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## "To what extent does the GROW model - a coaching technique, when used as a method of AFL improves post 16 students' problem solving skills in ICT, and hence improve their performance?"

### Overview of my topic

Coaching is a highly successful tool that has been used, to stimulate deep thinking and develop an active intrinsic approach to problem solving. In this research, I'll examine to what extent the GROW model – a coaching technique, when used as a method of AFL improves post 16 students' problem solving skills in ICT, and hence improve their performance and achievement.

### Stimulus

Featherstone High School is a 11-18 comprehensive school, in the London Borough of Ealing. The school has specialism's in Applied Learning and Sports. There is a wide curriculum offer including BTECs, Young Apprentices, Applied GCSE and A level course. All pupils complete a qualification in PE by the end of year 11 selecting to study either GCSE PE, BTEC Sport or JSLA Award. The school shares its sporting facilities with the local community. There are approximately 1200 students on roll, with a wide range of ethnic and linguistic backgrounds. Approximately ninety percent of the students have English as an additional language and approximately twenty percent in the early stages (Stages 1 and 2 of the EAL assessment). Majority of the students are from Indian, Pakistani and African heritage.

According to the School's Development Plan (SDP) the number one priority for teaching and learning is to focus on literacy strategies and introduce innovative approaches to teaching and learning (T&L). The school believes that there is a strong correlation between teaching and learning and students' achievement. This was alluded to by The Government in the white paper *The Importance of Teaching (November 2010)*. 'The single most important factor in giving every child a good education is to have good teachers delivering good lessons'. Seen that good lessons are delivered by infusing good practices in the classroom, this investigation is an attempt to explore another strategy that teachers can draw upon to deliver good lessons.

Featherstone is a specialist school in Applied Learning, the vast majority of our students' pursuit vocational qualification. As Professor Wolf points out in Wolf Review of Vocational Education, Government Response (2011), Vocational education is immensely valuable for two reasons firstly it is an essential part of a broad curriculum and secondly it is a vital underpinning for the British economy. It is quite likely that the school will continue to focus on delivering vocational qualification to it's students.

BTEC vocational qualifications, contextualise learning within given scenarios. , Students are required to apply theoretical knowledge and skills to solve given

problems and demonstrate understanding. If we align this requirement to Bloom's Taxonomy of learning we will see that the capability requires students to go beyond levels 1 and 2 of recall and understanding. The scenarios require analysis, synthesis and evaluation, effectively operating at levels 3, 4, 5 and 6 of Bloom's Taxonomy. Students need to develop high levels of independent thinking and problem solving capabilities. How we support students to develop these confidences, to empower them through developing strategies that can be applied to thinking through all problems is the focus of this research project.

**Question**

I became interested in coaching after attending a introductory workshop and realising the onus that the technique places on the person that is being coached; in particular the ability to organise their thoughts and derive unique solutions. It also provides a practical working model that one can refer to when faced with a problem. There are a wide variety of techniques available to a coach, however in this research, I'll focus on the GROW model. This technique would be a vital skill for students in my school as vocational courses require learners to solve problems within scenarios.

The key question that will be addressed in this action research is *"To what extent does the GROW model when used as a method of AFL improves post 16 students' problem solving skills in ICT and hence their performance?"*

**What is coaching?**

Coaching provides a supportive environment where the coach uses effective questioning techniques, coupled with listening skills to assist the client (student) in realistically evaluating multiple options so that they can make the right decisions and determine a course of actions. The solution lies within the student and by asking the appropriate questions the student will select the most appropriate choices. The focus for my enquiry is to examine to what extent students become more independent learners, how well they are able to solve problems that require higher order thinking skills when supported by coaching.

According to Timothy Gallwey (1986) "Coaching is unlocking a person's potential to maximise their performance. It's helping them to learn rather than teaching them". It is important to note that the emphasis is far removed from giving directions and solution paths, but is deeply entrenched in the individual ability to use learnt knowledge and effectively solve a problem.

The GROW model, which is an acronym for, G – Goal, R-Reality, O-Options, W-Way forward (what will you do). .

Students have developed the basic skills and understanding in ICT by the time they study a ICT BTEC course. Knowledge (theoretical) is taught through instructional lessons coupled with practical work. For example in teaching *Principles of Computer Networking*, the types of network, connecting devices, communication medium used on network would be firstly taught in a theoretical setting, followed by setting up and configuring a computer network. The students would then be required to create a

network solution for a given organisation, with specific requirements. A student designing this network will draw heavily on their theoretical knowledge, in particular they will be required to select the most appropriate solution then justify their choice. A student solving this problem may, use the GROW model. I've outlined an adapted version of the GROW model to reflect the classroom situation and these are the key questions that we will seek to answer.

## G – Goals

***What we are trying to achieve:***

What do we want?
How will you know when you achieve it?
When do you want to achieve it by?

## R – Reality

***Exploring the known information (practical of theoretical knowledge):***

What have you done specifically to achieve your goal?
What challenges have you met and overcome?
What other challenges do you expect to meet?

## O – Options

***Stretching beyond what the student has tried or thought about before:***

What could you do?
What else …?
What if …?

## W – Will / Way forward

***Gaining commitment from the student towards taking action:***

Which option would be faster / easier / preferred / most efficient?
What might stop you?
When will you take action?
Now relating this model to the *Principle of Computer Networking* problem above, implementing what I call the GROW model for education.

**Goal**

- I want to design and implement a computer network for FHS Industries that should connect the resources from the three branches offices in Ealing, Greenwich and Luton to the head office in London. This network should share resources over the Internet with the appropriate security policy.

- I'll know that I've achieve this when I have designed this network (network diagram), and working security policy.

- My deadline for this task is October 24, 2011 at 10:00 am (fictitious date).

**Reality**

- I know about the types of cables that I can use to create my network.

- I know the maximum length that each cable can be used and still be effective.

- I know the various network devices that I can use to connect my nodes (computers at each site)

- I know at least two methods to configure networks to share data over the Internet, but they are not very secure.

- I know that using lease lines could be an option, but this is quite expensive.

**Options**

- I know that files can be shared over the Internet if there is some common area perhaps on a web server that each office car read from and write to.

- Virtual Private network can be an option, but I may need to research more about VPN to fully understand how it work.

- I need to explore the security option that is available through VPN

- I may need to explore any emerging technology that could possibly provide this solution.

**Will / Way forward**

- I need to research more on VPN, and in particular the security options that are available.

- I need to read more on emerging technology to

The example above demonstrates the kind of questions that a teacher may use to prompt a student during this problem solving session. Through constantly and consistently applying this method, the student will develop the capacity to apply this technique themselves.

Although coaching develops personal thinking skills in personal and professional life, it is my belief that this technique can be embraced and to solving academic problems.

It is not a farfetched concept to see that by developing a coaching culture, where students apply this method in their academic work, it can help them improve their performance and achievement in school. This will eventually support them in their personal life, which will help them to be better individuals.

**What is problem solving?**

Problem solving is a process that can range from deciding what time you need to leave your house in the morning in order to get to lesson on time, to developing a complex formula for solving mathematical problems. Students engage with problem solving process on a daily basis, as they are faced with problems in the classroom, on assignments or in examination.

It is therefore important that students develop the knowledge and the skills to be excellent problem solvers. This will improve their ability to determine better solutions and hence increase their performance. Developing clear problem solving procedures will also help students to become independent learners.

For a large number of my students, thinking through a problem and developing a solution, is not the most natural capacity they possess. Problem solving is a skill that can be developed and you can become better at it through practice. To support students in becoming good problem solvers teachers could teach students these skills.

Coaching is used for problem solving. Coaching is often described as providing a pool of silence for someone to dive into. The GROW model can be used to provide a framework to students to engage in the problem solving process and hence become good problem solvers.

**Strategy**

My control group is a year 12 BTEC level 3 ICT class. I selected this group as I will be teaching them, at least eight of the twelve required units for their BTEC Diploma in ICT. I will be meeting them on a regular basis. I noticed that the majority of the students lack problem solving skills. Therefore measuring the impact should be quite clear, determining whether the GROW model helps or not.

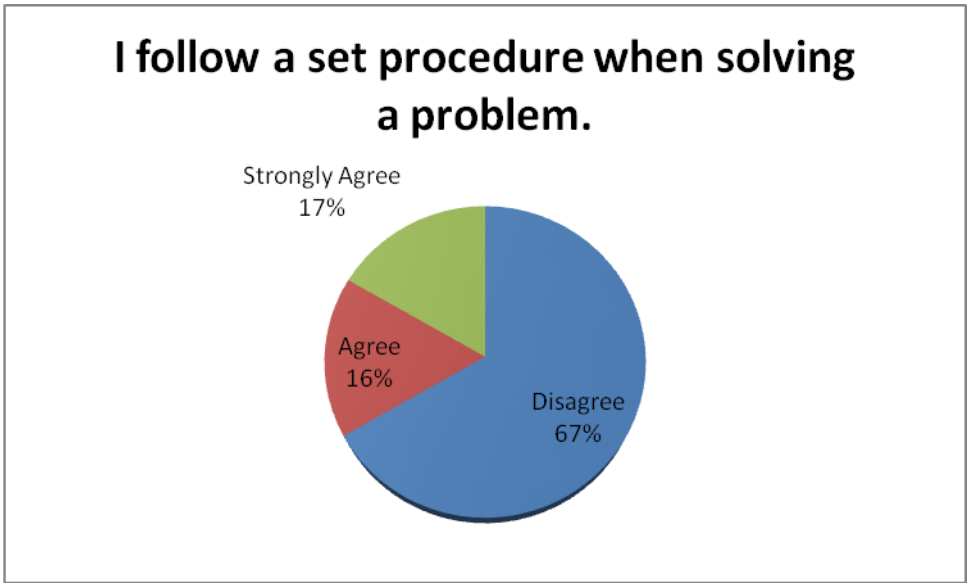
I administered a questionnaire to the group, to find out about students problem solving skills, and how they address developing solutions to problems. The questions along with the results are reproduced below.

| Response from my questionnaire | | | |
|---|---|---|---|
| | D | A | S A |
| I have a set procedure(clearly define model) that I follow when am faced with a difficult problem in my assignments | 4 | 1 | 1 |
| I find that the assignments are written to develop my problem solving skills | 0 | 4 | 2 |
| I find that the scenarios based assignment allow me to think more about the theoretical aspect of the course | 0 | 4 | 2 |
| I know where to go to get additional support that will help me to answer the assignment questions | 0 | 5 | 1 |
| I would benefit from having a set procedure to follow when I'm faced with a difficult problem in my assignment. | 0 | 5 | 1 |
| I find that the assignments help me to be a more independent learner | 0 | 4 | 2 |

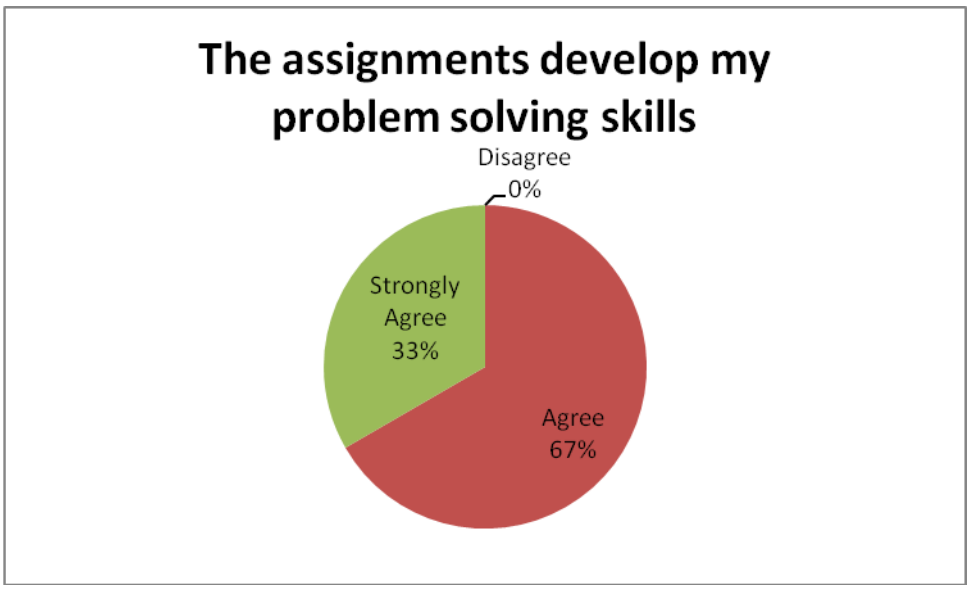
D - Disagree
A - Agree
SA – Strongly Agree

From the responses above it is clear that the assignments are problem solving oriented, yet there is no clearly defined method available to the students to think

through the solution. You can see the contrast between the problem solving nature of the assignment and the number of students that have a problem solving tool to assist them.




Question number 2




There seems to be a discrepancy with the expectation and the tools that the students are equipped with. The idea is to present this tool to the students to see what impact this might have on their performance in ICT.

**Outcome**

The GROW model was introduced to the class as a problem solving technique. Each stage of the GROW model was explained along with the possible questions that might be asked under each heading. I demonstrated the application of the GROW model using examples in their ICT assignment.

Students were encouraged to go through this process whenever they were faced with problems. Whenever a student asked me a question pertaining to the assignment, I deliberately asked the students relevant questions within the framework of the GROW model. This forced the student to think about their solutions. I pointed out the processes and stages the students had used, so they could hopefully see the benefit of reflecting and asking themselves the right questions for themselves.

I realize that after a few months the level of support that students asked from me significantly reduced. Students started asking themselves the questions within the GROW model, which often led them to finding their own solutions.

**Evaluation**

The GROW model has definitely developed students self confidence and has made the students more risk averse in solving problems. Students are now going through the GROW model when faced with difficult problems and in most cases they do derive the correct solution. I find that where a student have more options and have explored a great deal, then this model provides a variety of way forward and allow students the flexibility to choose different pathways. This is the desired outcome in most situation seen that in most real life problem (scenario as is the case for the BTEC assignments) there are a variety of solution pathways some are more efficient than others and some are impractical. It was quite clear also that the students that could select the more efficient pathway with justification were able so achieve grades on the higher end of the mark scheme (merits and distinctions). The assessment criteria is written in such a way that to achieve a pass in most assignment require applying theoretical knowledge to solve a problem, however to achieve merits and distinction requires deeper understanding of comparison, justification and for distinction students are required to evaluate solutions, tools and techniques.

Sometimes students alternate between options and way forward, in that when they are at a point where they cannot see a way forward so they revisit the options section, to look at what options are available and what they could try as an option. This alternation is encouraged, as this is how problems are solved in real life situation.

I'll continue to use this model and extend this model to the year eleven (11) students during their last term after covering the theoretical aspects that are needed to be successful in the examination. The reasoning is that from observation the GROW method is only effective in situations where the student have a vast exposure to options / theoretical knowledge, before they can draw on these experience, and use them as a way forward. For example it would be pointless to ask a year seven student to determine the best software to use to create and manipulate a database if the only kind of software they have only being exposed to word processors.

The GROW model is not suitable for subjects and areas that have pre-existing "raw facts", that don't require problem solving skills for example in history, there is no way of applying the GROW model to find out what year we had World War 2.

It is not conclusive that the GROW model is the sole contributing factor to the students development of problem solving skills. From my experience of teaching Post 16 students; students are normally very dependent and fail to think through the problem solving process, initially and after maturity in the subject and as a person have being developed then the approach changes.

**Next Steps / Dissemination**

More study needs to be done on the GROW model, and assess its impact over a longer period. I'll continue with this investigation, at this interim point I have seen success with using the GROW method to engage students in the problem solving process.

I'm hoping to continue using this technique and have a more evaluation on the impact that this method have on students' performance and achievement. I will conduct interviews with the participants and hopefully I'll be able to extend my finding and share this technique with other teachers of the post 16 group.

**Reading**

DfES (2005), "Working together: Coaching and assessment for learning",

DfES (2010), "The Importance of Teaching – The Schools White Paper 2010", Accessed on: May 1, 2011, Available from: http:www.tsoshop.co.uk.

DfES (2011). "Wolf Review of Vocational Education – The Government Response", Accessed on: May 1, 2011, Available from: http://www.education.gov.uk/publications

Gallwey Timothy (1986), "The Inner game of Work", Random House Trade, ISBN 0-375-75817-8.