**How can developing object based learning skills during primary initial teacher training influence the trainee’s approach to classroom teaching and learning?**

A collaborative action research programme between Leeds Museums and Galleries, Leeds Trinity University and York St John University, funded by Arts Council England

**Final Report 2016/17**

**1.0 Executive summary**

Second year primary teacher training students from Leeds Trinity University and York St John University participated in an action research project with experts from Leeds Museums and Galleries (LMG). All students acquired skills in object learning and were encouraged to employ these in their own teaching. A focus group developed skills further through additional training with museum staff.

At both stages insights into impact on the students were captured via a variety of methods. Participation in the project also enabled the tutors to review the impact of off-site experiences for trainees.

Initial findings include:

* Raised levels of confidence in using object based learning among students participating in at least a half day (3hr) training workshop (QP1)
* Limited ability of students to devise higher order questions relating to object based learning prior to and during training workshop.
* Limited life experiences of students related to museums and heritage learning (QP2,6).
* Students primary focus on gaining subject knowledge, which is a key area of concern for them, rather than on the transferable pedagogy and skills of object based learning
* Even with raised levels of confidence related to object based learning, 67.6% of the students involved would prefer to utilise support from experts (QP1,2)
* The limited number of students who had experience of using objects in their teaching prior to the training. (56%)
* 60% of the students involved in the project cited the access to expert advice and examples during the training as significantly improving their confidence in using objects to support their teaching.

A toolkit on how to develop object learning in the classroom has been drawn up based on the initial findings. The toolkit and findings from the project relating to good practice in object based learning were disseminated at the Historical Association National Conference May 2017 in Manchester and via an article in Teach Primary and a blog for the publisher Rising Stars.

The scope of the original questions and sub questions can now be regarded as ambitious, but a great deal has been learned from the project and areas of limited impact have been addressed for the project to be undertaken within 2017-18.

The research was underpinned by the ACE Quality Principles, focussing on personal progression (QP6), excellence (QP1) and authenticity (QP2).

**Review of the literature**

Much research considers the benefits to children of learning outside their classrooms with national mandates and government policy documents endorsing the educational, social and cultural benefits (such as The Learning Outside the Classroom Manifesto, DfES 2006). The Learning Outside the Classroom Manifesto provides within it a statement of intent for an approach to learning in which direct experience is of prime importance, and through which training opportunities and professional development opportunities for schools and the wider children and young people's workforce will be improved.

Subsequent reports from key Government agencies make a number of recommendations in which the message is that learning outside the classroom must have a clearer and more consistent presence across initial teacher training. The House of Commons Select Committee 2010 state:

' *Teachers need to be exposed to learning outside the curriculum early on in their career and this should not be left to chance. We expect to see a clearer and more consistent presence for learning outside the classroom across initial teacher training …'* (House of Commons Select Committee on Education and Skills. Transforming Education Outside the Classroom: 2009-2010)

It is with this in mind, and the personal and professional educational philosophies of the three researchers involved that entirely support the notion of trainee teachers learning to support and deliver learning outside the classroom activities, that this action research project came about.

Michael Eraut, Emeritus Professor at the University of Sussex, is a leading researcher into how professionals learn in workplace settings, particularly during the early stages of their career.

In his publication '*Developing professional knowledge and competence'*(2008) he highlights the fact that most professional codes of conduct refer to an obligation to engage in continuing professional development, and that professional knowledge is generally constructed through experience and interpretation of that experience.

He points out the fact that the central purpose of continuing professional development is to bring practising professionals into contact with new knowledge and ideas and that:

*'a significant proportion of the learning associated with any change in practice takes place in the context of use'* (Eraut 2008 p.33)

This joint action research programme undertaken, aims to analyse the impact of developing object based learning skills into primary initial teacher training in two Higher Education institutions, namely Leeds Trinity University and York St John University, and to offer students a 'work placed learning' opportunity.

The programme was primarily practical in nature providing opportunities for the students to engage in, and learn about object handling, and to then reflect on the training offered as well as their previous experiences and subsequently the possible impact this may have on their confidence and future professional and pedagogical practice.

*'Some learning is associated with new input, some with new use, and some no doubt with the period in between when there may be reflection on input or contemplation of use'* (Eraut 2008 p.33).

The project also aims to follow the progress of a small focus group of students into their school placement and final year of training in recognition of the fact that:

'...*successful innovations are not fully clarified until people have been using them in the classroom for one or two years' (*McLaughlin and Marsh (1978) in Eraut (2008))

McLaughlin argues that this clarity can only be acquired during use and thus claims that most learning takes place during knowledge use, supporting the aims of the project in providing student teachers with opportunities to observe and implement object handling in the learning environment (both within museums and subsequently in the primary classroom).

Joyce and Showers (1980) recommend five components of training namely:

* Presentation of theory or description of skills or strategies
* Modelling or demonstration of skills or models of teaching
* Practice in simulated and classroom settings
* Structured and open-ended feedback
* Coaching for application (hands-on in classroom assistance with the transfer of skills and strategies in the classroom).

Their research indicates that all five elements are needed when mastery of a new approach is desired, and the structure of the research programme would seem to fulfil many of these requirements, in particular the description of skills and strategies followed by the practical demonstration and modelling aspects as well as further coaching for application (please see section 2 of this report for an outline of the methodology employed.)

This mode of delivery was seen by the professionals engaged on the research programme to be of prime importance, with all three key partners having a personal educational philosophy and pedagogical approach that includes practical involvement and application of knowledge. This is particularly significant as most current models of teacher training involve high levels of theoretical input and a focus on strong academic outcomes.

Eraut argues that the focus on technical knowledge of teaching generally has a much higher status than practical knowledge, thus the primary purpose of teaching is perceived as a communication of technical knowledge. This stance would seem to be borne out by some of the findings from the questionnaires where the majority of students placed a high level of importance on feeling secure in their subject knowledge -as opposed to having more confidence in using a model approach to object based learning that can be used across age range and subject matters, not just giving historically based information. Eraut claims that this focus interferes with giving priority attention during training to the acquisition of practical knowledge.

'*The improvements of both initial and continuing education is dependent on a broader view of what constitutes professional knowledge and know-how, more information about how professionals use and develop such knowledge, and a deeper consideration of how professionals learn'.* (Eraut 2008 p 57).

This viewpoint is supported by Colin Beard and John Wilson (in '*Enhancing Teaching in Higher Education' (2005*) Eds. Hartley, Woods and Pill) who promote a model of learning experiences that includes accessing a variety of learning environments, one of which is the external environment, and another the types of learning activities offered.

A learning environment where active learning is encouraged is said by Snyder (2003) to involve students doing something and taking a participatory role, and David Major (in Hartley, Woods and Pill 2005) argues that through work based learning, learners have a better understanding of the learning process than is gained through conventional teaching methods. He quotes empirical findings from University College Chester that show:

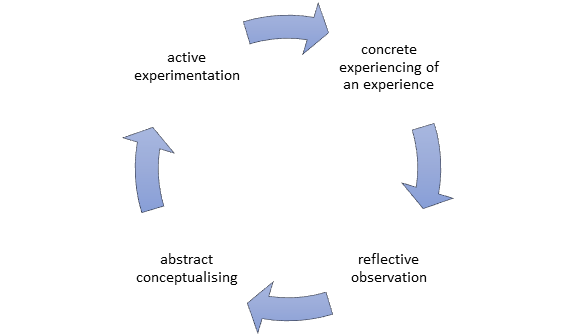
* Knowledge is retained and reinforced through practical application
* Learning is best achieved through collaboration with others

Again, this could be seen to be borne out by anecdotal responses within the student teachers responses when asked the question *“has today's workshop changed your perception of using objects to support children's learning?*

* *'It has made me more confident in how you can use them and what kind of questions you can use' (Amelia)*
* *'Yes, looking at how children's learning can be furthered through exploration '*
* *'Yes, seeing the objects in real life changed how important I thought it was to see and hold them' (Charlotte)*
* *' It has as I can see how questioning can be used more and how they can be integrated into a topic' (India)*
* *'Yes, because we could see them in context' (Lily)*
* *Yes, sharing key questions with each other' (Olivia)*
* *'Yes, actually doing it ourselves helped me to understand what the children get out of it and how easy it is to do' (Amy)*

Jennifer Moon in ***'****Reflection in Learning and Professional Developmen****t*** (1991) questions what we understand by the term 'experiential learning' in relation to professional development, and surmises that it could be seen as involving activity outside the classroom. Boud, Keogh and Walters (1985) suggest that experience could mean *' a workshop, a field trip, a lecture...an event arising from a personal study project or a totally unplanned experience in daily life'* (cited in Moon 1991, p 22). In most placement or field trip experiences for example the learner is taught or told as well as 'doing'. They point out that there may have been some prior teaching that underpins any observations made which needs to then be integrated with new learning.

From the training activity undertaken it could be surmised that there may be links that could be made to Kolb's experiential learning cycle (Kolb 1984)



An important feature of Kolb's idea is that the process of learning perpetuates itself so that the learner changes *'from actor to observer'* and from *'specific involvement to general analytic detachment'.* He relates the cycle to Piaget's sequence of developmental stages (Piaget 1971) which culminates in the flexible interaction between different forms of knowing that are linked by appropriate forms of learning. Therefore, in Piagetian terms, this is the stage of formal operations. The processes of assimilation and accommodation underpin both the Piagetian stages of development and the Kolb cycle.

Assimilation is the intake of information from the environment and accommodation is the modification of what is already known by the learner in the light of the new learning. As can be seen from the students' response within the questionnaires, there was evidence that both assimilation and accommodation had taken place as an outcome, and that following the half day training there was a significant reduction in the type of support and number of areas of support the students felt they needed (see figures 5a and 5b). It was apparent from the responses that the practical training session (i.e. the experiential learning and assimilation stage) and the opportunity for reflection upon this, had enabled the students to move beyond their current thoughts, ideas and behaviours with regard to the experience, and to consequently learn from it.

Boyd and Fales (1983) see reflective learning as the key element in learning from experience, saying that it is the core difference between whether a person repeats the same experience several times, or learns from the experience in such a way that he or she is *'cognitively changed'* (cited in Moon 1991).They subsequently suggest that there is a phase of *'clarification of the issue for reflection'* ( Moon 1991 p 27)that might be a matter of verbalising what might previously have been an image or idea. There is a suggestion that in order to improve the outcome of learning, the learner needs to be aware of the current practice, situation, or level of knowledge so that they can conceive or better understand the level of learning that is required. Several writers (Boud et al and Steinaker et al) suggest a stage of returning to the experience, *'reviewing' and 'recollecting'.* This might involve returning to notes made at the time of the experience or talking through an event with a group in a debriefing session.

The methodology of the training gave the students involved reflective learning opportunities, both within the training session and post session. All the students completed the post session questionnaire which framed questions to encourage reflection and review:

1. *How confident do you now feel using objects to support children's learning?*
2. *Has today's workshop changed your perception of using objects to support children's learning?*
3. *In terms of support, did the workshop help you with areas below? (see figures 4a and 5a for categories and outcomes)*
4. *Would you now visit a museum with your class to support your classroom teaching? (see figure 7) with a sub question: Can you tell us why?*
5. *What aspects do you think you will use in your teaching? (see figure 8 for categories and outcomes)*
6. *Have you got anything else to share about how you feel about museums or using objects for teaching and learning?*

Many of the dialogic responses in the questionnaires provided evidence that seemed to confirm that *'they can conceive or better understand the level of learning that is required'* (Moon 1991)*,* and were able to *'review and recollect.'* For example, one student's response to question 2 (*Has today's workshop changed your perception of using objects to support children's learning?)* states she now has:

'*more ideas of good questions to ask when looking at objects',* and that she had been offered *'More advice on how to engage children with artefacts especially when 'hands-on' is not an option'* (i.e. The object is behind glass).

Another responded:

*'I have learnt the importance of children asking the questions'* and inresponse to question 4:

*‘I loved it! Very educational and fun’.*

The students from York St John University had further opportunities to *'review and recollect'* within their module sessions and workshops back at University. The York St John university students were required to do an assessed presentation at the end of their 'Learning outside the Classroom' module, with many of them making reference to their learning and experiences within the museum workshop, and to the use of museums and objects as an important and integral part of their teaching.

Boyd and Fales (1983) say that there is a stage of *'openness to new information'* within which acquiring a broad perspective, and gathering new information could be combined with the next phase of processing of knowledge and ideas. They suggest this has a particular significance in the formal education setting (such as University).

For Boud et al (1985) it is 're-evaluating the experience' that is of prime importance and they analyse this process using a series of elements (that may not occur in sequence) namely;

* Association (relating new data to that which is already known)
* Integration
* Validation to determine the authenticity of the ideas and feelings which have resulted and
* Appropriation – making the knowledge one's own.

Examples of students working at this stage include observations and reflections such as:

'*It has made me think about the questioning to promote discussion such as open-ended questions'* (response to question 2, Sally)

'*Making cross curricular links is easier than I expected. I learnt how to question better'* (response to question 2) … *'Learning outside the classroom benefits learning, and experts may be able to explain in more detail'* (response to question 4, Claire)

*'It was good to see the variety of objects you can use –from an old key to a dead bird. Interesting to see how it can link to a variety of lessons / tasks.* (Ella)

There may then be a further stage which is *'possible action'.* Action is clearly defined in the Kolb cycle as '*active experimentation'* that leads to new experiences, the assumption being that the new experience represents a progression from the first.

The focus group of students involved in the project had opportunity to engage in *'active experimentation'* and thus further develop and progress their learning, as the methodology included a full day training event at Leeds Discovery Centre, the LMG open access store, at a later date. On this day the students worked on a number of more detailed planning and collaborative tasks to further develop their skills in object based learning. Levels of confidence were then assessed at the end of the event through a short questionnaire, within which the students were consistent in their acknowledgement of the value of the training and experience.

Moon (1999) points out that:

'*Personal knowledge in the early stages of professional education is difficult because of the undeveloped nature of some personal knowledge that is brought to a professional education situation'* ('Reflection in Learning and Professional Development. Theory and Practice' p.83) and goes on to say:

'*The task of the education process is not just to promote awareness of prior conceptions, but to develop the understanding to form an appropriate basis for further learning'.*

Laurillard (1993) promotes the notion that the teacher's interpretation of the material of learning will influence the nature of the material of learning that reaches the learner, in other words she is asserting that there is a significant difference in the learning process between second order learning (theoretical learning perhaps?) and learning from experience. The work experience situation (such as this) which is a typical experiential learning site for students- includes activities that the students will observe, but also people speaking about what is happening.

As she points out:

*'In their cognitive structure, the students may have theoretical knowledge that they will apply in order to facilitate further learning from their experiences while they are on site. The students' learning task then is to integrate these inputs and form a coherent, valid and appropriately critical picture of the events following these stages of learning:*

* *Noticing*
* *Making sense*
* *Making meaning*
* *Working with meaning*
* *Transformative learning (cited* in Moon 1999 p32*.)*

The students' personal reflections from this day would certainly seem to support this viewpoint:

‘*Today has really helped me to further understand about how objects can be used to support children's learning. For me, exploring the store has greatly widened my thinking in the vast selection of resources that can be used to engage children. I have been inspired by how objects can be used as evidence, as a basis for historical enquiry and cross-curricular approaches.... I feel that I have received opportunities to extend my learning and confidence’ (*Rebekah)

‘*I am more aware of the vast range of objects available. Going into the collection room and feeling the power of all those objects made it clear how much impact that could have on children...These are powerful ways to enhance children's learning which* *promotes enquiry and child centred learning... I feel more confident in combining using resources with planning and how to use the resources as a start to a topic’.* (Eleanor)

Moon also points out that one influence on learning is of course the learners' interest and satisfaction. Being interested in a topic seems likely to encourage a deep approach to learning, and it is worth considering therefore what factors might inspire interest. One source is contact with other interested people and contact with staff which might inspire them. Again, this was borne out by the responses from the students that make frequent reference to having contact and input from 'a more knowledgeable other '(i.e. museum staff) as well as to having access to the physical environment of the museum and the resources within it (both human and physical) which could be interpreted as an indication of the success of the training.

In answer to the question 2 (‘*Has today's workshop changed your perception of using objects to support children's learning?)* Will responded by saying:

*'I always know using artefacts was useful in supporting children's learning, however the session helped me to see how best they can be used. It was very valuable, a great bank of information and learning.'*

And Amy:

*'Yes, especially after writing questions and the museum educators coming and talking to us all... they added knowledge that I may not have known.'*

The evidence gathered from the project to date would seem to indicate that engagement in the project will influence the students' pedagogy and personal education philosophy, as well as their attitudes and dispositions. A large number of the students indicated in their responses that they would now feel more confident to take their own classes to visit museums (see figure 7) and to access and use objects to support their learning and teaching (see figure 8) thus indicating the overarching success of the training.

As learning professionals, the challenge for the students now is to ensure that they continue to develop their existing skills and knowledge, and to further develop and extend this knowledge throughout their training into their teaching careers.

*'Research into professional development suggest that the initial period during which novice professionals develop their proficiency in the general professional role continues well beyond their initial qualification '* (Eraut 2008) and he goes on to conclude that :

*'Professional knowledge is constructed through experience and its nature depends on the cumulative acquisition, selection and interpretation of that experience.'*

The longitudinal approach to this project should offer the researchers opportunity to ascertain whether this is indeed the case and to assess the longer-term influences on those students involved.

**2.0 Methodology:**

To achieve the desired project outcomes from June to November 2016 the project leads from Leeds Trinity University and York St John University collaborated with the Lifelong Learning Manager and the Learning and Access team from Leeds Museums and Galleries in developing a half day (3hr) off-site experience for over 300 Level 5 (second year) primary education teacher-training students from both institutions (QP6). This experience took place in November 2016 at Leeds City Museum and as part of the event all students received training in how to utilise objects in their teaching to ensure pupil progress.

The workshop used a best practice object based learning model to demonstrate the pedagogy behind object based learning (QP1). Each small group was given an authentic museum object (QP2) and asked a series of questions:

1. What do you want to know about the object?
2. How would you find out the answer?
3. How did the object get here?
4. Join with another group, what’s the connection between your objects?
5. How would you use those objects in the classroom?

After using an object on the table in front of them, the students were asked to take the questions they had devised from question 1 above around the museum and retest them on object behind glass, did they all still work? What was the ‘best’ question? All the questions were recorded and collated as evidence and for the development of the toolkit.

Prior to the half-day training all students completed a pre-experience questionnaire enabling the researchers to gain data about previous experience in this field, levels of confidence and the type of support participants would like to receive. On completion of the training all students completed a similar questionnaire to ascertain whether levels of confidence had increased. The data from the questionnaires was then analysed by the project leads. Information related to students’ ability to formulate questions in object learning was also collected. This information was analysed looking at levels of confidence and quality in devising specific types of questions.

At the conclusion of the event students were invited to take part in further training to extend skills and mastery in the subject. The aim was to recruit 20 students comprised of 10 from each institution and representative of the whole Teacher Education student population. These students would be tracked longitudinally through into their final year of study and beyond as NQTs. Four students from Leeds Trinity applied to join the project and two further students were then invited by the project lead to take part. Two students from York St John joined the project. The students represented training across key stages.

Project students attended a full day (7hrs) training event at Leeds Discovery Centre, the LMG open access store, in January 2017 staffed by the three project partners (QP6). Students worked on a number of more detailed planning and collaborative tasks to further develop their skills in object based learning. Levels of confidence were then measured at the end of the event through a short questionnaire.

The next step was to observe the students applying their skills while undertaking their placement during Spring 2017. Students were also given opportunities to loan objects and to obtain support in organising a museum visit. A profoma was designed by one of the project leads to use during the observation process to look at the quality of the teaching and the impact on pupils’ progress. Due to a number of difficulties only one of the six students were available for observation, one student loaned objects from Artemis, the schools object loans service in Leeds, and no students undertook museum visits. Students were required to keep reflective logs during the placement reflecting on their experiences of using objects and also where they perceive objects would have further enhanced lessons. These logs were collected for analysis to assess the level of impact of the training experience on their teaching.

**3.0 The Quality Principles:**

The research was underpinned by the ACE Quality Principles for best practice when working with children and young people. The seven quality principles are:

1. Striving for excellence and innovation
2. Being authentic
3. Being exciting, inspiring and engaging
4. Ensuring a positive and inclusive experience
5. Actively involving children and young people
6. Enabling personal progression
7. Developing belonging and ownership

For the research, the project leads focussed on QP6 (personal progression) for the students, supported by QP1 (excellence) and QP2 (authenticity). In turn, it is hoped that this will lead to engaging, inclusive experience for pupils in the and out of the classroom.

**4.0**  **Findings:**

* **Types of question**

From the initial 3-hour training workshop, it would appear that the majority of the students demonstrated a limited ability to frame challenging questions that would enable the pupils to further explore the properties of the objects (see Figure 1).

Questions related to the physical properties of the objects were most popular with the Leeds Trinity students *(*e.g*. 'How was it formed?', 'What material is it?'*), followed by the value of the objects with a particular focus on monetary value as the second most popular area. (e.g. '*What is it / was it worth';' Would it have been expensive to buy'?*). Whereas for the York St John students it was questions relating to the interpretation (such as *'Is the pattern significant?*', *'what did it represent?'*) and physical properties / features of the objects that were the main focus. Few questions focused on the authenticity of the objects or their mode of manufacture (e.g.' *How do you think it's made?'*).

Surprisingly, only 15 of the 176 questions posed by the Leeds Trinity University students, and 23 of the 176 questions posed by the York St. John students, considered the age of the object with the most popular question being '*How old is it?'*. Some groups framed as many as 14 questions in the time available while others as few as 4. Some of the higher order questions related to the significance of objects and collecting and curating. For example, '*is this object worthy of being in a museum?'/ ' why is it in a museum?', 'how does this object make you feel and why?'* or *'what is the story behind this object?'* These are all open questions that lead to discussions around multiple heritages and interpretations.

The researchers were interested to observe that many of the students did not record the most popular, ‘standard’ questions for classroom use with objects, for instance, *‘what is it?’, ‘what does it do?’ or ‘how old is it?’* This is possibly because the answers to these questions could perhaps be seen to be very obvious for some of the objects used in the workshop, or perhaps the students may have resisted posing questions when answers were already known. The questions were categorised by one of the project leads and cross referenced by LMG staff; however, some questions fitted into multiple categories and it needs to be taken into consideration that if the process had been undertaken by another member of the group, the allocation of questions into categories might be different.

The questions formulated by the students were somewhat varied. For the next phase, it would be useful to see how one question (and answer) leads on to another subsequent question being posed.

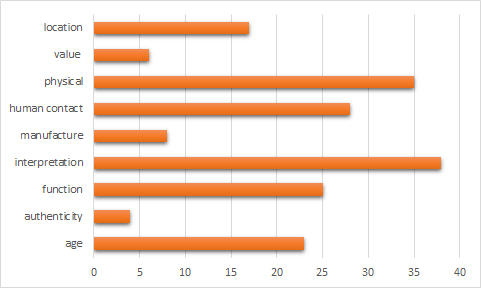
It should be noted that the groups were not all working with the same objects therefore it may be that some objects (such as a dish or a key) lent themselves to the framing of more general questions, (e.g. '*what is it used for?' 'who owned it'? 'what is it made of?'* whereas other objects prompted certain types of questions or specific lines of questioning. For example, a Pakistani bejewelled hat prompted questions relating to its cultural significance and the significance of the materials it was made from and the patterning on it.

The number of questions framed is not necessarily a reflection of the quality of the questions posed. However, for the next phase it would be useful to correlate the framing of questions with the pre-experience questionnaires to identify whether it was the object being used, or the student’s knowledge that was key to those questions being posed. Was there any correlation between levels of confidence or previous experience of object handling and the number and quality of questions formulated?

It should be noted that the participating students had a range of previous experiences related to object based learning and heritage experiences, as well as differing curriculum input. The Early Year’s students from Leeds Trinity University had completed a module on learning in the foundation subjects that included History, whereas the later years students had no similar experiences to draw upon prior to the training. The students from York St John had some experience in foundation subjects from engagement in their 'wider curriculum ' modules undertaken in their first year, within which they had looked at cross curricular / thematic learning. They had also had input on 'Learning outside the Classroom' with a focus on the use of heritage learning, and museums and galleries to support learning and teaching activities. As part of this module, some of these students (though by no means all) had had opportunity to visit such settings and observe teaching activities taking place within them. This may almost certainly have had some impact on finding and their responses.

**Figure 1: Types of question**

Leeds Trinity University



York St. John University

* **Levels of confidence**

Levels of confidence in using objects to enhance pupils’ learning were measured both prior to and following the half-day (3hr) training. On a scale of 1-10 (10 being the highest level of confidence) more than 50% of the students rated themselves as having a confidence level of 7 or more prior to the training session. Post training, 95 of the students (approximately 50%) attending the training recorded no change to their level of confidence. 69 of the students had raised their confidence by one level, 41 by 2 levels, 9 by 3 levels, 7 by 4 levels, 1 student by 5 levels and 1 student by 6 (see figure 2). Of the 95 recording no change to levels, accompanying comments would suggest an increased level of confidence, meaning that the dialogic responses didn’t match the data:

*' doing it ourselves helped me understand how easy it is to do ',*

*' I realised how simple it can be to use objects in children's learning '.*

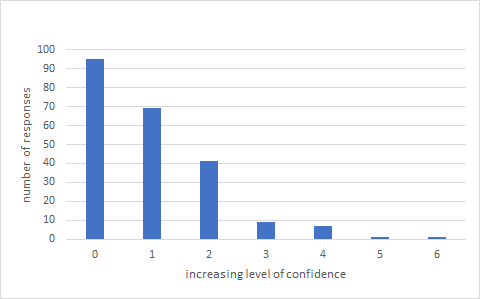
However, it may be that the students did not feel the change in attitude or knowledge gained was significant enough to move to a higher level and was just felt within the boundaries of a level. It is also worth considering that gaining a greater appreciation of what is involved in object based learning may have resulted in a static, or lower, score as the student was more informed and able to be more self-reflective, for example as Laura stated

*" realising that I don’t need to know about the objects in order to use them'.* Another student stated that:

*' I have a lot more ideas of how to use objects in a lesson or topic. I feel a lot more confident with questioning'*

**Figure 2: Measure of the level of student confidence (pre-and post-training) in utilising objects to support pupil learning**

**(LTU and YSJU students)**



* **Previous experience**

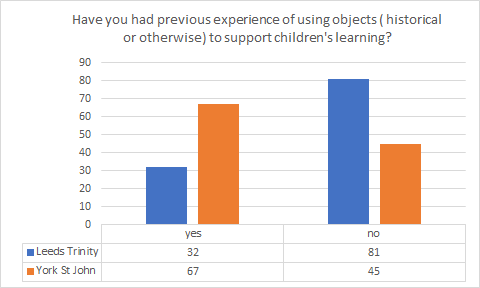
The researchers were also struck by the limited number of students who had utilised objects in their teaching (see Figure 3). Only 32 of the 113 Leeds Trinity students gave a positive response and of those, some of the objects used could be classified as apparatus for example 3D shapes etc in mathematics. The number of students from York St John University providing a positive response was greater (almost double at 67), however, some of these had had recent opportunity to use objects to support their teaching whilst on their modular ‘SOTS (Settings other than Schools) practical placement which had taken place earlier in the semester. Several of these students made specific reference to these experiences in their responses, identifying the particular settings and learning activities they had been involved in and observed.

Further scrutiny and analysis of responses showed that objects were most likely to be used when teaching curriculum areas such as History, Geography, RE, topics or themes, or science based activities.

One aspect for consideration when looking at the figures is how broad a teaching experience these students had undertaken prior to the training. Within Year 1 both the Leeds Trinity students, and the York St. John students would have had more focused input and experience in teaching the core curriculum areas within their training programmes, yet some of them may have completed an enhanced project or University assessment that encompassed an element of the foundation subjects. This question needed more detailed responses to be of greater value. For example, *“In what way were the objects used”*?

The comments garnered from the students’ school experiences would suggest that the objects were often just shown to the pupils, and on many occasions the students only had opportunity to observe such activities rather than deliver them themselves. Further detail could consider if and how learning was developed through the process.

**Figure 3: Previous experience of using objects in supporting children’s learning**



* **Confidence in object handling**

When asked the question *'what support would move you up the scale and give you more confidence?'* the most popular response was subject knowledge with more than 75% of students citing an increased level of subject knowledge as a main area of need. This is an interesting response given that the teacher-training courses they are engaged on at both Leeds Trinity and York St John, are primarily focused on pedagogy rather than subject knowledge during the first year of training. There is some difficulty in providing coverage of all the areas of study particularly within History and other foundation subjects due to the demands of the ITE programmes.

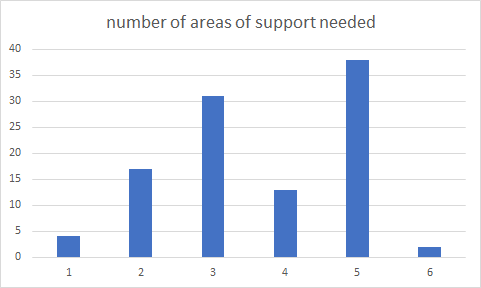
Access to expert advice, examples and modelling were more or less equally cited as the next most popular identified areas for support. (see Figure 4a). Many students identified that they felt they needed support across a number of areas in order to increase their levels of confidence. (see Figure 4b)

**Figure 4a: What support would move you up the scale of confidence?**

**(LTU and YSJU students)**

**Figure 4 b: How many areas of support are needed to move you up the scale of confidence?**

**(LTU and YSJU students)**



* **Impact of the training**

Following the half day training the students were very positive about both the session providing advice from an expert (real or virtual) and also access to real life examples / case studies. The practical elements of the training sessions- in particular the opportunity to explore, use, handle and talk about objects themselves- were identified as being of real value, resulting in a significant shift in the type of support and number of areas of support the students felt they needed (see figures 5a and 5b). The number of students who felt they needed support across all five areas was significantly reduced, and the number of students who felt they needed no support increased, thus demonstrating impact of the training session across a number of areas.

The area of least impact was in providing subject knowledge. The students perceived this as one of the areas where they had the most deficits in knowledge. However, the training was aimed at demonstrating a model approach to object based learning that can be used across age range and subject matters, not just giving historically based information. In one example a student stated that they now realised that:

*'objects can be used across the curriculum and not just in history' and* another that

*'it is a lot more valuable / effective than I thought'*

yet there appeared to be many students who still felt they wanted more subject knowledge. We can only assume this is because having subject knowledge often engenders confidence, as then a teacher can ‘keep one step ahead of the pupils’; however, in the next phase of the research project this question needs to be refined to provide more valuable information.

What was significant were the anecdotal comments made within the questionnaires which highlight an improved understanding of the importance of the use of effective questioning when using objects to support teaching, as well as the types of questioning that might be used. Students involved in the activities recognised the value of handling, discussion and exploration around an object as well as the cross curricular opportunities that might be accessed.

*'it gets the children to ask questions and start their own discussion'* and...

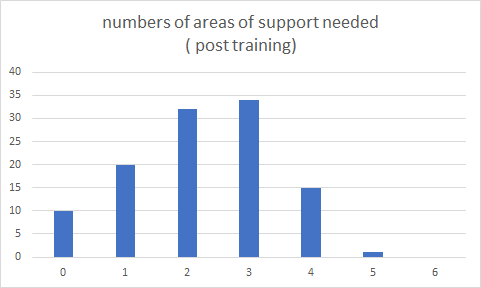
*'it has shown me how to use a hands-on approach and the importance of talk around the object'*

**Figure 5a: Post questionnaire: did the workshop help you with these areas?**

**(LTU and YSJU students)**

**Figure 5b: How many areas of support are needed to move you up the scale of confidence?**

**(LTU and YSJU students)**



* **Previous museum experience**

The research has made the researchers more aware of the limited experiences regarding visits to museums and other heritage sites of some of the student cohorts, and therefore the need for their university course to enrich their life experiences (see Figure 6). It ~~is~~ could be concluded that if the students are unfamiliar with learning in museums, then they are less likely to develop these experiences with their pupils. Again, anecdotal responses within the post training questionnaires indicate that personal experiences from engaging in the training will have a positive impact on the students' confidence and willingness to use museums and their resources to enhance and support their teaching, and to subsequently visit with their class.

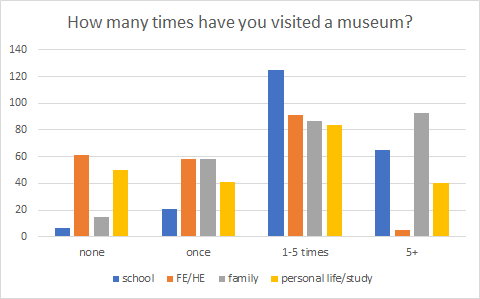
*' I will definitely incorporate it into my teaching'.*

As Beth said *" I will definitely be doing this- thanks!"*

The researchers will aim to encourage each ITE institution build such visits and experiences into future module development and to encourage other members of their Primary Education teams to do so. It is also evident from the findings that some trainees have either a passive, or even a negative view of museum and heritage learning experiences. To counteract these views and to target those students unlikely to undertake optional experiences, opportunities must be built into courses that are completed by all students.

**Figure 6: Have you visited a museum?**

**(LTU and YSJU students)**



* **Impact on confidence in visiting a museum and object handling**

Following the half day training all the students stated they were now willing to visit a museum with their class to support classroom teaching and many commented on their raised levels of confidence, as Hannah said:

*‘I feel more confident leading a school trip to a museum'*

However, almost all the students would still want to access support from museum staff during a visit and when utilising museum resources as part of the visit. Many of those students, who had said in their responses that they would visit independently, also said they would want support from museum staff (see figure 7). Many went on to comment on the benefits of accessing input from experts particularly related to subject or specialist knowledge.

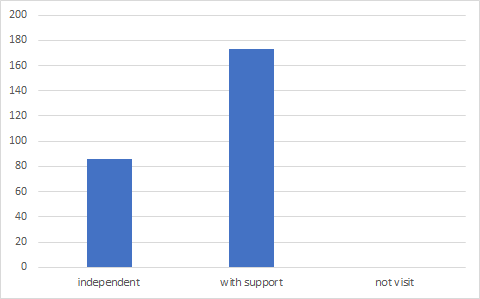
*' museum staff add knowledge that I may not know and may help to prevent misconceptions'.*

This should not necessarily be perceived as a weakness of the experience but should be seen as a development and recognition from the students that museums staff will have additional specialist expertise. Many of the students made reference in their responses to working alongside a *'more knowledgeable other'.* If support is available from a more experienced and knowledgeable other would we all access that support if there were no barriers to this related to cost or accessibility? It should also be noted that the students’ views related to whether they were willing to take their class to a museum were not collected prior to the training. This makes it hard to assess whether the training had an impact on this viewpoint as it may have been that many or all of the students would have been willing to do so without the training.

Overall however, it could be concluded that the majority of the students involved in the project are now more aware of the value of what is offered within museums and have a greater desire to utilise the expertise and resources that is available.

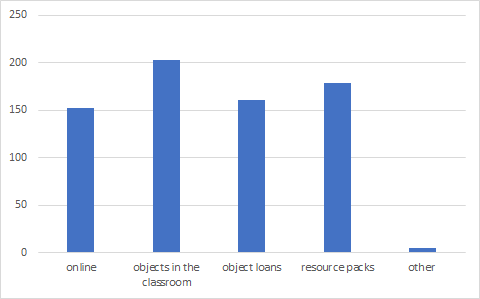
**Figure 7: Would you now visit a museum with your class to support classroom teaching?**

**(LTU and YSJU students)**



**Figure 8: What aspects do you think you will use in your teaching?**

**(LTU and YSJU students)**



From the focus group of students – 5 of the 6 students from Leeds Trinity, and the two from York St John, all reported increased levels of confidence in object learning over the course of the project. All the students made some reference to the benefits of teachers working with museum staff to access expertise. However, the differing range of experiences of these students needs to be taken into account as 2 of the students from Leeds Trinity had both undertaken 2-week placements in museum settings and one in a spiritual setting which involved utilising objects in the period between the initial and the final questionnaire. The two students from York St John had also had one week's experience in a Setting other than a School prior to the training (one of which was an outdoor education centre).

Responses to areas of major impact included knowing which objects to use, types of questions to use and an awareness of the breadth of the curriculum covered by object learning. The students also cited an increased level of confidence in both visiting museums with their class, and in planning for the use of artefacts in their classrooms to both engage children in learning and enhance their learning. One student indicated that her involvement in the project had:

" *greatly widened my thinking in the vast selection of resources that can be used to engage children in learning...I have been inspired by how objects can be used as evidence and as a basis for historical enquiry and cross curricular approaches." (Rebekah)*

**5.0 What have we learned- what would we do differently?**

A number of the sub questions have not been addressed due to some of the project limitations and over ambitious aims.

* What are the skills, knowledge and confidence needed to effectively deliver the approach?
* Is there a process or model we can replicate?
* What is the short and long-term impact of object based learning on the trainees’ practice?
* Does the development of trainee skills impact on pupil progress and engagement?

We also need to consider how we measure and evidence impact in some of these areas, and need to potentially make the questions ‘SMART’er.

Some changes will be introduced in the planning and delivery of the session to the whole cohort. Ensuring the group question sheets are named would facilitate the cross-reference of findings.

The original brief aimed at recruiting 20 students to take part in the second stage of the project. This target was not reached with only 6 students from Leeds Trinity University coming forward and 3 students from York St John University. However, one of the students from York St John withdrew from the project at a very early stage due to ill health. Whilst this take up was disappointing it became apparent during the next stage that with the original number intended, it would have been very difficult to sustain the planned levels of support with the available staff resources. Some information from students was collected and consideration given as to why the intended numbers had not been reached. Reasons included: students failed to be motivated by the project offering; other pressures on student time at the time of year- including assignment deadlines; reluctance to take on extra commitments during school based training.

To address some of these issues for Autumn 2017 the project leads plan to take the project out of school based training. Instead the students will undertake the teaching element early in semester 2 in an allocated school. It is hoped that as the students will be placed in the same setting they will be able to collaborate in arranging a museum visit for groups of pupils.

The original plan was to observe all the students delivering object learning in their placement school. Only one of the 8 students was available for observation, one student loaned objects and no students undertook museum visits. Only 2 reflective logs were made available for analysis. This difference in outcomes partly resulted from the constraints of the curriculum in placement schools and students not having sufficient flexibility to introduce object learning into their lessons. In addition, students found they were mainly teaching lessons in the core subjects delivering topics that they perceived did not lend themselves to object learning.

Again, there were also personal issues affecting the outcomes with one of the students from York St John experiencing problems in her placement school which necessitated a change of class and key stage part way through the school placement. As this was an assessed placement undertaken as part of the programme, the priority was to complete the placement to a 'good' or better level thus diverting attention away from project expectations.

Unfortunately, four of the Trinity students also experienced difficulties within their placements and subsequently two withdrew from school based training and their primary education course. This meant all four students had other priorities during the placement and were unable to complete the logs. Removing the experience outside of the assessed school based training experience should avoid this problem in 2017-18. However, it should be noted that these students had commented on the positive impact of the project. One student said,

*‘The project enabled me to feel more confident teaching an unfamiliar subject in an engaging way, along with improving my questioning skills to help gain a firm understanding of pupil progress.’*

The plan to deliver the lessons in one school outside school based training in 2017-18 should overcome these issues. As the school/s is/are choosing to join the project it is envisaged they will facilitate opportunities within the curriculum to deliver object-learning sessions.

**6.0 Where next? What do we need to develop in 2017-18?**

This project has consolidated and extended the strong relationship already developed by the teacher training institutions with Leeds Museums and Galleries via the former MLA project. The 3 project partners have already agreed to extend the project into 2017-18. This will include monitoring the progress of the 2016-17 students into their final year and to rerun the project with the new cohort of level 5 students. This would facilitate opportunities to amend arrangements as outlined in the 'what have we learned' section above, building on good practice from this year but adapting where required. It will also provide opportunities for the current focus group of students to deliver mastery sessions to the new cohort.

A timetable is already in place for delivering the project with the new level 5 cohort in 2017-18. Steps have been taken to overcome the problems with students being able to meet project outcomes within the tight framework experienced in school placements. One school has already agreed to host students to deliver sessions with pupils in January. This step will facilitate less pressure on students and greater freedom in teaching.

The project leads will continue to seek out opportunities to disseminate the good practice learned from the project. Unfortunately, due to a lack of funding one of the project leads was unable to take up the invitation to present the project findings at HEIRNET 2017 in Dublin. It is hoped that funding will be made available for HEIRNET 2018 in Corfu. Opportunities to publish the findings will be explored particularly in Education 3-13 or the HEIRNET journal in 2018, as well as The Journal of Museum Education.

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