

THE 6th Journal

**Full reports of
Action Research
Projects**



Foreword:

The 2005/6 academic year was a highly successful one for practitioner research in the college. Five member of staff carried out projects in diverse areas, and each of these have sparked interest and curiosity among other colleagues about strategies which can be used to improve learner's motivation and to engage them in the learning process. These projects have been written up in a format which seeks to ground the ideas in some background theory but also in a personalised way which hopefully other teachers will find accessible and will be able to relate to their own practice. If, having read the reports, you are inspired to find out more, I am sure that the relevant members of staff would be happy to speak about their projects. Alternatively, you may have an idea for a project yourself, which you can talk to me about.

David Godfrey
Senior Project Leader



Collette Brennan – CM Media

Which formative assessment methods really make a difference when trying to raise student achievement?

Chapter 1

Pages 3 - 13

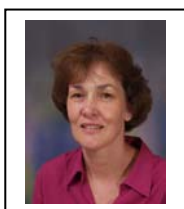


Nicola Franklin – Media Tutor

Improving motivation and participation by using technology in the classroom

Chapter 2

Pages 14 - 25



Kate Halpin – CM Mathematics

Improving student participation and understanding in Mathematics through increased use of student problem setting and solving

Chapter 3

Pages 26 - 41



Diana Laffin – SCM History and ADT4L

Using extended role play to develop confidence in learning Tudor history

Chapter 4

Pages 41 - 51



Gabriela Reigh – English Tutor

An investigation into the effect of a peer support system on students' motivation

Chapter 5

Pages 52 - 63

**Formative Assessment:
Getting Back into the Box**

Collette Brennan

INTRODUCTION

Aims:

- To maximise the quality of support and the overall experience of the course
- To gain a much better understanding of what benefits students from their perspective
- To target feedback more personally, accommodating individual students' learning needs
- To raise self esteem through positive, productive feedback
- To involve the students as a much more powerful peer resource in raising student achievement
- To be very ambitious in combining the College's single corporate objective with a previously low achieving cohort –
- Use the "freedom" offered by 100% coursework to encourage every student to achieve an overall distinction – the highest award possible for this course
- To improve students' organisation skills and foster greater independent learning.
- Improve the role of assessment to promoting learning and achievement

Setting the scene

The project focussed on two groups of One Year Media Students on the level 2 OCR Nationals Media course.

This cohort represents the first group of students beginning a course that is 100% coursework assessed. The possibilities therefore for maximising potential to its fullest, using close and on going tutor/student communication, was very exciting.

Previous experience has made clear that some of the most pressing issues facing this group is crushingly low self esteem, often caused by some or all of the following :

- Academic "failure" at GCSE
- Unhappy school experience
- Low levels of support at home
- Lack of positive role models
- Very poor literacy skills

Added to this is the dilemma that a large majority of the students when asked, had never considered doing / positively did not want to do, a one year Media Course – and nevertheless found themselves on one, as it represented the best choice out of a limited set of alternatives.

Naturally this made for quite a challenging start to the beginning of a new year.

Classroom resources

Useful resources included access to mini DV video cameras for recording student video diaries. This combined with technician support ensured students could undertake the diaries more freely and openly. It was also used to record me supporting practical production lessons (eg portraiture practical) so that I could more objectively consider how language was used to motivate and support students. I movie editing software was used to import, arrange and view in a manageable way, student video diaries.

Theoretical background

What is formative assessment?

FA centres on the ways in which pupils are told what is expected of them, how well they are doing, and how their efforts are praised

- Black and William emphasise the importance of Formative assessment's role as a diagnostic tool – i.e. it should offer up opportunities for improving both teaching and methods of assessing the quality of learning. To this end it could be a particularly powerful tool in helping low-achieving students (1)

The crucial point is that assessments become formative when the information is used to **adapt** teaching and learning to meet student needs.

The research indicates that improving learning through assessment depends on five deceptively simple factors

- The provision of effective feedback to pupils
- The active involvement of pupils in their own learning
- Adjusting teaching to take account of the results of assessment
- A recognition of the profound influence assessment has on the motivation and self esteem of pupils, both of which are crucial influences on learning
- The need for pupils to be able to assess themselves and understand how to improve (2)

Additionally, feedback given as part of formative assessment helps learners become aware:

- of any gaps that exist between their desired goal and their current knowledge, understanding, or skill and guides them through actions necessary to obtain the goal (3)

The most helpful type of feedback concentrates on giving specific suggestions for improvement encouraging students to focus their attention thoughtfully on the task rather than on simply getting the right answer .This type of feedback is critical for lower achieving students because it emphasizes that they can improve as a result of effort rather than be doomed to low achievement due to some presumed lack of innate ability.

METHODS

Data Gathering

Method 1 : Focus group findings

Formative assessment focus group (James, Ed & Stuart)

Background : The group were given an overview of what is involved in formative assessment and the nature of the project. The first group were chosen for their willingness to be critical – this could then be used as a springboard for future sessions.

Wednesday 1st March

1. What comments would you make on the subject of how I assess you as we progress towards the final grading of a Unit?

It's good and helpful but when don't understand – you need to stop

Sometimes there can be too much at the same time when people are further ahead or behind – they need to be managed more individually.

There needs to be more flexibility in what I'm assessing at a particular time.

Problem when people are absent as you might be trying to assess something when it might not be relevant to someone.

Frequency isn't necessarily always a good thing needs to be really relevant at the time.

2. What has been the most frustrating aspect of assessment for you?

We need more time with making productions - more consistency in this area – we've had just the right amount, not enough too much – can be a problem with our own self imposed deadlines. As we only get 2 OCR visits a year extra time can be given but then this sometimes leads to a lack of structure.

3. When I assess, am I too critical? Does the volume of intervention and advice end up leaving you demoralised and fed up?

No.

This is a feeling of Perfectionism sometimes – but this gives us more confidence – it does build up the pressure but this is a good thing as we can see we're achieving and we like not being talked down to. You take us seriously and you take our work seriously

Really like critical feedback

Happy with feedback and levels of it

4. Why do you think it's working so well? Final comments

Smaller group more relaxed – know each other a lot more everyone helps each other out on deadline day everyone's an individual working

Bit longer for some deadlines

Emails are really good used heavily by Nicola and I – relieves a lot of pressure

Really different from school – never had any feedback

Method 2 : My Diary entries (Extracts follow)

I collated them into a grid to assess what I learnt and what I learnt through my learning

Date	What I did	What I learnt	What I learnt through my learning
19.Jan.06	Gave direct and spontaneous feedback to a student who got very upset	That it is easy to forget other factors may mean my giving "constructive" feedback is inappropriate at that time	To slow down. Try to judge things a little more carefully. Consider what the student is ready to hear and able to process before storming in – it may not matter to them that their work will improve if they feel worse for the feedback!
2. Feb.06	Talked to a small group about the need for being honest about my teaching – why it's important for me to learn to improve my practice	Incredibly strong levels of communication can be achieved between student and teacher when the dynamic is right. That what I assume to be their priorities are often not their priorities at all!	How easy it is to forget some of the fundamentals in teaching when you're assessment focussed
1 March	Focus Group with 3 students from group 2	That there is a full range of resilience and maturity throughout the two groups – much less than in any of my AS or A2 groups – reinforcing the importance for incredibly structured and sensitive well paced assessment and Unit management	Better sometimes to Go in with an open mind rather than a strict set of questions – allow it to be open and fluid

Diary Extracts

The intention was to keep a bi monthly diary, but this ultimately proved impractical. In total I ended up keeping a total of 6 entries, all prompted after particular high and low points in the course. The highs were generated by successful and satisfying production work, flexible & independent research tasks and formal acknowledgment of success from the Moderator and the College itself The lows were generally sparked by the sheer intensity of a 100% coursework load.

The diaries took different shapes, ranging from a very loose and spontaneous response (19 Jan) to a more structured positives versus negatives model (2nd Feb). The latter was probably more useful in terms of reflecting with a more balanced and objective perspective. It also helped me to avoid “awfulising”.

Diary 2nd February 2006-02-02

We are currently half way through units 3 & 4 and as yet everything's very much a mixed bag

Positives	Negatives
Massive success on units 1 & 2	Many seem stressed
Formal acknowledgment of success by John Guy	Am questioning whether the goals set are unrealistic – students' moods are very variable
Big endorsement by OCR moderator	Difficult to establish what is really going on from the students' perspectives as they are presenting such wildly different views and experiences
Students very busy and creative	Focus seems to be very much on end product – what about the process? What about their engagement – equality of opportunity – esp in group work are the leaders pushing ahead at the expense of others?
Students who were unsure about staying have stayed	Some real clashes with students in their groups – there seems to be a whole issue of getting over the hurdles that prevent them from engaging in learning – they seem to have little problem with the conceptual understanding – they just cannot work together!!!
Really great conversation with Niall Stuart and Felicity – lots of trust and honesty there (doing course forums)	Certain students seem hell bent on self sabotage. Almost as if all they know is criticism and failure – am surprised that the success of the first 2 units does not appear to be giving some students as much confidence as I thought it would.

The following extract was quite pivotal in terms of getting me to stop and slow down. Compared to their AS peers, this particular group of level 2 students frequently struggled with the following ; emotional resilience and maturity ; managing their behaviour ; conflict resolution. The incident described

Diary 19 January

Feel very annoyed - incident today where F got really upset as a result of me responding to the video. I hadn't clocked how upset she was when she came into the lesson and didn't take account of her obvious “mood” before I began to critique the project. She was very upset and I took the full blast of her fury. I was obviously the last straw in a series of events but it revealed something about remembering the importance of listening to them. This definitely feels very different from last year when the exams broke up the coursework > It feels like we're on this relentless line to keep churning work out, constantly refining, improving – feels like there's something of a gap developing between those who are secure with this and those for whom it is overwhelming – mainly because they have never had to work so hard before. It is clearly a shock to the system for many of them! Focus needs to be on identifying individual areas for focus.

The biggest issues are definitely: Independent learning; Problem Solving; Planning; Communicating with others; Anticipating problems; Asking for help; Reliability; Common sense

Method 3 : Students' video diary

(Students were given questions to think about before making responses)

What single factor would have made a difference to you in terms of how you get feedback?

L : Most of it was negative during the filming...it seemed like she didn't like it at all.... but then it put us on the right track so we got it right in the end

What has been the most effective way of communicating to you?

Luke: on a one to one basis because it gave me more a view of what to do and it was quicker to find out what I did wrong

So how did you feel when you thought you were doing the wrong thing

Rubbish because we thought we had the wrong idea

The negative feedback helped us a lot

Uniform folders helped us a lot – I'm very disorganised so it helped to manage the work ..I knew where everything was

Method 4 : Course reviews

Broad consensus of opinion on all matters relating to teaching and learning. Failed to generate any kind of qualitative feedback beyond what we knew already. Confirmed what we hoped was going well, ie interesting and engaging course delivery / supportive and knowledgeable teaching / generous access to resources

FINDINGS

What were the preliminary findings?

1. My assessment / focus is still too narrowly focused on assessment objectives – not addressing the more nebulous but critical issues of EI independent learning being a true participant. Raises the question – is the intensity of FA making them more reliant on me?
2. Variables of individuals threshold (too much feedback – folder / email / verbal / peer / student diaries)
3. Student capacity for self reflection is limited
4. Contradictory responses
5. Unlearning old habits

➤ What are the principal findings?

Reflection on Assessment strategies Used

- **Individual portfolio (initial completion / interim feedback / final completion / tutor comment & final grade - covers detail for Tasks 1-3 for Unit One - Introduction to the Media** Time consuming to fill in / useful for isolating areas of difficulty early in the course when some students were less likely to be assertive or confident. Enabled them to highlight particular areas of difficulty / therefore encouraging them early to be self reflective – established early the importance of asking, questioning ..
- **Interim feedback sheet. For 3 tasks students commented on an area of difficulty to the tutor - prompting a more clearly directed response from the tutor .** Again, time consuming to fill in but allows for early formal feedback on arrange of tasks – also useful for student in communicating to them how on track they are
- **Standardised Templates for students answers :** Very very popular with students\and highly praised by OCR Moderator. Enabled students and new staff to the Course to see at a glance what was required in terms of content / depth of response. Allowed us to direct responses appropriately to the more prescriptive requirements of the course. They encouraged students to work together as answers had similarities in form and any concerns about dubious similarities in content were easily identified!
- **Student written diaries across 4 weeks for two units.** Not particularly successful. Students encountered real problems being reflective – they were characterised by being very brief and descriptive. The process was repeated over a second unit with some improvement, though ultimately students were uncomfortable with the process as the diary had a dual audience.
- **Personal Video Diaries.** By far the most illuminating and helpful in terms of qualitative responses. Significant preparation was done over a matter of weeks to ensure that students understood the purpose of the video diary. Emphasis was put on how vital their honest feedback was and the positive impact their feedback could have on this and future courses. It also helped to establish a culture of trust and respect ; in some cases it enabled students to be more open in their critiques beyond the video diary. The process was set up twice, latterly with one of the Media technicians on hand to prompt questions and encourage more revealing responses. Her questioning technique was highly valuable in drawing out honest and candid responses. The overall consensus was that verbal feedback should be detailed and on going but it could easily de motivate if it wasn't planned carefully. It is very easy for verbal feedback to become rigorously focussed on the negatives and even when it is balanced out by lots of praise, the negatives are what gets remembered.
- **Other methods used included:** peer assessment on photography unit (very positive experience / very much a celebratory experience) ; teacher diary (useful but needed to be more frequent) ; Uniform folders & portfolios (very popular & a key strategy in terms of addressing the serious organisational issues within the cohort)

DISCUSSION

1. Students thrive on personalised and frequent verbal feedback. It is by far the most popular form of feedback and efficiently targets areas of their work that need attention. It helps to indicate very quickly where teaching needs adapting either in terms of approach or resources. This necessitates a readiness on the part of the teacher to be self critical without being judgmental
2. Varied and frequent interim assessment is helpful in terms of altering the pace of teaching & learning for the better. It can be a guide to slow down / pick the pace up.
3. All too often it is easy to be results rather than process focussed.
4. Regular F/A keeps a pretty constant dialogue going with the students. How easy it is to forget some of the fundamentals in teaching when you're assessment focussed
5. Where there is a wide range of resilience and maturity throughout a class, FA reinforces the importance for incredibly well structured and sensitively designed feedback.
6. If assessment is going to be effective **it needs to be varied** - ideally it should include oral, written, and performance activities.
7. Assessment should **engage** learners – this is traditionally viewed as being the part of the process that students see as the teacher's responsibility. Students need to be directly drawn in using language that they understand / managed in a way that is relevant to them. Innovations in new technology could be critical here.
8. *While feedback generally originates from a teacher, learners can also play an important role in formative assessment through self-evaluation. Two experimental research studies have shown that students who understand the learning objectives and assessment criteria and have opportunities to reflect on their work show greater improvement than those who do not (5)*
9. Students need to be more directly involved in assessing their own and others' skills and learning. They recognise when this is done well and enjoy the process if it has been set up and scaffolded properly.
10. Even when students are achieving well they are essentially nervous about the whole area of assessment. It is fraught with associations of being under scrutiny, not measuring up & ultimately failure. This can even be the case when hard evidence shows that they are meeting targets and succeeding. Where self esteem is low, formative assessment needs to be made very accessible and as far as possible non judgmental.
11. The essential contradiction is that formative assessment embraces notions of frequency and inclusivity. This sustained focus on making judgments and measuring risks being a de motivator for some students

FUTURE IMPLICATIONS

The project has been crucial in terms of encouraging me to reflect on my own practice and re-examine the merits of academic success.

The starting point with many of the students was low self-esteem and a disengaged attitude to learning. The final summative achievement is important, but perhaps more so (as much?) is the process and how they see themselves developing as thinkers and learners. All students did ultimately go on to achieve a distinction and their feedback clearly indicates they are very proud of this achievement. As pleasing as this is, it does not disguise the real story behind the process; that students need to be involved more; encouraged to be more independent; more aware of how to cement / transfer knowledge and skills; see interim failure as a natural and healthy part of the learning process. The list is possibly endless.

Formative assessment clearly helps to support the expectation that all students can learn to high levels and "counteracts the cycle in which students attribute poor performance to lack of ability and therefore become discouraged and unwilling to invest in further learning." (4)

Personally I think there is something to develop here – perhaps through utilising technology inventively and not just for the sake of it. This has already led to a programme of personalised tutorials being prepared (using Macromedia Captivate). Here students can learn at their own pace / get ahead if they're ready or repeat tutorials if they are struggling. Essentially it supports independent learning and varied learning preferences. I would like to incorporate student feedback far more skilfully into my devised schemes (ie edited filmed presentations running alongside students' completed work) This necessitates a more confident engagement with the smartboard technology and INSET is being organised around very specific T&L objectives.

Ultimately, the experience of being an Action Researcher has been very rewarding. It has re-ignited my interest in trying new methods, grappling with the unknown and being creative. I think most importantly it has given me a much better understanding of what it might be like to be a student at the College.

Bibliography & References

1. Black, P.J. And William,D. (1998) "Assessment and Classroom learning", *Assessment in Education*, 5(1), 7-74
2. Black, P.J. And William,D Assessment for Learning Beyond the Black Box
3. Ramaprasad, A. (1983). On the definition of feedback. *Behavioural Science*, 28 (1): 4-13
4. Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology*, 84 (3): 261-271.
5. Fontana, D., and Fernandes, M. (1994). Improvements in mathematics performance as a consequence of self-assessment in Portuguese primary school pupils. *British Journal of Educational Psychology*, 64 (3): 407-417.

**The Guide from the Side,
Not the Sage on the Stage**

The Use of ICLT to Motivate Learners

Nicola Franklin

INTRODUCTION

Aims

To explore the ways teachers can motivate students using ICLT in the classroom

Setting the Scene:

Inspiring motivation through ICLT in the classroom

The EI element of the research has been narrowed to focus specifically on motivation and the impact of specific changes to the teaching resources - namely a clear focus on a selection of ICLT resources which work together in a variety of ways. Media lessons are like any other in the sense that they occur within a typical 6th form classroom. The key difference is the opportunity for multi-media content and resources to be used. To what extent is the use of ICLT during these lessons a factor in motivating the students? With all the good will, entertainment value, subject knowledge, preparation, resources, time, enthusiasm in the world it doesn't mean the students are learning anything and we must add to this list the ability to motivate students to learn. Can the use of ICLT be helpful here? We should not underestimate the power of ICLT as a democratising force in education and the significance it will have in the future learning environment. While the activities and technologies used during this research project are limited in comparison to some of the larger studies and developments currently underway it is safe to assume that ICLT in the classroom is going to become a fundamental part of the student experience and that it is very important to be aware of the developments taking place and to be considering how to integrate them into our teaching repertoire.

“At a national level government initiatives in all four UK countries have promoted e-learning as a means of empowering and engaging learners. Increasingly, they also focus on the practitioner as an active ‘innovator’ of new practices and techniques.”
(JISC, *Effective practice with e-learning: a good practice guide in designing for learning, 2004*)

Possible resources which could be used

smart board, wireless keyboard and mouse, VLE, internet, interactive voting pads, document viewer, blogging, tablet pc, video-conferencing/web-cam, you-tube, sound recording, video camera, digital still camera, editing software (i-movie), creative software packages (Photoshop, poser, flash ...), pod-casting, web-radio,

Theoretical context

The focus of the research is building the motivation of the students. To understand motivation we must recognise that there are two forces at work; as the Behaviourists Watson and Skinner both identified during the 1930s a person moves towards pleasure/reward and away from pain or more recently - 'intrinsic rewards' and 'extrinsic rewards' Mullins (*management and organisational behaviour, 1999*). These motivating forces may be described as follows: Intrinsic (psychological) - achievement, interest, feeling valued and Extrinsic (social) - test scores, competition, rewards, sanctions, fear of failure, variety of teaching methods. The extrinsic may be seen as the motivational force of the teacher, the intrinsic may be seen as the motivating force of the student themselves. The use of ICLT to encourage a sense of ownership and control over the students' learning

In developing the use of ICLT in the classroom one must be aware of the differing experiences of the students - while some students are highly ICLT literate others are completely technophobic, pitching the activities at the right level for active participation and learning will be crucial.

As Harkin, Turner and Dawn (*teaching young adults, 2001*) have pointed out motivation and participation act together and all learning is a relationship between *confirmation* and *challenge* It is on this continuum that all teaching must operate

confirmation ————— **challenge**

“confirmation - the recognition that the learners previous and preferred learning style are valid in their own right within the context of where the learning is taking place ... challenge - progress is proportionate to a realistic level of challenge and most people will accept a challenge if it is attainable”

As a teacher, I am concerned with how technology may be a new challenge for the students whilst providing an opportunity for them to develop their own sense of motivation (intrinsic rewards).

Young people are often the first adopters and trend leaders when it comes to using technology – for many this is an area of their lives they have natural inclination and motivation to know about. By tapping into their existing interests and motivations can we inspire them to learn?

“By understanding where a child is coming from you can use the motivation he or she naturally has anyway and creatively adapt it to your own subject. I have yet to meet a child who isn’t motivated, sometimes they just aren’t motivated to do what we want them to do when we want them to do it.” (Ian Gilbert, Essential motivation in the classroom, 2003)

METHOD 1

Implementation

The final module studied in the AS year is called 'Audiences and Institutions', the focus during this module is New Media Technologies (mobile phones, HDTV, internet etc) and because the content of the course focuses on contemporary developments in technology there is a clear opportunity to link the content of the course with the mode of delivery. Thereby using new technology to teach new technology and considering whether this encourages the students to be more motivated. Some of the technologies are already familiar to the students whilst some technologies have only been used in a limited number of ways from the students perspective. I have chosen to make use of familiar technologies which are usually used by the teacher but to focus the use on the students in the hope that the students will have some confidence in how the technology works whilst also having the challenge of using it themselves and seeing an increase in a personal sense of purpose, responsibility and overall motivation.

Teaching strategies

Creating group glossary of key terms using wireless keyboard and mouse allowing the students to contribute with confidence from their seat in the group

Method of data collection

post-its

FINDINGS 1

Results

the feedback from the group falls into 2 categories

positive feedback:

interactive	
more relaxed	
engaging	
Everyone can participate	
fun	
No wires to get twisted	
Good to be able to move away from the screen	
I can embarrass myself from where I am sitting instead of in front of the whole class	

negative feedback

slow	
range is limited	
Takes too long to pass round	
Not everyone is participating in the activity at the same time	

Analysis

33 + responses

22 – responses

The students were disappointed by the limited range of the keyboard and mouse and considering we were in the smallest classroom in the department students sometimes still had to move a little in order to get a signal (16 responses). However, they were pleased by the interactivity (7 responses) and level of participation (7 responses) which the keyboard and mouse created. This level of positive response is very encouraging and it seems the only real downside was the range at which the keyboard and mouse could successfully operate – a technical hitch rather than any real criticism of the concept. It seems important to consider the trade-off between the motivating nature of the technology and the de-motivating implications of technical limitations and things going wrong.

METHOD 2

Creating research 'Blogs' online

Students created their own case study research resource allowing students to personalise their information and for me to respond with similarly tailored feedback



Method of data collection

focus group – whole class

FINDINGS 2

Students were enthusiastic about the clear connection between the subject and the method of research and assessment. Some of the students were relatively technophobic and while willing to try the technology they became resistant to it when they found they were experiencing technical difficulties which meant they lost the work they had done. Other students were more confident using the 'blog' site and were more willing to make use of the slightly more advanced features such as adding pictures, sounds and videos. The flexibility of using a blog site as the base for all their research made sense to the students as all their research would be sourced from the internet they could easily add their findings and links to relevant sites very easily. The ease with which I could assess their progress was beneficial to them and the fact that I was creating a blog while they were creating theirs gave the students a base from which to start new tasks. Most students found the blog activity engaging and they became more interested in it as their research progressed and they could see what they had achieved.

Analysis

The ownership over their own research and the control they had over how their blog looked and how it worked was motivating, however some students were de-motivated by technology they were unfamiliar with and found the challenge of new content as well as new technology too much. It seems important to allow the students to make the choice about which challenges they engage in and which they do not. Motivation must come through choice – everyone is motivated by different factors.

METHOD 3

Creating group mind maps and presenting them to the group via the smart board.

Students used wireless keyboard and mouse to construct a mind map for the whole class

Method of data collection

Poll

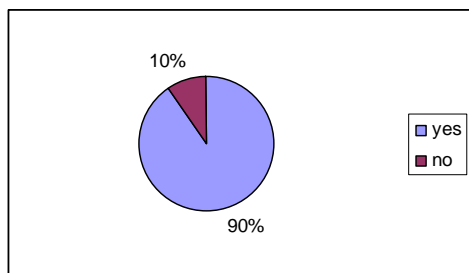
FINDINGS 3

positive

Yes, I think this exercise motivated me to participate - 18

negative

no I do not think this exercise motivated me to participate – 2



Analysis

Providing the students with the words which they needed to fit into the mind-map ensured that they covered all the relevant issues. The students could take it in turns to manipulate the mind-map adding strands and moving words around. The students had an opportunity to think about which words they wanted to use and where before they were given the mouse and keyboard.

Such an overwhelmingly positive result to this poll was surprising. The students who said that they were not motivated to participate explained that they were sometimes frustrated by what other people were doing and that they did not agree with them.

METHOD 4

Group essay planning using smart board and wireless keyboard and mouse

Students contributed ideas and edited the group essay plans from their position in the room. The students were asked to take an essay question identify key ideas individually and then in groups before feeding back their potential plan to the whole class.

Method of data collection

Anecdotal

FINDINGS 4

Students seemed enthusiastic about using wireless keyboard and mouse again – they are now very familiar with the technology and everyone has used it at least once. Students were aware of the limitations with regard to the range at which the keyboard and mouse could work and adjusted themselves automatically. Students worked individually then in groups preparing a possible essay plan the class discussion which followed was aiming to create an 'ultimate' essay plan which would be unique to the group and saved in the shared area for them to access again later and adapt for them to use whilst doing the essay for homework.

The discussion was lively and sometimes heated as the students argued for their changes to be made. The technology was automatically passed from group to group as they made decisions about a group's contribution. The fact that they did not have to get out of their seats to make changes seemed a clear factor supporting the smooth transition from group to group and suggestion to suggestion.

Analysis

The democratic situation which arose during this session was very encouraging. Students felt more able to contribute because the focus was on the smart board and on the groups rather than on their specific contribution to the discussion.

METHOD 5

Using internet to research

Use of the IT suite provided an opportunity to access internet resources which were then evaluated and selected to form part of their case-study – used in conjunction with the blogging task.

Method of data collection

Observation

FINDINGS 5

Students maintained their attention on the task at hand and all of the students found at least 1 source and all found at least 1 relevant piece of information.

1 student had technical issues due to limited storage space on user area. 2 students required direction as to appropriate search terms.

Analysis

The students were given a time frame and a clear focus for their research and specific criteria with which to select the most appropriate sources, they could choose exactly what they wanted to look for based on what they had decided their case-studies were. The students were provided a computer each. The students stayed on task throughout the activity and all students ended with useful findings.

METHOD 6

Revision game using smart board

'Monopoly' inspired game where the counters move around a 'virtual' board on the smart board the students are required to answer a subject specific question before they can progress. This revision task is designed to test their understanding of the theory and concepts found in the Audiences and Institutions module whilst also providing a reminder of those concepts through using the game; for example the game could be played so that the teams must build a horizontally integrated company or a global company by buying particular squares on the board.

As in 'Monopoly' teams must take it in turns to try to buy squares on the board using game money. Each member of the team takes a turn to play and answer a question or opt to pay more money but confer with their team.

Method of data collection

Video/anecdotal

FINDINGS 6

The students were excited by the prospect of using a game as part of their revision. They were impressed by the time and effort which had gone in to creating the game for them to use and were appreciative of this. During game play students were very vocal and engaged - a sense of team spirit was beginning to develop. They became increasingly competitive and were keen to beat the other teams and to answer their questions for them. Everyone was participating in the game and was looking to support one another to ensure the teams' overall success. The use of the smart board and the perceived fun of the activity encouraged the students while the team aspect along with the sense that this was a different way to assess their learning seemed to inspire them. They were keen to play again.

Analysis

The students appeared highly motivated by this activity and felt the use of technology was part of this motivation although the structure of the activity and the team aspect were considered more important to their level of motivation.

METHOD 7

Document viewer

electronic document viewer in connection with smart board allowed students to view functions of portable new media technologies

Method of data collection

Interview x3

FINDINGS 7

key comments included

"what's the point? We could just pass the phone around"

"it's a glorified OHP"

"why don't you just film yourself using the phone then play it on the smart board?"

"you can't see things properly- it's hard to focus and position what we are looking at"

"you can't get the camera far enough away"

"useful if there is a larger number of students"

"if we are looking at a document you might as well just scan it in or search the internet"

"the screen is too small"

"it's awkward, the power cable isn't long enough and I can't work out which way to move it so you can see things"

"it's good if you have something really small and fiddly"

"seems good for when students bring things in to show but not for teachers to use"

"I wouldn't bother with it"

Analysis

The students are very clear about when this technology would be of benefit. Students were very quick to recognise the potential downfalls and having used the technology were not positive about using it again unless it was the most appropriate method of displaying things to a group. This technology could be more beneficial if it had recording and microphone functions to allow students to use it as a method of presentation which they could prepare in advance. They did not consider this particular technology to be motivating in fact they viewed it as a bit redundant.

OVERALL FINDINGS

Some increase in level of motivation was perceived as well as positive feelings towards using technologies now they had had a chance to experience them first hand.

- Increased level of confidence using ICT resources - less technophobic
- more willing to contribute to class activities
- Increased sense of responsibility for group learning
- greater sense of support and camaraderie when others were contributing to class discussions and creating group resources
- creating own learning resources (blogs, class essay plans, group glossary ...) increased sense of ownership

Based on the research conducted the technology is most suitable when it is used in conjunction with each other - the technology has been used together i.e. smart board and internet, therefore it is more appropriate to ask which combinations were most successful, which combination led to the greatest opportunity for motivation to be developed. In fact it may be more appropriate to discuss the repeated use of technologies as part of a system of learning strategies where confidence, responsibility, support, ownership are developed on the way to increased levels of motivation.

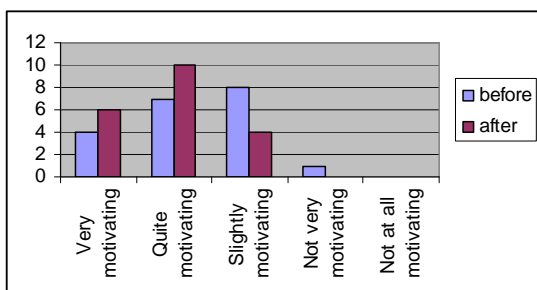
Using technology

the most important factors when selecting technologies to be used in lessons:

- To choose to make use of technology which is fit for purpose - the document viewer is only really useful if you are wanting students to demonstrate something small to a large group.
- Consider whether students will already be familiar with the technology - smart boards are in most teaching spaces in college - the students already know how they work but blogging was unfamiliar therefore tutorials were needed before they could be used constructively

The questionnaire - key results

'how motivating do you find the variety of teaching methods used in media?'
average response went from 'slightly motivating' to 'quite motivating'



'how often do you contribute in lessons?' average response went from 'I contribute sometimes' to 'I contribute quite often'

'which technology/combination of technologies do you think is most motivating?'
average response – wireless keyboard and mouse + smart board

'When you contribute in class how does this make you feel? Motivated' - average response went from 'a little' to 'quite'

DISCUSSION

What factors influenced success of this project?

Student perceptions:

Students were interested in the subject – they use technology all the time (mobile phones, internet etc) and are increasingly open to using technology in the classroom. They also enjoy discussing technology and how it impacts on our society and this was brought into focus by using technology to learn about this subject.

Students also enjoy practical hands-on tasks and this is something they expect from the course. They also appreciated that these strategies were different from those used in other modules.

Technology:

The level of preparation required for a technology heavy lesson can be considerable – for example the ‘monopoly’ style game required the production of the virtual board and counters as well as the cards for each property, the play money as well as all the questions for the assessment part of the process. The technology can also have a tendency to go wrong or can lack the flexibility required for larger groups – for example the blog home site crashing or the wireless keyboard and mouse not having the required connectivity range. It may also be perceived as gimmicky or unnecessary (document viewer) or too far out of their technophobic comfort zone (making their own blog website).

Variety and access:

The variety of technologies used during the course of the project and the access to the technologies the students could use will be different in other institutions. I think the students consider themselves very lucky to have the dedicated use of their own IT suite as well as two full time technicians who can help them with their work.

Course content:

The AS OCR media studies course includes the option to study the relationship between the consumers and producers of new media technologies thereby providing an obvious link to using new technology to teach the module. For example - the students appreciated that they were creating a blog site to house all their research about blog sites.

Principal findings

- The project reinforced existing evidence about the use of ICLT in so far as technology can benefit students by expanding their skills and confidence
- That the use of ICLT in class based tasks can be varied and can support content delivery
- A wider variety of activities which make use of other ICLT resources was welcomed by the students and even those who considered the technical side of the subject matter daunting were willing to use new technology in the activities undertaken.

CONCLUSION

At the end of this investigation I am now far more aware of the need to build the students confidence as well as their motivation - by having confidence that what you are doing is correct you are more likely to be motivating them to continue what you have already started. I am therefore going to try to ensure confidence and comfort and an awareness of what is required before expecting motivation. I am also aware that the students come to the class with a range of anxieties, skills, preferences, issues, and that the motivation of the students should be dependent on where they are now. We need to make use of only the most appropriate technology and that students will be de-motivated by technology which appears redundant or unnecessary and consequently to introduce any technology which they are unfamiliar with in a manner which provides an opportunity for experimentation and confidence building without the pressure to demonstrate skill. And it is worth considering the impact on the teacher as well as on the students. By providing a range of activities and technologies to work with in the classroom the variety of teaching strategies may increase and enthusiasm with it.

Potential extensions/developments

- The use of computer games as learning tools - students are often already familiar with game formats and the focus on winning or completion of a game could be constructive due to the element of progress and memory required but the level must be perfectly pitched to allow students to make use of highly advanced game play skills whilst also providing an opportunity to learn specific requirements of any scheme of work.
- Blended learning (using face to face as well as on-line teaching resources) this could be in the form of increased use of on-line demonstrations and tutorials for how to use the technology as well as supporting the delivery of subject content
- Increased development of subject specific resources designed to be accessed and assessed on-line

Issues

This research should be considered specific to age group, access to technology, technical support as well as subject. It should also be noted that due to the continuous developments in ICLT that this research should also be viewed as specific to the time period in which it was undertaken.

References and further reading

Ian Gilbert

Essential Motivation in the Classroom
Routledge Falmer, London, 2002

Chris Hill

Teaching Using Information and Learning Technology in Further Education
Learning Matters, 2003

JISC

Effective Practice with E-Learning - a Good Practice Guide in Designing for Learning
JISC, 2004

Joe Harkin, Gill Turner, Trevor Dawn

Teaching Young Adults - a Handbook for Teachers in Post-Compulsory Education
Routledge Falmer, London, 2001

The Learning Discovery Centre Team

Creative ICT in the Classroom - Using New Tools for Learning
Network Continuum Education, Stafford, 2006

Alice Mitchell and Carol Savill-Smith

The Use of Computer and Video Games for Learning - a Review of the Literature
Learning and Skills Development Agency, London, 2004

L.J. Mullins

Management and Organisational Behaviour
Pitman, London, 1999

Susan Wallace

Managing Behaviour and Motivating Students in Further Education
Learning Matters, Exeter, 2002

Improving student participation and understanding in Mathematics through increased use of student problem setting and solving.

Kate Halpin

INTRODUCTION

The aims are:

1. To determine whether requiring students to set and solve their own mathematical problems for a fellow student to solve improves their participation in and enjoyment of lessons.
2. To determine whether students gain a clearer understanding of the underlying mathematics when they are required to set problems.
3. To determine whether students acquire a better understanding of the use of mathematical language through problem setting.

Background:

In September 2004 I started teaching a group of Single Maths students who had chosen Decision Maths as their applications module. They were a group that immediately jelled and obviously enjoyed working together. When I started the Decision 1 module I tried an idea that a colleague had suggested to me which was to set students the task of making up their own questions and presenting them to a fellow student to solve.

I first tried this with the topic on Dijkstra's algorithm for finding the shortest path through a network. I was surprised at how enthusiastically and imaginatively the students went about the task. They enjoyed the activity very much and I believe they understood that topic well thereafter.

I used this idea in a fairly haphazard way from then on, but was always impressed at how well these activities were received and executed.

(That particular group went on to do well in their AS Maths and in the second Decision module. Their teachers of the second module taught it in a similar way and probably more imaginatively than I did. It has been very gratifying to see such success and these students have been very active mathematically since.)

I could not be sure whether it was just a property of the group that they did well in the end and that they enjoyed question setting exercises, but I was determined that I would continue to incorporate question setting into my lessons. I also wanted to be sure that, even though I am nearing the end of my teaching career, I continue to explore teaching ideas with which I am less familiar. Further, at our college we are encouraged to reflect on recent research into learning styles to enhance our teaching and our students' learning.

In September 2005 I decided that I would make question setting a regular activity for the lower 6 Double Maths group I share with a colleague. I felt there would be many topics for which I could confidently try this method of teaching and learning. I told the students I would be doing this research and their response was immediately cooperative and interested. It seemed to me that they liked the idea of being part of some research, but I believe they also liked the idea of a slightly different type of activity.

Theory

Early in my teaching career I used overwhelmingly a deductive teaching style. This involves beginning with general principles and deducing methods and applications from them. This leads to concise and highly structured presentations. By contrast, inductive teaching allows students to see specific cases first and then work up to the principles involved by inference via lessons that may have less rigid structure. Felder (1993) points out that research has shown that “of these two approaches to education, induction promotes deeper learning and longer retention of information and gives students greater confidence in their problem-solving abilities”. This struck me as an approach to teaching that I should use more consistently. I believe that when students set their own questions they will need to think about the underlying ideas, solve their own problem and sort out any mistakes they might make, including those made by setting awkward or unworkable problems. I believe this is an aspect of inductive learning that can be used in conjunction with others.

I was also impressed by a paper written earlier by Felder and Silverman (1988) in which they reported that “Much research supports the notion that the inductive teaching approach promotes effective learning. The benefits claimed for this approach include increased academic achievement and enhanced abstract reasoning”. This also gave me the impetus to try this method systematically as one of my aims was to enable my students to gain a clearer understanding of the mathematics they are studying.

Mathematics is a discipline that requires reasoning and thinking which may not be engaged in during the normal daily course of events. Honing the appropriate thinking skills for the subject should surely improve enjoyment, understanding and facility in it. There is research being done in the post-16 sector on “thinking skills” approaches to teaching. Findings have shown this to be effective in improving ability.

In particular using “peer-interaction” to aid development of thinking skills via “collaborative researching, thinking and discussing together” has been found to be effective. Moseley, Baumfield et al (2004). I believe the method I am using will enable students to develop thinking skills. I also hope that they will enjoy the process as most of my students in this group have declared that their preference is for interpersonal, as opposed to intrapersonal, learning.

I was mindful that teaching by requiring students to exchange questions they had set would not suit every student’s learning style. However, as stated by Atherton “pandering to learning styles may be doing the students a disservice: they will benefit more from adapting and becoming versatile, more able to respond both to formal teaching and learning from experience, than they will from having everything made as easy as possible for them in your particular subject”. Atherton J.S. (2002). I therefore felt little anxiety at proceeding in the hope that students averse to this method might become more flexible in their learning styles.

METHOD

For each of the activities a clear description of the task was given a day or two in advance, for homework. Students were to set a question on the given topic, solve it carefully, respecting the notation and language of Maths to make sure it was “solvable” with the methods and techniques they were learning. I was particularly keen for the students to engage in the thinking behind problem solving.

In class the next day (or 2 later) they would be matched randomly with another student (I use my own, handmade cards to do this). Pairs would then swap their prepared questions and solve them. The pairs would then check each other’s solutions and comment on them.

I hoped this method will appeal to introvert and extrovert students alike. Introvert – as they would have the opportunity to reflect via their preparation, extrovert – as they would have the opportunity to share problems in pairs (possibly a larger group too).

FINDINGS

I shall now record some of the question setting activities done throughout the year. I have recorded the first in some detail as it is a very general type of problem that may be used in other disciplines. Thereafter I shall record the tasks briefly only. Further details may be found in the appendix. Students' questions and some of their work are in the appendix.

Task 1: Algorithms – 13th September 2005

Students were set the task to make up an algorithm. The idea was that the algorithm should result in an outcome which would not initially be known to the student who was to apply it. This idea was "borrowed" from a colleague who had tried it out with his own students when teaching them Decision 1 and found it highly workable.

The task was set a day in advance of the lesson. Examples of some of the algorithms that the students came up with were:

- ✎ Making a paper aeroplane. This was successfully made by the student pair.
- ✎ Drawing a simple but abstract shape. Successfully done with pencil.
- ✎ An algorithm that calculates the longest chain of even numbers in a given series of integer numbers – probably off the internet. A good challenge.
- ✎ Directions to a student's home.
- ✎ Finding out whether a number is prime. A difficult challenge.

This turned out to be a highly successful exercise to start this research because it is fun, not difficult to understand mathematically and could be made as challenging as the student wished, and, indeed, a few students really rose to the challenge of finding or devising tricky algorithms.

During the activity I did not intervene at all. This was not necessary as the students were trying each other's problems with much animation and the level of discussion was much higher than on occasions when they would engage in other types of group or paired activities. I was extremely pleased that they were quite critical about the algorithms set and the steps they used. I was particularly pleased that students did not appear to be unhappy about criticism. In fact this group has since worked very well together in a well-balanced and productive way. This is also due, to a large extent, to their other mathematics teacher using very innovative teaching methods.

Task 2: Graph theory and networks – 20th September 2005

Students were set the task to make up a question about graphs and networks. They had just spent the lesson researching graphs and network via a verbal and visual group exercise and the aim of this activity was to consolidate their learning and to differentiate between deeper and superficial understanding. Students were told they would swap their questions with another student, at random, the next day.

I was pleased with the outcomes of this task because it showed the students the need to be precise in giving definitions and descriptions in mathematics. Ambiguity in mathematics is undesirable (at least at this level). Some students found this task a bit more difficult and one was rather crestfallen when what he had produced did not work very well. I thought this was not at all a bad thing as it stressed the need for precise definitions. However, I felt that this activity had not been as positively embraced by all the students as the previous had been.

QUESTIONNAIRE 1

At this stage I wanted to gauge formally how students regarded this method of setting and solving problems. I did this using a questionnaire.

Homework Styles Questionnaire – 12th October 2005

	V+	+	N	-	V-
1. I enjoy homeworks for which I have to prepare questions for a fellow student		8	7		
2. I think homeworks for which I have to prepare questions for a fellow student help me understand the topic well.	3	6	5		1
3. I prefer homeworks for which I have to prepare questions to traditional homework set from Textbooks or Review Sheets.	1	3	5	5	1
4. Homeworks for which I have to prepare questions result in the next lesson being more interesting.	5	7	2	1	
5. Homeworks for which I have to prepare questions suit my learning style	1		9	4	1

In addition students were asked to comment freely. These are the comments made by some of them.

Comments:

I prefer working through questions from books to reach an answer as I feel I can learn the method to answer the questions.

I find making up questions easier but I don't think it improves my knowledge of what I am doing. Questions from Review Sheets etc. help more when I go through them after and work out mistakes I make.

I think a variety of homeworks from textbooks and Review Sheets and setting our own questions is the best way for learning through homework.

Although often they don't actually work, I can often work out why, and change it. They help you understand where you are going wrong and make you think into it and all the possible outcomes. (I liked this comment).

These homeworks help me understand the topic much better and provide good practice but I think I learn more from Review Sheets.

I think questions for other people are good but I like doing traditional questions much more to work it out for myself and then do a question for others after that.

If I had a choice I wouldn't.

Some of these comments were encouraging. I felt that it was worthwhile continuing this method, refining it as I used it more and more. The students, quite sensibly indicated that they liked this method as long as it was mixed with other methods too. So variety seemed to be what they liked. I was pleased that their comments seemed to be well-balanced and thought through with some care.

I was keen to see how students would manage question setting in a Pure Maths module. I suspected that they would find it easier and that they would come up with questions that were more precisely expressed and that their questions would give rise to unique solutions.

The first Pure Maths module that I taught them was Further Pure 1. This module involves more algebraic topics and the students were on slightly more familiar ground.

Some tasks set are given below with more detail in the appendix.

Task 3: Roots of quadratics

Task 4: General Solutions of Trigonometric Equations – 26th April 2006

These questions evoked some discussion on problems such as how to use the language of mathematics appropriately and why a problem may not have a real solution. These are both important issues in mathematics and such discussions naturally arise throughout any mathematics course. However, there was a sense of discovery as they, themselves, found the obstacle to a real solution, rather than having it contrived via the textbook or the teacher.

Another interesting observation was that students could include graphs to support their question. One student did this and this gave emphasis to the visual aspect of learning.

The discussions I observed suggested that students were reflecting on the problems and were doing so in a more sophisticated than at the beginning of the course.

The students were approaching the half-term break before study leave for the summer exams. I felt this was a good time to canvas their views again. I did this via a second questionnaire which I used specifically for this topic.

QUESTIONNAIRE 2

	Strongly agree	Agree	Disagree	Strongly disagree
1. I am confident about finding the general solution of trig equations.	4	6		
2. I think that setting a question for a fellow student helped me consolidate my understanding.	1	8		1
3. Preparing a question for a fellow student helped me understand how to use the language of maths for trig equations.		9	1	
4. I think that doing a fellow student's prepared question improved my understanding.	1	6	3	
5. I think that sharing questions with fellow students is an enjoyable way of learning.	1	8		1

Generally the students indicated they found this exercise useful. One student consistently indicated a dislike. He nevertheless always participated fully in the exercise and did so with good cheer.

Task 5: Matrices – 9th May 2006

As we approached the end of the AS course we inevitably started revision. I decided that we would do the matrices revision via problem sharing. Students were asked to revise the topic for homework and then prepare an exam style question for sharing. This went particularly well, maybe because it was a topic with which students were more familiar. Good questions were set requiring manipulation of matrices, diagrams of their effect on a set of points in 2-D space and interpretation of the transformations they represented. I could see that students were becoming used to setting questions with multi-stage solutions which drew on different methods of reasoning. A particularly interesting discussion arose out of one question in which a student slipped the zero matrix into the product of 5 matrices. When his student partner came to interpreting the product, she said "it does nothing". The discussion that ensued involved the meaning of "zero" and "nothing" in a mathematical context. I took the opportunity to point out the different zeros used in mathematics – for example: the real number zero, the complex number zero, the zero vector, the zero function..... I have done this before, but the discussion held on this occasion seemed to grab their attention more since its source was one of their problems specifically.

Modifications

Since my students were not overwhelmingly enthusiastic about setting problems **for homework** I decided to make a slight adjustment to the method. This was simply to get students to set problems for one another as soon as we had been through a new concept. I had seen this done very effectively in two lessons that I observed during our Mathematics and Science Faculty lesson observation cycle. Both teachers used the method in their lesson and had clearly done it often before because the exercise was executed in a very natural way by the students. Under these circumstances the exercise seemed less pressured since the problem solving requirements were more specific, less open ended.

Modified Task: Composition of functions

Set a question involving two different functions. Decide what compositions of these functions you will get your student pair to perform. You should require 2 or 3. Solve your problem yourself so that you can check your solutions together.

Students found this a natural activity to complete. It did not take long and was completed with success by all pairs. However, I observed that the tasks were undertaken in a more perfunctory way.

CONCLUSIONS

- ✎ Decision mathematics problems were easiest to set and students found them enjoyable.
- ✎ Pure mathematics problem setting and solving had varying success and enjoyment, but led to opportunities to discuss the language of mathematics.
- ✎ Statistics problems were more difficult and not as appealing. I did not include an example of this as it did not go particularly well. (I will need to improve here)
- ✎ Setting and solving problems improved as the year progressed.
- ✎ During these activities students were animated and enjoyed them for the most part.
- ✎ Even though students were setting the problems themselves, it was important to be clear about the context and expectations. Where the exercise was too loosely framed, there was least success.
- ✎ Both questionnaires indicate that students felt positive about the activities and felt that they helped to consolidate their understanding.
- ✎ Observations of the students during these activities showed students fully engaged. None was passive and almost all were fairly animated at least even though a few students said they did not particularly like these activities.
- ✎ The majority of students suggested their understanding of the topics had been enhanced through the activity to an extent
- ✎ Opportunities arose during the activities to discuss the use of the language of mathematics. Although it is difficult to measure the success of this, as their teacher, I felt there was more focus on this than might have arisen in other classroom situations.

I am determined that I will continue to incorporate student question setting in lessons; sometimes set for homework; sometimes set in the lesson. I am content that it is yet another method I can use to bring variety to my lessons while improving, I hope, my students' participation and, ultimately, achievement. I hope that I may refine this method as I learn how to use it more and more effectively.

My Own Reflections

I am not a risk taker and prefer to work with methods with which I feel comfortable. This cannot be best for my students. I know that I need to serve their learning needs. What has helped me to feel confident about doing this research – which I felt I had to do for the benefit of my students – was the support of my students and my colleagues.

I don't think my colleagues are fully aware of the impact that **their** teaching and sharing of ideas has had on me. Without knowingly doing so, they have reinforced my confidence in what I have been doing because they employ similar methods and enthusiastically discuss successful lessons. These daily accounts (and occasional lesson observations) of classroom activities has been enormously enriching and encouraging and I am grateful to be working in such a dynamic teaching and learning environment.

My students, too, have been great. Each one entered the research with their own personal imprint, ranging from very enthusiastic and involved to not quite so keen and preferring the more formal, structured teacher-led approach. The message thundered over was that I dare not slip into old ways and must vary my methods and seek new approaches.

Of one thing I am absolutely certain is that I still have much to do to refine my teaching. Doing this research has helped me to feel less anxious about taking what I had perceived were risks. Other research is there to support me, as are my students and colleagues.

HOW I MIGHT FOLLOW UP OR EXTEND MY RESEARCH

I am mindful that I could have given my students the chance to be more evaluative about this method and encouraged them to describe their thinking, planning and learning. There is evidence that this aspect of "metacognition" is of benefit to students. Schoenfeld, A. H. (1987) I am sure it will need time, but it will give me something new and fresh to try as I have seldom explicitly done this before.

REFERENCES

ATHERTON J S (2002) *Heterodoxy: Learning styles don't matter* [On-line] UK; Available: <http://www.doceo.co.uk/heterodoxy/styles.htm>

FELDER, Richard, "Reaching the Second Tier: Learning and Teaching Styles in College Science Education." *J. College Science Teaching*, 23(5), 286-290 (1993).

FELDER, Richard, Learning and Teaching Styles in Engineering Education. Richard M. Felder, North Carolina State University and Linda K. Silverman, Institute for the Study of Advanced Development (1988) P 7

Moseley, D., Baumfield, V., Higgins, S., Lin, M., Miller, J., Newton, D., Robson, S., Elliott, J. and Gregson, M. (2004) Thinking Skill Frameworks for Post-16 Learners: An Evaluation. LSDA NERF Bulletin, Summer 2004

Higgins, S., Baumfield, V., Lin, M., Moseley, D., Butterworth, M., Downey, G., Gregson, M., Oberski, I., Rockett, M. and Thacker, D. (2004) Thinking Skills approaches to effective learning: what is the evidence for impact on learners? NERF Bulletin, Summer 2005.

Schoenfeld, A. H. (1987). What's all the fuss about metacognition? In A. H. Schoenfeld (Ed.), *Cognitive science and mathematics education* (pp. 189-215). Hillsdale, NJ: Lawrence Erlbaum Associates.

APPENDICES:

1. THE TASKS IN MORE DETAIL (with some repetition)

Task 1: Algorithms – 13th September 2005

Students were set the task to make up an algorithm. The idea was that the algorithm should result in an outcome which would not initially be known to the student who was to apply it. This idea was “borrowed” from a colleague who had tried it out with his own students when teaching them Decision 1 and found it highly workable.

The task was set a day in advance of the lesson. Algorithms that the students came up with were:

- ∞ Making a paper aeroplane. This was successfully made by the student pair.
- ∞ Drawing a simple but abstract shape. Successfully done with pencil.
- ∞ An algorithm that calculates the longest chain of even numbers in a given series of integer numbers – probably off the internet. A good challenge.
- ∞ Directions to a student’s home.
- ∞ Finding out whether a number is prime.
- ∞ A sorting algorithm.
- ∞ Making a cup of tea. Obvious at the outset.

Comments:

The first six were largely successful because of the element of surprise – not knowing what the algorithm would do until a few steps has been tried. Making a cup of tea was obvious from the start. The student afterwards realized that he should have devised an algorithm which was such that they would only know the outcome once a pass of the algorithm had been completed.

Students learned that it was important to have an algorithm in which the steps were clear and unambiguous. They could see this in their own algorithms when they tried it out on their student pair and this was reinforced when they tried their student pair’s algorithm.

During the activity students were very animated and seemed to enjoy doing each other’s questions. Three students rose to the challenge of finding unusual and challenging algorithms.

Task 2: Graph theory and networks – 20th September 2005

13 out of 17 students attempted this task.

Students were set the task to make up a question about graphs and networks. They had just spent the lesson researching graphs and network via a verbal and visual group exercise and the aim of this activity was to consolidate their learning and to differentiate between deeper and superficial understanding. Students were told they would swap their questions with another student, at random, the next day.

These were some of the questions set:

1. Produce a complete graph which has 4 vertices. Additionally each vertex has a loop.

Comments:

The graph was well defined with only one graph resulting (up to isomorphism) Student drew the correct graph. Some discussion resulted because one student thought that the definition of the graph needed to include specifying the number of edges.

Teacher input: Because the graph was defined as complete, the number of edges did not, in fact, need to be specified. The loops were added afterwards.

This was a clearly, simply stated problem which was appropriate for this level.

2. The graph is a connected graph which contains a tree, and a cycle joining 3 vertices. The graph contains no loops, multiple edges and cannot be made into one full cycle. All of the edges are of equal lengths.

Comments:

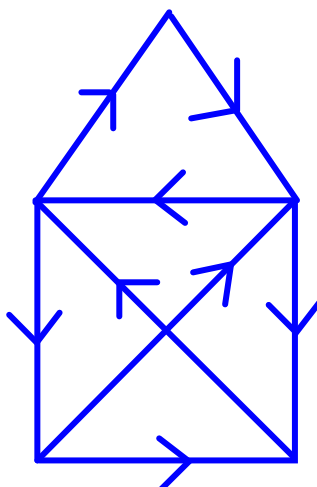
The definition of this graph contained contradictory information which confused the student who had to draw it. This generated a lot of discussion about connected graphs, trees and cycles and the fact that it is not necessary to specify that the edges are of equal lengths. However, the student wanted to make an interesting graph. This gave him and his paired student something to think about and after the discussion they realized that it is important to give clear, unambiguous information in problem setting. This was shared with the class too.

3. Draw four vertices in the shape of a square. Label the vertices A, B, C, D. Ensure the graph is a Hamiltonian cycle, making sure no edges cross. Now complete the graph.

Make a fifth vertex, so that they form a pentagon shape.

Join the fifth vertex to the nearest two vertices

Now turn it into a digraph, also ensure it's Semi-Eulerian, showing where you started. This is the diagram she intended.



4. Comments:

This student tried to put lots of ideas into her problem mixing the notion of an algorithm with graph theory. She and her student pair needed to discuss what she intended the resulting graph to look like. Some of the steps were not necessary to produce the required graph. The notion of an isomorphism could have been stressed beforehand, but it was probably useful to do so afterwards.

After their discussion they appreciated that the correct use of maths language and objects was not as simple as appeared at first.

5. (1) Draw a tree which has 8 vertices and 7 edges. The vertices are labelled A, B, C, D, E, F, G and H. B, D, E and F make a vertical straight line.
(edges) BA, BD, BC, DE, EF, EG, EH.

- (2) 5 vertices: M,N,O,P,Q; edges MN, MO, MP, MQ, OO, QQ.

Comments:

- (1) This problem went well with isomorphic diagrams.
(2) This was rather trivially defined but yielded isomorphic diagrams.

Task 3: Roots of quadratics

The first topic was on roots of quadratics – the connection between the roots, α and β and the coefficients a, b and c of

the quadratic equation. $ax^2 + bx + c = 0$. Specifically, $\alpha + \beta = \frac{-b}{a}$ and $\alpha\beta = \frac{c}{a}$.

Students were set the homework task of setting a problem involving a quadratic equation of the type suitable for this topic. No further detail was given as I felt that it was fairly clear what kind of question to set.

These are some of the problems set.

∞ The quadratic $7x^2 + 3x + 11 = 0$ has roots α and β . Find a quadratic with roots $6\alpha + \frac{2}{\beta}$ and $6\beta + \frac{2}{\alpha}$

(J)

Comments:

This looks like a standard question which is sufficiently difficult – just the kind a student might expect in an exam. However, the fractions involved were rather nasty and the student's pair struggled to work with the fractions. The student should have worked through the problem carefully beforehand – as expected as part of her homework preparation – so that she could see that was unnecessarily complicated and not enhancing the knowledge and methods associated with roots of a quadratic.

∞ If $5x^2 + 101x + 5 = 0$ has roots α and β , write a new equation so that its roots are $2(\alpha + \beta)$ and $3\alpha\beta$ (H's question given to N)

Comments:

A straightforward question which worked well and N managed to solve it well with using the right algebraic approach.

∞ The equation $x^2 - 5x - 7 = 0$ has roots α and β . Find the quadratic equation whose roots are α^3 and β^3 (N's question given to H).

Comments:

Quite a tough question because it needs the expansion of $(\alpha + \beta)^3$. H consulted the textbook to get the expansion thereby improving her knowledge on this topic. She arrived at the correct quadratic

∞ Write down the quadratic equation whose roots have the sum -9 and product 6.
The roots of this equation are α and β . Find the quadratic equation whose roots are α^2 and β^2 . (N's question given to T).

Comments:

This problem was clearly and unambiguously stated and T found it easy to solve.

∞ T's problem for N was very briefly stated and needed to have details given verbally.

” $x^2 + 4x + 12$ find $\frac{1}{\alpha^2}$ and $\frac{1}{\beta^2}$ ”.

Comments, outcome and teacher input:

Once the problem was better posed N solved it successfully. (Roots are complex, but this doesn't matter)

Task 4: General Solutions of Trigonometric Equations – 26th April 2006

Students were given the task to set a trig equation for which their student pair was to find the general solution. I have included two examples. The first one was set by a student with a strong verbal learning style who likes to read maths textbooks. He set this in the spirit of making the exercise fun by adding a touch of whimsy. I have not changed his grammar.

∞ “Norman the rivet collector has two great loves: Rivet collecting, and general solutions to trigonometric equations. Or at least for this week and this question these are his two loves.
However poor Norman has hit a slight problem – he doesn't know any trigonometry. In his reckless youth he preferred “youth culture” and “friends”, though now he knows much better. Fortunately his favourite mathematician rivet Joe is an expert at trigonometry, and so could answer Norman's poor problem, but the question is, can you?
Norman's problem was:
What is the general solution, in degrees (Norman doesn't believe in none of these new fangled radians. He's an old fashioned fellow) to:
 $\sin 4\theta + 25 = 1$
Why he wants to know, nobody knows, but it matters to poor Norman – and would you want to see a sad rivet collector”

The first point his student pair noticed was that this equation did not have a (real) solution. A discussion ensued about this and the need to use the language of mathematics correctly to avoid ambiguity. The equation was then given as $\sin(4\theta + 25) = 1$. Including the brackets made this possible, and easy, to solve.

A more orthodox question set was:

∞ ”Find the general solution for the equation $\sin 3\theta = \frac{\sqrt{2}}{2}$, in radians.

Find all possible values for θ , when $-4\pi \leq \theta \leq 4\pi$

Make sure you include a graph in your working”.

A student with a strong visual learning style set this question, hence the inclusion of the comment about including a graph in the working.

Students were invited to give feedback to the class on the use of mathematical language in the problems. These are some of their comments.

Don't forget brackets - eg $\sin 2\theta + 25 = 1$ -T

Remember special triangles-J

Awkward numbers used - don't be afraid of decimals - S

Be careful with signs - L

Complicated question set A - hmmmmmm

Be careful about the period of function.

Students were clearly reflecting on the problems and this was more sophisticated than it had been at the beginning of the course.

Task 5: Matrices – 9th May 2006

This went particularly well, maybe because it was a topic with which students were more familiar. Good questions were set requiring manipulation of matrices, diagrams of their effect on a set of points in 2-D space and interpretation of the transformations they represented. One student criticised her student partner for writing

$$\begin{bmatrix} 1 \\ 0 \end{bmatrix} = \begin{bmatrix} 2\frac{1}{2} \\ \frac{5\sqrt{3}}{2} \end{bmatrix}$$

This is a common abuse of the “equals” sign. It was encouraging to see that students were thinking about how they should use the language of mathematics correctly.

An interesting discussion arose out of a problem set which involved a sequence of five transformations represented by a product of 5 matrices. The student slipped the zero matrix into the product. When his student partner came to interpreting the product, she said “it does nothing”. The discussion that ensued involved the meaning of “zero” and “nothing” in a mathematical context. I took the opportunity to point out the different zeros used in mathematics – for example: the real number zero, the complex number zero, the zero vector, the zero function..... I have done this before, but the discussion held on this occasion seemed to grab their attention more since its source was one of their problems specifically.

2. ISSUES AND SUCCESSES

Task 1: Algorithms

Just over half the class produced good algorithms. Some were uncertain how to do the activity or did not do it at all for homework. Some brought in rather scrappy work. I realized I had to be more precise in my instructions if all students were to benefit fully.

However, I was particularly pleased that three students found interesting algorithms and did the exercise in the spirit of a challenge.

Task 2: Graph theory

I had introduced this topic in an investigative way in which the students used verbal and visual activities to learn the definitions. A few of their questions were not well structured and used a number of definitions that were not consistent. This made it a bit frustrating for the student pair to solve. Also, there were several other ideas which were rather more complicated than students would be expected to deal with in exams. This exercise highlighted the importance of being very precise in posing problems and using new language and ideas correctly and unambiguously.

However, the positive side of this was that the students discussed the problems and this, I believe, was the point at which they became confident at challenging one another's questions and being critical of them.

Task 3: Roots of quadratics

A few students were rather ambitious, producing questions that ended up some rather nasty algebra. I pointed out that the object of the exercise was not to do complicated algebra (necessarily), but to understand the relationship between coefficients of a quadratic and its roots.

However, the exercise highlighted the need to focus on the essence of the topic and for most students it lent itself well to this style of questioning.

Task 4: General solutions of trigonometric equations

There were no issues other than that some students used the language of mathematics in a cavalier way.

However, I regarded this as a good opportunity to focus on this problem via a brief discussion.

Task 5: Matrices

The main issue was, again, with the use of the language of maths. The discussion that resulted addressed this.

On the positive side, it was evident to me that my students were becoming better at question setting and that they did this better with a topic with which they were familiar, as it was a revision exercise.

Finally, doing an impromptu question setting exercise in class on compositions of functions went very well and felt very natural for me and for the students.

3. COMMENTS ON STUDENTS' QUESTION SETTING STYLES

The Verbal Student: **T** always grasped the maths required. He liked to set questions that were predominantly verbal and not typical of the style of question in most mathematics textbooks.

The Very Able Student: **N (L and A₁)** – a very strong mathematician – set orthodox, but challenging, questions that usually had more than one part to it and demanded a deeper understanding of the underlying mathematics.

The Risk Taker: **A₂** had a particularly individual style, using current issues (e.g. war in Iraq) to set his questions in an interesting context – this, sometimes to the detriment of the problem set. He tried to be overambitious and did not always check that his problems were solvable.

The Conservative: A number of students went for “safe” options. They usually looked in a textbook and varied a problem from it slightly.

The Forgetful: Each time one or two of students “forgot” to do their preparation, and had to produce an impromptu question.

**Asking the Audience: Using remote voting role
play to enhance participation in the history
classroom**

Diana Laffin

INTRODUCTION

Aims

The aims of this project were twofold:

- (1) to identify the factors which hindered student participation in AS Tudor History lessons
- (2) to explore how extended role play could be used to improve student engagement in lessons by overcoming those barriers.

Setting the Scene

For AS Tudor students the transition from GCSE to AS is tough, and, as they face an exam worth 40% of the course in January, it needs to be swift. They arrive in September with little factual knowledge of the 15th century and lack a 'sense of period'. Added to this the classes for this course are often unbalanced in terms of ability (with less middle than other classes) and gender (very few boys take up this option).

The project was prompted by concerns about my Tudor classes over the past two years. On the surface, they were high performing and positive, gaining good results and showing enthusiasm in course forums. However, both in 2004 and 2005, there was a small minority who did not share the confidence or commitment of their peers. The project was partly stimulated by reflecting on a conversation with two students attending a support workshop in 2005.

Extract from diary (September 2005):

The AS students last year were an enthusiastic and fairly confident bunch on the whole and responded well to round the class quizzes, talking essays and other kinds of oral work which I employ. I like to use these methods because they ensure active participation from all and I feel satisfied when I know everyone has had to play a part and no-one was able to opt out. But when I'm honest with myself, I know it doesn't work for them all. Last year it was the Sarahs. Two girls who apparently should have got 'D's at AS but it was clear from the start that it would be hard for them to pass. Both lacking confidence. Both rather intimidated by their peers, and let's be honest, a bit by me. Both frightened of being put on the spot and being shown up in front of all these, sure of themselves, outgoing people around them. One of the Sarahs got an E at AS, the other failed. I'm so keen on inclusion but did I really include them? I suppose what I'm coming round to is the recognition that participation is not the same as inclusion.

I did try with the Sarahs. Sarah B came to one or two of the support sessions at lunchtime in the autumn term. I had a little one to one session with both of them in the summer to try to help them with structuring essays. It was obvious that they were still having difficulties, despite the formulas and revision sheets I provided as props. It was also clear that they didn't have much confidence and my cajoling wasn't doing anything to boost it. I remember feeling at that session, despite my upbeat and cheerful note, that we'd given up. The Sarahs didn't really believe they were ever going to get it if they hadn't by a month before their exam. And they sensed that I thought that too. It makes me feel a bit ashamed, but realistically, could I have done more? Should I have intervened earlier? Could I have done anything to get them onside earlier in the year?

As a teacher, I am very committed to the idea that all students should participate in oral work as well as written work. We don't excuse students from homework just because they don't like writing, so why should we allow students to opt out from speaking? However, I was aware that speaking out in front of peers was intimidating for many students. The realisation dawned on me that imposing an expectation that everyone should join in was not improving classroom cohesion or confidence. If my classes were to be genuinely inclusive, the motivation needed to come from them rather than be imposed by me.

Theoretical Background:

This action research project aimed to create a better classroom context for inclusive student talk. Educational research confirms the importance of dialogue and interaction both between teacher and learner and between students themselves in developing confidence and understanding. Vygotsky (1978) stresses the 'importance of the nature of the interaction between teacher and learner or discussion between learners in developing understanding'

This dialogue is most useful when it is exploratory and reflective, rather than based on a speedy review of knowledge. Kyriacou and Goulding (2004) have shown how many teachers confuse interactive and traditional whole class teaching, focusing on short closed questions rather than open minded enquiry. This resonates with my own experience as, desiring a strong sense of pace, my classroom discussions often do not allow sufficient open ended reflection. This project should facilitate more thoughtful open ended discussion.

Several researchers have demonstrated the role played by choice in motivating students to learn. Gilbert (2002) has explained the relationship between giving choice to students and enabling them to take

responsibility. Booth's research has also shown how being overly prescriptive can demotivate pupils (Husbands C, Kitson A and Pendry A 2003). This reading has influenced the way I approached the project. In the first experimental lessons in the autumn term, I allocated roles to students based on their ability. In the extended project in the spring term, I allowed the students the choice to develop their own roles with some direction and support.

More specifically there is strong research evidence that role play can be highly effective at improving engagement and understanding in the learning of history. Phillips (2002) lists the benefits of role play as motivation, insight into historical situations, improved recall and 'empathetic appreciation'. This is confirmed by Luff (2003) who states that :

'AS and A2 pupils are still young and fun loving' and that the assessment objectives in examined history courses can only truly be addressed with creative teaching rather than 'playing it safe' with chalk and talk.

In his research using multiple intelligences in the history classroom, Rhys Davies(2006) found that pupils listed role play as one of their favourite history activities as it was regarded as 'fun, enjoyable and engaging' This is confirmed by college course forums which repeatedly show that role play and decision making activities are very popular with students.

Husbands et al (2003) have shown that motivation, engagement and confidence are the three key factors influencing enjoyment and achievement in history teaching. Clearly the three are closely interlinked and are the primary focus of this project.

METHODS USED

Teaching Strategies Implemented:

The Role Play

In the autumn term, two experimental lessons were taught using role play and remote voting pads. Evaluations of these lessons were used to inform the main project which started in the spring.

The extended role play was initiated by students choosing and researching a character in Tudor England. At the start of the module, students were asked to create a profile including age, gender, region and family circumstances. Some characters were real and some fictional, allowing the chance to explore the roles of key players in Tudor government and society. Students with non-fictional characters used books and the internet to fill in their details. Those with fictional characters researched their roles and were supported in producing realistic profiles. Their profiles were summarised on character cards which were given out at the start of any lesson involving voting.

During the module on the Age of Wolsey, they had to reflect the views of their character on different policies and at different times in the reign. Students voted by responding to four choices in a powerpoint presentation. Each presentation included 5-6 questions with responses from very positive agreement to very negative disagreement. The similarity in questions made voting patterns and changing views over time easier to see.

In the plenary lesson at the end of the module, students worked in groups according to social class and were required to vote as a group rather than as individuals.

Classroom Resources

The role play used the CPS remote voting system. Students were each given a numbered voting pad which they used throughout the module. This system recorded each student's vote so that graphs could be made of their voting patterns at the end of the project. After each vote a bar chart revealed the whole class response to different questions.

Practicalities of the Project

In the autumn term two experimental lessons were taught: one with the Tudor and one with the modern group, with the students using the remote voting pads in character. These lessons confirmed the students' positive responses to remote voting and also highlighted the problems of variable standards of preparation for their roles, especially in the much larger modern class. Reading educational research persuaded me to be less controlling in the final project and to allow students choice in their roles.

Voting in role was generally very successful after a shaky start. The initial powerpoint which focused on hopes and fears at the start of Henry V111's reign had mixed success. Students acting as nobles had not grasped the general dissatisfaction of the aristocracy at the end of Henry V11's reign and recorded votes of dissatisfaction. The failure of a few students to understand their characters' attitudes had the effect of skewing the results for the whole cohort. However, in the following voting sessions the students gained confidence in their role, voting appropriately and justifying their views with vigour. One unexpected and encouraging development was that one student voted 'out of character' but was able to argue convincingly why her individual might not share the same views of other members of his class or region. This led to an open ended and lively discussion which emphasised the complexity of Tudor society.

The plenary discussion was the most successful lesson centred on the project. The requirement to vote as a group led to some impassioned arguments and some determined abstentions from individuals, such as the yeoman of Lollard views who disagreed violently with the religious conformity of his class. Ideally I would have liked to incorporate more group work into the project, for instance, setting up regional focus groups to highlight the different perspectives of localities such as Cornwall and London. The transition from an individual to a group view was an illuminating process and clearly enhanced the understanding of the class. It was frustrating that time constraints enabled this to happen only at the end of the project.

FINDINGS

Recording student perceptions

Students were given an initial questionnaire to complete asking them about the difficulties of Tudor history and what factors affected their participation in lessons.

This was followed by recording of two small group discussions. At the end of the project, students completed another questionnaire and a ten minute whole class discussion was recorded on video.

What factors hindered student participation in lessons?

This project confirmed that many students lack confidence in class discussions and a minority find speaking out in class nerve racking and intimidating. In particular, they do not like targeted questioning when they have had no time to think up their answers. However, classroom participation is greatly affected by interest levels and by the nature of the activity undertaken. If students felt confident and interested, their inhibitions about classroom participation could be overcome.

The most common reason given for failure to participate was lack of confidence: nerves, shyness and fear of failure being frequently cited. Many students are self conscious, even amongst class mates they know well, and commented that they disliked the feeling that everyone was staring at them. Six of the sixteen respondents in the original questionnaire stated that they joined in only 'occasionally' or 'rarely'.

In the small group discussions and the plenary discussion students commented that they disliked being put on the spot in whole class discussions:

What puts me off is being put on the spot with questions.... If it's quite a fast pace and I just can't keep up sometimes. (comment in small group discussion)

This was confirmed in the plenary discussion when the students stated strongly that preparation time played a key role in their willingness to become involved.

Alongside confidence the level of interest students felt in the topic or activity also affected participation. Although the questionnaires revealed that most students did not find Tudor history especially difficult, they found it hard to learn parts of the course they perceived to be dull, such as government and administration. Many commented that the learning activity was crucial:

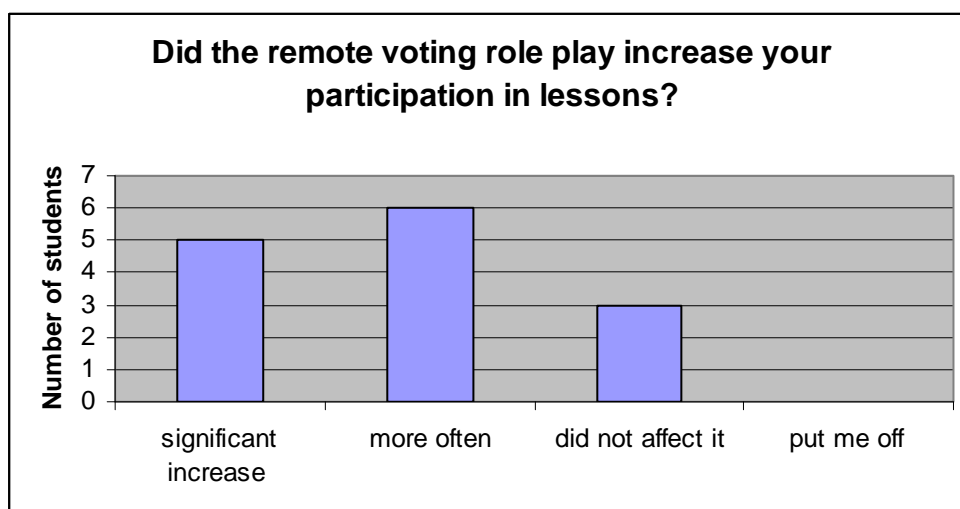
'If the activity is creative and made fun, which would make it easier to understand.' (Questionnaire)

A majority of the students felt they joined in more with active learning activities compared to lessons where they were just 'sitting and listening'. Several stated that role play was very effective at making them join in:

The role play is really good because it makes us all want to join in a bit more and it's a bit more fun'. (Questionnaire)

Did the role play improve participation?

Most students stated that the role play had increased their involvement in lessons. However, three students felt it did not affect their involvement.



Questionnaire responses to the role play were very positive with most students commenting that it helped them to understand the views and attitudes of people in Tudor society. Students liked the '*interaction of the class as a whole*'

(Questionnaire). Several stated that role play was very effective at making them join in:

'The role play is really good because it makes us all want to join in a bit more and it's a bit more fun'.

Several commented on the inclusive nature of the activity. One statement on the written questionnaire was: *'I liked the remote voting because you felt involved in the task and having your own character to think about.'*

There was an acknowledgement that the role play ensured full class involvement in the activity, Hannah, speaking in the filmed plenary discussion, saying that:

'It makes you think about it because everyone's got to think about what they would do whereas normally if someone's just answering a question then people don't necessarily think what they would say in that answer but if every one's got to vote then obviously ..everyone's got to think..'

The success of the role play varied according to topic and timing. In the initial presentation, some students had not got to grips with their character's outlook and this caused some confusion. However, by the end of the spring term most had become confident in their role and progress was being made.

Diary Extract (Easter 2006):

The benefits so far are that the students are beginning to see patterns in the reactions of different groups within Tudor society. It is already clear, for instance that the lower classes and the church have much more reservations about Henry's aggressive and expensive foreign policy than the nobles. They are also recognising change over time, with dissatisfaction with finance and government growing rapidly in the 1520s.

One problem is that the role play characters are not used frequently enough to provide a regular reference point for review and discussion. It might have been better to get the students to carry the character cards with them at all times, perhaps sticking them onto their folders, so that the whole course is considered 'in role'. Over time, the students seem to be recognising the values and attitudes of their character when they return to them but I feel this could be more deeply embedded and used in discussion. They have retained their enthusiasm for the voting and all still seem keen to take part.

DISCUSSION

What factors influenced the success of this project?

- Student preparation:
The project demonstrated that good student preparation was essential for successful voting and discussion. It did not matter if students voted atypically for their role, if they had sufficient understanding to justify their choices. However, if their 'out of character' voting arose from misunderstanding, this had an adverse impact on the learning of everyone. The experimental lesson with the modern group relied on their research of a character in preparation for the role play voting. Some students did not make the effort and, as a result, could not contribute to the discussion. Clearly, researching a character well does involve some commitment and imagination as you could not type 'immigrant farmer in the Mid West 1920s' and get the same kind of instant information you could find if you typed in 'Roosevelt'. For the Tudor students I provided more support and advice to help with their character research and this was more successful.
Some topic areas needed more guidance and support than others, for instance, the religious quiz revealed the gap between our modern secular society and 16th century attitudes.
- The use of the technology:
The visual aspect of the remote voting was an unanticipated benefit of the technology. In the plenary discussion one student commented how much having a clear visual focus enhanced her understanding of the issue. Several students liked seeing the results of the class vote on the whiteboard so that *'you can see if your character's opinion is the minority or majority'* (Questionnaire)
Even students who did not like role play, on the grounds they had to act, were happy to vote in role . Clearly the technology was not essential for the role play to work, as the same results could have been achieved through voting on paper or using mini whiteboards. However, the students commented that the visual feedback and the fun element in voting enhanced their enjoyment of the activity.
- Class dynamics:
This year's Tudor AS class was made up of 17 girls. This led to a very relaxed atmosphere which encouraged participation and enabled me to support students who needed more guidance. The experiment with the mixed modern AS class of 22 students suggests that larger classes may need closer management to ensure all were purposefully involved.

- Different forms of voting:
The project was planned for individual voting in role. This worked very well for inclusion but some students, especially the brighter ones, found it limiting, especially if their character was of low social status rather than at the heart of government. Interestingly, less secure students became more attached to their roles and enjoyed the confidence that came with understanding the views and outlook of one character.:
Gemma in plenary discussion: *I liked to be the same person because then you get to know that role.. you became more confident in character...*

The plenary session required students to vote in social classes or groups rather than as individuals. I was pleased with the level of discussion and with the confidence with which some 'characters' argued with the rest of their group. This seemed to be the most successful activity in terms of engagement and a differentiated understanding of the impact of policies. This made me realise that the transition from individual voting to group voting could add to the challenge and enjoyment of the role play considerably.

Principal Findings:

- Remote voting in roles increased student involvement in lessons. It was more inclusive and less intimidating than other forms of role play or whole class discussion.
- The project confirmed the research evidence that role play enhances enjoyment and empathetic understanding in history. However, for the role play to work well, students need to prepare well and feel confident about their characters. Some aspects of the course may require more guidance than others and large mixed ability groups need careful management.
- The technology gave the role play exercise more clarity and fun but was not essential to make it a success.
- Individual voting in role helped students gain confidence but changing their role or moving to group voting may lead to livelier interaction and discussion.

CONCLUSION

I have always been passionate about active and inclusive learning in history but this project has challenged some of my preconceptions. Oral work in my lessons has too often been teacher controlled and prescriptive, and, for some students, this is off putting. The role play has encouraged me to allow more choice in the classroom and to design tasks which require participation from all without putting any student in the glare of the spot light. The role play provided enough support and structure for all students to take part and made me aware of the importance of prior preparation for good quality class discussion.

The potential for both role play and remote voting as learning tools is enormous and I hope to build on the ideas in this project in the next year. It is too early to know if I have saved another pair of 'Sarahs' from a sense of failure but I hope that all students in this year's Tudor class at least have felt a stronger sense of inclusion.

REFERENCES

Davies R (2006) Multiple Intelligences in the Classroom: An evaluation of the effectiveness of the 'MI approach' through the teaching and learning of History. National teacher research panel , DFES.

Gilbert, I (2002) Essential Motivation in the Classroom, Routledge

Husbands C, Kitson A and Pendry A (2003) Understanding History Teaching, OUP.

Luff, I (2003) Stretching the strait jacket of assessment: use of role play and practical demonstration to enrich pupils' experience at GCSE and beyond , Teaching History, 113.

Kyriacou C and Goulding (2004) Teaching mathematics: How good are we at improving students' confidence and competence? NERF bulletin, Summer 2005 P11

Phillips, R (2002) Reflective Teaching of History 11-18, Continuum

Vygotsky, L.S. (1978) Mind in Society, Harvard University Press, summarised in Husbands C and Pendry A (2000) Thinking and feeling: pupils' preconceptions about the past and historical understanding in Arthur J and Philips R (editors), Issues in History Teaching, Routledge. P132.

Appendix A: Student notes and character card

Thomas Boleyn



Thomas Boleyn

Profile:

Born in Norfolk in 1477, of gentry stock. Well educated. A successful court career rewarded him with the title Earl of Wiltshire.

Hopes:

- To be looked on favourably by the king, to be promoted and favoured at court.
- To gain wealth and status for the family.

Fears:

- That the economy or political situation will become unstable.
- That Henry will become miserly at home and cautious abroad like his father.

8

Appendix B: Initial Questionnaire

TUDOR HISTORY QUESTIONNAIRE

Please circle the correct answer.

1. On the whole, how difficult has the Henry V11 module been to understand?

Very difficult difficult ok easy

2. Which of the following topics have been most difficult to understand?

Foreign policy Finance Government Nobles

3. Which skill has been the most difficult to grasp?

Inference source utility source comparison essay

4. On the whole, what kind of classroom activity helps your understanding the most?

Watching video class discussion role play group work

5. How well do you feel you understand the Tudor period?

Very well well quite well not much at all

6. On the whole how willing are you to join in class activities?

I join in most activities with enthusiasm.

I often join in and make regular contributions.

I occasionally join in and make some contributions.

I avoid joining in and make rare contributions.

7. Please explain underneath what factors make you more or less willing to join in class activities.

Appendix C: Final Questionnaire

TUDOR AS REMOTE VOTING ROLE PLAY

Final Questionnaire

1. How has the character role play affected your learning of this module?
2. Are there any ways you think it would work better?
3. Which aspect of the role play worked best in your view?
4. *Tick the statement underneath you agree with most.*
 - 5.(a) The remote voting role play was very helpful in understanding the module.
 - (b)The remote voting role play was quite helpful in understanding the module. © The remote voting role play added little to my understanding of the module.
 - (d) The remote voting role play added nothing to my understanding of the module.
6. (a) The remote voting role play gave me confidence to participate in class learning and significantly increased the amount I joined in.
(b)The remote voting role play encouraged me to participate in class learning and prompted me to join in more often.
© The remote voting role play did not affect my confidence or the amount I joined in in lessons.
(d) The remote voting role play put me off joining in in lessons.
7. (a) The remote voting role play significantly increased my enjoyment of the lessons.
(b)The remote voting role play was quite enjoyable.
© The remote voting role play did not affect my enjoyment of lessons.
(d) The remote voting role play made me enjoy the lessons less.

An investigation into the effect of a peer support system on students' motivation

Gabrielle Reigh

INTRODUCTION

Aims and brief summary

The aim of my project was to investigate to what extent students in an AS Language and Literature group can help each other to develop better study skills. From the beginning of the academic year, students were put into pairs selected by me according to each student's needs. At different stages in the course, the pairs were given tasks in which they were encouraged to exchange ideas and tips for success. The tasks became progressively more developed, so that the students had to rely on their new study partner more and more. When I started the project, I hoped that its end result would be that students would learn from their study partners and also produce work of a better quality both independently and in their groups. I thought that another benefit of the system might be that it would produce a more cohesive class, where students are comfortable working with a wide range of members in the group.

Research on peer support systems

I came across the concept of buddy systems when I used to work in secondary school. It is a method that has been introduced into primary and secondary schools mainly as a way of encouraging students to form good relationships with students from different year groups. Most of the research I have found for the project was about secondary and primary schools. I found an article on the University of Glasgow educational research website entitled *How the buddy system came to be a vital and integral part of the school's induction procedure*, explaining how a peer support system operated in Kemnay Primary School.

The researcher, Dorothea Adam, wrote that the project was a result of the school's concern that they were only addressing academic issues and not dealing successfully with the children's insecurities and integration into the school community. The staff felt that rather than trying to help the younger children, the Upper Stage children were more likely to bully them. The staff decided to talk to the Upper Stage children about this and came up with the idea of a buddy system together.

The children were put in 'buddy pairs' based on existing friendships and acquaintances and some of the duties of a buddy were to meet up with the younger children before break and help them dress for the outdoors and make sure they had their lunch with them.

The experiment was deemed to be fairly successful as most of the older children enjoyed being buddies and felt they could empathise with the younger children. Some developed closer relationships than others and interestingly, it seemed that the children who enjoyed the experience the most were those who were paired up with students who they didn't know beforehand. There were some negative points to the scheme however, such as the complaint from the older that the scheme gave them less time to socialise with their own friends and there were some instances of 'over friendliness' when a buddy became too attached to their pair. By the end of the project, the staff felt that the novelty of the experiment had run out for the children and that the buddy was seen as a bit of a nuisance, but that when probed further it emerged that they felt that the buddies had helped them integrate into school life.

There were some suggestions for improvement from those involved:

Suggestions for improvements

From the Primary 7s:

- We should want to be a buddy
- We should be paired with someone we don't know
- We should be in charge of a small group rather than an individual therefore making it easier for Primary One's to make friends with each other
- We should be involved in class work, eg paired reading, computer work.

From staff interviews:

- Buddies need clearer guidelines as to their role and expectations
- Because of discrepancy in numbers between Primary One and Primary Seven not all Primary Seven's were buddies and this caused some degree of jealousy
- A more natural process of selection should be adopted to pair buddies and Primary One
- Introduce the idea of buddies, also buddies themselves, to parents and children during the induction procedures and at play session at the beginning of the school year
- Develop further the idea of peer tutoring for the mutual benefit of all.

From parent questionnaire (Primary 1):

- Introduce child to his/her buddy in May/June during the induction programme
- Make sure the buddy is very clear about his/her role
- Parents to meet buddy
- Video of buddies and Primary One working together.

How I applied the study to my own project

The aims of my project were different because rather than simply using the buddy system to help the students adjust socially to college life, I wanted to use it to help them improve their academic work. The idea for the project came out from my concern that English Language and Literature students were finding it difficult to read the novel for unit 3, *Wuthering Heights*, because they could not organise their time efficiently. I was also concerned that when students were given tasks to prepare in pairs outside of lessons some did not spend much time doing it and therefore the work could be poor.

Having read the research on Kemnay Primary School, I decided that I would pair the students with students they didn't already know. However, I wanted them to feel that they had some say in who their buddies could be so I asked them to nominate 3 people that they would like as their buddy and I chose their buddy from that list. I paired people for different reasons. Sometimes I paired up a person who was motivated with someone with less developed study skills in order to help the weaker person improve, and sometimes I paired two students with a high minimum grade who had not fully developed their potential in order to see whether they would motivate each other.

I also decided to give the buddies projects to do outside of class in order to encourage them to rely on each and see whether they benefited from the support or whether it hindered their learning. As suggested in the Kemnay School project, I wanted to give the buddies clear guidelines to their role so I started the project by giving each student a letter explaining the experiment and discussing this with them.

METHODS

In the second week of college, I introduced the project to the students and described the aims to them. We discussed the problems encountered by students in previous years with regards to studying outside of college and how the buddy system might help motivate them. The students' response during class discussion was positive as I think they were intrigued to be part of a research project.

One of the reasons why I wanted to do the project was to allow the students to reflect on what their goals were in English and whether they had acquired the study skills to achieve these goals. In order to do this, I asked the students to complete a First Stage Questionnaire in which they had to explain what they wanted to achieve during their AS course and consider how having a buddy might help them achieve their goals. I then asked them to nominate three other students to be their buddies, encouraging them to consider students outside their group of friends.

For the following lesson, I gave the students a letter explaining the project and telling them who their new buddies were. I also set up the first task that they would collaborate with their buddy on – a PowerPoint presentation on a book of their choice from a reading list provided. Even though these were individual presentations, 2 opportunities were given to the 'buddies' to get to know each other better by discussing the book they had chosen and how they found the experience of reading something perhaps more challenging than what they were used to.

During the course of the year, the 'buddies' worked together on several other tasks, each designed to allow them to get to know each other better and rely on each other's hard work.

Before we started reading *Wuthering Heights*, normally the most challenging aspect of the course, the buddies discussed what they envisaged that they would find most difficult about reading it, to exchange tips about how to read the novel successfully and to set each other targets for their next meeting, in a month's time. For the next buddy meeting, the buddies discussed their targets again and any difficulties they might have had in meeting them.

The final project that the buddies were involved in were PowerPoint presentations on the historical context of *The Pardoner's Tale*, by Chaucer and *Death of a Salesman*, by Arthur Miller, two texts which they would be comparing as part of their A2 course. The 'buddies' were given one and a half lessons to prepare these presentations and then present them to the class.

In addition to these projects, the buddies worked together in other lessons during pair activities and before the exams they checked on each other's progress. In his way, they kept in touch with their buddies and could discuss their progress in the course.

FINDINGS

Responses to the First Stage Questionnaire

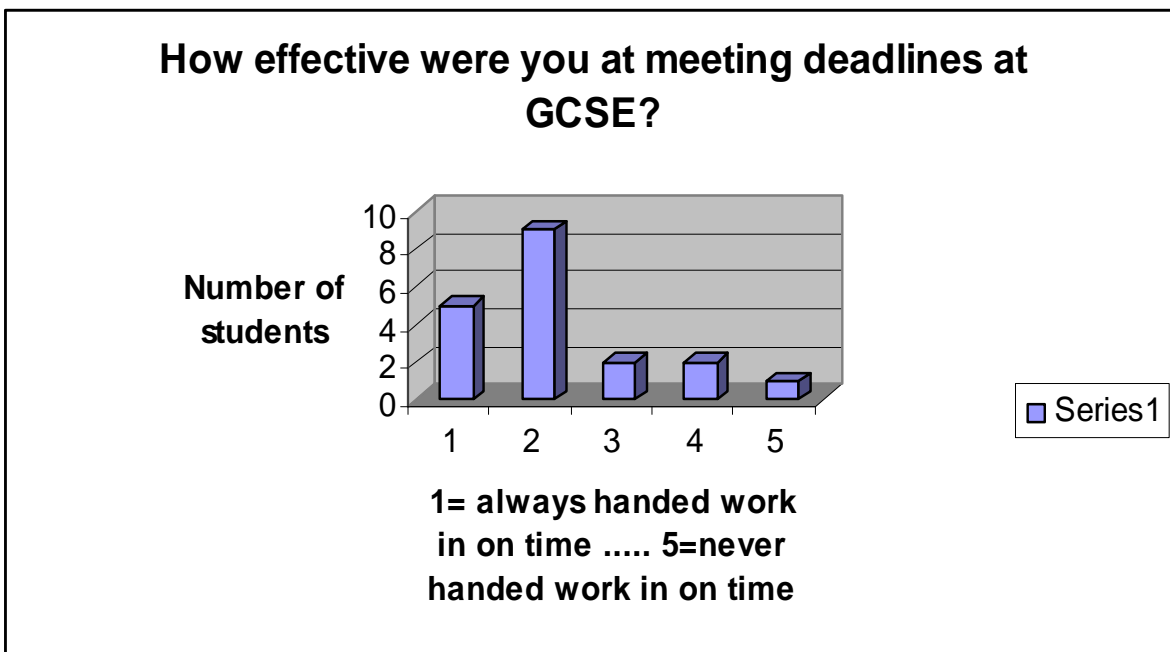
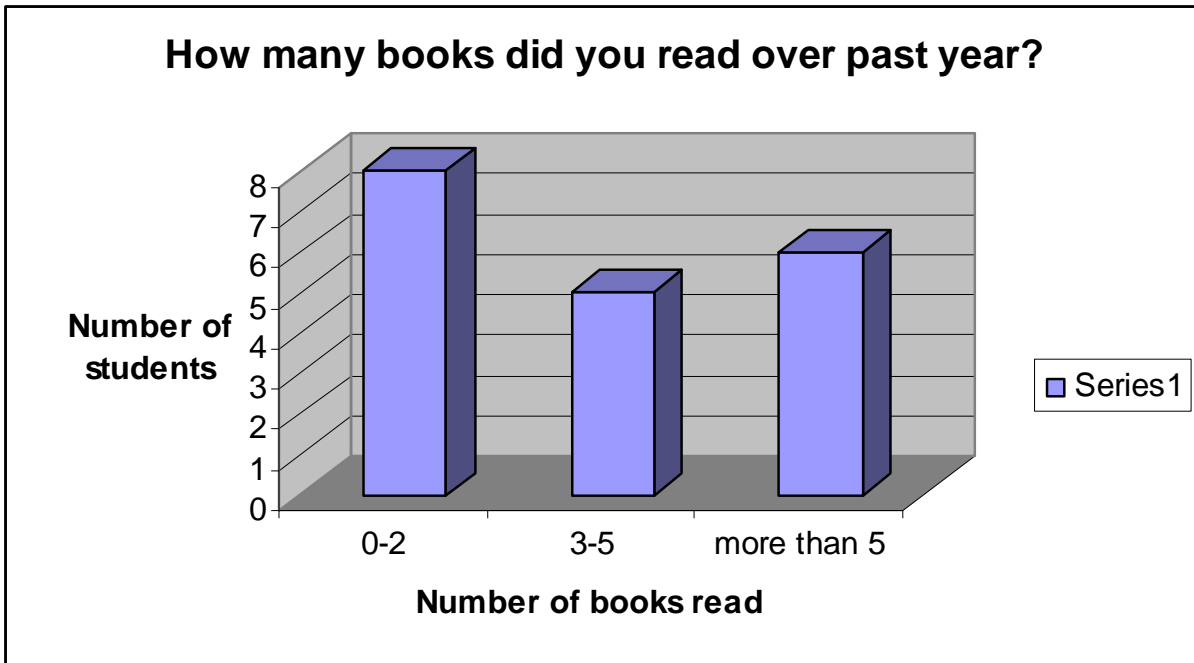
1. What do you feel that is your greatest strength in terms of your study skills?

Comment	Number of comments
Reading	8
Essay writing	4
Coursework	5
Writing under timed conditions	2
Working as part of a team	1
Being a team leader	1
Punctuality	1
Meeting deadlines	3
Revision	2
Creative writing	3
Textual analysis	2

2. Which of your study skills that relate to English would you most like to improve?

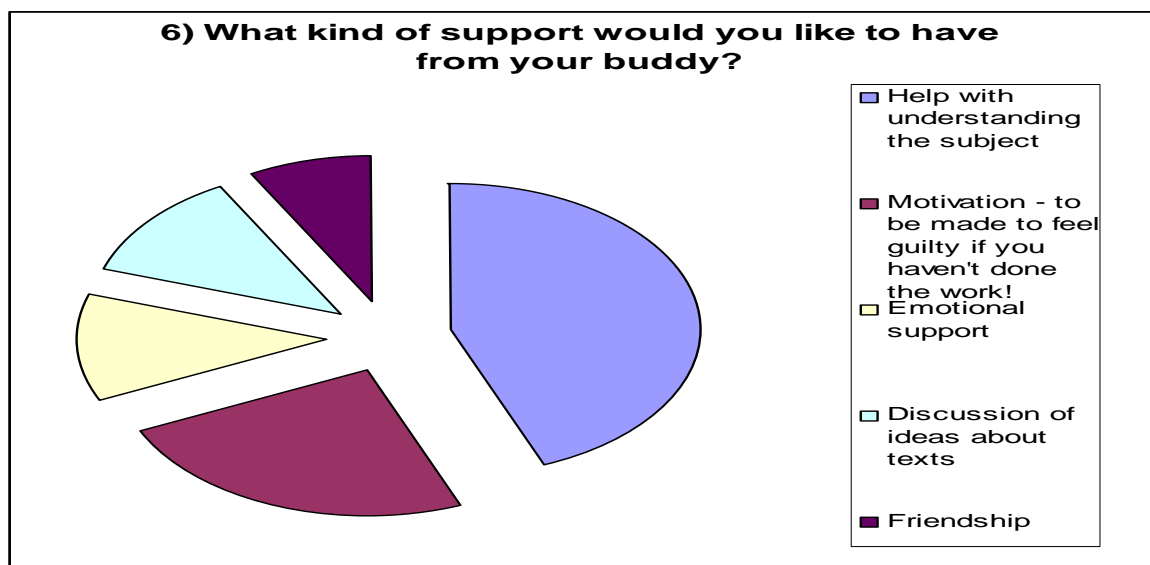
Comment	Number of comments
Timed essays	4
Planning essays	3
Developing answers	2
Revision	2
Reading	3
Widen vocabulary	4
Essay writing	6
Time spent on homework	3
Staying motivated	2

Q.3 & 4

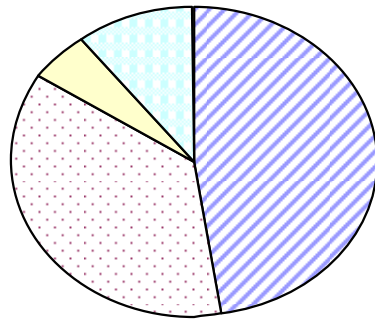


5. What do you feel you have to offer in terms of support and motivation to your buddy ?

Comment	Number of comments
Encourage them to read more widely	1
Help them prepare for lessons	2
Help them organise their time	2
Encouragement	4
Emotional support	7
Discuss ideas	1
Practical help with tasks	7
Friendship	3

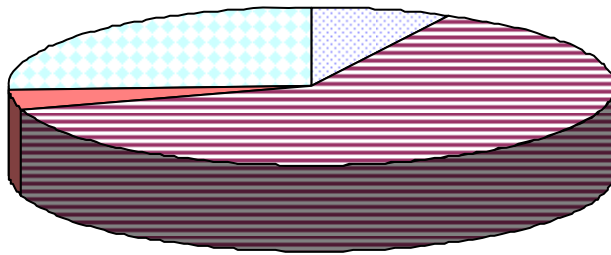


7) Do you have any worries about the buddy system?



- No concerns
- Unequal sharing of work
- Not getting on with the buddy
- Not knowing anything about the buddy beforehand

8. What would you like to achieve this academic year in Language and Literature?



- Good understanding of the course
- Good grades
- Meeting new people
- Better writing skills

For more information about the findings from other buddy meetings throughout the year, see appendix.

Final Stage Questionnaire Responses

1. How do you feel you have performed in English this year?

Comment	Number of comments
I feel that I adapted to the AS course well and regardless of the grade I'll get, I really enjoyed the course – it's one of my favourites.	1
I improved my skills.	3
Happy with the January results	1
Could have worked harder	5

2. Which study skill related to English did you feel you most improved this year?

Comment	Number of comments
Knowledge of grammar and terminology	5
Vocabulary	1
Analysis	8
Structuring essays	1
Concentration in class	1
Reading skills	1
Homework	1

3. How did you feel you motivated and helped your buddy this year?

Comment	Number of comments
Revised together	2
Helped them in class to complete the tasks given	6
Exchange of ideas	3
Friendship	1
Worked together outside of college	2

4. What was the most helpful thing about having a buddy?

Comment	Number of comments
Having someone to talk to who wasn't a teacher, so I didn't feel stupid asking them questions if I didn't understand.	2
She helped me with problems as she was going through the same things as me.	1
Help with understanding ideas.	4
Exchange of ideas	4
Motivation	1

5. How do you think the buddy scheme could have been improved?

Comment	Number of comments
It is unfair that some people knew their buddies outside of the lesson while I had to work with someone I didn't know.	1
Have more buddy lessons	2
Work with other buddy pairs in buddy groups.	1
Have two buddies rather than just one so as to get to know more people in the class.	1
Swapping buddies through the year to meet new people.	
No improvements needed.	4

6. What were the advantages and disadvantages of working with a buddy on a project (eg. PowerPoint presentation)?

Advantages:

Comment	Number of comments
Sharing the workload	8
Fresh ideas	5
The end product was of a better quality than if I had worked on it by myself.	1
You can benefit from the other's person's knowledge (eg. IT)	2
New friendships	
More motivating than working with a friend	1

Disadvantages:

Comment	Number of comments
I didn't bond with my buddy.	1
Difficult to do the work if the buddy is absent, or has even left college!	3
The work may not be done the way you want it to be done.	2
All the work can fall on one person.	2
Buddy may not be very communicative.	1
It is difficult to arrange a time to meet after class.	1
It means spending less time with friends.	1
You don't get to work with someone new.	1

CONCLUSION

Looking at the results of the First Stage Questionnaire, I realised that the students could be quite unrealistic in their expectations of success. 42% of students had read less than 3 books during the year and confessed to having problems with meeting deadlines, yet everyone expected to achieve at least a grade above their minimum grade in the final exams. In the light of this information I paired up students who I felt might learn from each other and inspire one another to do more work.

I was pleased to see that the optimism regarding the scheme that the students had expressed in the First Stage Questionnaire was still reflected in their Final Stage Questionnaire. In both these questionnaires, the students enjoyed the idea of forming a friendship with someone new as they felt this made the group as a whole more comfortable to work in. They also liked the opportunity to exchange ideas with someone who maybe have had a different opinion and did not have to agree with them purely because they were friends.

When working on the PowerPoint presentations on historical contexts, some buddies felt that they had learned new information from their partners who did History or developed new IT skills because of the partnership. Interestingly, some students felt that working with someone new brought more formality to the task and that this helped them become more motivated because they would 'feel guilty if they let the other person down'.

The group as a whole benefited from the project. The course forum confirmed that students felt comfortable with other members of the class, partially due to the buddy system. This idea was also reiterated in a lesson observation with the class where it was noted that: 'The teacher promotes mature working relationships between students, encouraging the development of individual and collaborative skills'.

While most students seem to have benefited from the project, it made a real difference to two pairs in particular. One pair were two students with high GCSE scores, one of which was underperforming at the start and sometimes lacked focus in lessons. The pairing benefited both students and I think played a significant role in their now excellent performance. The second pair was a girl and a boy who worked well together even outside lessons, meeting before the exams to revise together and plan essays.

There were ways in which the project could have been improved. I felt that I didn't use the buddy idea as much as I could have done as I didn't want it to become tiresome to the students and was concerned about finishing the syllabus. However, as a result of this, the buddy project was not something that was at the forefront of the students' minds all of the time. Another problem with the experiment was that some students' buddies had left the college and so they had to be given a different buddy at a later stage, which sometimes meant that they didn't bond as well.

I felt that the experiment had an overall positive effect on the atmosphere in the group and the students' motivation. Although the group had some discipline problems at the start of the course, by the end the students had become much more enthusiastic and determined to succeed, although it's impossible to say how much this had to do with the buddy project. However, I don't feel that I fully fulfilled my original aims to develop the students' time management skills and ensure that they completed the tasks set to the best of their ability. Certain students still rushed homework and failed to consult their buddies on the projects given, while others were still finding it difficult to read the novel by the deadlines set.

Bibliography: The SCRE centre (www.scre.ac.uk)

Appendix

Feedback from the buddy meeting in which they set each other targets for reading *Wuthering Heights*

Concerns about reading the novel

Comment	Number of comments
Time management – finding the time to read the book.	7
Finding the 19 th century style and vocabulary unfamiliar.	7
Problems with understanding the plot	3
The novel seems boring	1

Solutions/ targets given by the buddies to each other

Comment	Number of comments
Set aside a particular time period for reading	12
Read in a quiet place	2
Write summaries after reading each chapter	5
Look up unfamiliar words in the dictionary	4