LSIS RESEARCH 2012-2013: REPORT – MA Assignment

REPORT TITLE

BIG BOOTS, SMALL feet – How to walk better

RESEARCH QUESTION:

HOW DO WE EMPOWER LOW ATTAINING LEARNERS TO LEARN BETTER?

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DRAFT 2

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ABSTRACT

A study was carried out in an inner-city FE college on how to enable low attaining learners to learn better. Problems are: learners were unable to achieve a Pass grade even at the second referral and always needing help. This was thought to be due to lack of understanding of concepts and the links between them. Based on the idea that every subject matter was a combination of concepts and their relationships, a *concept linking* technique was devised to encourage divergent thinking. Called '*BestMates'*, the technique required learners to reconstruct a deconstructed subject matter through group discussion. The subject matter was first presented by direct instruction. Data was collected from a group of 16 BTEC Level 3 Diploma IT students using an anonymous questionnaire instrument to elicit responses about their experience of the technique. Data was analysed by tabulation and charts. The indicative results showed that learners: were highly participative and motivated to learn, enjoyed the learning experience, felt more confident; felt it boosted understanding and cooperation. Most learners self-reported that their learning experience was positive: "fantastic", "exciting" (85%); and all (100%) were keen to do it again. Further areas of research are considered.

Key words: *empowerment; Best Mates; component concepts; deconstruct; reconstruct; concept linking; cooperative learning.*

1.0 INTRODUCTION: Why boots?

To understand the problem, here is a simple scenario. Imagine a football team who are about to engage in a league match season. They are all dressed up in their colourful gear, only there is one problem: all the boots are oversized. They try to exercise with them and it is near impossible. They cannot even begin to think of how they would use such boots to play against any opponent. The coach gives them pep talk and boosts their morale, including the promise of doubling their wages. There is only one look on their faces that says: we cannot use these boots! There are two choices - to change the boots or give their feet extra padding, in order to make it work for them. But with a game in hand and no chance of changing the boots, they have to wear them and play. So the coach decides that the better way out of their predicament is to try the 'padding' solution. This is what this project is trying to do.

This project is about a problematic situation not in football, but in learning, in which there is a *misfit* between learners' ability and the sizes of the "boots" (course demands) they must wear in order to achieve on the course. This study was carried out in a further education college. The aim was to find ways of enabling low-attaining learners to learn better and achieve more on their vocational course.

1.1 Background – learning perspectives

My initial idea in September 2012 was to explore and devise the all-effective activity that would improve my chances of getting Grade 1 in class observations. However, further thought indicated a better way to get the grade: empower learners to learn better.

1.1.1 The Big Boots

> The vocational course of interest is called BTEC Level 3 Extended Diploma in IT, comprising 18 units studied over two years and under the Qualifications and Curriculum Framework (QCF), is equivalent to 3 A Levels. There are other variants such as the 12 unit, 9 unit and 6 unit courses that lead to 2, 1.5 and 1 A level equivalents, respectively. The Extended Diploma has practical and hands-on units, but there is much more theory and technical knowledge with much greater complexity than at lower levels. Besides, it is the next stepping stone to higher education, where demand for quality, good written and verbal communications skills is the norm.

Generally, in this college setting, the prevalent teaching method for theory and some technical subject matter was by direct instruction which involved more or less slide presentations – featuring whole class teaching. Practical demonstrations, individual research and elements of group work including the use of the internet are also used, but to a lesser extent. There is also a prominent use of the VLE (Moodle) as in many schools and colleges.

1.1.2 The Small Feet

Entry requirements for the BTEC course are grouped into two routes: full GCSE and Level 2 vocational qualifications. The former is 4 A*-C grades at GCSE including Maths and English and the latter is a combination of some GCSEs and primarily a Level 2 qualification in IT, which is usually the vocational BTEC First Diploma. Increasingly, less and less entrants on the 18-unit course use the GCSE route, while the preferred route has become increasingly the alternative.

It is important to explain that with the level 2 qualifications, there is no prerequisite to pass English at Grade C or equivalent. This is because the emphasis is on meeting vocational criteria in an IT subject area, first at BTEC Intro (Level 1) and proceeding to Level 2, as a means of progression which the funding agencies demand. Thus, candidates coming into the Level 3 programmes do not have to have GCSE

qualifications to become eligible for entry, even though they may have obtained Merits and Distinctions at Level 2.

As for learners, some elements of low attainment include: not having the right level of English language skills on entry hence learners find it very difficult to achieve a Pass grade on first or second referral; lack of independent learning ability - always asking for help on simple concepts; poor quality of work often due to a prevalent tendency to merely 'cut and paste' material from other sources, especially online; thesaurus 'abuse' and too many referrals that increased workload further for them and staff.

This situation has implications for course-readiness and how this affects their ability to achieve the target qualification. This is especially so when the flavour of the course shifts towards harder and more complex technical and theory work; in writing up assignments at a higher level as they prepare to progress to higher education or fitting jobs. There is also an element of self-deception among learners who think that their vocational Merits and Distinctions at lower levels mean that they are very good learners and so, hope to sail through smoothly when learning becomes more complex, demanding higher cognitive skills. The result is shock and deflation when they realise that they lack the necessary skills. This can lead to disappointment; de-motivation and discontinuation (drop out) of the course whose domino effect begins with poor quality work output, frustration, poor punctuality and poor attendance.

1.13 The Padding

At this point, a raft of interventions, now common in colleges, is then thrown into the white waters full of struggling learners in various forms including: additional Learning Support facilities, counselling, academic mentoring, and remedial courses in English and Maths (functional skills), etc. Sometimes, these post-traumatic interventions are successful *when* introduced in time. At other times, and with resource constraints, such learners would limp through the first year with trailing uncompleted units, including failing to achieve the key skills or functional skills or, pass GCSE resits. They are then wheeled through the second year, coming out with a piece of paper that certifies that the holder has been through FE. Actually, it has been a journey that he/she was ill-prepared for and could not acquire the target skills that the qualification was designed to provide within the relatively short time allowed. In my experience, some even go on to higher education but eventually drop out of the course before the end of the first year.

Clearly, we need more fine-grained early intervention, the sort of which can only happen in the classroom right from the start. Obviously, it would be nice if all learners were confirmed to possess the right skills before they came on the course, but that would be asking too much in the current political and economic climate. Like one OSTED trainer once told us during a staff development programme, "…deal with it!" So, like the manager with a team of footballers wearing oversized boots, practitioners must seek not the chance of changing the course (boots) – at least not immediately – but doing what we can and think of creative or innovative ways to enable our systemically disadvantaged learners to learn better and achieve their cognitive goals. This project has been conceived to contribute to conversations about how we can make big boots and small feet work well.

2.0 LITERATURE REVIEW

The problem under investigation is that of how to empower learners to become more effective learners. It seems appropriate to review how people learn and hope to find some theory that would help us achieve empowerment of learners. We would need to define *how* we learn and *what* we learn. We would examine the reasons why they need to be empowered. A challenge is to find out how to measure success of an intervention that claims to empower learners. These issues can be resolved by looking at the literature.

2.1 How we learn

As the table shows below, learning can take place in different ways. However, some approaches are more effective than others. To empower learners, we must seek to lean towards the more effective learning strategies. The literature shows, according to Pollard (2008) that there are three most influential theories of learning, such as behaviourism, cognitivism and social constructivism. Briefly, behaviourism is characterised by learners following the teacher's instructions and the teacher's job is to transmit knowledge and skills. The learner on the other hand is expected to respond favourably if learning is to take place. Behaviourism has influenced what is usually referred to as "traditional" teaching methods such as whole-class, subject-based teaching. This approach draws a lot of criticism among which are that it encourages passive learning, is inflexible to adapt to the needs of different learners hence offers poor differentiation opportunities. This type of thinking is linked to theorists such as Thorndike (1911) and Skinner (1968).

A comparative overview of three theories of education/learning			
		(adapted from Pollard2008 p 182 LN 30-11-11)	
	Behaviourism	**Cognitivism**	**Social Constructivism**
Image of learner	• Passively learns correct response • Focus on the individual • Extrinsically motivated	• Actively builds understanding • Focus on the individual • Intrinsically motivated	• Collaboratively builds understanding through dialogue • Focus on working together • Socially motivated
Characteristics of teaching	• Teacher transmits knowledge and skills • Learning depends on teaching and systematic reinforcement of correct behaviour	• Teachers give learners individual opportunities to build their understanding of the topic. • Sets problems to solve • Real life examples	• Teacher plans activities that allow learners to gradually build understanding through experience interaction and adult support
Characteristics of learning	• Students follow teacher's instructions • Students respond in the desired way	• Building knowledge of the topic by solving problems • Learning can be independent of teacher	• Group discussion, problem solving and feedback
Examples of T&L methods & resources	• Recall of names • Simple motor skills • multiple choice test • lower levels of Bloom	• note taking, reading, evaluating information and justifying decisions made • Essay writing (compare & contrast...) • Higher level Bloom	• Group discussion • Group activities • Paired mind mapping • Higher level of Bloom
Strengths of the model	• Easy to plan and administer • Focus on clear targets • Progress easy to monitor • Can be fast and efficient way to learn	• Makes links between everyday life and classroom • Motivates learners through links to everyday life • Builds understanding on the experience of learners • Individual student's deep learning can be assessed	• Learning comes through interdependence of teacher and students • Encourages collaboration and language development • Clarify thinking and extend understanding • Supports differentiation
Weaknesses of the model	• Risk of superficial learning • Difficult to adapt Teaching & learning to meet the varied needs of students • Motivation seen in terms of	• Planning and managing learning challenging • Significant resource and organisational implications • Management of classroom can	• Harder to assess the deeper learning of individual learners • Planning and managing learning challenging • Students may need preparing

	reward systems	dominates teachers time • Requires the active participation of learners	to fully participate in these activities (learning to learn)
Major theorists	• Watson • Skinner	• Dewey • Bruner • Ausubel	• Vygotsky ZPD • P4C (Lipman) • Lave & Wenger

Table 1 Learning Theories - tabulated by Lawrence

The cognitivist thinker sees learning in a different light. Learning is seen to be more effective if the individual learner is intrinsically motivated hence teaching and learning should focus on the individual. One of the great strengths of this approach to learning is that it actively builds on understanding of what is being taught. Rather than follow the teacher, there is more opportunity on the part of the learner to build on understanding instead of swallow whatever is offered without internal processing. The process of achieving this level of understanding is through problem solving and direct interaction with the subject matter with a strong element of independent learning. By contrast, the behaviourist learner depends on the teacher for what he/she hands out, and does not get to directly interact with the learning in a way that builds his/her understanding. Constructivism, despite its strengths, also draws some criticisms such as the extra planning and management that are required to enable individual learning needs to be catered for; the need for high level cooperation of the learners and the risk that it could easily become counter-productive if there are insufficient resources and learner motivation. The most well-known constructivist thinkers are Dewey (1933) and Bruner (1986).

Finally, there is the social constructivist line of thought that sees learning as something that is most effective when there is collaboration and cooperation with someone else. As such, learning is a social activity. By comparison, behaviourist and constructivist learning is more of what an individual can do, favourably following the teacher or being more active and problem-solving. Social constructivism thrives on teaching and learning approaches that encourage group work, discussion and peer interaction for the purpose of learning. Transmission of knowledge and skills is down to the social interaction that takes place during the learning process as learners learn from each other. This interaction is not limited to learners only but also the teacher who provides almost real-time and integrated feedback as the group works on a task, for instance. The result is perhaps the strongest point that recommends this theory, and that is, that it offers opportunity for learners to extend their understanding. This is in direct contrast to the other theories that have little or no element of interdependence or interaction. The proponents of this approach to teaching and learning are Vigotsky (1962, 1978), Lipman (1980) and Lave and Wenger (1999).

However, like the other theories, social constructivism also draws certain criticisms. These include: difficulty to assess that deep learning has actually taken place during the interactions that occur say, during a group discussion. Planning and managing the learning process is more challenging, meaning that more time and resources would be required to make it work effectively. Besides, learner participation is central to its success and this may require that learners be trained or pre-conditioned before a social constructivist intervention can be applied with success.

2.2 What is knowledge?

This is a pertinent question to ask, if we are to empower learners to be more effective. Empowering learners requires a conceptual framework of knowledge upon which to build an intervention. What constitutes knowledge? What is lacking or inadequate in the low ability learners that we need to offer them so they can learn better? To answer these questions, we consider the natural way we learn and what we refer to as knowledge.

When we look at the world around us and what we know about it, we can say that one's knowledge of a topic can is actually an intelligent network of connected ideas or concepts that make meaning when all the nodes or concepts are accurately connected. These concepts and their associations or connections are, therefore, the building blocks of knowledge. Thus knowledge takes place when a learner knows certain concepts or skills and can *connect* or link them correctly. Another perspective for consideration is that these concepts are embodied in the way we use language to express knowledge. The combination of concepts, their links with other concepts and the language to express them, is crucial for learning. This means that knowledge will be retained more if the learner understands and acquires these building blocks in increasing amounts and is able to link concepts regarding any topic. This brings us to the idea of mind mapping which mimics the natural way we learn about the world.

2.3 Mind Mapping

This is a way of generating ideas about a topic. According to Rustler (2012, p1), mind mapping is a visual technique for structuring and organising thoughts and ideas. Tony Buzan often regarded as the inventor of the technique, states that "mind mapping replicates the way our brains think and the way we absorb information", (Rustler 2012, p xvii). Whilst it is mostly used as a brain-storming exercise, mind mapping represents the way any type of knowledge is connected together in a logical manner. A variant of mind mapping is concept mapping.

The way mind mapping is used requires learning to occur top-down, from the general to the more specific. It allows a big idea to be decomposed into sub-ideas or sub-concepts with increasing detail. Mind mapping uses images and drawing of lines to attach secondary and tertiary ideas (lines) to the main idea. (Dunket and Tatarkowski, 2005; *http://www.mindmapping.com/mind-mapping-in-education.php*. Mind mapping can be done in a group or individually hence it fits in with the constructivist and social constructivist theories.

Therefore, the concept linking process will help the learner eventually in their journey towards becoming 'experts' in gathering knowledge-blocks and connecting them together. It means that eventually, they will become more confident and independent learners. Concept linking is similar to the idea of mind mapping although the latter

3.0 EXPLORING EMPOWERMENT

Empowering learners involve enabling learners to do what they could not normally do, especially in different learning situations. This occurs at several levels. This section reflects on what I have observed as a practitioner in an FE college. Current practice indicates that this empowerment could be through individual support on a 1-to-1 basis; peer support or group work including individual support and group approaches. This is based on the belief that ability is not a permanent state. For example, Weatherly (1996) states that: "the notion of "ability" itself, as some all-defining, permanent attribute of a person, is strongly challenged by much recent work."

The goal of empowerment is to make learners autonomous or independent learners. As Weatherly argues:

> "Learning experiences should enable children to become autonomous individuals. "Autonomous" is defined as "articulate, knowledgeable, purposeful, responsible, skilled, self-disciplined, self-motivated,

self-reliant, and able to co-operate effectively with others". Autonomy is most likely to develop through activities such as co-operative learning; the promotion of thinking and learning skills."

3.1 Individual empowerment

In my professional practice, I find that the use of teaching assistants (TA) in the classroom, additional learning support, say in the library, is common in colleges of this type. However, the effectiveness of this approach is not established in literature. From experience, in-class support by TAs is mainly given to those who have special needs such as autism and dyslexia. One of the constraints in in-class support for other students who are struggling is that often the TAs are not familiar with the subject area, so their support is, I would argue, shallow. On the other hand, there is the feeling that some of the learners can become even lazier, especially when support includes taking notes for the learner. Its impact on learner success is therefore diminished, if not counterproductive.

3.2 Whole group support

The type of empowerment alluded to earlier is the provision of remedial studies in English and Maths, to enable groups of learners achieve the qualifications which they failed to get during their secondary education. Chief in this strategy is the provision of key skills, now Functional Skills, in English and Maths. There are also GCSE English and Maths resits. Both Functional Skills and GCSE resits are meant to be studied during the first and second year alongside their main BTEC course. This amounts to a heavier workload for learners who in themselves are already vulnerable. Besides, the amount of time allocated for these remedial courses is very short – often only about one hour to one and a half hour, once a week. Therefore, the effectiveness of this type of intervention on improving the chances of success among low attaining learners is once again, questionable.

3.3 Collaborative and cooperative empowerment

In classroom teaching, group work can help enhance learning. The key drivers are the elements of collaboration and cooperation that must occur in it and how these impact the individual learner's success when they working together in small groups. There is no doubt that groups, if well constituted and organised, can create a safe environment for learning: where social talk progresses into academic talk; friendly and supportive, allowing learners to make mistakes and learn from them; a place of discussion – speaking and listening to each other. (Swan, 2005; Pollard, 2008). According to Johnson, Johnson & Holubec (2008), Smith and MacGregor (1992) cooperative learning enables students to work together to maximize their own and each other's learning.

On the other hand, groups may not always produce good results as Chiu (2004) points out. Groups may provide a friendly atmosphere but this depends upon many factors including individual personalities, perceptions of other people, ethnic or racial background, etc. Get the balance and focus wrong, and it becomes a disaster and counterproductive. Thus, the benefits of group empowerment strategies can only be realised with careful planning and management.

3.4 Impact of Teaching methods

The purpose of this research is to find ways to help low attaining learners to learn better. In seeking a viable solution, the first aspect to look at is the method of delivery. Teaching can take place in different ways. One popular way is direct instruction. According to Pollard (2008:373), this involves the teacher providing information on the learning matter while the learners mainly listen and make notes. In colleges, this tends to be a prevalent method especially in non-practical, technical or theoretical subject

areas. One research by Malcolm Swan (2006, p236) argued that when used in areas such as Mathematics, it is not effective:

> "… the teaching of retake GCSE maths is predominantly teacher-centred and transmission-oriented. This paper argues that this approach is ineffective for students' learning and for their attitudes towards learning and that a student-centred, collaborative approach to learning, where discussion and reflection are central, can prove more effective in developing students' understanding of and attitudes towards mathematics."(Swan, 2006:p229 - Abstract)

Clearly, there is a tension between teacher-centred or transmission-oriented learning and student-centred learning processes. This research finding is central to the work that is reported in this project because this appears to be part of the problem that is being investigated in my project. Learners do not seem to have benefited enough from the direct instruction approaches that have been used during the course. Direct instruction is criticised for creating an atmosphere of passive learning, where learners do not really interact actively with the subject being taught. What Swan (2006) is advocating for Maths retakes is to have a more active involvement of learners in the material that is being learned. This is how he explains the basis of the resource that was developed in his research to enhance learning:

> "The theoretical principles underpinning the design of the resources are described
> fully in Swan (2005). They may be summarized as follows:
> - lessons are conducted in supportive social contexts;
> - lessons consist of rich, challenging tasks;
> - students are encouraged to make mistakes and learn from them;
> - teaching emphasizes methods and reasons rather than just answers;
> - students create links between mathematical topics;
> - the purpose of each lesson is communicated clearly to students;
> - appropriate use is made of technology.
> The intention was to show teachers generic approaches for fostering collaborative
> cultures within their classes."(Swan, 2006:231)

Another factor that could empower learners, mentioned above is creating a ***supportive environment*** to learn. Weatherly (1996) argued that creating a supportive learning environment and reducing stress is essential to learning. He states, "School and classroom ethos should minimise stress and promote self-esteem. Stress is the arch-enemy of effective learning. Many causes of children's stress lie [within] the control of schools … to create supportive learning environments." Studies have shown that part of this can occur in group work and of course, in the whole class as well as the whole college. Wherever it occurs, a supportive environment will certainly empower learners.

Prince (2004) reviewing the effectiveness of active learning, defines it as "any instructional method that engages students in the learning process". Active learning requires students to do meaningful learning activities and think about what they are doing (Bronswell and Eisson, 1991). Again the elements of collaboration and cooperation are unmistakable.

However, it is also to be noted that where there is a pressure to "push through as much material as possible in a given session" (Prince, 2004) collaborative learning may take too much time. Such is often the situation in BTEC Level 3 Extended Diploma programme where 18 units have to be delivered in 72 weeks (two years). Sometimes, timetabling versus rooming issues mean that sufficient time is not available to instruction. The pace of group activity may be slowed down by some negative group dynamics making it impossible to cover the required material within the time frame.

Nevertheless, the need to try out other methods that have been found to create successful learning environments is inescapable. From the literature, it is clear that the type of solution that would

empower these learners in this project should include collaboration and cooperative learning. These were the theoretical considerations that led to the development of the technique described below in this report.

3.5 How do we assess what empowerment has occurred?

According to Prince (2004) reviewing engineering education issues, it is difficult to assess conclusively the effectiveness of an intervention. Norman and Schmidt (2000) discussing problem-based learning concluded that just as every instructional method consists of more than one element, it also affects more than one learning outcome.

As with Prince (2004), when asking whether empowerment has occurred or how effective an intervention has been, he suggests that the broad range of outcomes should be considered such as:
- measures of factual knowledge
- relevant skills and student attitudes
- and broader issues such as student retention (and we would add attendance and punctuality)

Prince bemoans the fact that "solid data on how an instructional method impacts all of these learning outcomes is often not available, making comprehensive assessment difficult. In addition, where data on multiple learning outcomes exists it can include mixed results." This should be noted when evaluating the results of my project.

Nevertheless, Swan (2006) reports that his intervention was not that effective in terms of the outcomes he used. He explains that while learners seemed to engage more than they would in traditional transmission-oriented learning, this did not translate into a great amount of improved grades or interest in the subject of Mathematics. In effect, we concur with Prince (2004) that unless there are agreed criteria on which to base judgements, it is difficult to measure the impact of the an instructional method. Thus the question we must ask is what is learning for? If it is to pass examinations, then effectiveness or performance has to be the improved grade levels. But as Fielding ( ) cited in Coffield (2010) states, colleges of further education would then become "colleges of further examinations"!

3.6 What do I expect?

All things taken together, I do expect my project to have some impact in the classroom learning environment in terms of:
- supportive learning (SL),
- time on task (TOT) - Chiu(2004);
- less of teacher intervention (TI) - Chiu(2004);
- more individual participation (IP); and
- Overall less assignment referrals (AR).

4.0 METHODOLOGY

As explained in the previous paragraph, the aim of this study is to find ways to empower the low attaining learners to learn better. To address this issue, I analysed the problems that were symptomatic of the difficulties of the learners. I came to the conclusion that the root of the tendency to cut and paste raw material into their assignments and fail to meet the criteria was embedded in a combination of two factors: lack of language skills and misunderstanding of concepts. Of course, it could also be due to sheer laziness on the part of learners. However, conversations with them convinced me that they were working very hard, though not sharp, at their studies. It was clear that a 'padding' solution should focus on breaking down concepts further than direct instruction alone would allow. This approach would have

to involve learners - thinking, talking, selecting, discussing and making decisions about each concept in a body of knowledge or subject matter. I describe below how I developed a technique which I hoped would help learners to learn better, *in addition* to whatever other interventions they may be using already.

4.1 Defining Low Attaining Learners

As a first step, it was necessary to define what low attainment. This is not water-tight, but should be seen as a rough categorisation of the target learners for the study. Therefore, for the purpose of this project, a learner has a low 'attainment potential' if the learner is does not have full GCSE requirements. Most of the learners had low English language skills according to their initial assessment and GCSE results. The GCSE grades in English Language were mostly D and below. The alternative qualifications were mostly Level 1 in Adult Literacy; Entry Level 2 and 3 – which are below Level 1.

This means being unable, or finding it difficult at Level 3, to use correct terminology or concepts, grammar, punctuation, meaningful phrases and sentences that are relevant to the subject matter. This means they cannot read for comprehension as they cannot associate correct meaning with concepts or the relationships between these and other concepts in the make-up of a topic of learning. They would frequently copy and paste often large portions of raw text into their work even though it is irrelevant and are not able to recognise the different concepts in a passage in relation to the task. Commonly, they would use the *thesaurus* in MS Word to *substitute* similes for the author's original words and then claim that they had used their "own words". This is what I call *thesaurus abuse.* They are unaware of their errors in written work even after several explanations. Of course, it could be argued that, in this last point, it could be the teacher's fault; so it is not to be assumed that it is *always* the learner's difficulty. Many of these problems arise when learners use the internet and other online sources such as the VLE for their assignments. Overall, a LAL learner would struggle with assignments, fail to achieve a Pass until after several referrals. This is why I thought that a different approach from pure direct instruction might work.

4.2 Selecting learners for the study

The next step was to identify those who should be involved in this study. Four groups of Extended Diploma learners exist: two of first years and two of second years. Altogether, there were about 70 Level 3 learners. For several reasons of constraints on the project, the numerical data used for this report is based mainly on the responses of one first year group of 16 only. This gives a 23% sample. However, all four groups provided me with interesting insights into the problem under investigation. Finally, while the focus was on Level 3 learners on a BTEC course, aspects of my study covered ten first year HND learners whom also gave me useful insight into the impact of concept linking strategy on learning.

4.3 Devising "Best Mates": my conceptual journey

as pointed out above, this technique grew out of the consideration that every subject of learning is a combination of different concepts that are linked to each other in a way that gives it meaning; 'meaning' which the learner has to understand. This understanding translates into better application of the concepts in written assignments thereby achieving the objectives of the learning process - the reason for the lesson.

The idea is that if the subject matter is *decomposed* into appropriate component *concepts* and clearly presented, this makes the learner able to learn them more effectively, when the learner reconstitutes the subject matter. Gaps in knowledge occur because the learner has not grasped the crucial component concepts and cannot yet see the association between them so that learning occurs. Clearly, it is not possible to evaluate what one has not understood. Thus, deep thinking is also not possible when a learner has not yet grasped the concepts in the subject matter.

This thought led me to consider that learning can be seen as a process of decomposing or deconstructing and then reconstructing concepts in our minds about the world around us. Thus, it is arguable that the degree of learning that has taken place can be ascertained by how accurately a subject matter is reconstructed in the *learner's mind*, using its *component* concepts when these are applied to new situations. We can observe this at the end of a learning session (lesson) as an assessment outcome. It can also be used as a rough measure of the impact of the learning session on the learner. In other words, if the learner can *reconstruct* the subject matter accurately, not merely recall it, then learning has taken place to a high degree.

4.4 Critique – is this not pure memory regurgitation?

What this approach tried to achieve may be criticised as nothing but pure memory regurgitation in which no real cognitive thinking was taking place. However, this is not true. The process of deconstruction and concept reconstruction is much more than that because Best Mates enables learners to question one another's thinking, ask questions, think about not just the words/terms on the card but also the associations between them. This process is not complete until the learner can accurately reconstruct the original meaning of the learning material in a way that meets the objectives of the learning session. Thus, it stimulates more thinking and understanding, and the development of problem solving skills, especially when carried out in a group situation. This is in line with social constructivism, in terms of learning theories that were discussed above.

In the next section, I present details my working definition of concept-linking in the context of a group learning.

The group of learners

4.5 Ethical considerations

In compliance with BERA (2013) guidelines, student participation was fully optional. For safeguarding and anonymity purposes, learners were instructed to omit their names or student ID. They were briefed on the nature and purpose of the research activity when they took part. They were not coerced into completing the questionnaires and their views were respected. All interaction with the learners was in accordance with normal existing college procedures and guidelines, without prejudice due to gender, sexuality, race, ethnicity, cultural diversity of disability. Photos were taken by learners to celebrate their achievement and will not be used for any other purpose than for this report. I have taken a disinterested approach to the research design, analysis and interpretation of the results. In terms of reliability, the validity of the results and analysis techniques and the inferences to be drawn from the findings, must be evaluated in view of the fact that it is a small group study and there is no more to it than that.

4.6 Description of the technique: Making 'Best Mates' Connections

Here is an overview of the technique of linking or *connecting* concepts with each other as in a word-chain. 'Best mates' are the concepts that are accurately located cognitively within the body of knowledge.

4.6.1 Preparation

First, I taught the subject matter in the unit using direct instruction – as in normal presentation and explanation. When completed, I made a comprehensive list of all the concepts, keywords and other terms that constitute the subject matter. I cut these up into strips of paper or cards. I shuffled them extensively to hide any obvious connections. I put them into packs of say, five cards to be given to each group of learners. Each group normally have the same subject matter to allow for peer assessment by other groups of the finished product.

4.6.2 Activity

I divided the class into groups – often 3 or 4, (group size should depend on the size of the class). Each group appointed a leader and chose a colour with which to mark their cards using a marker pen. In each group, members would look through the strips in their hand, state the meaning of the concept and they agree together what each strip says and what other concepts it may relate to. Once decided, the group would place the strip on the table for reconstructing the subject matter. They should do this until they have placed all the cards given to them in the right sequence and in relation to other concepts.

When they have completed this part of the task, the learners would take their cards to a central point where the whole subject matter comes together – the main concepts were displayed in an A4 paper. Here each group of learners try to match their concepts with the main topic by placing the cards around the 'best mate' - the correct one. Team leaders must ensure that their group's cards are placed with the best mates.

4.6.3 Assessment Tour

After each group has finished, peers (group leaders) and I carried out the assessment tour. Each group's work is examined and judgement made about its accuracy. The aim of this tour is to check that the right card is placed by the right 'best mates'. Any card that appears to be in the wrong place is queried by any learner or teacher. The cards are colour-coded for each group. If the group who placed the card can defend its decision successfully, it scores a point (plus sign), but the challenger loses a point (minus sign). Otherwise, the challenger scores a point (plus sign) and the group that got it wrong loses a point (minus sign).

Example: *Group A challenges a card that Group B placed. Group A defends it. Teacher agrees with Group A. Group A scores 1 point for successful defence. But Group B scores no point. Group C challenges Group D's card as being in the wrong place. Group D clearly made a mistake, as they are unable to defend it. Teacher agrees. Group C scores 1 point for a successful challenge. Group D loses 1 point for wrongly placing the card.*

This process of **peer checking** and **challenging** continues until everyone is satisfied (and teacher too!) that there are no longer any wrong 'mates' around the key concepts. The final state of the cards is as shown in the pictures below.

4.6.4 Who is the winner?

The points scored by each team are recorded on a score board. The points are summed up for each group. Minus points are subtracted from the plus points. The winner is the group that has the highest plus points. Also, since 0 (zero) is greater than -1, the group with zero wins if all other groups have got minus points in total.

Photos below show a session of finding best mates.

4.7 Data Collection

4.7.1 Document observation and analysis:

I carried out a simple inspection of the learners' assignments and noted the quality of the work produced in terms of the type and frequency of teacher intervention in the written work shown by the markings on the piece of work. Generally, markings were used to show: wrong use of words, cut and paste, grammar error and misconceptions; or inaccurate evidence due to wrong facts in it. I did not record any statistics as I only wanted to have an impression of the degree of low attainment among the groups of students selected for the study.

4.7.2 Questionnaires:

4.7.2.1 Functional skills questionnaire: To buttress this general inspection, I designed a questionnaire to survey a group of 11 first year students on the BTEC Level 3 course who were taking Functional Skills and GCSE classes. The blank questionnaire is in *Appendix 2b.* I wanted to find out how they perceived these remedial courses in terms of the amount of benefit they were getting that would help them on their main course. There was a question as to what sort of mistakes they were getting in their assignment referrals. Most of them felt it was mainly grammatical. However, in reality it was more than that grammar since their low language skills also drive down their ability to understand the language of the texts that they are given to read or the tasks they were set for their assignments.

Altogether, the general impression was that the learners had many corrections to do in each referral and many did not achieve the Pass grade in the first hand in or after the first referral.

4.7.2.2 Post-Best Mates trial questionnaire: I designed this for learners to record their perception of the Best Mates activity. They were instructed to complete it anonymously. The blank schedule is in *Appendix 2a*. It contained both closed and open questions, enabling the learners to express themselves. It had sixteen questions; one or two were repeated in a different way to check the answer given was as intended. The questionnaire was distributed in class and they were instructed opt out if they wished and that it was not compulsory.

Here are some of the questions asked:

Q1 What did you think of the activity?

Q2 What part of the activity did you enjoy most?

Q7 What was good about it (your group)?

Q10 Would you like to do this activity again?

Q11 In what way did this activity make you learn better?

The tabulated data is shown in Appendix 4.

5.0 RESULTS OF TRIALS USING BEST MATES

5.1 Positive

Most students enjoyed this activity very much. All the students thought that it helped them to remember what they had learned and filled some gaps in their knowledge. They particularly enjoyed the discussion or debates that ensued throughout the process of identifying the "best mates" of the cards that they held. It stimulated a lot of interest and all of them would like to do the activity again. Got everyone engaged and asking useful questions, even those who would normally not say anything! One student said, "I really liked it because you were also working with us together and it was fun!"

Here is the summary of benefits I found:

- stimulated a lot of discussion/debates;
- encouraged cooperative learning
- enhanced individual learning and understanding;
- generated fun and enjoyment of learning.
- engaged everyone (participation) because it enabled:
  - handling,
  - reading,
  - questioning,
  - searching, and
  - reading without being self-conscious of it.
- Learners do the work of learning, teacher guides and supports them.
- It also helped develop group skills and
- fostered a healthy sense of competition for knowledge among groups.

Charts

The data was analysed and charts were produced to illustrate the findings. These are presented in the following pages.

5.1.1 Most students (85%) appeared **_very_** positive about the game: (Fig1 – Overview.)

Activity Overall Perception (Q1)

- Just OK 15%
- Great 23%
- Fantastic 39%
- Exciting 23%
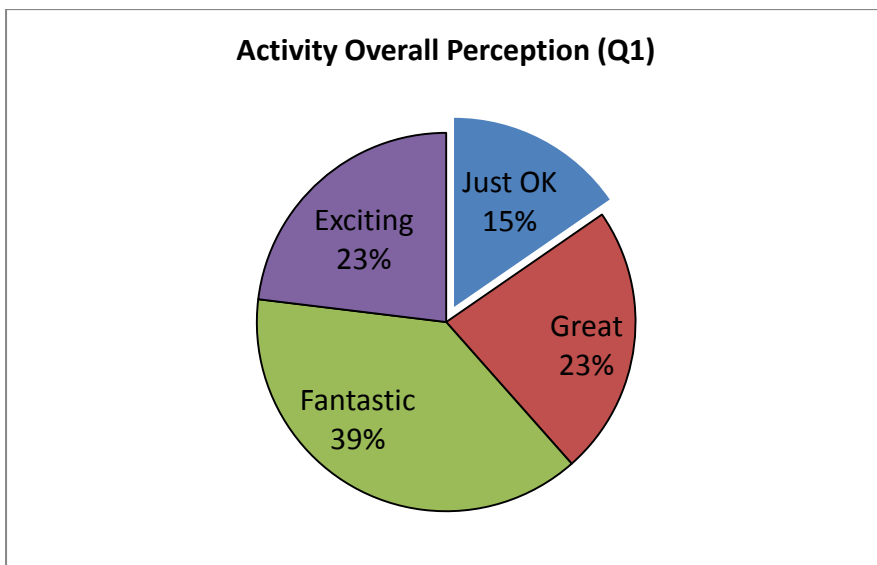
Figure 1 – Overall perception of the activity.

5.1.2 What was good about Group work (Q7)? The learners enjoyed working in groups. (Fig2)

What was good about group work (Q7)

- More confidence 10%
- Working with new people 10%
- Listening to each other 10%
- sharing ideas 70%
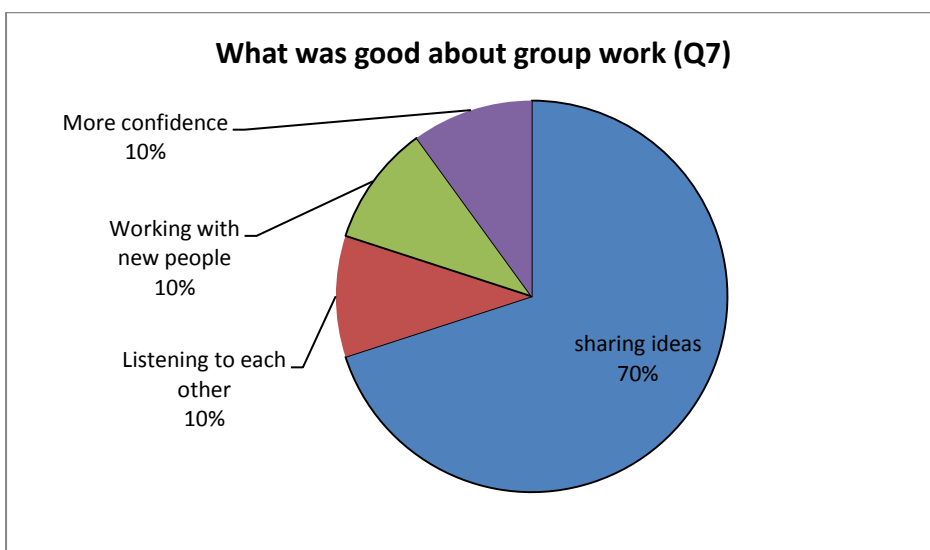
Figure 2: What learners felt was good about group work.

This chart shows that discussion was a positive experience for a significant number of learners. This supports the literature on cooperative learning, creating supportive learning environments in the classroom. (Swan, 2005, 2006; Weatherly, 1996; Prince, 2004; Pollard, 2008). For this group of learners, it is important that listening to each other, working with new people and having more confidence were mentioned. The group is comprised of different ethnic groupings.

5.1.3 Effect on learners was also quite positive (Q16). It enabled them to gain better understanding as well as recalling knowledge. This amounts to consolidation of learning. Research shows that content retention was higher in group activities where cooperative learning had occurred, so it is no surprise.

Effect of the activity on learners: self-reporting (Q16)

- Better understanding 27%
- Reminded me 73%
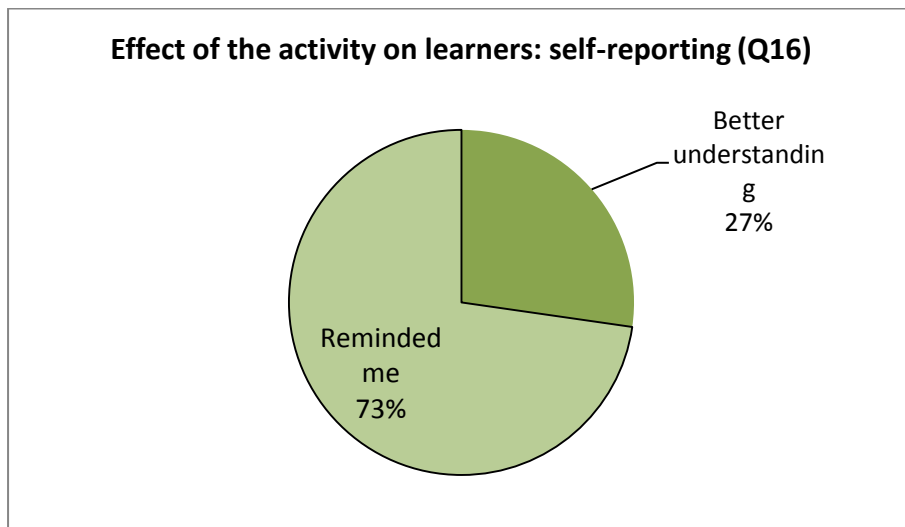
Figure 3: How learners felt that the activity had helped them.

5.1.4 How much did they enjoy the activity? Scored out of 10, this clearly showed that all of them (100%) enjoyed it. Enjoyment of learning is part of the Every Child Matters (ECM) principles.

Enjoyment of the activity - scores out of 10 (Q12)

- seven 27%
- Eight 18%
- Ten 55%
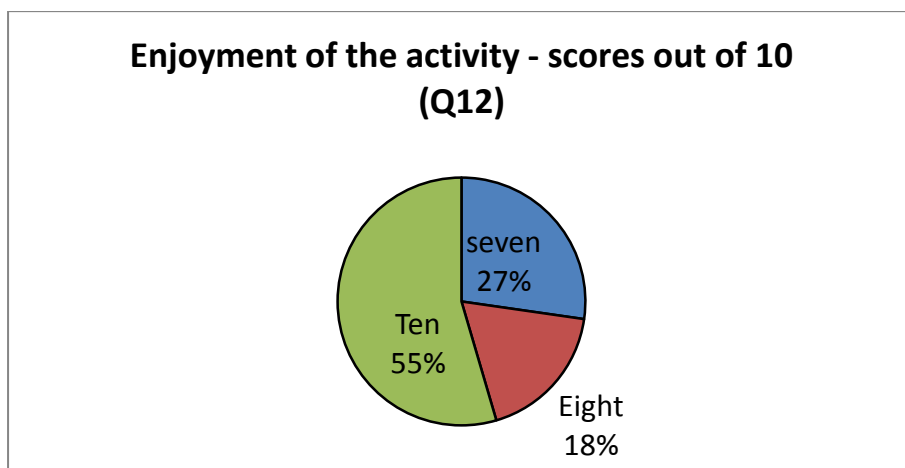
Figure 4 Enjoyment of learning

How they learned better… this question was designed to elicit their own perception or assessment of the benefit or impact of the activity on their own learning. Learners can tell whether they learned something or not; hence a self-reporting method was used here. Self-reporting was used also in Swan (2006).

How they learned better, Q11

Figure 5 How they perceived their experience helped them to learn

With this last chart, we can see that the use of concept linking has had some impact on the learners. However, there are challenges to be dealt with, as with any instructional method. Section 4.2 briefly covers some of these challenges.
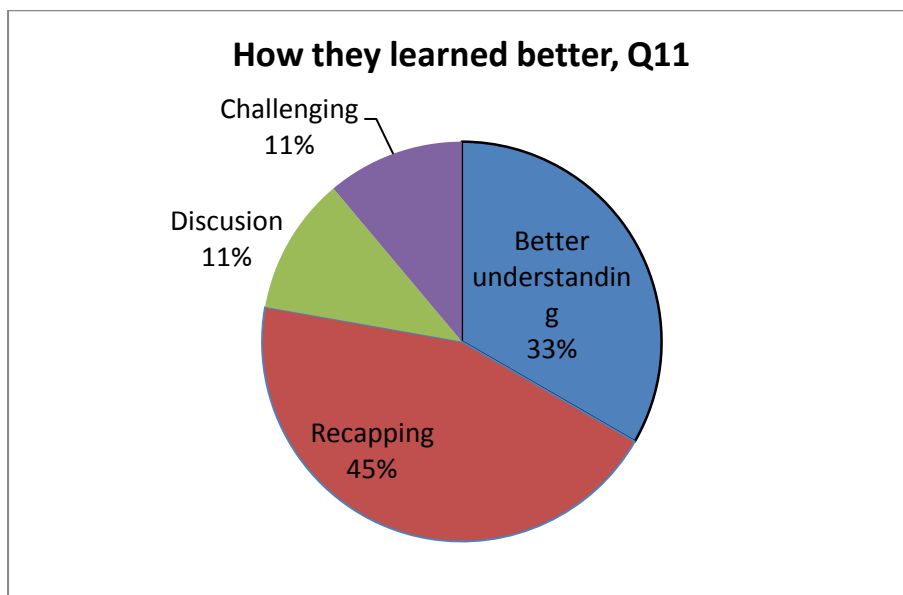
5.2 Challenges

Careful *preparation* is necessary. (For full description see Appendix 3). The process starts with direct instruction followed by decomposition or deconstruction of the topic into main and sub concepts. Concepts are typed up on A4 sheets and cut into strips. Put strips into packs. This should be done before direct instruction. Packs must be prepared according to the number of groups; plus extra for those who finish early.

Careful *implementation* is also necessary. Teacher intervention (TI) may become necessary in new groups as debates may become very intense. This also depends upon the choice of team members – a good mix of quiet and chatty personalities is required. Also, it could become a bit rowdy especially during the inspection tour of what all the groups have done and TI may be inevitable. Watch out for those who may switch the cards of a rival group to gain an advantage over them. (It happened). Hefty penalties would normally calm down this type of behaviour. (I was merciless!)

Finally, how do I *convince colleagues* that it is a brilliant experience especially, if one is satisfied by happy, learners who are beaming with pride and accomplishment at the end of the lesson? Earlier attempts at joint practice development (JPD) did not germinate, like seeds that fell by the wayside. It is hoped that with more trials and positive feedback from learners, I will be able to get colleagues interested. I should also find a way of simplifying the preparation – so that there would be no need for cutting strips of paper all the time. I may volunteer to help colleagues decompose their learning material; but where is the time? (Fielding, 2005)

Concept linking is similar to mind mapping and there are some software for mind mapping such as *NovaMind* and *iMindMap*. How can these be evaluated for their suitability for consolidating knowledge

as in BestMates? I have just begun to explore the *NovaMind* literature encouraged by my project findings.

5.3 Concept linking process

The concept linking process was hoped to help the learner eventually in their journey towards becoming 'experts' in gathering knowledge-blocks and connecting them together. Working in groups as some learners have done in this study, it has potential to empower them eventually, to become more confident and autonomous learners as Weatherly (1996) called for.

While concept linking is similar to the idea of mind mapping, it should be noted that mind mapping as a technique has often been used as a tool for *gathering* ideas, normally not for *consolidating* learning (Duckett and Tatarkowski, 2005); also, *http://www.mindmapping.com/mind-mapping-in-education.php*. The approaches are different as they inherently proceed from different perspectives. Having said that, concept linking can also be referred to as concept mapping (Pollard, 2008) and according to Rustler (2012) is used to structure knowledge.

6.0 CONCLUSIONS

Overall, I have explored the idea of **concept linking** as a technique for improving the understanding of learners with low attainment profile in BTEC Level 3 Extended Diploma in IT. We can come to the following indicative conclusions:

6.1 The *Best Mates* technique may improve learning in the classroom for individual learners through interaction in a group as well as the teacher. It fits in with the social constructivist theory of learning which is well known in literature.

6.2 Learners enjoyed learning a lot because of the group discussion and peer support that they received and that it had enhanced their learning of the topic. This outcome is supported by research on cooperative learning in groups.

6.3 With a strong element of group discussion, the technique has received positive feedback by the learners. There was increased participation, confidence, cooperation and understanding. This compares with Swan (2005) who found similar increases in interest among GCSE Maths learners.

6.4 Limitation: As in Swan (2006), there is yet no indication here that the technique necessarily translates into lower rates of referrals or reduced frequency of teacher intervention (TI) when their assignments are assessed by the teacher. This is yet to be tested.

6.5 Limitation: As in Pollard (2008) tabulated above, the weakness of this approach is in the extra amount of planning and management of the concept linking process as well as the cooperation of group members – a lack of time, resources on the part of learner and teacher could render it less effective.

6.6 Whereas the technique may bear certain similarities with mind mapping techniques, Best Mates is different insofar as it approaches learning from a different perspective; it does not gather ideas, but consolidates them. In this way, it encourages convergent thinking using concepts that have been provided, in the process of reconstruction of the main idea. (cf Rustler, 2012:193-196).

8.0 IMPACT

8.1 On Learning

As stated above, in spite of the promising indications that this technique may empower learners to learn better as stated in this report, there is no evidence yet that it directly translates into outcomes that show learners' measurable improvement, in terms of using the concepts correctly and producing better quality assignments. This should form the basis of further research. Swan (2006) states that while learning increased, there was a minimal effect ("learning gained") of the discussion approach on attitudes, confidence and perceptions of the subject (Maths). This is how he expresses it:

> "the results indicate that learning increased with both the number of activities used and the degree to which the teaching was reported (by students) as student-centred, learning gains were modest, reflecting the difficulty of algebraic concepts for these students. Students' confidence, motivation and anxiety remained largely unchanged..."

- The note of disappointment sounds clear. Nevertheless, I hope to analyse the assignments produced by the learners after a period of time to see if there is indeed a positive change in the quality of work.

8.2 On Teaching – joint collaboration

- I also intend to carry out more Best Mates activities in my teaching and measure how well it has empowered the low attaining learners to learn better. There is more fine-tuning to do.
- I would also like to invite colleagues to try out BestMates technique.

8.3 Joint collaboration prospects?

Attempts to get other colleagues involved have failed so far. Initial response indicated that staff were not really interested in any type of research because of time constraints. Research appears to be an alien idea. A few close colleagues have only shown very marginal interest as in occasional, *"How is it going?"* but not really keen to participate.

My response to them is 'wait and see'. It is hoped that the indications of this study might convince them to have a go. Meanwhile, the priority is to make the Best Mates technique work more efficiently in improving the classroom learning environment as well as outcomes. However, because my absences when I attend residential have become noticed, this has given me an opportunity to explain my research. I now have some green shoots of interest that may lead to collaborative work in the future. I am optimistic!

8.4 Future Research

As stated above, there are still questions of how to make the technique more effective; the planning and management required and how to generate interest in joint collaboration with colleagues. We need to see how the activities translate into better learning and better quality assignment evidence by learners.

9.0 RECOMMENDATIONS

9.1 Lecturers:

- Should consider buttressing direct instruction with a concept-linking exercise/activity
- Learn mind mapping techniques to be used for managing knowledge as opposed to brainstorming only
- Get other colleagues to try it out as part of JPD

9.2 Organisation:

- Create more CPD time that can be used to explore this and other techniques and develop effective JPD among staff.

The End.

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Appendix 1 – to be inserted : Feedback Questionnaire

Appendix 2

GCSE/FUNCTIONAL SKILLS (ENGLISH) QUESTIONNAIRE   Date : _____

PLEASE DO NOT write your name. JUST BE HONEST. THANK YOU.

1. **What Literacy course are you studying?**   (A) GCSE   (B) Functional Skills

2. **What do you think about the English Language/Functional English course?** *Circle one.*
    a. Excellent
    b. Very Good
    c. Good
    d. Fair

3. **How do you like the topics that you are taught on the course?** *Circle one.*
    a. Excellent
    b. Very Good
    c. Good
    d. Fair

4. **What are the areas of English language that you find difficult?** *Tick/circle as many as apply.*
    a. Knowing the meaning of words (vocabulary)
    b. Speaking clearly
    c. Saying the correct words
    d. Explaining yourself well
    e. Writing correct grammar
    f. Describing things in writing
    g. Reading long passages
    h. Understanding what I read
    i. Recognizing words
    j. NONE OF THE ABOVE

5. **Which of the following activities do you do in the course?** *Tick/circle as many as apply*
    a. Learning English words in general (vocabulary)
    b. Grammar work
    c. Spelling tests
    d. Making sentences verbally
    e. Writing sentences
    f. Setting ideas out in paragraphs
    g. Learning the words from your main course (e.g. IT or Business)
    h. Matching words with their meaning
    i. Giving presentations
    j. Learning the meaning of words using a dictionary
    k. Punctuation work
    l. NONE OF THE ABOVE

6. **Would you say that the GCSE/Functional Skills course has improved your <u>confidence</u> generally in the use of the English language?**   YES, **very much**   Yes, **JUST a little**
    NO, **not at all.**

7. **If "YES", in what ways do <u>you NOW feel more confident </u>than BEFORE the course?**
    a. I find it easier to do my assignments now
    b. I make less mistakes in my assignments
    c. I am more able to ask questions in class
    d. I am more able to explain myself
    e. I can now tell when my grammar is wrong.

8. If "**NO**, not at all" write down the things *you want to do* but are still **UNABLE** to do:
    _____

_____

9. **What do you think about the corrections you get in your assignments?** *Tick/circle as many as apply*
    a. Too many corrections
    b. Corrections are about grammar and punctuation
    c. Corrections are about knowledge of the topic
    d. Corrections are about the presentation of the work (line spacing, fonts, etc)
    e. Corrections are about "cut and paste" – copying work from the internet or books.
    f. Not following instructions.

10. **On a scale of 1 to 10, circle the number that best represents how well your Functional Skills/GCSE English course helps or has helped you with your IT course assignments.**

    1   2   3   4   5   6   7   8   9   10
    Does not help   *Very helpful*

11. **Do you have any suggestions on how to make the GCSE/Functional Skills course more helpful to you in your IT course?**

    ☐   Yes   ☐   No

12. **If YES, what are   they?**
    a. More grammar work
    b. More spelling work
    c. More punctuation
    d. More sentence writing
    e. More work on how to create good paragraphs
    f. How to write ideas down clearly
    g. ANY OTHER SUGGESTION?. *Please write it below* :

    _____
    _____

THANK YOU FOR YOUR ANSWERS.

What course are you on? *(Please circle one).*
BTEC First IT   BTEC L3 Ext Diploma IT (3 A/Levels)   BTEC L3 Diploma IT (2 A/Levels)

What is the year of your course? *(Please circle one).*   Year 1   Year 2

Thanks you for completing the questionnaire.

Appendix 3:

BEST MATES APPROACH - Explained

| 1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

(a) Table of concepts. Topic: Numbering from 1 to 16

Imagine a topic that is made of 16 different concepts. We break them up as represented in this 4x4 grid. The grid is only for illustration purposes as it is not required. Imagine that this topic is "Numbering from 1-16 in order". The objective of the learning session is to **recognise** and **position** each number so it follows it natural sequence. We can cut the grid up into cards/strips of paper, shuffle them and ask learners in groups to put the whole topic together. Each learner should have a card and with the help of other members of the group, decide the position of the number in the card based on their knowledge of the rules of sequence. Subsequently, they arrive at the knowledge through cooperation and discussion.

By extension, we substitute the numbers in the grid for specific terms or **concepts** related to a particular topic, as in the next grid. The same process can be used to consolidate understanding of the topic; a kind of "word chain". Each term or concept is cut out; all are shuffled and given to individual learner. They will work as a group to link up the concepts to achieve a correct representation of the topic.

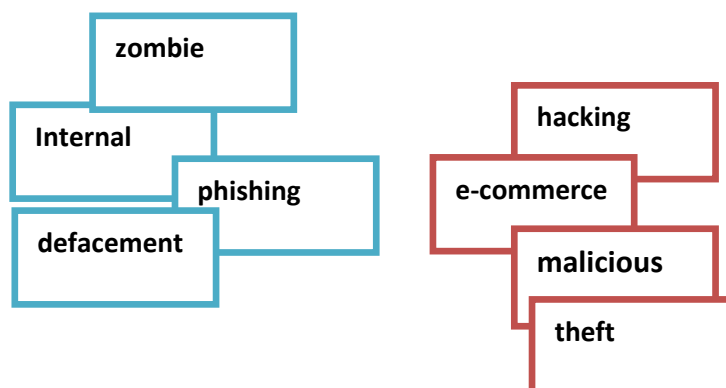| External	flooding	DoS	defacement
human	phishing	internal	error
Trojan	malicious	theft	e-commerce
damage	deception	zombie	hacking

(b) Topic: Potential threats to organisational systems security
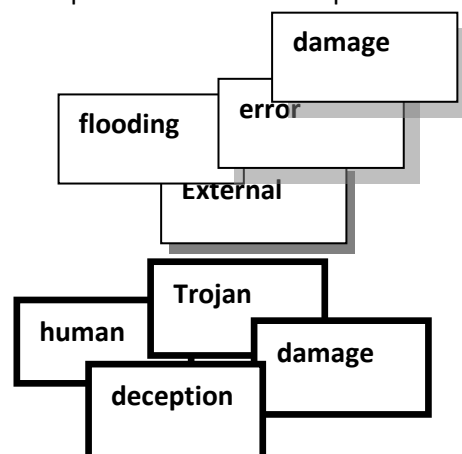
THE LINKING PROCESS

1. Get a word card/strip
2. Recognise it
3. Know what it means
4. Find its best mate(s)
5. Link them up

NEXT

Solution: THREATS: Malicious damage (internal, external: viruses including Trojans, hacking, phishing through deception of victims); e-commerce threats (DoS by zombie network, website defacement via hacking); theft of equipment; human error.

Benefits

Cooperative learning: No free riders, listening to each other, discussion; "we sink together"; peer assessment; peer feedback; friendly environment; confidence building; recalling and consolidating knowledge; more fun than a gapped task. Motivate learners to learn more(??); increased Q&A.

Risks

- Group choice – wrong group may be intimidating; hamper learning; stressful and lower self esteem.
- Noisy when leaders check what each group has done.
- Prep time and choice of terms.

Application

- Revision of learning
- Consolidation of knowledge
- Aid to web quest for full learner-centred learner

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APPENDIX 4: DATA follows

Appendix 4

TABULATION OF DATA

SUMMARY

1	Total no. of respondents	12
	Destroyed questionnaire	1
	Usable for analysis	**11**

Enjoyment of the activity

6 **(Q12)**

Score	freq
seven	3
Eight	2
Ten	6

Overview - What do you think? (Q1)

Response	Frequency
Just OK	2
Great	3
Fantastic	5
Exciting	3

(row label 2)

Q12 - Raw scores

10
10
x
10
10
7
7
7
10
8
10
8

Group Work benefit (Q7)

Response	Frequency
sharing ideas	7
Listening to each other	1
Working with new people	1
More confidence	1

(row label 3)

Learning better (Q11)

Response	Frequency
Better understanding	3
Recapping	4
Discusion	1
Challenging	1

(row label 4)

5 **How the activity helped them to learn (Q16)**

Response	Frequency
Better understanding	3
Reminded me	8

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