

Integrating Business and Economics Education in a Technology Project

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■ Background

National Curriculum Design and Technology links work formerly associated with art & design, business education, craft, design and technology, home economics, and information technology. But it is not simply an amalgam of all the knowledge and skills of those subjects. Its stated aim is to:

'enable citizens to cope with a rapidly changing society, and meet the challenges of the 21 century', (1)

Nor does it mean that some of those subjects do not have a separate existence outside technology. True capability can only be achieved with inputs from all subjects. One only has to reflect on designs such as Concorde, high rise flats and the Sinclair electric car to realise that technical and scientific expertise does not guarantee that consumer needs are met.

Business and Economics Education (BEE) has an important contribution to make to technology. This raises the question of subject expertise. According to HMI:

'...the infusion of economic and business concepts is not quite so easily achieved as many teachers are lead to believe ...an encounter with business and industrial contexts which is not focused in both preparation and follow-up by the teacher, do(es) not produce understanding'. (2)

If BEE is left to non-specialists, where will their priorities lie? In their own subject expertise where they feel confident. BEE aspects will be left until the end, if there is time, as bolt on activity or solely as part of the evaluation process. How will progression take place? At Key Stage 2, pupils should:

'know that advertising helps promote and sell goods and services' by, for example 'advertising a school event'. (3)

At Key Stage 3 they should be taught to:

'consider the influence of advertising on consumers. (4)

Yet, in both primary and secondary schools an advert is often drawn as a simple poster with little thought for the media to be used, the potential target audience or whether the advert dovetails into a coherent marketing campaign. Where will the quality and rigour come from?

'...(it) does not mean reducing business education to a simple and stereotyped view of market research and retrospective costing of products, just because the non-specialist finds that easy to cope with...'. (5)

The Non-Statutory Guidance (NSG) brings an understanding of what is required. Design and technology:

'describes a way of working in which pupils investigate a need or respond to an opportunity to make or modify something. They use their knowledge and understanding to devise a method or solution, realise it practically and evaluate the end product and decisions taken during the process. (6)

Design and technology capability comes from pupils' enterprise, ability to work as members of a team, evaluating existing products, working to deadlines, keeping to budgets, reconciling 'conflicting requirements such as quality, speed and cost', acquiring a range of skills and working with a variety of materials. This process is described and assessed in four attainment targets.

Attainment targets and programmes of study are of equal importance. Programmes of study indicate what should be taught and include many statements relating specifically to BEE. In the examples below I have attempted to explain the attainment targets and relate them to BEE activities such as starting a business or a mini company project. At this point it may be worth noting that enterprise education competencies can be closely matched to the technology attainment targets. MESP/SCIP puts forward the view that:

'many of the new demands placed on integrated Technology ...can be met through Enterprise Education'. (7)

The first attainment target, identifying needs and opportunities, involves children working in a range of contexts; home, school, recreation, community, and business and industry, progressing from the familiar to the less familiar. Children are well practised in identifying their own needs; identifying the needs of others requires empathy and necessitates substantial research. BEE teachers are used to working in all these contexts. Children are encouraged to identify business opportunities and to establish whether the needs of others can be met by their ideas

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through a variety of research techniques. For progression to occur, children are introduced to an increasing variety of research methods linked in an increasingly sophisticated manner. There is a danger that the questionnaires that children compile at Key Stages 3 and 4 are little different from those found in primary schools. Another danger is that children are constantly set narrow problems identified by the teacher. This will not develop capability as children need to be given more opportunity to identify their own tasks for activity.

In generating a design, the second attainment target, proposals are put forward based on the research carried out. Information is organised, analysed and presented in a logical and coherent way. Alternative solutions are considered; constraints such as practicality and cost are considered; criteria are explored against which the success of the business can be evaluated. Elements of a business plan are prepared including budgets, cash flow forecasts and marketing. Computers and other IT equipment are the problem solving tools of BEE teachers who have extensive experience in applying word processing, desk top publishing, databases and spreadsheets, in a variety of ways to a context. Survey findings, once inputted to a database or spreadsheet can be presented as pie charts and bar graphs. The presentation is not seen as an end in itself but rather as a means of developing analytical and evaluative skills.

At first glance, the third attainment target, planning and making, might be perceived as a part of the process which BEE does not address. Children need to work with a variety of materials, tools and processes. They should produce artefacts (objects made by people), systems (sets of objects or activities which together perform a task) and environments (surroundings made, or developed by people). As part of their activity children may be involved in a cost benefit analysis of a local construction project. Their activities include a simulation of a protest meeting for all involved: companies, planners and residents for example. Invitations, advertisements and agendas for the event can be seen as artefacts. Taken in the context of the meeting, they are a system. The meeting itself, complete with displays and presentations forms an environment. It would be very difficult to claim, however, that BEE alone could deliver design and technology. In the same way, other

subjects on their own cannot bring about capability.

Evaluation, the fourth attainment target, is common to all subjects across the curriculum. In both BEE and design and technology, it is not an activity carried out at the end of a project. It should be built in to all stages, illustrating the point that the attainment targets do not dictate a linear approach. Children may start an activity by evaluating an existing product. They are required to evaluate their activities against the original need, take into account users' views, cost effectiveness and scale of production, and illustrate the economic, moral, social and environmental consequences. Their understanding of accounts and the application of financial skills allows them to evaluate the success or failure of a mini enterprise.

BEE teachers have been led to believe that they would be involved in technology. A DES publication makes this quite clear:

'Under the National Curriculum some business studies will be taught as part of Design & Technology ... This means that teachers who train to teach business studies will be employed for part of the time as specialists within a multi-disciplined team'. (8)

The BEE specialist in a school technology team has a variety of roles. Involvement in planning is essential. If no contact with children takes place, for whatever reason, other teachers will need help in understanding how the BEE dimension can be integrated into the new subject. This will involve attending meetings, preparing materials and briefing colleagues. Considerable time is required over and above normal teaching commitments.

It is important that all pupils have access to a BEE specialist. Without that access, it becomes very difficult to ensure quality and progression and develop true capability. This may mean teaching in a fully integrated manner alongside other design and technology teachers; it may mean supporting other teachers where appropriate in a planned and coherent way. Or it could be a combination of all these possibilities.

The BEE contribution should not be seen in terms of teaching cross-curricular IT skills. Time is limited enough in design and technology without this added constraint. All

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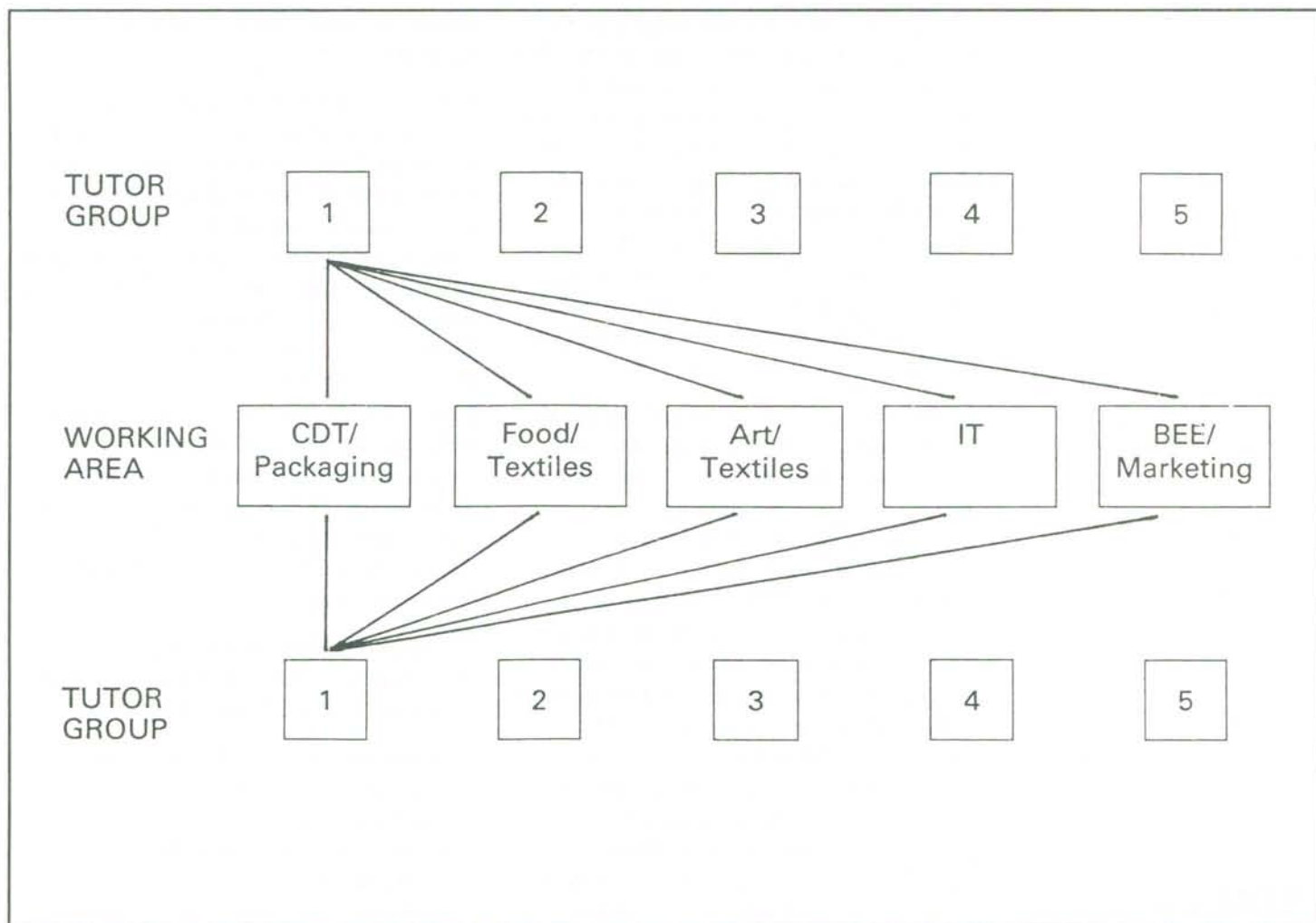


Figure 1: Organisation of pupils' work in 'Craze'

curricular areas should devote time to developing IT capability.

■ Moves towards integration

The NSG makes it quite clear that technology is a new subject and that integration of existing subjects is required. Integration is not easy and change must take place in manageable steps. In some schools, headlong rushes into integration have not worked. Well planned moves can and do work; but block time-tabling is an essential prerequisite for success. Whatever the degree of integration, BEE teachers have a definite role to play.

A large number of schools adopt an approach whereby technology is mostly delivered by discrete subject areas, often in a carousel arrangement. Teachers work to a common theme over the course of a year but children have to use the materials appropriate to the subject area; their ability to identify needs and opportunities is limited by a narrow range of materials. Teachers often complain that they do not have enough time and teach the same 'module' as many as six times a year.

Progression is difficult to establish and children perceive their technological experience as a series of inputs by different subjects. Such an approach may well perpetuate individual subject delivery. However, teachers do tend to work together on integrated projects ranging from a one or two day stand alone project to several projects lasting a few weeks each. BEE teachers should find no difficulty contributing to such a programme but should consider whether it is technology that is being delivered.

There are some interesting attempts to move towards integration in a more gradual way. One involves subject pairing. For example, a BEE specialist develops a term's (or half year's) joint scheme of work in conjunction with, say, a home economist and then team teaches for some of the time. A CDT teacher teams up with an art or IT teacher in the same way. The programme is repeated every term (or half year). Children experience every subject area during the year. In Year 8, pairs are swapped so teachers work with a different specialist. They recognise the expertise of other teachers and a

valuable exercise in team building is learned. Another approach involves teaching skills in a circus for about one hour a week, and working in an integrated way for the other hour. Several integrated projects are completed in the course of a year, but it is difficult to match the skills to the project. Some children will not experience working with food, for instance, until the last term and cannot apply those skills in the integrated projects earlier in the year.

Successful integrated projects can be a powerful way of delivering technology. The enthusiasm and enjoyment generated amongst children working in an open-ended manner is very revealing to some teachers. The learning which takes place can often be much greater than can be achieved in separate subject delivery. Once teachers let go of the reins somewhat, they are often surprised at what children can achieve; although probably more demanding for teachers, the children's enthusiasm percolates through.

The success of such projects depends on a whole range of factors. Staff need to believe in them; projects need to be well planned and organisational difficulties, such as pupil movement between work areas, anticipated. A project must be chosen which gives scope for all contributory subjects to participate happily and to display their strengths. If any individual subject's contribution is forced or false, then the project theme may need to be reconsidered, especially if there is only one project in a year. In planning, it is essential that the need for progression is considered but bearing in mind that children can only work with a limited number of materials in any single project and need to experience a range of materials over a Key Stage. It is not acceptable for a child to continuously work with the same material.

■ An example of an integrated project

I have developed one such project. *Craze*, in the course of my work as a 'Business and Economics specialist' in an LEA Technology team. The project was developed after a conversation with pupils on *Teenage Mutant Hero Turtles*. If children relate so much to crazes like this, then a project whereby they could work on their own craze could be a real winner. But could they be encouraged to reflect on 'crazes'? I produced an outline with some suggestions on how it could be implemented, leaving it to individual schools and teachers to

tailor it to their own requirements and, in the process, to take some ownership. The description which follows deals with how it has been used in schools and how it could be developed further.

The project is probably best suited for Year 7 and 8 pupils and requires about 15 to 20 hours of time. Working with a half-year group of about 100 pupils and 5 staff, the project could be organised as follows. Each teacher has two roles: one as a technology tutor at the beginning and end of the project and another as a specialist during the middle section. About 20 children would initially work with one of the five technology tutors, then split up into specialist areas and finally come back together again with their tutor.

The children are then asked to take the producer's campaign. Small team brainstorming sessions produce a whole range of possible ideas, some of which will be rejected by the children themselves as unrealistic or impractical. Discussion reduces the suggestions still further until there are just a few possible contenders in the whole tutor group, possibly one from each team. These ideas can now be explored more fully with some flesh being put on the bones of the ideas. Outline plans are developed for each idea; how can the craze be developed? What possible products can emerge? What might be the main elements of a marketing campaign? Discussion with their tutor will identify a variety of constraints the children will have to work with: whether the materials and equipment are available in school, whether some resources are accessible from out of school, and the expense of materials. Some direction may be necessary to avoid the over-use of some working areas or to ensure that children gain experience in working with different materials.

Having drawn up outline plans, children will need to make a decision as to which craze or crazes should be adopted by the tutor group. This can be achieved by a vote after presentations to the tutor group by each team. Hopefully, by this stage pupils will have already put forward their ideas to their target market (eg. primary school children) in order to test their response; their findings and proposed modifications should be included in their presentation. This test marketing teaches them the importance of ongoing market research before gearing up for full scale production.

Having decided upon a craze, the children begin to plan the next stage in detail. What needs to be done? Who will do what and in which area will they do it? What resources are needed and what deadlines are appropriate?

The children now move to one of the working areas. One tutor group may plan a craze involving cuddly aliens. Four children may go to CDT and possibly produce games, toys or point-of-sale displays. Another four would work in the art & design area producing clay or plastic figures, cartoon strips or animated cartoons. The home economics area would take another group producing food products or textiles to reflect the chosen craze: Cuddly Alien yoghurts or bum bags, for example. Children opting for the information technology work area may produce a craze database of a Cuddly Alien adventure game — although IT and BEE could possibly be combined.

In the BEE working area, children work on developing a marketing campaign. Some produce an advertising campaign using a variety of media; this may include comics, magazines, radio or TV adverts and point of sale displays. Tutor group 1, for example, having researched ideas and planned their activities, would split up into working areas. Some would go to the CDT working area and others would go to home economics, art, IT and BEE. The same would apply to the other groups so each working area has children from all five tutor groups. Individual children may spend all their time in one working area or experience activities in more than one area. During the working area time, it may be necessary for children to occasionally come back to their tutor groups to discuss progress and change details of plans in the light of problems and experience. Once all the 'making' activities in the working areas have been completed, children would go back to their technology tutors where presentations would be made and final evaluations take place. The role of BEE in this organisation is crucial because it is the area of work where the purpose of the whole activity is most under scrutiny. I should stress at this point that I do not consider this to be the sole contribution of BEE to technology. The project should be seen as part of a series of curricular experiences over Key Stage 3. It plays to some of the strengths of BEE and minimises weaknesses such as the making aspects and using a range of materials. A marketing campaign brings

together all the activities in different working areas.

The children's working brief is to design a new craze. Working with their technology tutors they research previous crazes such as spinning tops, hoola hoops, Rubik's cube, *Cindy*, *Star Wars* or Teenage Mutant Hero Turtles. This can involve collecting examples of merchandise and advertisements for current crazes or interviewing adults about the crazes of their childhood. They can then display the results of their findings which leads to a discussion of why previous crazes were successful. This discussion is crucial to ensure some understanding of the children's role both as a consumer and as a future producer, whether at an employee or employer. What did these crazes have in common? Were they aimed as adults or children? Do people really 'need' such things? What needs were being met or had producers identified an opportunity to persuade people to part with their money? Such discussion brings out issues such as using the world's limited resources and commercial exploitation of children through advertising and peer group pressure.

In the BEE working area, the children work on developing a marketing campaign. Some produce an advertising campaign using a variety of media: this may include comics, magazines, radio or TV adverts and point of sale displays. The purpose behind this kind of work is twofold: learning about the way products can be priced and marketed and reviewing the whole basis on which such activities are carried out. These objectives are both central to BEE and are not easy to achieve separately, let alone together.

For instance, children are asked to think carefully about their choice of media in relation to its cost and effectiveness in reaching the target market segment. They are asked to investigate a variety of sales promotion ideas: free gifts, competitions, coupons or special offers. It is one thing to stimulate children's thinking about the range of possibilities open today, it is quite another to help them to judge which are appropriate to use. Under the direction of a specialist, children can be guided to examine the range of possibilities and make decisions about which promotion activities are most cost-effective and suitable. Decisions can be made on the best way to distribute the final products — through specialist toy shops or chain stores, for example, and this might

involve even more research. A pricing policy needs to be established. A non-specialist might be happy to accept a price that children thought was appropriate. This guess may be based entirely on the cost of materials with a little bit added for profit. A specialist would obviously encourage children to explore different pricing strategies to a depth dependent upon the abilities and experience of the children. As a starting point, direct and overhead cost would have to be considered as would the price charged by competitors and, the level of profitability required. Gaining publicity for the craze can also be examined; children may explore possibilities of celebrity involvement, press releases and stunts to ensure free media coverage. Again, rather than simply putting pen to paper, children would be encouraged to think around the issues involved. Company stationary can be designed and made, possibly involving IT and art, but taking into account the image which they wish to project to the recipients of such stationery. What may be an appropriate marketing style for primary age children may not be appropriate for communicating with other businesses.

Another aspect of the work children would carry out in the BEE area would be co-ordination and communication. Marketing cannot operate in isolation from production. There is a need to communicate effectively with other working areas. Pricing, an essential marketing component, cannot be decided without reference to competition and production costs. Therefore, children must obtain cost details from their tutor group colleagues in the other working areas. They must ensure that there is consistent packaging and advertising in terms of colour, logo, information and type style throughout the product range. For instance, if packaging for food, textiles and games is being produced in the CDT workshop or the art room, it is essential that individuals in the marketing group ensure consistency. These activities need to be co-ordinated by children meeting their group members from other working areas and discussing how the marketing campaign affects their work.

These few examples show what might be done and how a BEE specialist may approach the activities in ways which others would not. There are, of course, many other possibilities which teachers can encourage. I have concentrated on the idea of marketing which

covers some of the programmes of study at Key Stage 3 but there is no reason why other aspects of BEE should not be included in this project.

Another approach might be more appropriate if the children's access to a BEE teacher is limited due to timetabling constraints. The BEE specialist would still work as a technology tutor in the introductory and final stages but rather than having a separate class, the role might change to that of consultant, working alongside other technology colleagues with children in a *planned* way. This would ensure access to a specialist for all children.

The third attainment target, planning and making, specifies that children are involved in making artefacts, systems and environments. In their working areas, most children will have been making individual *artefacts*. In the final stage with their technology tutor, the whole project begins to fit together. All the products that have been made, the toys, the food, the clothing and the packaging are linked together, forming a *system*. The marketing campaign itself is a *system*. An exhibition of completed crazes forms an *environment*, to which other year groups, parents and other adults — including the press) can be invited.

The presentation of their craze to other groups can be an enjoyable way of evaluating the outcomes of their work and the processes used. Children assess how well the craze meets the needs and opportunities which were originally identified. From the producers viewpoint, they relate their craze to what people want and are willing to buy. Will it make a profit or will it be a flop? They also assess whether it does meet consumers needs; did those needs originally exist (the need for novelty for instance) or has a need been created by the producer?

There are additional benefits of such a project. It can extend across the whole curriculum, bringing in music and media studies (radio and TV adverts), history (researching crazes in the past) and English (Cuddly Alien story books). It obviously incorporates elements of enterprise and EIU. Putting the craze to a commercial test would provide an excellent evaluation.

If the school's approach does not encourage an integrative approach, projects like Crazel can be undertaken in BEE alone. A better approach might be to work with one or more other subjects interested in a joint development. A

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joint project between BEE and CDT, for instance, will bring greater realism to both subjects and help teachers understand and appreciate each others' strengths.

Conclusion

Technology brings together subjects with a common, practical approach to learning. BEE has the unique potential to provide a vital link between those subjects. However, in order to provide a quality experience and to ensure progression, it is very important that the business and economics education dimension is delivered by a specialist. Moves towards integration are required. Careful planning in design and technology is needed to ensure that the expertise of each subject is used effectively to enhance children's technological experience, and to give all children the opportunity to develop their capability in order to reach the higher levels of attainment in technology. Projects like 'Craze!' bring technology subjects together and provide a possible model for BEE teachers.

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