

# Enterprise in the Curriculum: SCAMPER

SCAMPER is an idea generation tool (or to be precise a set of 9 idea generation tools) which can help people in organisations to solve problems creatively.

It was originally created by Robert Eberle, an educational administrator in the US, but gained wider recognition in Michael Michalko's seminal book *Thinkertoys* in 1991.

The principle itself is fairly simple.

Whenever we are looking for new ideas - in this case, in an FE context - passively waiting for inspiration can be counter-productive because it can often take too long, and achieve too little. Far better to use provocative mindtools which can help us to jolt our brains out of traditional thinking patterns, and enable us to come up with alternative and additional ones.

## SCAMPER

The acronym SCAMPER works by encouraging us to 'manipulate' existing thought patterns by asking ourselves a series of creative thinking questions using action-orientated verbs:

S = Substitute	(What if I could substitute this for that?)
C = Combine	(What if I could combine this with something else?)
A = Adapt	(What if I could adapt or borrow an idea from somewhere else?)
M = Modify	(What if I could modify this concept, or magnify it, or minify it?)
P = Put to other uses	(What if I could apply this to a completely different context?)
E = Eliminate	(What if I could eliminate it?)
R = Rearrange	(What if I could reverse this, or rearrange its parts?)

In fact, in the business world of enterprise, it is virtually impossible to think of an innovation we admire which has not used elements of SCAMPER in some way. For example, Dyson 'eliminated' the bag, the Company 'Umbro' got their name by 'combining' the 'um' from Humphreys with the 'bro' from Brothers, and Stella Artois 'reversed' the concept of beer costing too much from a negative into a positive with the strapline 'Reassuringly expensive.'

Similarly, from an FE perspective, SCAMPER can be used to encourage and promote a range of fresh options we may not have considered before, from the incremental end of the spectrum to the radical end of the spectrum.

Perhaps it is no coincidence then that Robert Eberle earned his place in 2004 in The Creative Education Foundation's Hall of Fame for being a 'tireless devotee of creative thinking' who 'carried his message far and wide in the education world', and also enterprisingly turned SCAMPER into a product, *Creative Games and Activities for Imagination Development*.

# Enterprise in the Curriculum: Case Study 1

## Business, Media and/or Performing Arts

### ***'Clothes Show' – Student Fashion Show***

Students from one or all of the above courses organise a fashion show which meets local community interest and supports the retail trade.

Practical tasks:

- Whole group decides on theme (e.g. 'Fair Trade Fashion'; 'Fashion on a Budget'; 'Mature but Young at Heart'; 'Support your Local Boutiques')
- Whole group decides on target audience (e.g. college community, friends and families) and important stakeholders (e.g. press; employers)
- Whole group decides on/if entrance fee to be charged and local charity nominated to benefit from proceeds (e.g. Fair Trade; Age Concern)

Week-by-week project schedule drawn up. Tasks allocated to different teams:

- Operations: organise venue, stage, lighting, music, changing facilities, chairs
- Product Supply: approach and engage local retailers for loan of clothes, rails
- HR: recruit student models and train/rehearse
- Marketing: decide on communication channels, produce marketing material (leaflets/posters/invitations), approach local press and organise recording of event
- Finance: devise project budget and manage expenses

One member of teaching team acts as overall project manager

A local industry expert provides mentoring session for each team (e.g. local accountant; marketing agency; retail buyer; event management company; stage/drama director) advising of key success factors. Industry experts also invited to final event.

Event is staged at college or community hall to signal integration with/contribution to the local community. Event is recorded for opportunity to review/consolidate learning with students and for future PR/dissemination purposes.

### ***What students learn:***

This type of event provides opportunity to integrate subjects (e.g. from both AS/A level Business Studies and Business and Management Foundation Degrees): marketing, accountancy and finance, people and operations management.

Enterprise themes:

- students are encouraged to have an innovative idea (e.g. Fair Trade theme);
- which has a commercial dimension (supporting local retail trade as well as of sufficient interest to possibly be able to charge nominal entrance fee);
- students are the ones who through teamwork and leadership have to bring it about;
- using creativity, marketing and communication as well as financial skills;
- involvement of industry experts provides students with expertise but also inspiration and insight into 'real' companies/job roles;
- as well engaging with potential employer community;
- and ensuring project success

# Enterprise in the Curriculum: Case Study 2

## Modern Languages, English and/or History

### ***'Our Town' - International Student Brochure***

Students from one or all of these subjects produce a brochure for international students on study visits in the town (e.g. exchange/summer school).

Practical tasks:

A representative from local authority and/or education institutions presents context and data on nature of study visits and countries of origin of visiting students. Whole group agrees main target audience(s) and countries of origin for brochure. One member of teaching staff acts as project manager.

Project is divided into key stages and sub groups allocated different tasks:

Research and Development

- Research and survey relevant target groups for what each target group would be interested in about the town. Understand also best 'distribution channel' for students to access brochure
- Research into local organisations, their services and their marketing literature. Explore interest in sponsorship/advertising
- Research production options and calculate costing/budget of brochure productions

Production and Distribution

- Compile/consolidate relevant information and agree content, style, format that would appeal to target audience
- Write-up content in English
- Translate into relevant languages. Test with target groups for authenticity
- Negotiate/secure sponsorship/advertising to offset costs
- Brief printing company/student production team
- Agree distribution channels (e.g. schools/FE colleges, tourist office, libraries, exchange families etc)

Launch

- Present findings and brochure to local authority/education representatives
- Secure local press coverage

### ***What students learn:***

This type of task provides opportunity to integrate subjects (e.g. from both AS/A level Modern Languages, English, History and degree level and including English as a Second Language): written language, contemporary language, text and document analysis, culture.

Enterprise themes:

- students are encouraged to have an innovative idea (e.g. young international visitors);
- which has a commercial dimension (supporting local trade as well as of sufficient interest to possibly be able to secure sponsorship/advertising);
- students are the ones who through teamwork and leadership have to bring it about;
- using creativity, marketing and communication as well as financial skills;
- involvement of local organisations provides students with real world dimension;
- as well engaging with potential employer community;
- and ensuring project success

# Enterprise in the Curriculum: Case Study 3

## SCAMPER in Food and Drink

Students on Food and Drink training in the FE sector could be introduced to the creative thinking tool of SCAMPER and then be given an opportunity to use it in a way which might help them to be more enterprising in their studies and future careers.

### ***Innovative Restaurant Project: practical tasks***

The group is told to imagine that they have been given the task of setting up a new restaurant in a street where many similar restaurants already exist. It could be an Italian restaurant in a street full of Italian restaurants, or an Indian restaurant in a street full of Indian restaurants. Their challenge is to use SCAMPER to help them differentiate their restaurant from the all the others.

#### **Substitute**

What if their new restaurant could substitute traditional Italian cooking for very modern Italian cooking? What if it could substitute old-fashioned Italian music playing in the background for very contemporary Italian pop, appealing to the younger generation?

#### **Combine**

What if students were encouraged to think of new ways of fusing Italian cooking with other types of cooking? Italian + Spanish? Italian + Russian? Italian + Japanese? Crazy as this might sound, throughout history food and drink has involved the constant evolution of unusual and interesting combinations, from hotel-bar cocktails to award-winning chef Heston Blumenthal's fish porridge and egg and bacon ice cream, or even Sushinho (a restaurant in the Kings Road, London) which fuses Brazilian cuisine with sushi.

#### **Adapt**

What if the students' Italian restaurant could Adapt the robots and conveyor-belt ideas of YO! Sushi, or the benches of Wagamama, or the speed of McDonalds? (There is even a restaurant in Thailand, for example, where the waiters and waitresses race around on roller-skates).

#### **Modify**

What if their restaurant could be different because it sells triangular pizzas instead of round ones? Or the biggest pizzas in town? Or perhaps even tiny pizzas? (The Nano-Pizza House)

#### **Put to Other Uses**

What if it was not only a restaurant, but also a place where people could come to learn how to cook Italian food? What if it could provide cookery masterclasses for children and adults?

#### **Eliminate**

What if, like 'Clever Wally's Raw Pizza', you Eliminate the cooking, selling raw pizzas customers can cook at home so it's 'ready when you want it and how you want it.'

#### **Rearrange**

What if you turn mealtimes around, and focus more on being predominantly a pudding restaurant or an Italian ice-cream parlour instead?

#### ***What students learn:***

This type of approach enables students to temporarily step outside what they normally do from a food and drink perspective, to explore what they could do. More importantly, however, it also reinforces the value and importance of having a USP.

***Enterprise themes:***

- students are encouraged to generate new ideas using the SCAMPER tool
- students are given the chance to explore the pros and cons of working in a highly-competitive environment
- students are encouraged to view food and drink as far more than food and drink itself, and to see it within the broader context of marketing, risk-taking and risk-management, and constantly developing new ways of enriching the customer experience

Extensions for this exercise might also include giving students an opportunity to research some of the most innovative and enterprising restaurants in the world, to see which of the SCAMPER tools they have used to achieve their desired outcomes, and what powerful lessons could be learnt from their experience.

This does not mean that (in and of itself) learning about an underwater restaurant in Florida will help them as FE students. What it does mean, however, is that by stepping into the SCAMPER mindset, they can start to see why enterprising drinks companies like Innocent, or restaurateurs like Sir Terence Conran, or celebrity chefs like Jamie Oliver, have not become successful by simply regurgitating what has gone before, but by thinking about food and drink in new and dynamic ways.

# Enterprise in the Curriculum: Case Study 4

## SCAMPER in English

### ***The Purpose***

To stimulate students' creative thinking through the use of SCAMPER in order to develop higher order thinking skills. This approach is designed to help students not only become more fully engaged with the subject of English, but also to stretch their minds so they can go beyond writing rather predictable and 'average' essays in exams to achieve higher grades.

### ***'Imagine you are the Poet...': Practical tasks***

The group is given a poem (either well-known or unfamiliar) and then, in pairs, they are asked to re-write it or re-interpret it using SCAMPER. To support them with this process, the English Teacher will start the session by explaining what SCAMPER is all about, and then use a sample poem to demonstrate how it might be applied.

### ***What students learn:***

This enterprising exercise will enable students to explore the key themes and messages of the existing poem in an innovative way, and also allow them to temporarily imagine that they are the 'poet' to reflect more deeply on the impact different words, rhythms, and metaphors can have on the reader.

### **Substitute**

What if they took a Shakespearean sonnet like 'Shall I compare thee to a summer's day?' and substituted key words so it becomes 'Shall I compare thee to a winter's day?' or 'Shall I compare thee to a summer's night?' What difference might such substitutions make?

### **Combine**

What if students were to alter the structure of a poem (which has many stanzas) by combining three stanzas into one, or what might happen if different pairs started combining totally different poems such as Wordsworth's 'I wandered lonely as a cloud' with Stevie Smith's 'I was not waving I was drowning', to create 'I was waving at a cloud'?

### **Adapt**

What if students could adopt the style of gangsta rappers (like Jay-Z or Eminem) and turn a traditional poem into something more contemporary or street-wise? After all, every poet is a product of the age in which they write to some degree, and in their time the Cavalier poets and the Metaphysical poets were in many ways no less radical.

### **Modify**

What if students could take the poem and shrink it into a haiku poem, or expand it into the beginning of an Epic like Paradise Lost, or multiply parts of it by repeating words or lines?

### **Put to Other Uses**

In recent years on the London Underground 'Poetry on the tube' has been a highly successful initiative, helping to provide tired commuters with something to read and think about, as well as enabling eclectic poetry to reach a wider audience. What if students could explore fresh ways of taking the poem they are considering into new areas, such as having it printed on T-shirts or stationery design to be worn on 'Poetry day', or perhaps with the help of the design students, to even come up with ideas for a 'poetry park' (like a sculpture park) where people could step inside poems, or perhaps walk through them, line by line?

Alternatively, this might be a good opportunity for the English Teacher to help students appreciate how many words in the English language have come from 'somewhere else', for example, a line like 'From the *theatre* (Greek) of her *boudoir* (French) she sipped *coffee* (Arabic) and *accidentally* (Latin) looked up at the *sky* (Norse)...'

### **Eliminate**

What if specific words, lines, or perhaps even stanzas, were removed? Might this destroy the structure or flow of the poem, or potentially enhance and improve it? Often, in the world of advertising and copywriting, for example, the idea of 'less is more' is seen as a positive rather than a negative, with straplines like 'BA. The world's favourite airline' or 'Esso...put a tiger in your tank.' What if the whole poem could be turned into a single 'catchy' line on a poster? What might it read?

### **Rearrange**

What if students could re-arrange or reverse the sequence of the poem in some way, such as putting the refrain before the stanza? Again this process might seem strange, however, it could help to mirror and reflect the work of certain post-structuralist authors like John Fowles. Similarly, this type of back-to-front thinking could invite a discussion of a range of literary works that have reversed familiar patterns, such as F Scott Fitzgerald's short story of *The Curious case of Benjamin Button* which tells the story of a man who starts off old and gradually keeps getting younger.

# Enterprise in the Curriculum: Case Study 5

## Dead Poets Society

Film is a useful pedagogical tool for motivating students and stimulating imagination. The integration of business education and film has increased over the last 20 years. However by choosing a film which is not directly related to business, enterprising attitudes and capabilities can be explored within a much broader context, and help to develop empathy with a more broadly understood entrepreneurial lifestyle.

### Aim

To explore enterprise attitudes and capabilities

With some imagination many enterprising lessons can be found in the 1989 film *Dead Poets Society* directed by Peter Weir. The table below highlights eight specific lessons that can emerge through engaging students in discussion.

### Dead Poets Society's eight enterprising lessons

1	Conformity stifles creativity
2	Don't follow the leader
3	Find your own passion
4	Make your life extraordinary
5	Creativity can be unleashed – we all have it
6	Looking at situations from different perspectives will allow you to see what others do not
7	Carpe Diem (Seize the day)
8	There is a time for daring and a time for caution. The entrepreneur knows the difference (Neck et al, 2007)

The eight lesson format is designed around a series of six clips of varying lengths during a 90 minute class session. The next table identifies these clips by giving a scene description in addition to clip length, discussion, remarks and corresponding enterprising lessons. The lessons below should be the output of class discussion. The teacher/lecturer role is to guide the student in such a way as to allow them to derive their own lessons and meaning. The eight lesson summary can be used at the end of each lesson.

Clip	Clip description	Clip length	Lesson	Remarks and comments
1	At the end of the opening credits as the Headmaster addresses the audience 'Ladies and Gentlemen', until the scene of the first bells of the semester and the flock of geese	7 mins	1	Clip sets the stage and tone of the movies. Conformity, tradition, and lack of creativity are evident. Opening discussion questions: Describe what you see in the clip? Does what you see inhibit or enable enterprising thinking?
2	From the opening bells of the semester and geese flying (previous clip end) through Keating's first class, and ending with the students walking out of the classroom discussing Keating's class	7 mins	3,4,7	Clip introduces many issues but the emphasis should be on creativity, passion, creating a life of impact, and 'carpe diem'. Discussion questions: Is Keating an entrepreneur? What behaviours indicate that he is (or is not) an entrepreneur? What do you think Keating is thinking?
3	Keating's classes when he has students stand on top of his desk and proceed to jump off	2 mins	6	Clip begins to show how Keating is encouraging his students to view situations from a different perspective and keep their eyes open for new opportunities. Discussion questions:

				How does this scene relate to entrepreneurship? How can you begin to see the world from a different perspective?
4	Students are reciting their original poems in class. Todd did not complete the assignment but Keating helps him create an improvisational poem.	4 mins	4,5	Clip emphasises how creativity can be unleashed and that fear is the primary factor limiting our ability to be creative. Every one has the ability to be creative in their own unique way: this uniqueness can be the source of new ideas. Discussion questions: How would you describe Todd before and after the poem? Can we learn anything about creativity from this clip? What role does creativity play in entrepreneurship?
5	From the scene of Keating's class when they are in the courtyard walking in a circle through to the scene where Todd throws his desk set off the roof.	4 Mins	1,2,3,6	Clips emphasises that it's human nature to follow the leader and that many times we don't even realise we are following. Positive things often result from stepping away from the pack. Discussion questions: How does this clip relate to entrepreneurship? Does an entrepreneur always need to lead? Why or why not?
6	From the scene where Dalton receives a phone call from God during an assembly through to the scene where Keating reminds the students that there are times for caution.	6 mins	2,8	Clip shows a turning point in the film when the boys may have gone too far. Tradition and conformity seem to be winning. Not all entrepreneurial attempts are successful but the learning from the attempts can be powerful. By this point in the class the students recognise the line of enquiry and the directed nature of the teacher's questions. As a result, simply ask: What do you think?

# Enterprise in the Curriculum: Case Study 6

## Enterprising students 'take the plunge'

In January 2010 over 100 students from Abingdon and Witney College spent three days in a conference centre experiencing *Take the Plunge*, a new business enterprise training programme. With the support of 16 major employers, they took part in a *Dragon's Den* style competition, and faced a panel that included judges from Deloitte, BMW, UKAEA and the NHS.

Students were divided into teams of six, and became immersed in the world of business planning and decision-making in order to create, develop and then pitch their product or service to the judges. The judging panel acted as mentors during the process, and the teams were asked to consider all the essential elements of planning for a new business, including market research, finance, marketing, people and operations.

'The toughest issue facing students leaving education is the huge wave of young people that all land on the job market at the same time. What *Take the Plunge* is about is giving them a practical head start, so they can take control of their lives and ride ahead of the wave into the career they want', said Jenny Craig, Business Lecturer and college coordinator of the event. 'We believe that developing a better understanding of real business practice will stimulate and inspire a greater entrepreneurial spirit in our young learners.'

The winning team received a first prize of £200, and the runners-up £100. 'The prize money is appealing, but the learning and experience of participating will leave everyone the richer!' said Jenny. The students were drawn from National Diploma courses in Business and in Health and Social Care, which meant that an added bonus was networking with others across the college.

The programme was organised in collaboration with the Working Knowledge Group, training consultants who specialise in narrowing the gap between education and the workplace, through work with 14-19 students as well as university undergraduates and new managers.

'The college has this year spent £50k in establishing *Take the Plunge* within our key skills enrichment programme as a three-day, cross-college enterprise experience. This is a new line in our budgets and demonstrates our commitment to developing an enterprise ethos', said Steve Billcliffe, Assistant Principal, Development. 'For us it's a pilot study which we hope to roll out more widely in the future.'

In 2006 Abingdon and Witney College was one of the first in the region to be awarded *Action for Business College* status by the Learning and Skills Council. For more information about the college, see [www.abingdon-witney.ac.uk](http://www.abingdon-witney.ac.uk)

# Enterprise in the Curriculum: Mini Case Studies 1

## ***Healthcare***

'ER'. Students create and stage a play which identifies all the different jobs and related skills which constitute the healthcare professional service in the UK. There are no restrictions in creativity and costume design. This module develops creativity, innovation, teamwork, project planning, communication, networking skills.

## ***Art and Design***

'Global Art Village'. In teams representing the five continents, students put on an exhibition in civic/town hall tracing the link between their allocated continent to the design and/or creation of buildings, sculptures, public spaces in their town. This module develops teamwork, networking, project planning, creativity, communication skills. Also supports internationalisation strategy of the college.

## ***Engineering***

'Carry on Campus'. Students interview college staff (teachers, porters, cleaners, caterers, reception etc) to find out what potential manual handling health and safety issues there are on campus and what would make life easier on campus (e.g. better filing cabinet, trolley, briefcase, ramp etc). Student teams each identify a key need/issue and design an apparatus which would address this including cost considerations. This module develops enterprise skills, teamwork, networking, communication, creativity and budgeting.

## ***Catering and Hospitality***

'5-a-day Every day' Cook Book. (e.g. for students or for the elderly). In teams students create menus/recipes for a complete week to cover an entire term-time/three month period which would realistically appeal to either students or the mobility-challenged elderly and which would ensure a healthy dietary intake. Production and sale of the book is part of the task. This module develops enterprise, problem-solving, creativity, networking, budgeting and communication skills.

## ***Construction***

'How many builders does it take?' In teams students research the different materials used in the construction of different college buildings and calculate the likely quantity of each material used and the total cost in today's prices. Host a fund-raising competition asking entrants to guess how many different materials have been used and/or how much each building costs to build. Proceeds go to refurbishment of a student area. This module develops enterprise, teamwork, networking, communication, budgeting skills.

## Enterprise in the Curriculum: Mini Case Studies 2

### **Physics**

A murder mystery game (to develop analytical skills). Teams compete as forensic laboratories and have to pitch for a contract to the Home Office. This module develops enterprise skills, problem solving, project planning, team working, strategy, decision making, budgeting, networking, communication skills, competitor analysis

### **Philosophy**

'Moral Maze'. Based on the Radio 4 Moral Maze concept, students put on a series of Moral Maze debates identifying the topics, the different debating positions/arguments, recruiting and/or participating as relevant speakers, preparing the range of questions/topics for each debate, and taking turns (in pairs) to host/chair the events themselves. This module develops problem solving, project planning, teamwork, networking, negotiation, communication, influencing skills.

### **Mathematics**

'Trade show deal-maker'. Students act as retail buyers and suppliers at a fashion or consumer electronics trade show. Calculating issues such as minimum and maximum profit, quantities, delivery and quality aspects, each student supplier/buyer has to make five deals within a limited time period with buyers looking to buy five different product categories to create a complete range of merchandise at maximum profit. This module develops enterprise skills, problem solving, negotiation, decision-making, communication skills, networking.

### **History**

Day trip to France/Belgium. Students organise complete itinerary and logistics of day trip to historical site/attraction which would appeal to their peers. This module develops enterprise skills, marketing and customer orientation, creativity and problem solving, project planning, budgeting, networking, communication skills.

### **Geography**

'Green for less' competitive bid. Students explore the different ways their college could go green and save costs (e.g. solar energy, recycling paper etc). In teams they respond to a bid from the college by selecting one aspect, research, build a case and present to the board of governors how much money the college could save and how it would operationalise the initiative. This module develops enterprise skills, problem solving, project planning, creativity, networking, communication, teamwork, budgeting skills.

### **Economics**

'Fantasy charity stock market'. Teams of students identify charities for which they would make imaginary investments, select a portfolio of investments (stock market/property etc) and together with an investment adviser track the success of their investments over a period of the module. This module develops enterprise skills, problem solving, networking, communication, teamwork.

# Enterprise in the Curriculum: Mini Case Studies 3

## **Healthcare**

'Breakthrough Ideas'. In teams, students are asked to explore how SCAMPER has helped to influence healthcare throughout history, from the introduction of new services to new products. Take the invention of the needle-less syringe, for example (which uses Eliminate) or Key-hole surgery (which uses Minify), or the use of lasers to melt fatty deposits in the blood or to correct eye defects (which is based on Put to Other Uses).

Then perhaps students could look at improvements they might be able to make, by using SCAMPER on existing methods or machinery.

## **Art and Design**

'SCAMPER Art'. In teams, students take a specific letter from the SCAMPER acronym and then look at ways they can use it to influence the design of a poster for their college on the theme of enterprise. Using Magnify, for example, they might design a huge poster, or perhaps even use a mural instead? Or, using Combine, maybe they could create hundreds of little posters and then combine them (with staples or string). They could then be encouraged to look at famous artists and designers of the past and present through a similar lens. Picasso, for example, used to Combine a side-profile with a face-on profile in his portraits. Alternatively, others artists were famous for their miniatures, or how about painters who were part of a movement (like the impressionists) who adapted other painters' ideas and concepts into their own?

## **Engineering**

'SCAMPER Engineers'. Students are given a project to identify how each of the SCAMPER tools has been used in the past by inspirational engineers around the world to create something fresh and different. (Think of how both Brunel and Eiffel used Magnify, for example, to create the Great Western Railway and the Eiffel Tower). To help with this task, students might need to think of engineering in its broadest sense, from Dyson's wheel-barrow to car engineers at Audi with their 'Vorsprung durch Technik' (progress through technology).

The added value of this approach, however, would be to help challenge the mistaken view some students might have of 'I'm not creative, I'm an engineer', and to help them appreciate how the two do not need to be mutually exclusive.

## **Construction**

'SCAMPER Lego'. Over the years, many Lego activities have been devised to help students work more effectively and enterprisingly in teams - most famously, the Lego Tower which involves students designing and building a 'cost-effective' tower which is both tall and strong (too small, and it is unlikely to make the construction company any money, too large and it is likely to topple over). In this instance, an exercise could be created in which teams are all given the same existing building (made out of Lego) and then invited to change it using different SCAMPER tools. For example, maybe one team could turn it upside down (using Rearrange/Reversal) or another could take out key elements (using Eliminate). The purpose of this would be to show students how innovative it is possible to be in the construction industry, and to help them compare and contrast the range of SCAMPER creative thinking tools.

# Enterprise in the Curriculum: Mini Case Studies 4

## **Physics**

'Weapons for Peace'. Students are shown how throughout history the creative thinking tools for SCAMPER have been used to help many physicists come up with new weapons for war, ranging from The Stealth Plane (Eliminate visibility) to the Tank (Magnify strength) to the Bayonet (Combine gun with knife). In this project they are given the task - as aspiring physicists - to explore ways of creating 'Weapons for Peace', and in doing so exploring the types of physics-related questions they would need to ask, and experiments they would need to conduct, to help make them a reality.

## **Philosophy**

'The Questioning Mind'. All philosophy - metaphysical, ethical, aesthetic - is based on the power of questions. In this respect, SCAMPER can be used to help students ask additional and alternative questions to help them deepen their insight into a particular topic. Also, however, it can be used to help them analyse how philosophers in the past have subconsciously used SCAMPER techniques to change the way we think, from Kant's 'a priori/synergistic' reasoning (Combine) to Galileo's notion that instead of the sun revolving around the earth, the earth revolves around the Sun (Reversal).

## **Mathematics**

' $2+2 = 5$ '. Students are often brought up to think that mathematics is all about certainties, and that within it there can be no place for creative thinking. SCAMPER, however, can help students to appreciate that mathematics is always in a state of flux and change, and that without the pioneering ideas of mathematicians like Pythagoras, Euclid, Pascal, and Leibniz, many of the 'mathematical facts' we take for granted today would not exist. In this exercise, students could be encouraged to do two things. Firstly, to look at how SCAMPER has been used in the past (eg when Roman numerals were substituted by the Hindu-Arabic system) and secondly, how SCAMPER could potentially be used to improve maths in the future, (eg by benefiting from advances in nano-technology).

## **History**

'History Jigsaws'. Students studying a particular part of history (eg Stalin) could be encouraged to think about it in greater depth, and breadth, by creating a gigantic jigsaw where each piece - or flipchart paper drawn in the shape of a jigsaw piece - corresponds with a different SCAMPER tool. The Substitute piece, for example, could focus on who or what Stalin replaced, and what a difference it made; the Reversal piece might focus on the book *Young Stalin*, in which students explore the man before he came to power; the Minimise piece, might hone in on Georgia - Stalin's place of origin - and precisely what influence or impact his rule had on them, compared with the rest of the USSR.

## **Geography**

'SCAMPER landscapes'. Students are encouraged to look at a specific country's geography using SCAMPER to appreciate its complexity more fully, eg Spain. Adapt could draw their attention to how olives were brought to Spain by the Ancient Greeks and Phoenicians, changing the landscape of Andalusia forever. Similarly, they could go on to explore why the shape and location of Cadiz made it an ideal harbour for ships, and a natural gateway to the Americas in the 1600s (Put to Other Uses).

## **Economics**

'Thriving in the Credit Crunch'. Students could be shown how although many businesses tend to suffer in an economic downturn and global recession, not all do. Using SCAMPER they could be given the chance to research which parts of the economy tend to do well in tough times. For example, management consultancies who can quickly substitute work in the private sector with work in the public sector can often prosper. Similarly, businesses who sell less expensive products (Minimise) - such as Morrisons, Asda, and KFC - can often excel where premium food providers do not.