

Overview

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Student Number: 0450040

Assignment Title: A portfolio which illustrates a critical reflection of progress made on the planning and implementation of three pedagogical principles.

Pathway: Secondary PGCE

Assessment for learning

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Starter

Complete this table without a calculator!

	10%	50%	25%	15%
£16	£1.60	£8	£4	£2.40
£22	£2.20	£11	£5.50	£3.30
£70	£7	£35	£17.50	£10.50
£5.40	£0.54	£2.70	£1.35	£0.81
£25.80	£2.58	£12.90	£6.45	£3.87
£80.40	£8.04	£40.20	£20.10	£12.06

Example 1 on assessment of Learning. This is a starter to assess learners prior knowledge.

APK: Copy and answer

1) $7 - 7 = 14$ ✓
 2) $3 + 6 = 9$ ✓
 3) $5 - 8 = -13$ ✓

Examples:

1) $(d + 3)(d + 2)$
 $= d^2 + 2d + 3d + 6$
 $= d^2 + 5d + 6$

2) $(3e - 5)(2e - 4)$
 $= 6e^2 - 12e - 10e + 20$
 $= 6e^2 - 22e + 20$

Q11)

a) $(u + 4)(w + 2)$
 $= u^2 + 2uw + 4w + 8$

b) $(y + 1)(y + 2)$
 $= y^2 + 2y + y + 2$
 $= y^2 + 3y + 2$

c) $(a + 5)(a - 3)$
 $= a^2 - 3a + 5a - 15$
 $= a^2 + 2a - 15$

d) $(g + 1)(g - 4)$
 $= g^2 - 4g + g - 4$
 $= g^2 - 3g - 4$

e) $(p - 3)(p - 2)$
 $= p^2 - 2p - 3p + 6$
 $= p^2 - 5p + 6$

f) $(y - 4)(y - 4)$
 $= y^2 - 4y - 4y + 16$
 $= y^2 - 8y + 16$

g) $(n + 8)(n - 1)$
 $= n^2 - n + 8n - 8$
 $= n^2 + 7n - 8$

h) $(a - 3)(a - 7)$
 $= a^2 - 7a - 3a + 21$
 $= a^2 - 10a + 21$

Question 5: Expand and simplify

(a) $(x + 2)(x + 3)$
 $= x^2 + 3x + 2x + 6$
 $= x^2 + 5x + 6$

(b) $(2w + 3)(w - 1)$
 $= 2w^2 - 2w + 3w - 3$
 $= 2w^2 + w - 3$

(c) $(x + 9)(3x + 4)$
 $= 3x^2 + 4x + 27x + 36$
 $= 3x^2 + 31x + 36$

(d) $2(x + 1)(x + 4) - (x + 1)(x + 2)$
 $= 2(x^2 + 5x + 4) - (x^2 + 3x + 2)$
 $= 2x^2 + 10x + 8 - x^2 - 3x - 2$
 $= x^2 + 7x + 6$

Question 6: Expand and simplify

(a) $(x + 2)(x + 3)$
 $= x^2 + 5x + 6$

(b) $(2w + 3)(w - 1)$
 $= 2w^2 + w - 3$

(c) $(x + 9)(3x + 4)$
 $= 3x^2 + 31x + 36$

(d) $2(x + 1)(x + 4) - (x + 1)(x + 2)$
 $= x^2 + 7x + 6$

(e) $(x + 2)^2$
 $= x^2 + 4x + 4$

(f) $(x + 4)^2$
 $= x^2 + 8x + 16$

(g) $(x - 3)^2$
 $= x^2 - 6x + 9$

(h) $(x + 4)^2$
 $= x^2 + 8x + 16$

(i) $(2x + 9)^2$
 $= 4x^2 + 36x + 81$

(j) $(3x - 1)^2$
 $= 9x^2 - 6x + 1$

(k) $(4 - 3x)^2$
 $= 16 - 24x + 9x^2$

(l) $(7 - 2x)^2$
 $= 49 - 28x + 4x^2$

(m) $(7 - x)^2$
 $= 49 - 14x + x^2$

(n) $(4 - 3x)^2$
 $= 16 - 24x + 9x^2$

(o) $(8 + 5x)^2$
 $= 64 + 80x + 25x^2$

(p) $(3 + 2x)(5 + x)$
 $= 15 + 3x + 10x + 2x^2$
 $= 15 + 13x + 2x^2$

(q) $(9 + 2x)(3 - 2x)$
 $= 27 - 18x + 6x - 4x^2$
 $= 27 - 12x - 4x^2$

(r) $(5w - 1)(5w + 1)$
 $= 25w^2 - 1$

(s) $(3w + 2)(3w - 2)$
 $= 9w^2 - 4$

(t) $(2y + 3)(2y - 3)$
 $= 4y^2 - 9$

(u) $(5w - 1)(5w + 1)$
 $= 25w^2 - 1$

(v) $(9 - 4y)(2 + 3y)$
 $= 18 + 27y - 8y - 12y^2$
 $= 18 + 19y - 12y^2$

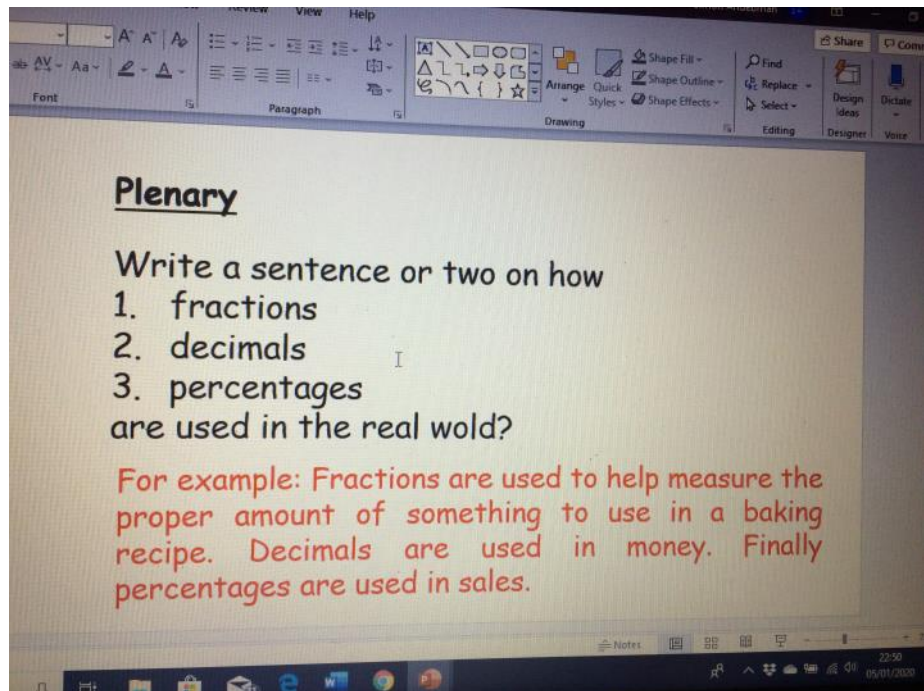
(w) $(1 - 2x)(1 + 2x)$
 $= 1 - 4x^2$

(x) $(3 + 2y)(3 - 2y)$
 $= 9 - 4y^2$

(y) $(9 - 5a)(9 + 5a)$
 $= 81 - 25a^2$

Expanding Two Brackets
 Video 14 on www.corbettmaths.com

Example 2 on assessment for learning. Questioning method to assess students understanding.

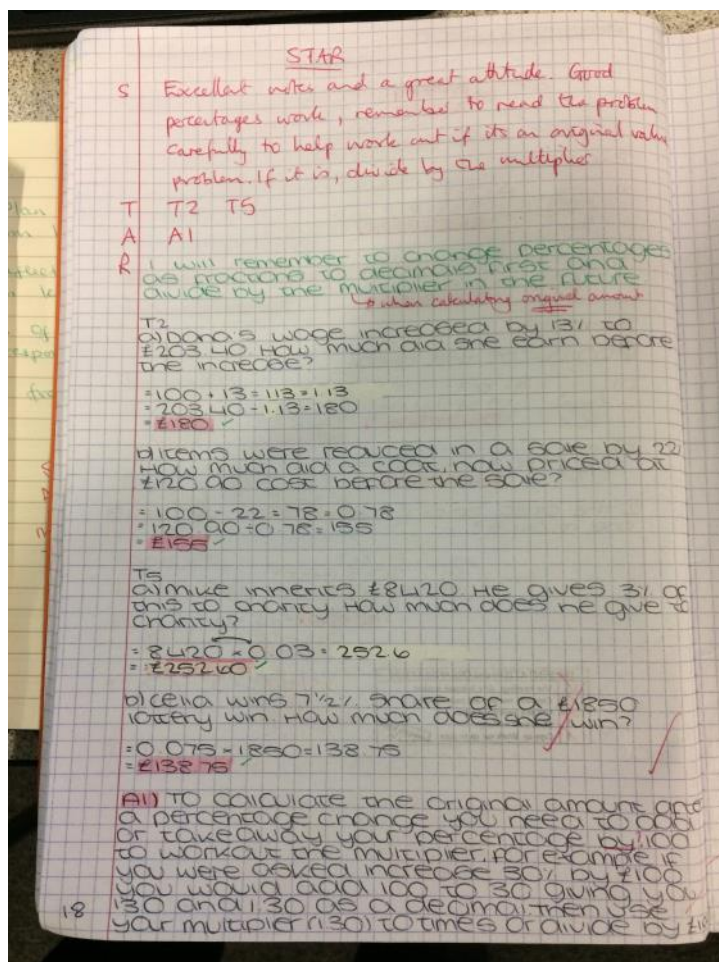


Example 3 on assessment for learning. Use of plenary at the end of the lesson as a means of reviewing learning objectives and success criteria.

Cross-Curriculum Responsibilities, including literacy, numeracy and digital competence.

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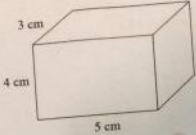


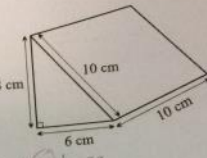
Example 1 on cross-curricula responsibility. Including literacy skill in learning process



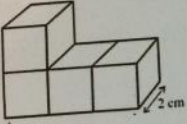
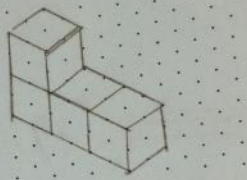
Example 2 on cross-curricula. Introducing learners' numerical skills to use it in a meaningful way.

8) Calculate the volume of the following shapes:

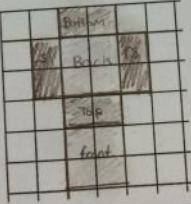
(a) 
 $5 \times 3 = 15 \times 4 = 60 \text{ cm}^3$ (2)

(b) 
 $2 \times 6 = 12 \div 2 = 6$
 $6 \times 10 = 60 \text{ cm}^2$ (2)

(9) Accurately draw this solid on the isometric grid

  (3)

(10) Draw a net of a cube

 (1)

After you STAR review this assessment, you are expected to log into MyMaths and complete tutorials and homework tasks on at least 3 target topics by

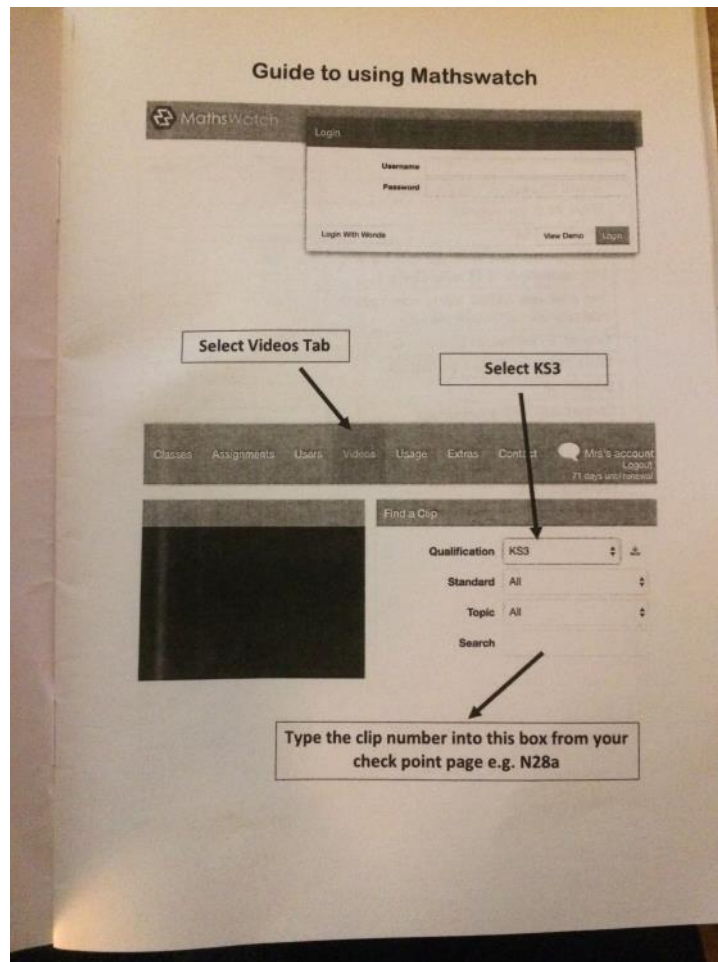
Parental Comment/Signature:

- * Fraction of an amount
- * Percentage increase/decrease
- * Draw a net of a cube.

Example 3 on cross-curricula. Use of digital resource to work on MyMaths on the given three target topics (the script).

Employing a blend of approaches including direct teaching

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Example 1 on blended learning approach. Use of e-learning in learning process

Learning Objectives (focus on Learning: use accessible vocabulary):	
The pupils will learn to:	
- understand the difference between 2D and 3D shapes; - draw single cubes and make shapes with multi-link; - draw 3D shapes on isometric paper.	
1	
Success Criteria (clearly linked to each Learning Objective and related to the process and/or product of learning)	Assessment of Pupils' Learning Evidence (What have the learners to say/write/do/produce... to demonstrate learning)
1. Pupils will be able to understand the difference between the 2D and 3D shapes.	1. Participating in the discussion, and be able tell the names of different 3D shapes. Also

Example 2 on blended learning. A lesson plan used teaching.



Example 3 on blended learning. Use of different teaching models in the learning process.

Critical Reflection

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1. Introduction

Effectiveness of teaching and learning rely on the teacher's competency of the subject knowledge and the pedagogical principles layout by the experts in the education sector. To implement good teaching and learning process in Wales, Donaldson (2015) introduced four purposes. The four purposes aim is to produce healthy, ambitious, visionary and highly inspired citizens of Wales. One of the best methods to achieve the success of these four purposes is by utilizing good pedagogical principles. As the result, Donaldson (2015, p. 63 - 70) suggests twelve pedagogical principles that are linked specifically to the successfulness of the four purposes. For the purpose of this assignment, the researcher will focus on three of the twelve pedagogical principles to critically analyse and evaluate its effectiveness on learning. Furthermore, the researcher will reflect the effectiveness of the three selected pedagogies in practice and make some recommendations.

2. Literature Review

Wales curriculum system is going through a major educational transformation to enable learners in Wales to grow as confident, motivated and healthy individuals. To achieve the target the paper will discuss on the three of the twelve pedagogical principles highlighted by Donaldson (2015).

2.1. Assessment for Learning

Assessment play an essential part in learning process as a means of judging the learners' understanding on the ideas related to learning objectives. Black and William (1998) defined assessment for learning as one of the best methods in teaching and learning process that establishes feedback that is important to enhance the learners' achievement. Teachers and learners mostly use the formative assessment to identify and act to the learners understanding in order to improve the learner's ability (Cowie and Bell, 1999). Feedback is one of the main parts of formative assessment which has an effective impact on teaching and learning process (Hattie and Timperley, 2007). Feedback can help pupils identify misconception and the topics that are difficult to understand. There are different assessment methods that are useful to collect data on pupils' learning. Homework, questions, and/or tests are some of the techniques used in assessment for learning (Chianese, 2012). The outcome of this assessment in return help practitioners to give learners feedback on their progress in relation to the learning objectives.

Many scholars showed that pupils learn most effectively when they can reflect on their learning, advance what they learn, and formulate their progress pathways (Chianese, 2012). That is the reason why the importance of assessment for learning developed from the notion that learning is a continuous process. According Black and William (1998), assessment for learning expands pupils' capability to evaluate their work and learning progress. In this method the learners can reflect and identify the gaps in their understanding, and encourage the learners to identify areas that require improvement. Besides, assessment for learning is an essential technique that enhance learner's way of thinking (Zimmermann, 2000). Furthermore, assessment for learning is specifically useful technique for assisting students to measure their progress and performance (Harrison, 2013). For instance, learners can be assessed based on their ability. That is, assessment can help teachers to work with low ability learners to meet their target. In a similar way, it can help to identify high ability learners to further their understanding. As a result of this technique, practitioners can figure out what the current knowledge of the learners and what do they need to know to progress to the next level. Donaldson (2015)

summarises the purpose of assessment for learning is to encourage the learners to work hard on difficult problems, simultaneously develop their identity as capable learners.

2.2. Cross-curriculum Responsibilities, including literacy, numeracy and digital competence.

Barnes (2015) described cross-curricular as the world beyond the classroom. Most of the objects we see around us are not the result of one curriculum subject. It is also obvious that the future has always been ambiguous. In education, cross-curricula is defined as a multidisciplinary approach to teaching and learning that helps to understand the complexity of the world by bringing together features from different areas of the curriculum (Greenwood, 2013). As the result of this complexity, the current education system in Wales may be inadequate to help learners succeed. Accordingly, the new *Curriculum for Wales 2022 guidance* has installed the cross-curricula responsibility of literacy, numeracy and digital competence in its curriculum across all fields of study in order to help learners develop in relation to the four purposes lay out by Donaldson (Welsh Government, 2019). This is important as it ensures learners in Wales to advance their skills and get a chance to continuously improve, expand and use them across the curriculum. In order to thrive in the current and future education system, learners need to be competent on the three essential skills: literacy, numeracy and digital competence (BIS, 2016). It also serves as a pathway to future career success. Greenwood (2013) also emphasises embedding the cross-curricula in the learning process motivate and encourage pupils more to learn. The motivation achieved by learners is due to the application of the cross-curricula in their daily lives. Moreover, Barnes (2015) highlights applying cross-curricula in learning increase learner's ability to solve problems, make learners creative and innovative. Besides, it allows learners to cooperate with one another. Working together paves the way for new ideas and discoveries.

To achieve an effective cross-curricula in teaching and learning, educational systems should have a clear vision and goal that are familiar by all participants (Savage, 2010). Additionally, the institutions should aim at the learners cognitive, personal and social development. If this is implemented effectively, it will also assist teachers to evaluate and reflect on their teaching. Moreover, it will create them a great opportunity to be imaginative and innovative in their curriculum planning (Savage, 2010). In general, cross-curricular approach offers well-rounded learning experience in all areas of the curriculum. That is, it reacts to the learner's desires, concentrating on inspiring the learners to merge the knowledge and skills within the subject, between the subject and from one subject to another subject.

2.3. Blended learning approach including direct teaching

The blended approach to learning including direct teaching is known as a system of teaching and learning that involves combination of different instructional methods including traditional teaching and e-learning (Makhdoom, et al. 2013). This approach allows flexible, concerted teaching and learning that alters the responsibility of the teacher from a traditional way of teaching to a coordinator. As the result, the blend of direct teaching and the use of different methods including e-learning generates a more cohesive approach for both teachers and pupils. In a similar way, Kaur (2013) described the importance of blended approach in learning as the efficient consolidation of various means of presenting, modelling and styling of teaching and learning which are operated in an interactively meaningful surrounding. Another benefit of blended learning is addressing crucial educational concerns by increasing pupils learning abilities and outcomes. Likewise, it allows teachers and learners to reflect and differentiate lessons from learners to learners across a different group of students (Garrison, 2004). In addition, the approach provides learners a variety of teaching models as teachers and learners have immense flexibility and availability without giving up the traditional way of teaching (Hancock and Wong, 2012). This approach also presents flexible time for learners to learn at their own pace. Learning

at own pace has significant advantage in reducing stress and increasing satisfaction of the learners. Furthermore, Hancock and Wong (2012) emphasises the blended learning approach is the most applicable and low-level risk approach that assist the education personnel at meeting the challenge the current educational system faced due to the dramatic changes that e-learning and other methods bring. Therefore, blended learning approach should be adopted in learning process as it serves as an instructional methodology to produce the best valuable educational system.

According to Hong and Samimy (2010) blended teaching approach can only be effective if learners have positive mindsets and are eager to adapt with different teaching models including e-learning. Besides, providing training and support to teachers is fundamental in creating and implementing an efficient blended learning approach in the learning process. Providing training and support allows teachers to establish a program that provide them an opportunity to engage very well with the blended learning approaches and components. Additionally, Hong and Samimy (2010) point out that training and supporting learners to enhance their computer literacy skill is important in implementing the blended learning approach effectively.

3. Conclusions

The researcher will consider the implementation of the three pedagogical principles discussed above in my own practice. The researcher teaches mathematics for pupils at KS3 stage in one state school based in Swansea. The pupils are aged between 11 years and 14 years of age.

The first pedagogical principle the research chose to discuss is the employment of effective assessment for learning in teaching and learning. At the current school where the researcher teaches, it is a compulsory requirement that all members of the teaching staff to assess the learner's prior knowledge before they proceed to the next lesson. As the result, in most of lessons the researcher prepared questions that assess the learner's prior knowledge. These questions at the same time serve them as base for the next lesson. For instance, the topic was regarding percentage increase and decrease of a quantity. The questions prepared as a starter was on how to calculate the percentage of an amount and the students were given 5 minutes to complete the task. The effectiveness of these type of assessment for learning is to investigate whether the prior knowledge was retained. From the questions, the researcher understands if there is any misunderstanding about the topic. Also it highlights some of the misconceptions. Consequently, assessing on prior knowledge help the learners to reflect on their learning, advance what they learn and formulate their progress pathways (Chianese, 2012).

The second type of assessment for learning used by the researcher is questioning method. These method helps the teacher to understand the performance of the learners based on the new learning and understanding. Questioning method are an important part of a learning process and useful for each teacher's in their learning profession. They are also one of the most efficient methods of formative assessment (Hattie and Timperley, 2007). Questioning provides learners to engage in the learning process and offers a good opportunity for learners to ask questions that is not clear to them. The researcher was satisfied with the effectiveness of assessing the learning using questioning method as most learners were concentrated on the task. This method was not only useful for assessment, it is helpful as a means of classroom management. It also gives a clear information to teachers whether learners are ready to progress to the next stage of teaching. Especially in mathematics lesson, questioning is the one of the most essential way that inform the teacher to identify the gaps in knowledge (Black and William, 1998).

Another method for assessing the learners understanding used by the researcher was the use of plenary at the end of the lesson. The researcher prepared the plenary activity as a means of reviewing the learning objectives and success criteria of the entire lesson. This activity enables learners to remember what they have learned,

deepen and extend their learning. Its effectiveness was measured by the level of learners' participation and relating the concept to a real-life context on which the researcher was satisfied. Additionally, it allows learners to think and learn on how to transfer the lesson taught to other contexts. As assessment for learning is an essential technique that enhance learner's way of thinking (Zimmermann, 2000), plenary is one of the best ways of assessing how the lesson delivered. Plenary is also serving as bridge that links the learning in a lesson to learning in another lesson or to a real-life context. As the result, plenary regarded as one of the effective methods of assessing learners understanding (Hartwell, 2017).

The next pedagogical principles considered is the employment of cross-curricula responsibility, including literacy, numeracy and digital competence in effective teaching and learning.

Although it was a mathematics lesson, improving learners' literacy skill is at the core of the researcher lesson. To employ this skill, the learners were given a chance to write on their own words as a means of reflecting on what went wrong and how to set a target for the future. This allows the researcher to identify any weaknesses in learners' literacy skill. Literacy does not comprise reading, writing, speaking and listening, but also highlights how the learners willing to engage with challenging ideas. Also it enables them to make useful link between subjects and to gain a valuable experience from others. From this example, the researcher can clearly demonstrated the learners work book with a literacy content. The learners was able to reflect on their own work and set a target for future improvement. That clearly demonstrated effective use of literacy supports learners understanding of the subject matter and encourage them to learn more. This was supported by Greenwood (2013) idea that highlighted the embedment of cross-curricula in the learning process motivate and encourage pupils more to learn.

The second example is on numeracy skill as part of the cross-curricula principles in the learning process. The lesson the researcher taught was a mathematics lesson. It is obvious the aim in a mathematics lesson is to enhance the learners' numeracy skill and how to use it in a meaningful way. Consequently, the researcher demonstrated to the class how to measure the height of an individual accurately using the apparatus called Leicester Height Measure. Using the apparatus, the students were able to see why we need to know about 'Decimals'. The researcher was satisfied by the level of learners' engagement and their ability to record the height of an individual accurately. Employing cross-curricula in a lesson as in the example in a meaningful way allow learners to merge the knowledge and skills within the subject (Savage, 2010).

Another important aspect in cross-curricula responsibility is employing the digital competence in the learning process. The researcher was limited to employ the digital competence skill in his lessons due to the school's IT technician long term sickness. However, an example of a learner's work that required digital competence was provided. In the example the learner was asked to work on three target topics on MyMaths, an online teaching and homework subscription website for schools. MyMaths provides different resources that assists learners inside and outside classroom. The application of this digital technology is one of the most important tools that contributed significantly to run an efficient teaching and learning process. Also, it is important to note that digital competence does not always involve technology. The researcher has used the Leicester Height Measure instrument as an example of digital competence in a lesson as this allows learners to reflect what we do in real-life. As Savage (2010) suggests, including cross-curricula including digital competence in a lesson makes the learning process meaningful.

The last pedagogical approach the researcher looked at it in relation to practice is the blended learning approach including direct teaching. As it has been discussed above, the blended learning approach included e-learning and direct teaching. The researcher has included three examples to demonstrate how it was implemented in

the learning process. It is evident from the first example that learning in MathsWatch is the application of digital technology (e-learning). MathsWatch is an online maths platform that makes learning available any time. As Hancock and Wong (2012) suggest, the e-learning provides learners a variety of teaching models as teachers and learners have immense flexibility and availability without giving up the traditional way of teaching. The second example is about the traditional way of teaching. The researcher applied the direct teaching in most his lessons. Direct teaching allows the researcher to set out a clear learning objective, check their understanding and guiding learners in their practical activities. The third example illustrates a different model of teaching. This illustration provides learners a variety of teaching models as teachers and learners have immense flexibility and availability without giving up the traditional way of teaching (Hancock and Wong, 2012).

4. Recommendations

The main purpose of effective teaching is to create an educational system that supports learners to succeed. Most significantly, reflection and feedback on learning are important methods to identify if the learning is effective. Besides, there are different other methods that help the education practitioners in identifying the weaknesses and how to learn from them. However, the main beneficiary in education system are teachers and students. In this fast-changing educational system, during the researcher few weeks in practice there were no teacher who was on an ongoing personal development program. One of the recommendations the researcher makes is to provide teachers on ongoing teacher training to adapt the current educational system. Ongoing professional development provides teachers on how pupils learn, how to adapt the emerging e-learning, new curriculum resources and so on (Hong and Samimy, 2010). Another important point is to give a chance for learners to evaluate the effectiveness of the teaching and learning process. The last and the most important the researcher recommend is to involve wider community particularly parents when implementing any pedagogical principles.

References

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