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Active learning and creativity in education.

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Abstract

This paper looks at how active learning methods can be used in teaching or training to enhance students understanding of subjects as well as develop other important skills such as communication and teamwork.

Two different activities, which the authors have used with students, are described and evaluated in detail. We suggest how such activities can encourage learners' to draw upon their existing knowledge, and through dialogue and participation develop their conceptual understanding. In this active process it is important that learners are given the opportunity to debate, negotiate and speculate about 'new' knowledge so that they can become more intuitive thinkers.

The paper will discuss the learning theory that underpins the exercises which links activity, social interaction and the development of mind. It identifies the need for an 'active learning curriculum', which is more likely to be achieved by incorporating opportunities for students to engage in such practices as: problem solving, collaboration, social participation and creativity.

This paper is structured as follows:

- it starts with a rationale and introduction to the topic,
- then uses a case study format to describe, analyse and reflect on active learning approaches that have been used with school/college age (16-19) students,
- the final section reviews theoretical perspectives on various types of active learning by drawing upon the research and writings of key educationalists in this area of pedagogy.

Introduction/Rationale

The authors both work on teacher education courses including Post Graduate Certificate in Education (PGCE) courses which are the mandatory qualification in the UK to be able to teach in schools. Trainee teachers often initially have a tendency to use teaching methods they have predominantly experienced themselves, which may well have been mainly didactic, and teacher centred. During their PGCE course trainees experience and have the opportunity to try out with their students a variety of teaching methods including strategies for active learning. This we feel enables them to respond to the challenge all teachers' face of motivating their students to engage with subject matter.

It is useful at this stage to clarify what we mean by active learning. It can be described simply as teaching where the students are actively involved in, and contribute to the learning process. The key element here is that learning activities are designed to enable students to activate their existing ideas and perceptions, and through collaboration and social participation with other students, they move on to a higher level of conceptual knowledge and understanding. This is seen in contrast with approaches where teaching is a one way transmission of knowledge from teacher to students.

There are a variety of methods, which if integrated into teaching can enhance active learning, the following are examples of the more common methods but are by no means an exhaustive list: role plays, simulations, games, case studies, discussion, group work, brainstorming, problem solving, student presentations, visits and so on.

Choice of case studies

For the purposes of this paper we have chosen two very different courses to illustrate how active learning can be utilised effectively with different cohorts of students. The first one is an Advanced (A) level Politics course which students usually study along with one or two other A levels. A level study is considered the academic route for students post sixteen with the clear aim of progression to Higher Education. The second course is a General National Vocational Qualification (GNVQ) Advanced in Business, which prepares students for employment or further study in the area of Business. Although usually the same age students (sixteen to nineteen year olds) study these courses over two years they are quite different in their content, structure and methods of assessment.

A level Politics

Before discussing classroom activities and student interactions it will be useful to describe the context within which they were conducted. At the start of an A level Politics course the students are likely to feel overwhelmed by both the new college environment in which they find themselves and the fact that they are studying subjects at a more specialised level. Students are often unclear about what they have chosen to study and they bring different levels of political literacy to the classroom. Political literacy in this instance understood in broad terms where students might have some practical understanding of concepts drawn from everyday life and personal experience. They may have awareness about current political issues, controversies and differing party political perspectives. Some have a more active interest, will have engaged in political discourse with parents or peers, and be familiar with some of the language of politics. Other students have a more passive appreciation of the nature of politics often defined for them by the media, which focuses on individuals rather processes. Politics is something, which is outside of their common experience and seems too irrelevant to their everyday lives. Regardless of their level of political literacy or interest in the subject a typical London classroom will include a diverse range of students who provide richness in experience which can be drawn upon during the course. The activity described encourages students to bring in their personal views, experiences and interpretations to discussion, and there is a sense of sharing and constructing knowledge.

Over the years of teaching A level Politics a well-established teaching team have devised an induction programme which tries to accommodate the difficult transition from General Certificate in Secondary Education (GCSE) to A level. This phase is recognised as particularly challenging for both teachers and students and the task of the teacher in the early stages of the course is to help students to see what they do know, what they can do, to build confidence and help define potential. Other essential parts of the induction process include establishing ways of working and creating a safe environment, which are built on joint activities and shared experiences. There is an early emphasis on concepts because they provide students with the 'building blocks' and language to make sense of world of politics. Crucially these concepts are not learnt in isolation or out of context and in fact many of the concepts appear frequently in everyday talk about politics. As Vygotsky suggests (1986:194) concepts exist at two levels, firstly at the spontaneous or everyday level and secondly at the taught level where ideas are taken over from other people. This is a two way process 'upward' of spontaneous concepts, 'downward' of non spontaneous concepts, each mode facilitating the other - and the joint operation being characteristic of human learning' (Britton, 1987:23). This process can be illustrated by an early lesson where students look at the issue 'rights and freedoms' via a sorting exercise (appendix 1). One of the aims of the lesson is to encourage students to share ideas about rights based on their own experiences but also to begin to develop an appreciation of universal rights which underpin some political systems and processes.

At the beginning of the lesson students are divided into small groups and asked to look at the list individually, they have to prioritise in their own minds 'the ten most important rights in a democratic society' and then put forward their choices to the smaller group. Half way through the lesson the small groups report back to the class, highlighting points of consensus and disagreement. In the small group discussion students put forward their views energetically. Typically, the starting points for discussion are rights, which they can identify with personally. When prompted to give reasons for their choices they have to begin to think in a less situational way and move onto more generalised principles linked to their own ideas about democracy. The idea that 'people should not be detained without charge' might relate directly to their own experiences of policing but in identifying this as a key element within democracy they move into more abstract ideas about the need to limit the power of the state. There are some rights, which cause more disagreement than others. For example 'Torture should never be used' leads to a debate about the need to physically punish particularly anti-social criminals such as terrorists and child abusers and here there are easily available examples of horrific crimes to support arguments for torture. The dialogue on torture goes to the heart of the nature of 'liberal democracy' and students who argue against torture highlight how a solution used for one group of criminals might become more widely used by the state for others less 'anti-social'. In the process of deciding which are the ten most important rights in a democracy students have begun to establish the connection between one concept and another, and that one concept takes its meaning from another. This of course is not immediately apparent by the end of the lesson but this level of abstraction develops over time, as the process of organising concepts into a system becomes a more conscious process. As Vygotsky proposes 'The formal discipline of scientific concepts gradually transforms the structure of the child's spontaneous concepts and helps organise them into a system: this furthers the child's ascent to higher developmental levels.' (1986:206)

In the whole class feedback small groups report back on points of disagreement and here students begin to appreciate that the issue of rights is highly controversial, not easily resolved within any political system. Two and half terms later when students were asked to reflect on the activity, they recall the benefits of the debate:

Preston: Yeah, the exercise we done on rights where we had to pick your rights in order of importance, I thought personally that it was like a good thing because ... everyone else's was different to mine. Some people thought that this right was more important than others. But in our constitution we haven't got everything written down and I know some people say its bad, yeah, because you don't know what your rights are, but if you see it in another way, its good because like in America they've got the right to bear arms but now that's going to far..

Aysha: But you can see now, because like you said people have different views on their rights, you can see why its much harder to implement a constitution in a country which has a codified one, because you're going to have to make consideration for the people who want one thing and another thing and trying to reconcile those differences.

Thus the sorting exercise on 'rights and freedoms' appears to have encouraged exploratory talk, argument and discussion between students, as well as reconstructing what they already know and trying out new levels of thinking about the concepts. Janet Maybin's research highlights the 'dialogic' nature of conversation and how talk between pupils represents 'a collaborative exploration and negotiation of meanings and understandings.' (Maybin, 1991:37) The student recollections also indicate how they have made connections between the activity and development in their own thinking about ideas and political processes.

During the class feedback the teacher may take on a more interventionist role by introducing the idea of conflicting rights for example, the 'right to keep as much of your wealth and income as possible' comes into conflict with 'the right to have free access to health care and education'. So a greater level of complexity is introduced, that some rights may have to be limited if another is to be protected. The concept of 'appropriation' is relevant here because the final discussion which is more teacher directed facilitates 'reciprocity of teaching and learning' with the teacher 'reconstructively' recapping in order to represent ideas in a 'recontextualized' way. (Mercer in Stierer and Maybin, 1994:105) In the whole class discussion

there is a conscious attempt to pool ideas and move students on in their conceptual understanding. This it could be suggested is an example of 'instruction' proceeding ahead of development and a working within the 'zone of proximal development'. Overall the 'rights and freedoms' exercise has served many useful purposes; students are involved in discussion, they begin to feel comfortable in a small group setting, they contribute whatever their own level of political literacy because the notion of rights is of direct relevance to their own lives, they work collaboratively sharing ideas. Also in the process they extend their conceptual understanding of key political concepts such rights, freedom and democracy. In the small group discussions there appears to be a social process of scrutiny, 'one of sharing, comparing, contrasting and arguing one's perspectives against those of others' (Edwards and Mercer, 1987:164) The opportunities for peer group talk in the lesson allow the students to make sense of ideas in their own terms and undoubtedly generates a collective willingness to learn.

GNVQ Advanced in Business

As with the previous example before discussing the actual activities it is useful to describe the context of the course and factors that lead to the use of these particular active learning approaches.

GNVQ courses are designed to be pre-vocational allowing students study and some practical experience of a broad vocational area. Along with vocational (subject specific) units students have to be competent in a number of generic 'Key skills' which are applicable to all students no matter which vocational area they have chosen to study. Mandatory skills are those of Communication, Information Technology and Numeracy, optional skills that students can also be assessed and accredited for are Problem solving and Personal skills which includes teamwork.

The nature of study on the GNVQ courses in Business necessitates project work, course work and continuous assessment. Often students on GNVQ courses have not been particularly successful in their earlier (often more academic) studies, there is generally a mix of motivations and abilities within a typical group. Over a number of years the staff on the course team developed various methods to try and harness the potential of groupwork and active learning during the two years of study. A successful addition, undertaken in the early part of the course was a three day residential away from college in which approximately sixty students from three year one classes took part. The students worked in groups which were designed to be different from their college groups. These groups were smaller (approximately twelve) close friends were split up and a balance of gender, ethnic background, motivation and ability levels was attempted. Over the three days the students took part in a variety of activity based exercises including role-plays, simulations, learning games, problem solving and group competitions. This allowed the course team to assess various elements of the key skills in particular communication, problems solving and teamwork. Along with this formal assessment there were the less quantifiable but arguably as important outcomes of the whole experience for the students. These included confidence building, forging of positive social and working relationships, which would generally prove to be beneficial for their ongoing development as students on the course and beyond.

This following section of the paper focuses on one of the activities the students engaged in during this residential. This activity is also to be run as a workshop at the Creativity in Business and Education Conference in Zakopane this year (2000) to accompany this paper. Although conference delegates will not be studying the same course participating in the workshop should illustrate some of the potential benefits of using active learning methods in teaching.

Prior to the exercise the facilitator needs to build a construction out of one set of children's building blocks (e.g. Lego), the intricacy and size of this can be geared to the level of the participants and how long you are aiming to run the activity. This construction is then kept in a secure place, participants should not see the construction before the activity. Participants then work in teams (a minimum of six in each team, probably not more than eight) competing with each other to build the same construction from the building blocks. Each team is divided as equally as possible into three roles; observers, communicators and builders. The team or the facilitator can decide who takes on which role. If an aim is to enhance decision making between students their team should make such decisions. Alternatively the facilitator can give out roles if they wanted specific individuals to communicate more or work together. The observers are the only roles that are

allowed to look at the construction that the facilitator has built, and then they describe this to the communicators. The communicators listen to the observers, and then try to pass this information on to the builders. The builders then try and build the construction out of their allocated set of building blocks. The facilitator needs to set limits on the number and lengths of times the observers from the different teams can view the original (facilitators) construction.

The activity starts with an explanation of the task and a clear outline of the 'rules', time limits and so on by the facilitator (appendix 2). Almost immediately the activity starts the students become very involved in their roles and motivated to achieve the task. The activity necessitates at various levels and in different ways between roles communication, observation, listening, memorising, teamwork, organisation, planning, time management, thinking and problem solving. It is important for the facilitator to take notes of the ways teams and roles approach the activity as this is useful when reflecting on the activity. For example some builders may organise all their blocks in colour and size others may just play with the blocks until the communicators try to explain what to do. Some observers and communicators organise between themselves which parts of the construction to concentrate on and memorise, others do not. Once time is up, the original (facilitators) construction is brought into the open and compared alongside the various teams 'constructions in progress' all participants can then see and compare results.

To maximise the potential of the activity it is important for participants to reflect and comment on the activity. Initially there can be an analysis of the skills the different roles (builders, observers and communicators) felt were important. It is likely to include most of those mentioned above without very much prompting. These findings can at the time or in subsequent sessions be related to specific areas of study or work relevant to the participants. With Business students we focused on communication as one of the main skills used in the activity, and how this is relevant for any organisation. Later on during the course case studies which may include communication issues within organisations can draw on students experience with this activity.

Purely looking at communication there are a numbers of aspects that can be drawn out.

- Types of communication -verbal, gestures, explaining, questioning, negotiating etc.
 - Communication within roles
 - Communication between roles
 - Direction of communication
 - Clarity of communication
 - Communication problems
- and so on.

The importance with this activity it illustrates the potential of active learning techniques to motivate and engage students, for them to socially participate in an activity and work collaboratively.

Student evaluations of the active learning aspects of the course such as the one outlined above were very encouraging, many rating it as one of the most important learning experiences of the course. Some students suggested the benefits of learning to work together and 'getting to know' their colleagues through such activities could have happened even earlier on the course, which prompted the course team to introduce similar activities into the induction week in subsequent years.

Theoretical perspectives

The examples used have explored the centrality of communication in the learning process and the way in which this can help students to explore ideas, create meanings, develop their conceptual understanding, work together and problem solve. Vygotsky's ideas about learning, particularly the concepts of scaffolding, appropriation and the zone of proximal development, reinforce the importance of the teacher's role in facilitating effective learning. The teacher is also socialising and inducting students in to ways of acting and thinking that are common to the educational culture of society. These are undoubtedly helpful in encouraging teachers to reflect on their own understanding and approaches to language and communication.

A particularly powerful theme throughout the research for this paper is the need to reflect on the extent to which teaching activity really transfers competence to the learner. Given the power relationship that exists in the classroom, and the teacher control of knowledge that follows from this, it can be hard in practice to ensure a 'handover' of knowledge. This process is likely to happen if students are clearer about the purposes of the teacher and develop confidence in their own ability to solve problems. Collaborative activities allow learners the space to construct their own meanings and potentially to transform their own thinking. Gordon Wells explains this dynamic interaction here:

Learning involves an active reconstruction of the knowledge or skill that is presented, on the basis of the learner's existing internal model of the world. The process is therefore essentially interactional in nature, both within the learner and between the learner and the teacher, and calls for negotiation of meaning, not its unidirectional transmission. (Wells, 1986:118)

Lave and Wenger (1991) present a situated learning that has relevance here. They suggest that knowledge, skills and activity cannot be viewed separately, nor can they be seen as just attributes of the individual, since they are developed in socioculturally organised activities.

As an aspect of social practice, learning involves the whole person; it implies not only a relation to specific activities, but a relation to social communities - it implies becoming a full participant, a member, a kind of person. (Lave and Wenger, 1991: 53)

Lave and Wenger's work reminds us of the deficiency of schooled learning, which places such a strong emphasis on the transmission of knowledge. However the debate over the value of abstract knowledge versus that knowledge which arises from involvement in activity appears to misconceive classroom processes. If learners are to develop their understanding of ideas they need to gain confidence in their ability to handle the 'tools' of the subject they are studying. This can happen through an active process of negotiating and debating new ideas thus skills and knowledge are being learnt together. Ideas emerge from activity and that interaction can enhance learners thinking in the subject in powerful ways. Wells (1999) emphasises the importance of 'dialogic inquiry' where learners genuinely communicate and make meaning in the course of an activity. In this process the teacher adopts a less predetermined approach within the classroom, listening, observing and recording student interactions more carefully so that teacher intervention, when it happens, scaffolds learning to establish emerging common knowledge. In this sense learning becomes a more transformative experience, as Wells suggests here:

From this perspective, then, learning to use these tools and practices through participation in jointly undertaken activity can be seen to involve triple transformation: first, a transformation of the individual's intellectual functioning and of his or her capacity for effective participation in the activity; second, a transformation of the situation brought about by participants actions; and, third, a transformation of the tools and practices as they are creatively adapted to suit the particular situation and activity in which they are used. (Wells, 1999:295)

In a recent National Advisory Committee for Creative and Cultural Education (NACCCE) Report for the Department for Education and Employment (DfEE) report entitled *All Our futures: Creativity, Culture and Education* several recommendations were made about how schools might contribute to developing 'young people's capacities for original ideas and action' (NACCCE Report, 1999:6). One key aspect of report referred to the importance of creating 'a balance between teaching skills and understanding and promoting freedom to innovate, and take risks' (1999: 10). We suggest that this creative potential can be realised through the use of more active approaches to learning within subjects that traditionally have a more rigid, academic knowledge base and tend to be less practically orientated. In this context there is a tendency for teachers to view knowledge as something that needs to be transmitted and learnt rather than constructed jointly by learners in a dialogic process.

In the course of collecting evidence for this paper the need to listen to student views on their learning, and whilst they are learning, was reinforced in a powerful way. The following quotation from a chapter in *'Thinking Voices'* appropriately entitled 'No, we ask you questions' aptly supports this sentiment:

'It is when pupils have learned that the teacher is truly willing to allow discussion to develop as part of the learning process, to appreciate spontaneity and to accept interaction, which is appropriate to the situation that they can begin to take such risks. They can be free to open their thinking and to engage in what they recognise as fruitful dialogue with the teacher. The challenge for us all is in the building that climate of trust in our own classrooms.' (Brierley, Cassar, Loader, Norman, Shantry, Wolfe, Wood in Norman, 1992 : 234)

This paper has reflected on practical activities and theoretical perspectives to illustrate the creative potential of active learning in education. It concludes that teachers can enhance learning substantially in their classrooms by integrating active learning approaches into their teaching. Students become much more involved in the learning process, to an extent they are in control, the activities often requires social participation and collaboration which are crucial to learners' cognitive and personal development.

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Appendix 1

Rights and Freedoms Exercise

From the list below select the ten most important rights or freedoms in a democracy- you may add one of your own choice if it is not on the list.

Discuss your list with other students in your group and try to come to a consensus. Make notes of any points, which give reasons for your choice. Particularly note any key points of disagreement.

Report back to the whole group.

- Everyone should have the right to vote in elections
- Everyone should be able to move freely within a country and to be able to leave it without fear of refused re-entry.
- People should not be detained by the police without being charged with an offence.
- Capital punishment should never be used.
- Everyone should have equal access to the law and be treated equally by the law.
- People should be able to meet and protest freely.
- People should be able to claim political asylum if they are being persecuted in their own country.
- People should be treated equally regardless of their ethnic background, gender, disability, age or sexual orientation.
- People have the right to be tried by a jury
- People should be able to freely practise their religion.
- No one should be forced to do military service
- People should be able to write and say what they want.
- Everyone has the right to own property and keep as much of their wealth and income as possible.
- Censorship of the media should not be allowed.
- Everyone should be paid at least the minimum wage.
- Everyone should have free access to health care and education.
- People should be able to sue trade unions if inconvenienced by their actions.

Appendix 2

The Building Blocks Communication Game

Instructions

Resources required:

- A standard set of childrens' building blocks per team (e.g. Lego), plus 1 facilitators' set.
 - A 'private' observation room/area, a building space per team.
 - A watch for timing purposes.
1. Prior to the workshop the facilitator will need to build a construction out of one set of building blocks, the intricacy/size of this can be geared to the level of the participants and how long you are aiming to run the game. This construction must be kept in a secure place, no participants should see the construction before the activity
 2. Divide participants into teams, ideally you need a minimum of 6 in each team, probably not more than 8.
 3. Each team is divided as equally as possible into 3 roles, this can be decided by the team or by the facilitator.
 - **Observers-** only they look at the construction the facilitator has built, and describe this to the Communicators.
 - **Communicators-** they listen to the observers, and then try to pass this information on to the Builders.
 - **Builders-** they try and build the construction out of their allocated set of building blocks.
 4. You should set up limits on the number of times the observers from the different teams can view the original (facilitators) construction and the length of time they do this.
 5. The observers must not be in contact with the Builders or see the progress of their construction.
 6. The communicators must not see the original (facilitators) construction, but can talk to the builders where the new construction is being built, but cannot touch or point to actual blocks.
 7. No writing or drawing is allowed by any participants.

If you have one room (lockable is useful) with the original construction in, you can then allow groups of observers to view it for timed periods, keep a note of the number of times observers have viewed it. The Observers liaison with the communicators can be in a relatively open space e.g. a corridor. Each team of builders will need their own 'space' to avoid observers and other teams seeing progress.

8. Once time is up, the original (facilitators) construction is brought into the open and compared with the various teams 'constructions in progress' all participants can see and compare results.

The De brief

This can focus on the skills the different roles (builders, observers, communicators) felt were important and are likely to include: Communication, Observation, Listening, Teamwork, Organisational, Time management, Problem solving. These findings can be related to specific areas of study or work relevant to the participants

E.G. If we take communication one of the main skills used in the activity, there are a numbers of aspects that can be drawn out.

- Communication within roles

- Communication between roles
 - Types of communication -verbal, gestures, explaining, questioning etc.
 - Direction of communication
 - Clarity of communication
 - Communication problems
- and so on.