individuals and non-project teaching teams, and the relative rarity of these, may be questioned and this could form a barrier to supply from such sources.

In comparing the responses of those associated with projects currently funded to share/reuse with others, again there were some differences, although only two differences large enough to suggest significance. There was again a greater level of interest in opening up work to comment/review as incentive to sharing resources (an 18% difference with 86% of project staff seeing this as positive next to 68% of non-project staff). Given the differences in quality/rarity ratings between sharing and use it should also be noted that the difference between the groups can be accounted for by differences in the no effect/not applicable ratings (11% for project staff and 28% for others). Rather than having concerns about opening resources for review and comments, non-project staff appeared less likely to consider this to be relevant to them.

The other difference which invites comment is the relatively large proportion of project staff who saw benefits in sharing to advance research and interests. As with previous differences between these groups this can perhaps be accounted for by the recognition of OER as a research area by project staff. Other staff may see its relevance as restricted to teaching. It also may reflect the wider opportunities for project staff to engage in dissemination around sharing of resources based on funded-project activity and an expectation that they do so.

Discussion, conclusions and suggestions

This paper has focused on identifying what appears to *motivate* sharing and/or use (reuse) of online educational resources. It started with unclassified user comments identifying factors that were thought to influence reuse obtained from participants within a range of reuse initiatives. These were then grouped into three broad classes which it argued have different effects on reuse. Technical concerns are akin to what Herzberg, in his work on motivation, described as hygiene or maintenance factors. These are significant factors. For example, if the file format is obsolete, or there is no license to reuse, an absolute barrier affecting all users occurs. This is the deterrent effect of Technical barriers. It may be possible to reformat the resource, to apply for rights clearance, or apply some technical 'fix' if something that does not run effectively, but this requires making a notably different version before reuse can occur.

Positive technical attributes of the environment can encourage reuse. However, on their own these may be insufficient to lead to sharing or use of specific resources within contexts which have yet to be identified and can be very

diverse. The resource which is openly licensed has a technical attribute which facilitates reuse. However, if other higher-quality openly licensed alternatives already exist, this resource is unlikely to be used. If resource versions with closed licenses are already in use, the open licensed resource may not be selected to replace these, unless the learning design requires the openness that an open license provides. If a repository offers particularly fast search (a technical attribute) it may encourage users to try it. However, to sustain interest the resources held there need to be those that are most relevant to the educator and context, or offer a suitable route to dissemination. The discoverability of repurpose able OER is becoming easier, so it is increasingly unlikely that a user or sharer will have more systems and resources to choose from.

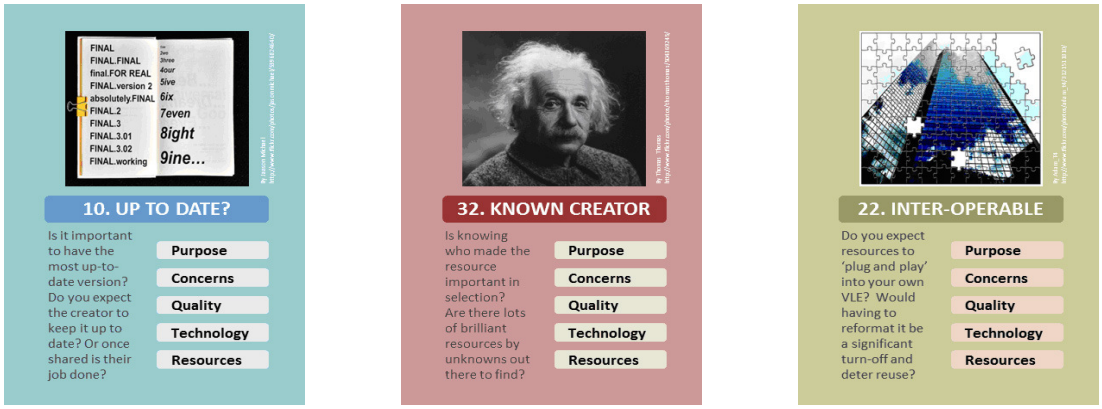
Choice between alternatives is likely to be informed by judgements about quality. With more alternatives, making a selection becomes more challenging and may inform technical requirements, e.g. to allow quick comparison of options at a glance. However, resource selection or awareness is no guarantee of reuse even where the quality is regarded as high. Becta, the British Education and Communications Agency reporting on the use of electronic resources by UK further education colleges (Davies, 2004, 2005 and 2006) found that most colleges reported that they used the National Learning Network (NLN) repository (84% in 2004 rising to 87% in 2005 and 97% in 2006), however 'common use' of the resources occurred in only a minority of institutions (9% in 2004 rising to 13% in 2005 and 17% in 2006). The NLN was a quality-assured repository specifically designed for UK FE at a time when there were few alternatives. Becta's research indicates that although NLN target users, were aware of the resources, their use was not embedded in practice for most colleges.

In the Personal Repositories Online: Wiki Environments (PROWE) project, interviews with participants revealed a number of strategies for deciding whether to look at alternative forum messages in anticipation of finding helpful content (Pegler, 2007). A single participant expressed attraction to resources from unfamiliar sources (novelty and curiosity) and also to those that were familiar (known and reliable quality), suggesting that decisions on quality could vary *for the same user* depending on timing, context and other constraints. Quality can attract attention to specific resources and deflect this from others. In addition to interest there must be opportunity for reuse to occur. The proposed use, and the alternative sources and existing educational approaches within that context, will help determine whether the resource is used and inform decisions about appropriate quality for that use.

Borrowing from Herzberg (1968), the selection of 'motivators' that respondents were asked to comment on in the survey included some which he referred to as KIYA, these compelled reuse or sharing, or rewarded it, through extrinsic mechanisms. Some factors attracted a greater degree of uncertainty or apathy than others. These were the factors most similar to the KIYA strategies to achieve movement, without long-term sustainable effects on motivation. However, all of the factors were rated more positively than negatively, apart from the suggestion that extra resources would be needed to reuse. This suggests that the factors selected were motivational to some extent, although their relative importance and combined effect within specific contexts requires further investigation. (Data generated by the survey will be released during 2012 as open data on the ORIOLE project blog (http://orioleproject.blogspot.com) and further research is being conducted with respondents to determine the interplay of context and factors.)

As an aid to exploring reuse factors and reuse contexts with different educator audiences, in a supplementary activity, sets of physical cards were generated. Each card within the 36-card set represented a reuse factor or group within the 195 factor list. All three factor classes were represented, with 12 cards created for each for the Technical, Quality and Motivation themes. The cards featured open licensed images to allow reuse and adaption. They were shared as a free download from the ORIOLE project 'shop' (ORIOLE, 2011) in print-ready or customisable formats. http://orioleproject.blogspot.com/p/shop_16.html.

Figure 9: The 36 reuse card themes and 3 specimen cards ***[1]***



Motivation: 1) Exclusivity, 2) Custom/Habit, 3) Sharing is Good, 4) Personalisation, 5) Funding, 6) Policy, 7) Learn new stuff, 8) Cutting costs, 9) Rarity, 10) Up to date? 11) Convenience, 12) Speed/Time

Technical: 13) Metadata, 14) Moving online, 15) Discoverability, 16) Granularity, 17) Reliability, 18) Context-free, 19) License to use, 20) Adaptable, 21) Innovation, Inter-operable, 23) Accessible, 24) Repurpose able

Quality: 25) Brand, 26) Style/Tone, 27) Appearance, 28) My Community, 29) Quality checks, 30) Persistence, 31) Ratings, 32) Known creator, 33) Research-basis, 34) Proved in use, 35) Description, 36) New/Improved

The cards were designed to support discussion activity or game playing, encouraging participants to suggest and compare ratings about the purpose and concerns (motivation), quality, technical and resources implications of each of the factors, with suggested prompt questions. Copies reproduced using an online instant print service (Moo.com) to create substantial physical 'decks of cards' have been piloted at conferences and development events by the researcher (e.g. Pegler, 2011) and also by other OER researchers (e.g. Anna Comas-Quinn, Teresa Connolly, Bea de los Arcos and Alannah Fitzgerald). As an aid to research they prompt semi-structured discussion of factors, ranking of factors and comparison of ranking across reuse contexts. This is a novel open educational resource which can provide a flexible structure within which participants, as well as the researcher, can explore and recognise constraints and enablers to reuse within specific contexts.

The questions within the survey were based on UK-centred HE activity so the answers may not be generalizable to other projects and contexts. However, the variety of motivational factors within UK HE and the extensive list of comments and observations around reuse barriers and enablers from which these derived, support a view of highly complex decision-making. Within this technical and quality factors cannot predict reuse, and may not motivate reuse, but need to be considered in conjunction with the purpose of the resource reuse and its context. This is also expected to be the case for non-HE and non-UK contexts, with the three factor classification offering sufficient discrimination between intrinsic and extrinsic factors to inform understanding of the interplay of influences on reuse decisions across different contexts. What the research reported in this paper suggests is that understanding the motive or purpose for reuse, will be as necessary to facilitating activity as establishing appropriate quality and technical factors, as these are likely to vary in importance depending on the specific reuse purpose.

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[1] Each card displays features an open licensed image sourced from Flickr and displays the name of the creator and the link to the image in Flickr. Those used here are by:
(Card 10) Jason Michael www.flickr.com/photos/jasonmichael/5396824640/ ;
(Card 32)Thomas Thomas http://www.flickr.com/photos/thomasthomas/504369245 ; and
(Card 22) Adam_T4 http://www.flickr.com/photos/adam_t4/3121511810/