

LEVEL 5 ASSESSMENT SPECIFICATION



Student name:	Jade Bissmire	Student ID number:	1706761
Programme:	BA Primary Education with QTS		
Module:	Enquiry-Based Learning		
Module code:	ECAD5006	Contribution to Overall Module Assessment (%):	100%
Lecturer:	Dr Ceri Lewis	Internal Verifier:	
Assignment Title:	Critically discuss the Enquiry Based Learning (EBL) approach that can be used as part of a range of teaching and learning approaches in the primary school. In your discussion, refer to examples of EBL strategies and techniques that you would use to develop learners' knowledge, understanding and skills in aspects of the humanities and science in the primary school	Word count (or equivalent):	5000 words
Submission deadline:	13 May 2019	Return date of provisional marks & written feedback:	12 June 2019
Submission method:	All written assessments, where practical and possible, must be submitted via <u>Turnitin</u> unless otherwise instructed by the Lecturer. (Please DO NOT put this assessment specification into <u>Turnitin</u> or it will match many similarities with other students' submissions.) Alternative submission method (if applicable): Late submission of the assessment will result in a late penalty mark. Penalties for late submission: Up to one week late, maximum mark of 40%. Over one week late, 0%. Only the Extenuating Circumstances Panel may approve a change to submission dates.		
Academic honesty / referencing:	Academic honesty is required. In the main body of your submission you must give credit to authors on whose research and ideas your work is based. Append to your submission a reference list that indicates the books, articles, etc. that you have used, cited or quoted in order to complete this assessment.		

Critically discuss the Enquiry Based Learning (EBL) approach that can be used as part of a range of teaching and learning approaches in the primary school. In your discussion, refer to examples of EBL strategies and techniques that you would use to develop learners' knowledge, understanding and skills in aspects of the humanities and science in the primary school

Enquiry Based Learning (EBL) involves incorporating questioning and engagement to assist in the learning of pupils. This involves the exploration of a topic, the development of questioning skills, discovering new ideas, and testing these ideas to further the pupils' understanding (Suduc et al. 2015, p. 474). EBL has been described as “an educational approach where the learner gains knowledge or skills through active enquiry rather than direct instruction” (Byrne et al, 2018, p. 83). In order for EBL to be successful, it should allow pupils to demonstrate that they are able to work independently and responsibly. It should do far more than simply develop their knowledge (Grigg and Hughes, 2014, p. 114).

This holds strong links to theories by Dewey, who theorised that “children learn by doing” and that learning should be individualised to suit each pupil, not to suit the content (Pound, 2006). Additionally, implementing Enquiry Based Learning within the classroom will automatically lead to implementing areas of the Successful Futures curriculum (Donaldson, 2015). Donaldson stated that learners want their lessons to be more fun, interactive, and practical, as well as completing more activities out of the classroom (2015:17).

Enquiry Based Learning is a thematic, cross-curricular approach to pedagogy as learners are given a topic to explore, covering different areas of the curriculum. A thematic approach is when a range of activities are planned for pupils based around a common theme (Ortiz, 2017). Thematic learning approaches are a method of assisting pupils in focusing on a topic and engaging with it more thoroughly than traditional methods (Gaughan, 2003, p. 18). Cross-curricular approaches to pedagogy are supported by Dewey (1902) who stated that there was no benefit to separating subjects in the curriculum (Rowley and Cooper, 2009, p. 2). Using EBL to stimulate learning within a class can allow for a cross-curricular approach to be adopted.

It can be argued that too much practitioner-lead instruction can result in what Dweck (1999) and Zimmerman (2000) described as ‘learned helplessness’ (Hewitt, 2008, p. 111). This is where pupils become overly reliant on others in order to complete tasks. Seeking support when it is not needed may give the pupil a low perception of their potential, lowering their self-confidence. Furthermore, Enquiry Based Learning is supported by the United Nations Convention on the Rights of the Child (1989). The importance of giving pupils a say in decisions that concern them is highlighted in Article 12, EBL allows pupils to explore a topic and lead their own learning their own way (Morris, 2017, p. 22).

Despite providing a more realistic overview of a child’s enquiry skills, Enquiry Based Learning does have its drawbacks. Whilst the practitioner is acting as a facilitator in these experiences, it is important that they are able to observe the enquiry skills being used by each pupil through the course of the learning. A difficulty associated with this is that the practitioner cannot be observing all pupils at all times. Whilst discussing one element of the learning with one group, another group could be developing their skills significantly, which may be missed in the summary of the investigation (Davies et al. 2012, p. 248).

However, there is an argument that when the practitioner ‘steps-back’ from the learning and becomes a ‘facilitator of learning’ instead, pupils may become distracted from the task at hand and not make as much progress had they been supported throughout their learning journeys (Hewitt, 2008, p. 109). Hewitt goes on to discuss the potential challenges associated with EBL, for example, pupils may ask questions that the practitioner does not know the answer to, which is likely to ‘undermine the traditional authoritarian role of the teacher’ (Wilson 1997, quoted in Hewitt, 2008:120). Another challenge associated with the implementation of EBL is highlighted by Vygotsky (1983). Vygotsky expresses the opinion that being able to learn through instruction is a vital element of human intelligence (Pound, 2006, p. 40). Within Enquiry Based Learning, the practitioner merely acts as a facilitator, giving very few instructions throughout the experience, this may cause learners to miss out on the opportunity to learn through instruction.

Traditional subjects within Wales have been re-mastered to create a “holistic approach” to the curriculum. There are set to be six Areas of Learning and Experiences (AoLE): Expressive arts, Health and Well-being, Humanities, Science and Technology, Mathematics and Numeracy, and Languages, Literacy and Communication. These AoLEs have been proposed

to allow cross-curricular planning, drawing skills from all areas of the curriculum (Department for Education, 2019a, p. 7).

The Humanities Area of Learning and Experience is all about human experience (Department for Education, 2019b, p. 3). The Humanities AoLE covers history, business studies, geography, social studies, and religious education, giving pupils a 'sense of place' and allowing them to learn about their heritage. Providing learners with real-life experiences within Humanities allows for the development of problem-solving skills and an ambition to learn and improve. The vitality of ambition when learning is supported in the Successful Futures Review of the curriculum with one of the four purposes being to develop "Ambitious capable learners who are ready to learn throughout their lives" (Donaldson, 2015, p. 29).

There are a range of models available that can be used to facilitate EBL in the primary classroom. One example being the 'S Model' (Appendix 1), which can be implemented in relation to an EBL study in the Humanities Area of Learning and Experience (Hughes, 2019). The 'S Model' can be dissected into four sections: Select, where pupils identify what their focus is and what they want to find out; Search, where pupils discuss how they are going to find out about the topic; Sift & Synthesise, where pupils decide what they are going to record and how; and Share, where pupils are able to present their findings to others how they choose. This model was proposed by Grigg (2013) with its main focus being in relation to a local area study.

Enquiry Based Learning could be implemented in a range of ways within the Humanities AoLE. For example, pupils could be given the topic of 'How People Lived Over Time' and be asked to work in groups, with each group 'Selecting' a different time period to study. Within that group, each person could be 'Searching' for a different element of life in that time, for example, toys or clothes. In this section, pupils could decide to use different resources such as books, the internet and newspapers to gain a range of information and images. Pupils would be encouraged to discuss the reliability of sources when deciding on the most appropriate resources for their study. Resources that are stimulating and of high quality are central to Enquiry Based Learning. In addition to this, pupils must be taught how to use their sources correctly in order to identify evidence that can be used in support of their theories (Hughes, 2019). Pupils could 'Sift & Synthesise' the information that they find and record it using a poster in order to 'Share'.

Within the new curriculum, science has become the Science and Technology Area of Learning and Experience. This AoLE combines the traditional subjects of chemistry, physics, biology, computer science, and design and technology to enhance how learners in Wales understand the world around them (Department for Education, 2019c, p. 3). The new interpretation of science in the curriculum requires pupils to apply their knowledge to different situations, make ethical judgements based on what they know and critically assess the work of others. Again, this AoLE is supported by the Successful Futures review of the curriculum (Donaldson, 2015, p. 30) by encouraging pupils to be “ethical, informed citizens”, finding and using evidence when forming an opinion.

Enquiry Based Learning can also be beneficial when implemented in Science. In response to curriculum changes, the ‘Community of Scientific Enquiry’ strategy was developed to focus on scientific enquiry skills (Dunlop et al. 2015, p. 463). This strategy compiles ten steps, including: Preparation for the enquiry, involving arranging groups and discussing ground rules; Question making, where groups discuss and create a range of open-ended questions; and Review, reflecting on the enquiry and suggesting areas for development should it be completed again. In this strategy, the practitioner, again, acts as a facilitator for the learning, allowing pupils to direct their own enquiries. However, Dunlop (2015) also states that the facilitator should act as a co-enquirer, remaining involved in the research by offering suggestions for possible sources of relevant information.

The phrase ‘children as scientists’ is frequently used in schools to highlight the significance of EBL. Different methods of enquiry allow children to collate reliable information from a range of sources to construct an understanding of a topic (Loxley et al. 2014, p. 17). An example of an Enquiry Based Learning project within science could be experimenting to see what material should be used to build a boat. This could be the basis of an experiment looking at the properties of materials in terms of their density in comparison to the density of water. Pupils could make predictions based on how dense they believe a certain material is, then test each material against their predictions. These results would identify which material pupils should use to make their boat, which they could then go onto create. This activity encourages pupils to use their enquiry skills to produce a final product based on their findings.

When discussing good practice in planning a skills-based topic using a thematic approach, ESTYN described the importance of reflection, independent study, and collaboration between practitioners. Despite the curriculum being skills-based, it is explained that forcing skills into tasks where they do not complement the learning is not beneficial to learners, so does not constitute good practice. It was observed in a case-study school that the engaging experiences, made possible through the skills-based curriculum, has improved pupils' outcomes. This was as a result of pupils learning how to apply their skills to a range of contexts across the curriculum, as encouraged in Enquiry Based Learning (Estyn, 2017).

The chosen Area of Learning and Experience to be discussed is Science and Technology. Scientific enquiry refers to what children do to answer scientific questions based on the world around them (Turner et al, 2011). There are many benefits to learners involved with enquiry in science: the development of effective communication, the development of a scientific skillset, the improvement of problem-solving skills, and the increased ability to work independently using their own reasoning (The Association for Science Education, 2018, p. 2). The Enquiry Based Learning project will be specifically focusing on the latest developments in healthcare with a Key Stage 2, Year 6 class. The goal for this topic is for each group to produce a presentation, based on their topic, to pitch to a professor at Swansea University. The pitch should explain why their advancement should be supported by the National Health Service (NHS). Pupils will be working in mixed-ability groups, with up to 5 pupils in each group. The model to be followed can be seen in Appendix 2.

The topic of 'Healthcare Developments and Advances' was chosen as it is a topic that is discussed at length in the media. For example, the latest pioneering operation to be added onto the NHS is a pioneering brain surgery that allows deaf children to hear, costing around £60,000 (Express, 2019). This could lead to debates between pupils based on ethics and if that money could be better spent elsewhere. This links to the curriculum purpose of 'ethical, informed citizens' (Donaldson, 2015, p. 30) as pupils will be engaging with contemporary issues and using evidence to support their opinions. An activity such as this would use the 'Oracy' strand of the Literacy and Numeracy Framework, with pupils expressing ideas, speaking clearly and using formal language (Learning Wales, 2014).

One of the proposed new AoLEs is 'Health and Well-being', within this area, learners will discover the impacts of making positive decisions using the purpose of being 'ethical,

informed citizens' (Department for Education, 2019d, p. 05). This also allows for the implementation of the theme of 'Health' within Education for Sustainable Development and Global Citizenship (ESDGC) (Department for Children, Education, Lifelong Learning and Skills, 2008a, p. 14).

Significantly, some of the proposed goals for input into the national conversation include: 'Wales is Prosperous and Innovative', and 'People in Wales are Healthier' (Welsh Government, 2014, p. 2). These goals will be run alongside the Sustainable Development Charter to prompt a significant development in the sustainability of Wales within one generation. In the Future Generations Act (2016) it is detailed that forty-four public authorities must work alongside each other to support a positive change in Wales (Welsh Government, 2016, p. 4). Such a large-scale act highlights the importance of achieving these goals to produce a better Wales for generations to come.

The methodology of choosing mixed ability groups is that an individual's learning should not be limited by a practitioner's expectation of their ability (Hunter, 2015, p. 2). Furthermore, it has been argued that all members of a class will have different cognitive strengths with differing cognitive methods (Gardner, 2006, p. 5). Gardner continues to explain his belief that 'intelligence' is best described as a set of mental skills and talents that can be applied in different contexts, not simply knowing the answers to tests. This theory suggests that a 'mixed-ability' group of pupils should contain a range of intelligences that may complement each-other and prove beneficial in group-work. Moreover, Belbin stated that an extensive range of strengths and weaknesses is vital for the success of any team, a vast range of intelligences within a team may increase the chances of success (Litmos Heroes, 2014).

Conversely, Piaget (1980) discussed, through the learning theory of constructivism, that children are 'lone scientists' and are able to construct meaning by interacting with the environment (Waters, 2014). Piaget further explained that the child is an 'active learner' who seeks meaning by exploring for their own interest, regardless of the social environment that they are in.

It could be argued that group work may not be the most effective method to use in order to cover the curriculum. It has been stated that group work increases the noise-level within the classroom, makes it difficult to monitor individual progress, causes a loss of control, and

encourages off-task behaviour (Baines et al, 2015, p. 16). However, in order to produce a sustainable future for Wales, it is imperative that its occupants work as a collective and think in more innovative ways (Welsh Government, 2014, p.1). As well as this, studies have shown that group work has been raising attainment levels, allowing pupils to take responsibility for their own behaviour, and doubling pupils' active engagement time when learning (Baines, 2009, p. 3). Furthermore, tasks which require a lot of collaboration are motivating for students, especially when said tasks spark curiosity in the learner (Loxley, et al. 2014, p. 4).

In order to monitor the progress of all members of each group, a range of Assessment for Learning (AFL) strategies can be employed. Assessment for Learning refers to any assessment that prioritises promoting learning (Black et al, 2007, p. 2). It is not assessment of learning, which assesses what a learner knows, often as an end-of-term test (Black and William, 1998). An AFL technique that may prove beneficial when completing EBL is writing a minute paper at the end of each session. These minute papers should include what the group did and what questions they would like to explore in the next session (Trauth-Nare and Gayle, 2011, p. 36).

Some pupils may require additional support in their research as their previous experience in science would be based on observations and actively completing experiments. This is not possible in this case due to the nature of the topic. At this age, pupils are expected to be able to collect information by reading textbooks and other forms of written information (Rupley and Slough, 2010, p. 99). It may have been more beneficial to introduce a topic where pupils would be able to complete experiments and make observations, for example, a fair test enquiry.

Pupils may be supported by building a bank of vocabulary that they are expected to include in their study. The terminology involved in science is proven to be the most difficult element of the subject as there are a myriad of new words and phrases, as well as new meanings to words that they already know (Loxley et al. 2014, p. 4). This vocabulary could be introduced within a learning hook at the beginning of the study. The learning hook for this topic would be a video explaining medical techniques that were used in ancient Egypt (Ted-Ed, 2018). This video would be beneficial to pupils as the differences in medical techniques are very obvious in comparison to modern medicine. Pupils will be shown this video then asked to think about what has changed before discussing their thoughts with a partner. Following this,

pupils can then offer their ideas to the class. Allowing pupils to work collaboratively before offering their ideas encourages active engagement in the task, and can help to improve their confidence when sharing ideas with the class (Baines, 2009, p. 3). Throughout the discussion, any key words, such as religion, development, and expensive, that are mentioned should be written on the board for all pupils to refer to throughout the topic.

Opposing this, it could be argued that the most engaging learning hook is to bring an expert into the classroom. The learning extracted from engagement with an expert in the field is a valuable resource for learners and could help to support the running of the theme (Harlen and Qualter, 2014, p. 138). For this EBL experience, it may have been possible to invite a medical professional into the class to help to answer any initial questions.

The planning element of the cycle would involve introducing the topic and asking pupils to produce a hypothesis as a cold task. This would involve: putting pupils into groups, giving each group an advancement to research, and asking pupils to make predictions in regard to their advancement as a 'cold task'. Within a class of 30 pupils, there would be 6 groups. Each group would be provided with different medical advances: Virtual Reality in Medicine, Artificial Organs, 3D Printing in Medicine, Robotic Surgery, Artificial Intelligence in Healthcare, and Brain Surgery to allow deaf children to hear.

Each group will be asked to formulate an initial idea or hypothesis based on what they already know about their topic. Following this, they will use the scientific skill of 'Enquiry' and 'Planning' (Department for Children, Education, Lifelong Learning and Skills, 2008, p. 12) to make predictions using existing ideas on their given advancement. As the pupils will not have been given any information on their topic prior to their predictions, it will be known as a 'cold task'. This is a type of formative assessment that establishes where each learner is at the beginning of a topic, identifying any areas that require extra support (Talk4Writing, 2014).

There are arguments to suggest that 'cold tasks' are an ineffective AFL strategy as they are simply used to make progression within a lesson clear for an observer or inspector (Ramblings of a Teacher, 2016). Furthermore, there is the opinion that there is no clear limit of how much input can be given before such a task. For this reason, there are bound to be inconsistencies in teacher-assessed levels not only from school-to-school, but also classroom-

to-classroom (The Literacy Shed Blog, 2015). However, from a well-being perspective, tasks such as these are considered beneficial to a learner's confidence as they are able to clearly see how they have progressed (Ambition Institute, 2015). They also allow the practitioner to assess what the learner already knows in order to plan for their next steps (Assessment for Learning Toolkit, 2017).

The rationale behind the inclusion of a cold task in this topic is for learners to see their progression as a group and identify how they have developed their knowledge. Pupils will be encouraged to refer to this progression in their reflective pitch at the end of the topic. This particular cold task will have a smaller impact on planning as each group will be monitoring their own progress and deciding on their next progression steps as a team.

Pupils will be developing their skills in the 'Enquiry' and 'Planning' areas of Science. Learners will be deciding on success criteria, selecting research methods, and making predictions to base their later research on (Department for Children, Education, Lifelong Learning and Skills, 2008b, p. 12).

Alternatively, it may prove more beneficial to encourage pupils to produce questions that they would like the answers to. These questions could be used in the place of success criteria whilst using the scientific skill of 'asking questions' (The Association for Science Education, 2018, p. 10).

The practitioner will be acting as a facilitator for the most part of the experience, providing some support using 'scaffolding', assisting pupils in making their predictions by providing some points to think about: What do you think it is? Do you think it will be expensive? What do you think are the positive and negative aspects of it? Scaffolding is a notion by Vygotsky referring to planning a curriculum based on pupils' current capabilities by observing what they are already capable of (Pound, 2006, p. 40). The scaffolding technique of questioning promotes thinking and enquiry skills in the classroom (Harlen and Qualter, 2014, p. 148).

The type of questions asked by a practitioner can have a significant impact on the responses of learners. Asking learners 'subject-centred' questions are considered unproductive as they are purely asking for a correct answer. For example, 'Why didn't the plant grow in the dark?'. If the pupil doesn't know the answer, they cannot answer the question. 'Person-

centred' questions are considered far more productive as they are promoting investigation and thinking. The aforementioned question would produce more answers had it been phrased 'Why do you think the plant didn't grow in the dark?' (Harlen and Qualter, 2014, p. 150). Additionally, providing pupils with open-ended questions for their predictions, is a support method by Piaget. These questions direct the learner without providing too much structure to the learning. These scaffolding techniques may be necessary as it is unlikely that any of the pupils have heard of these advancements so may not know where to begin when hypothesising.

The developing element of the cycle will ask pupils to plan their investigation and begin to collect data. This is similar to the 'S' model in Appendix 1. Each group will be discussing their methodology for their research including how they are going to find the information, where they are going to source their information from, and who they could talk to. This lesson would discuss reliability and bias in sources. A relevant skill that is mentioned in the Literacy and Numeracy Framework is deciding what sources to read and believe.

Pupils will be given access to technology in order to complete online research if that is their chosen method. It is stated in the Digital Competency Framework (2016) that Year 6 pupils should be able to identify websites that are secure and reliable using the padlock icon and looking for 'https' in the website's URL. Pupils should also be able to cite all sources when they are researching, this is an aspect of the 'Digital rights, licensing, and ownership' element. A simplified citing technique would be modelled to pupils using the website name, the date they used it, and the URL.

Modelling refers to a strategy where the practitioner demonstrates a concept to pupils, in order for them to replicate it (Eggen and Kauchak, 2001). When modelling, it is vital to explain what you are doing and why (TES Professional, 2015). However, it can be argued that over-reliance on modelling may lead to a dependency culture (TES Professional, 2015).

It would be expected that most, if not all, pupils in the class have used the internet to research a topic in the past. Pupils will have the choice to record their findings digitally on a computer, or written in their books. A challenge associated with the collection of data for this topic is that, as a result of these advances being very new, there may be very little research available for pupils, especially at a primary school level. As a scaffolding technique, the practitioner

could produce QR codes for each group, containing simplified information based on their advancement. This would provide a reliable source of information for pupils to record from.

When searching for information, pupils will be utilising skills in the communication element of Science. Pupils will be communicating by discussing their research within their groups and illustrating it using images and diagrams (Department for Children, Education, Lifelong Learning and Skills, 2008b, p. 12).

The reflecting element of the cycle will involve learners interpreting the data that they have found and comparing it to their initial predictions. Learners will be reflecting on their research and evaluating against the success criteria that they compiled in the first instance. The reflecting element of science also asks learners to suggest improvements on their study (Department for Children, Education, Lifelong Learning and Skills, 2008b, p. 15). Pupils could make recommendations to improve their advancement.

In addition to reflecting on what they have learned, pupils will be expected to reflect upon how they have attained their final results. Pupils will be reflecting upon how they have worked within their groups, identifying any skills that they have developed as a result, as well as any challenges that they encountered as part of the experience. Belbin explains that by developing strengths and managing weaknesses, team-members can improve how they contribute to a team (Belbin, 2010, p. 6).

Equally, learners will be reflecting on their use of resources using '2 Stars and a Wish'. This is a practice that focuses on strengths to improve the outcomes of future problems. Identifying resources and methods of information collection that were useful will assist pupils when completing a new task as they will be able to refer back to what they have learned (The Audiopedia, 2017).

The final element of the reflection will ask pupils to identify any further questions that they have in relation to their topic. These questions could be used within a task to encourage the application of the knowledge and understanding that has been ascertained throughout the progression of the study. Pupils will be asked to apply what they have learned to produce a possible answer to their question. These answers should be supported using pupils' research.

This is known as the 'Transfer of Learning' as pupils are using what they have learned in a new context (The Washington Post, 2015).

Following their reflection, learners will be compiling their findings into a pitch to be presented to a science lecturer at Swansea University. Pupils will be asked to use the enquiry skill of discussing how scientific ideas have developed over time, within this pitch, to highlight the importance of advances in the field of medicine (The Centre for Industry Education Collaboration, 2013, p. 4).

In preparation for their pitches, pupils will be given the opportunity to hold a debate between themselves, based on which of their advances should be provided by the NHS. This will exercise the citizenship skills of explaining their views whilst being sensitive to the feelings of others (The Houses of Parliament, 2016). In order to decide who won each debate, the remaining pupils in the class will vote for which of the two debating teams they would support, based on the evidence provided, another of the citizenship skills.

There will be an educational visit to Swansea University for the pupils to pitch their idea for a medical advancement that should be provided by the NHS, as well as this, pupils will be given the opportunity to use some of the equipment used in scientific studies within a laboratory. As the pupils will have been researching the human body and health, they will participate in the 'DNA: The Recipe of Life', science taster day within the university (Swansea University, 2015).

In order to improve this approach, some of the learning should take place outdoors. Learning outside of the classroom provides pupils with a stepping-stone to higher order learning and make the topic more engaging (Harlen and Qualter, 2014, p. 135).

In conclusion, Enquiry Based Learning is proving to be highly valuable in the future of pedagogy in Wales. Presenting children with real-world problems is a way to spark a drive and ambition to solve contemporary issues. This contributes to the formation of 'ambitious, capable learners', a key purpose of the Successful Futures curriculum (Donaldson, 2015, p. 29). When using enquiry as a rationale to learn, there is an element of interpretation required to form an opinion on a topic. Particularly when discussing healthcare, there is a conversation of ethics to be held. Developing an opinion surrounding the ethics involved in medical

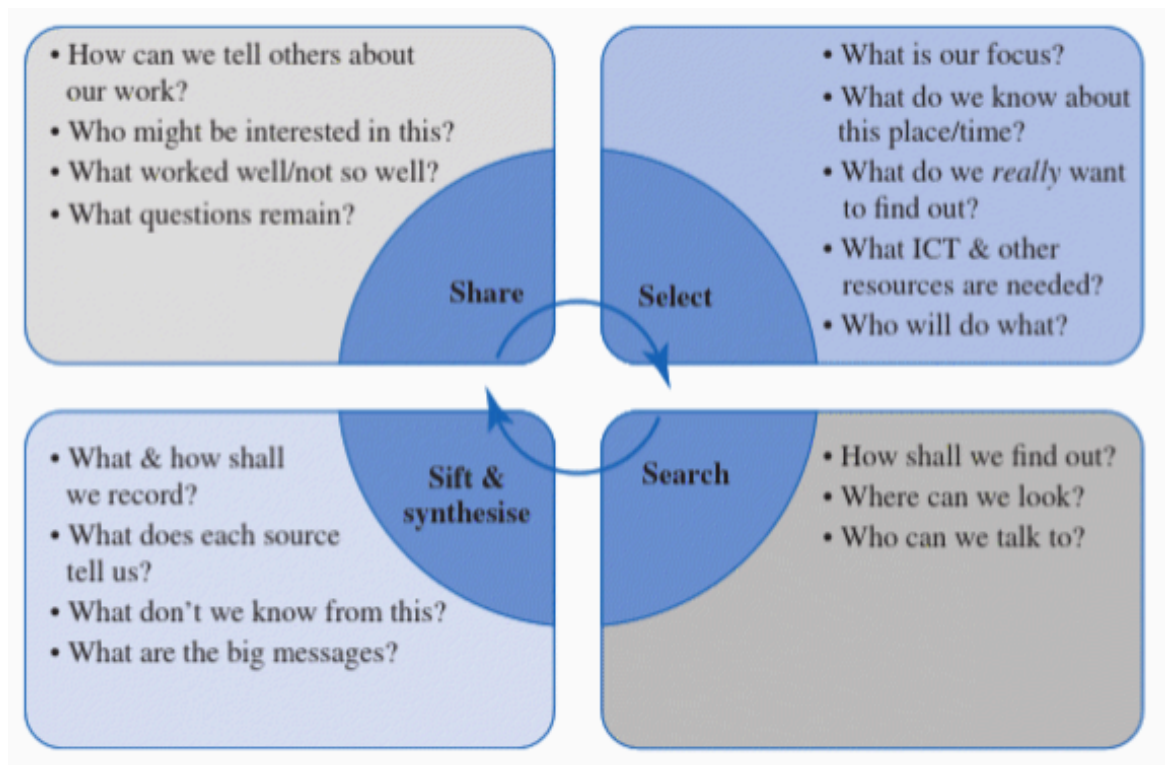
advances, based on information that they have found, is a stepping-stone to becoming 'ethical, informed citizens', another purpose of the proposed curriculum (Donaldson, 2015, p. 30).

However, EBL should not be the sole method of pedagogy used in schools. Vygotsky explains that learning through instruction is also a key element of cognitive development, a well-rounded learner cannot develop through the use of one strategy alone (Pound, 2006. P. 40).

Following this thought, it is also important that pupils are given the opportunities to work both independently and as part of a group to form a balanced educational experience. Piaget (1980) explained his belief that children are 'lone scientists', learning no matter what social situation they are in. Nevertheless, it is important to note that when pupils are given the opportunity to take responsibility for their own learning through group work, their active engagement time typically doubles (Baines, 2009, p. 3). Often, Environment Based Learning is completed within a group-setting, suggesting that pupils become significantly more engaged when their input is placed at a greater importance.

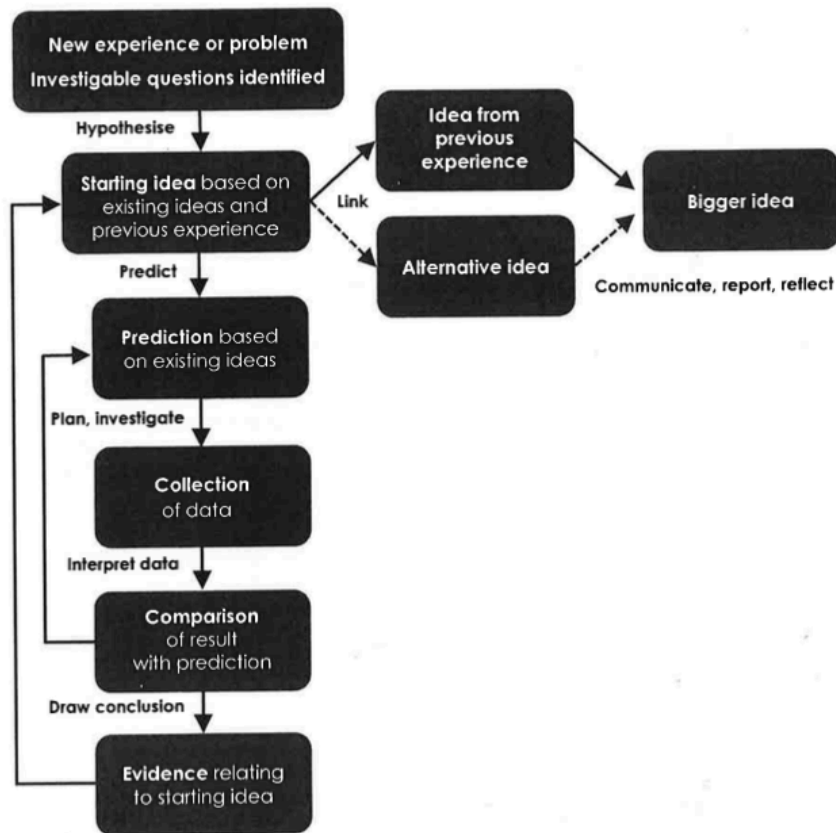
Appendices

Appendix 1



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Appendix 2



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