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Part A (literature Review): Introduction

Effective schooling identifies monitoring student learning as an essential practice in the provision of high-quality education. Careful monitoring is a major component in student progress, it determines a difference between effective and ineffective schools. Further, these analyses indeed provide different instructional practices to identify student progress as it is one of the efficient predictors of student's achievement in any institutional practice (Mor, Ferguson and Wasson, 2015). Furthermore, according to Ysseldyke and Tardrew (2007), the addition of an instructional management system and progress monitoring in mathematics classroom measures students' performance, and the results of this study stated that these two practices if implemented with integrity or high fidelity, the performance in mathematics for all the students is significantly enhanced.

Moreover, assessment is not something that usually occurs at the end of the course, it is an integral part of a constant classroom practice. It focuses on student's mathematical thinking and attention while taking a mathematical class. Research by Suurtamm (2017) suggested that these all assessment methods are the aspects of teaching and learning by making effective instructional decisions.

Monitoring and Assessment in Mathematics Classroom

Diagnostic Assessment

According to Csapó and Molnár (2019), diagnostic assessment is essential in three domains education, science and mathematics as this approach is a 3D approach that distinguishes between the application, psychological and disciplinary learning dimensions. Moreover, another research evaluated that if a diagnostic assessment is

implemented efficiently then learning of mathematics and teaching can be enhanced specifically in General Education and Training (Sekao, 2011).

As stated in the study of Quenette (2014), there are multiple assessments that teachers conduct to determine knowledge of students' including diagnostic tests. There are ways in which teachers evaluate and interpret diagnostic information. The research examined a diagnostic testing system in Year 9 mathematics by six teachers and the diagnostic assessment system was (Specific Mathematics Assessment that Reveals Thinking) SMART system based on two topic linear graphs and linear equations. Teachers are provided by this assessment a diagnostic analysis using online diagnostic test teaching advice to meet individual learning need of students by reducing mathematical ability learning gaps from students.

Furthermore, diagnostic assessment evaluates the existing knowledge of students relevant to the subject and that's why it is given at the beginning and at the end to identify the improved learning among students. In addition, diagnostic questions help teachers to collect data on student' progress related to their class (Csapó and Molnár, 2019). According to Anselmo and Eaton (2017), this practice is an 'evidence-informed' approach in the sense that they impact on decisions about the pace of students in understanding insights of the topic.

Formative Assessment

Zhou (2017) in his study said that early education requires a quality monitoring system and mathematics is the key content for early assessment and development evaluation of children. Further, he mentioned that formative assessment and evaluation

of its results reflect children's problem-solving ability and promotes diversity in learning methods of children. According to Wanner (2018), in higher education, the central aspects of the processes of student-centred assessment are self and peer-assessment. He further mentioned that these both assessment types are essential in developing key capabilities among students such as better understanding and more responsibility towards the subject. These both forms of assessment by evaluating own learning skills develop critical reflection skills among students. Further, he argued that the development of this effective tool requires careful designing for giving feedback to the developed capabilities.

However, another research by Thomas, Martin and Pleasants (2011) mentioned that peer assessment is a deeper reflection of an individual's learning which is also named as autonomous assessment. It is related partially with self-assessment and partially with the other's performances such as classmates when students reflect their selves. On the other hand, Pachler et al. (2010) stated that the core factor in formative assessment is learner's self-regulation which is directly linked with emotional and motivational factors that affect learners' engagement in learning. Furthermore, a study has evaluated that formative assessment is effective in assessing mathematics learning abilities for students specifically this study reviewed that in algebra interventions instructional effectiveness is critical and the best measure of instructional effectiveness is provided by a formative assessment which also promotes professional development (Accardo and Kuder, 2017; Hošpesová, 2018). In addition, Lambert, Algozzine and Mc Gee (2014) stated that in formative assessment progress monitoring assess students' performance individually in mathematics with the technology named accelerated math (AM) from grades 1-12 (Suurtamm et al., 2016).

Summative Assessment

An assessment in which evaluator identifies what has been learned by an individual or group of students is known as summative assessment (Hošpesová, 2018). However, Ofsted put a critical emphasis on 'teaching to the test' and stated that "it prepares students to gain qualifications but not in equipping them well enough mathematically for their future". He argued on the fact that achieving good grades does not necessarily examine by 'teaching to the test'. It means that teachers should adopt interesting and engaging approaches to teach mathematics such that students feel confident in applying their knowledge to practical situations (Marley, 2008). Often summative classroom assessment is performed for formative purposes as summative results are used to understand the misconceptions of students for large scale instructional purposes (Suurtamm et al., 2016). Furthermore, as stated in the study of Schoenfeld (2015), summative assessments in mathematics are performance opportunities or examinations where the primary purpose is to assess the knowledge gain at the end of the course such as SATs, stakes assessment, etc. However, another research by Marinho, Leite and Fernandes (2017) on mathematics summative assessment practices presented that, summative assessment emphasized competition and beliefs which is problematic as it only tells about what a student can do and what he cannot do, nothing about where they should improve themselves.

Part B: The Narrative

Assessment is considered as a critical piece of a learning process which is essential for both the students and teachers in such a way that teachers can evaluate their teaching process and its effectiveness whereas students learn their course in a much effective way. Moreover, assessment affects multiple facets of education including placement, student grades, curriculum, instructional needs, etc. (Moore Jr, Green and Gallis, 2009). The foremost essential component is formulated and communicate goals as when teachers communicate clear goals with students a picture of achievement comes in the mind about assessment to measure the achievement of these goals. Furthermore, it is important to select the correct assessment at the right time during the course is also very important because there are different ways through which the students can be assessed such as proficiency, knowledge mastery, skill demonstration and product creation. In addition, it has been viewed that using assessment for feedback is fruitful to improve learning.

Main Purpose

The main purpose of this assignment is to assess how I select a range of different AFL strategies and use them effect to inform my teaching and adapt lessons based on it.

Assessment for Learning (AFL)

According to Renkl (2013), assessment for learning is the process of interpreting and seeking evidence for the use of teachers and learners to identify where the students stand

in their learning and how far they need to go for the better understanding of the course. Similarly, as stated by Moore Jr, Green and Gallis (2009) Assessment for Learning is beneficial in exploring the clarification of the course to the students because it gives insights to teachers into the learning of their pupils and their practice of teaching. Furthermore, AFL also plays roles in assessing the learning of the struggling pupil of the classroom such that by improving the learning criteria in classroom learners can better gain the knowledge (Renkl, 2013). AFL strategies evaluate whether the learner is on the runway, on target and flying at cruising altitude; it means learner has the prerequisite but cannot do the task, a learner can complete the task with a little help and learner can easily complete the task on his own. Moreover, Moore Jr, Green and Gallis (2009) presented three key elements of AFL which are assessed, diagnose and remediate.

- In Assess, EPR (Every Pupil Response) techniques are used to identify misconceptions, see if there is a requirement of help by a pupil and decide re-teaching if necessary.
- To Diagnose if the incorrect answer by a pupil was as a result of a problem in the delivery of course or it’s the carelessness of the pupil by his habits or class behaviour.
- To Remediate is to carry out some form of task analysis by dividing the task into sub-tasks and then exploring the relevant skills for each subtask, then ask learners to write a reflective journal to know if the pupil requires no more remediation on the certain topic.

Justification for Choosing Assessment for Learning (AFL) Strategies

Baseline Test

A baseline test is an initial test which is used by teachers to assess the pre-requisite or the existing knowledge of the student. I use the baseline test as a diagnostic test for the evaluation of the knowledge of the pupils regarding the use of the key terms in mathematics and the general calculation knowledge (Dixson and Worrell, 2016). As EAL (English as Additional Language) students form the majority of my classes which is around 80%. Therefore, it is necessary to check their Knowledge that's why I begin with a baseline test to diagnose students learning in every class about the previous class to assess their understanding and then I switch to the next topic. In my chosen study unit, students learn about the pre-requisite skills needed for the number of branches of mathematics, statistics and probability to make pupil efficient in representing probability on a number line, Key terminology for probability, Sample space, Venn Diagrams & probability, experimental and theoretical probability, relative frequency along with real-life problem-solving.

It takes a long time for an EAL learner to be frequent in learning English for Academic purposes and perform tasks of academic education in English, for this reason, it is very essential for teachers of EAL to track the progress of learners at the start, middles and end of each class and course (Renkle, 2013). When I make baseline assessments, I keep in mind that I need to evaluate the key skills areas of the learners and their knowledge of Mathematics by analysing their speaking, reading, listening and writing abilities. For example, for the identification of Literacy, Communication and Language

understanding of EAL maths I take tests such as written comprehension, oral dictation, and vocabulary test after an individual class.

According to Moore Jr, Green and Gallis (2009), the instrument of baseline tests is used by the teachers to find out the natural ability, learning needs and potential of a pupil, these tests measure the cognitive abilities of the learners which are important in generating an expected level of achievement. I have the same perspective for the baseline tests and I take tests to measure abilities of students in Mathematics and fulfil their purpose of taking an EAL course, for example, the students learning it for General Certificate of Secondary Education (GSCE) level. Moreover, for the diagnostic test of learning of mathematics and its language I give students task sheets for numbers, addition and subtraction, evaluate their understanding of fractions and LCM, identify their knowledge of geometry by giving them word problems which also enhance their problem-solving skill.

Targeted Questioning

According to Bellman, Byrne and Sege (2013), one of an integral part of classroom learning is questioning and essential for any teachers are questions. One of the effective methods for formative assessment is target questioning which serves many purposes and enhances the student engagement in the process of learning. Furthermore, target questioning provides opportunities to the students to ask any query by evaluating their understanding of the topic (Dixson and Worrell, 2016; Hargreaves, Gipps and Pickering, 2014). I effectively apply this strategy of Assessment of Learning in my class as it challenges their levels of thinking and informs whether the knowledge provided in a

lecture are clear to the majority of the students then I progress further learning in my classroom. I think questioning may seem to an easy assessment technique however this is not the case in EAL as it requires practised knowledge of the teacher and therefore it is a crucial pedagogical skill. Students while learning may think that teacher has the dominance to talk in the classroom so an AFL strategy of target questioning gives chance to the students to speak up in the class explore themselves (Dixson and Worrell, 2016). I manage to ask such questions from the students related to the management of the classroom, information-recall, and higher-order questions for example, how could you define probability and what can you tell about intersection and union? I ask individual pupil randomly a problem-solving question related to the topic taught in class to analyse their familiarity with the topic. Moreover, for active participation in the classroom, I ask questions for the students and whoever answers first get the bonus marks, sometimes during the lecture of Mathematics for EAL students I ask students to give real-life examples related to the topic that reflects their deeper understanding like the connections of statistics with real-world problems and use of probability in common games, etc. For example, likely hood or unlikely hood of rain at times of the year, how financial institutions use it to determine the risk, etc.

Exit Ticket Question

As stated by Simpson (2012), exit ticket cards or questions are the easy and quick way to assess the knowledge of students and to measure the amount of progress they have done during that particular class. Exit ticket cards are the short prompts that are used by the teacher for the quick diagnostic assessment of students when the students

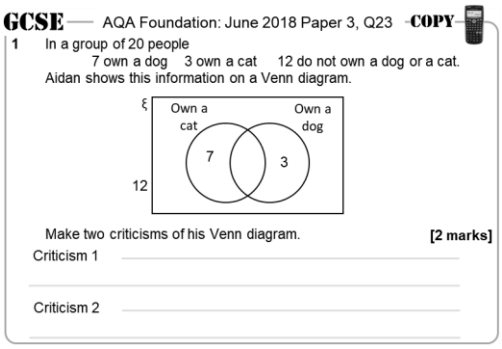
are about to leave the classroom they are asked to fill up the exit ticket card which is designed to collect the lesson feedback of from the students which means to check to understand of the student about the certain topic (Spendlove, 2009). I practice this strategy in my classroom of EAL students as a daily practice, for example, sometimes I ask the students to write the key points learned in that particular class in a summarised format and then I study them to evaluate the problems of the students or the topic area about which most students were unable to gain the right information.

According to Creghan and Creghan (2013), there are multiple advantages of exit ticket questions such as they require less preparation time and if the topic is continued till the next class it is best to attain some feedback and improve the lacks in the understanding of that topic in the next class.

Moreover, students feel fun with this AFL strategy teachers can be creative with them with this strategy like they design it like boarding pass such that students can leave the classroom by showing the boarding pass, or it can be made like train tickets or look like smartphone applications such as a Facebook review post or a Twitter post, etc.

I take exit card feedback from students as they leave the classroom which is extremely useful for me and I identify the criteria of how a lesson should go in my class for the better delivery of information and use it as a benchmark to measure the learning of students. After the introduction of the exit ticket question in my classroom, I consider it a really powerful tool for me in setting the clear objectives for the learners and getting feedback provided at least 80% of success in my students' performance.

For example, to my M&A class year 10, I give them exit question as shown below. See Section 1(Venn-Diagrams Lesson plan 2020-03-11). Student in the class performed well in it and that's why I was able to teach in my next lesson Venn-diagram and probability combined. If I have found any concern or misconception then I knew that I will need to spend more time on this topic.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1 In a group of 20 people
7 own a dog 3 own a cat 12 do not own a dog or a cat.
Aidan shows this information on a Venn diagram.

Make two criticisms of his Venn diagram. [2 marks]

Criticism 1

Criticism 2

Mini Plenaries

Mini plenaries are the shift from group to class and then back to a group in discussion during a small group of collaborative activity in the classroom (Creghans and Creghan, 2013). I think mini plenaries are the only way to understand the student needs in the middle of the lesson and to assess if the learners need more input about certain key terminology of mathematics or its operations. The group discussion as mini plenaries provides students with an opportunity to discuss their ideas with their mates and learn something from them that they were unable to understand during the lecture (Hargreaves, Gipps and Pickering, 2014). I use mini plenaries once during my lesson to make sure if I am going right with my lesson and students are with me in it to make sure the next topic or the next step in the classroom for the pupils would be effective for them mini plenaries help me getting the feedback from students.

According to Bartlett (2015), mini plenaries give students the ability and opportunity to reflect on how and what they have learned for the next steps to be taken by the teacher. I use this technique by using the 'Give me Five' quick activity in the middle of the classroom where pupil draws hand and each finger has a different question regarding the lecture such as thumbs up meaning what do you understand up till now in this lecture or ring finger for the operation of mathematics taught in class are difficult to be understood by students. I also use a quick activity of 'Keyword Bingo' by randomly questioning pupils about the keywords of the whole topic and how much they have remembered from the lecture.

Self and Peer Assessment

One of the proven and effective techniques of AFL is self and peer assessment, it is about improvement and revision as students get the ability to assess their knowledge and progress rather than relying on the teacher's judgment (Nicol, 2010). This assessment is carried out in my placement school as a compulsory activity because self-assessment individual pupil gets actively involved in the learning process. This is one of the major reasons for skill development among the students and helps them improve their required area lacking (Brown, 2015). Therefore, I train my students for the self-assessment and make them understand the actual purpose of learning and grasp of knowledge they want to gain for future achievement in GSCE exams. Also, some common misconceptions due to peer marking are discussed among pupils which create a better understating of the course. I use the self-assessment results to inform teaching as a compulsory AFL strategy of my school.

Moreover, students learn through self-assessment view their own mistakes and their level of learning in the classroom which makes them able to understand whether they are getting the course material or not. Whereas, teachers also get help from self and peer assessment because frequent assessment allows teachers to evaluate if the learning has been effective or not by ensuring the information gain by students and where they are lacking in the understanding of the course (Wong et al., 2015).

Feedback through Marking

This strategy of AFL in Mathematics is purposeful and clear, learners get to identify the misconceptions which help them improve themselves and learn their mistakes through feedback by marking (Chetwynd and Dobbyn, 2011). On the contrary, according to Hendry, Bromberger and Armstrong (2011), marking students' performance has no positive effects on learning and it may lower the self-esteem of students. My purpose of education Mathematics to EAL students (Majority of the class is on EAL) is to make pupil understand the concepts of Maths and make them able to solve the problems related to it, for example, using probability in real life to determine the risk. Therefore, by the use of feedback through marking I monitor and assess the individual's performance and also learn how I should excel in teaching from the most common mistakes of a student. I believe that marking learner should be written feedback as well as it is more effective and constructive feedback than marking. As stated by Wong et al. (2015), marks may lower the confidence and bring negative impact on a student but if he is provided motivating feedback with that it may help him in taking the feedback through marking positive and improve in the future tests.

Summative assessment

According to Taras (2009), the goal of a teacher is to successfully engage with the learners and make them able to understand complex problems. Moreover, Dixson and Worrell (2016) stated that summative assessments are essential in analysing the curricula and goals of the course by evaluating the understandings and skills of learners, measuring their competencies, and assessing their problems. Cilliers et al. (2012) highlighted that summative assessments indicate standards that are aimed to monitor students' performance and to raise the current standards of the school, further he also mentioned that these tests motivate students and make them put efforts in reducing the gap between their learning skills. Although summative assessments raise the morale of the high achieving students, other learners can also get encouraged from their performance and make them better in the remaining learning process of the course. Moreover, according to Taras (2009), to analyse the mastery of the subject area there are few components that teachers consider depending upon their course which carry out a summative assessment to achieve positive influences on students through learning outcomes.

Conclusion and Evaluation

M &A assignment for five lessons with this class allowed me to learn and practically implement a broad range of assessment strategies such as printed starter, mini plenaries, mini-whiteboards, targeted questions, self-assessment and peer marking, and exit

tickets. The assessment and feedback strategies which I used are mostly following school policies. These techniques helped me to develop tailored resources and enhance my capacity to provide effective feedback. These measures helped me to identify misconceptions and class ability in a better way which improved my teaching practice throughout the topic. Reflection allowed me to select effective AFL techniques relevant to my class which in turns make a lesson more interesting and challenging. Also, I was able to formulate interesting question AFL questions.

Results from the exit ticket and mini plenaries assessment in between the lecture show that understudies made significant progress and their attitude towards learning mathematics has improved a lot. Pupils have attained vital knowledge of this topic and have started taking initiative for their learning. Understudies learnt that making mistakes and learning from them is an aspect of progression and it is extremely useful in increasing understanding. As learning through mistakes help to reduce the risk of them occurring in the real examination. The main lesson learnt from this study unit is that the most important function of the assessment is to move pupils forward in their learning.

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