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NESTA Making Innovation Flourish

Learning to take risks, learning to succeed

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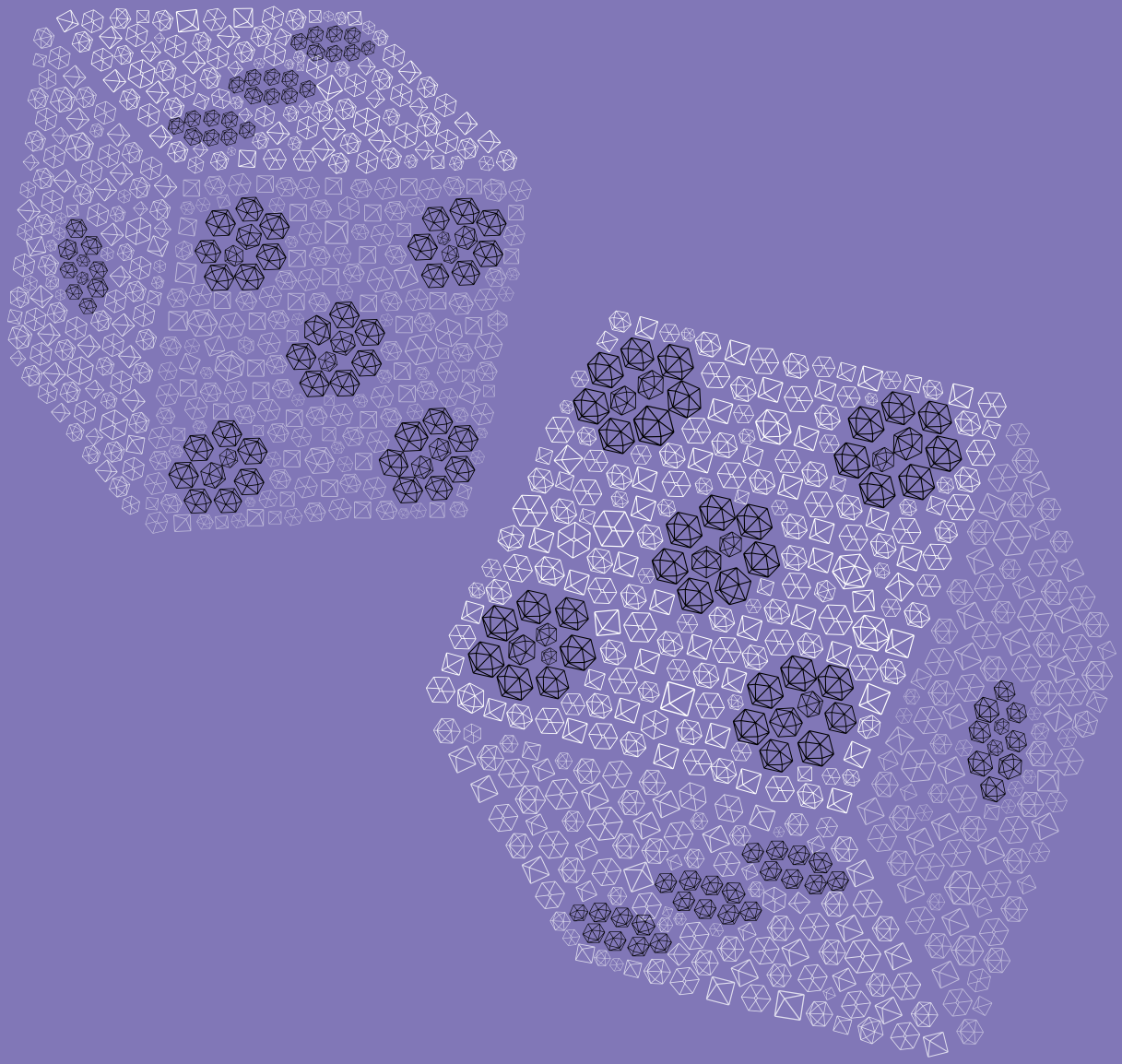

NESTA is the National Endowment for Science, Technology and the Arts and our mission is to transform the UK's capacity for innovation. We invest in early-stage companies, inform and shape policy and deliver practical programmes that inspire others to solve the big challenges of the future.

Our education programme aims to develop in young people the skills and attitudes that underpin innovation, and to ensure their best possible fit with the needs of the UK. We do this by supporting the professionals and institutions that work with young people, testing new approaches and disseminating ideas and resources about education for innovation.

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Executive summary

The importance of risk taking

Innovation is urgently needed for economic growth and to find solutions to pressing national and global problems. Risk taking is essential to innovation: anyone developing a new product, service or idea risks the possibility that it will not work, that someone else will get there first or it will be met with disinterest. Young people entering work in the twenty-first century will need to take risks to find these solutions, and addressing everyday challenges also involves complex decision making and evaluation of risk.

Risk taking is becoming a core skill. Employers now need people who can communicate, work in teams, take decisions, be adaptable and take risks. Despite the demand for skills of innovation and enterprise, and despite recognition of the value of invention and original thinking, the role of risk taking in preparing young people for the future is often overlooked by educators and policy makers. In the context of young people's lives, risk is seen as largely negative, linked to danger and regarded as something to be avoided.

In addition to benefits for employers and the economy, learning about risk taking can help young people to make decisions about subject choices and routes through education and careers. It can help them to evaluate alternative courses of action and can build confidence. The experience of failure, as a result of risk taking in a safe environment, can help to build resilience to setbacks and help young people to manage risk better in the future. There is little evidence that entrepreneurs are born and cannot be made: through practice, young people can learn to recognise opportunities and possibilities rather than play safe and tread well-worn paths of enquiry.

Key findings and recommendations

The report presents some of the findings from pilot projects, commissioned by NESTA, testing ways of developing an informed attitude towards risk taking. Findings include the importance of support from the top, for example from a senior teacher, and the role of professionals in assisting young people to take their own risks. Projects involving risk taking also need to be well organised, planned and recorded to maximise learning.

There are many opportunities for schools to assist young people to acquire risk-taking skills through and across curriculum subjects. These include the personal, social, health and economic education programme, which encompasses the twin elements of economic and personal well-being and includes enterprise and careers education. Enterprise education offers obvious opportunities to learn about risk and reward and to develop a positive attitude towards exploration and experimentation. Packages to support enterprise education, with imaginative ideas and appealing activities, are easily available to schools.

Learning to 'anticipate, take and manage risks' is one of the skills included in the cross-curricular Personal Learning and Thinking Skills framework for pupils aged 11 to 19, which is intended to support and complement learning within the curriculum subjects. This offers scope for risk taking to be incorporated across the curriculum and for young people to be encouraged to be more adventurous and experimental in their learning.

Numerous opportunities are offered within mainstream school subjects including science, design and technology, geography and mathematics. Outside of the curriculum and after school, young people can explore risk taking through activities such as drama, music and community projects. Opportunities to learn about risk and reward should be identified and taken up across the full range of activities involving young people.

A number of barriers need to be overcome if young people are to understand risk better and acquire skills to take risks. These include constraints on time within schools and pressure to achieve results. Risk taking can be facilitated through some simple measures, for example giving young people greater freedom to design their own projects and fostering a learning culture that supports independent thinking. Involvement with real projects, entrepreneurs and professionals can also help young people to see the real benefits of risk taking.

Acknowledgements

This report draws on the work of five pilot projects supported by NESTA, the Taking a Leap initiative. I am grateful to the organisations delivering these projects for the insights they offer into how risk taking can be encouraged among young people. They are:

- the Design and Technology Association (DTA)
- the Prince's Trust
- Rotherham Ready
- the Royal Society for the Encouragement of Arts, Manufactures and Commerce (RSA)
- Space Unlimited.

Thanks are also due to the Lowestoft Energy project for the valuable lessons of their work about young people and risk taking.

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Contents

1. Why is risk taking important?

The term 'risk society' has been coined to describe a culture that is oriented towards the future and dealing with uncertainty and insecurity.[1] Risk is integral to innovation and to advanced, complex societies. Major advances are dependent on experimentation – a process that involves trying out and mixing new ideas, methods and techniques. Taking risks can be demanding on resources and effort, but the rewards can be great when it leads to success.

1. Beck, U. (1992) 'Risk Society: Towards a new modernity.' London: Sage; Giddens, A. (1999) Risk and Responsibility. 'Modern Law Review.' 62 (1), pp. 1–10.

The last 50 years have seen major advances in innovation, particularly in the area of information and communication technology (ICT). The need to find solutions to national and global problems, such as poverty, pollution and energy depletion, is more pressing now than ever. Young people entering work in the next decade and beyond will be faced with serious social, economic and political challenges. They will need to be equipped to address these challenges, to develop new and effective ideas and approaches.

But innovation through risk taking is needed not just to address big challenges: these skills and abilities will be needed in all areas of life and across industries and occupations. Young people entering the world of work will need to acquire these skills to succeed in the workplace of the future. They will need to be innovative, adaptable and capable of making good decisions.

The value of enterprise skills is widely acknowledged, yet the importance of risk taking as one of the skills of enterprise is largely unrecognised or unarticulated. In the context of young people's lives and activities risk is viewed as largely negative, linked to danger and seen as something to be avoided. It is associated with avoidance of drugs, alcohol, sex, malevolent adults and numerous other forms of danger.

Risk is often talked about as something to be 'managed', as in the widely used term 'risk management'. This suggests that risk is something to be controlled, or even avoided and eliminated. Innovation is unlikely to happen through taking this approach. Alternatively, by treating risk taking as necessary to achieve reward, we can instead explore risk and decide which risks should be taken and which should be avoided or minimised. This is a much more active process than the term 'risk management' suggests. It also requires greater skill and knowledge than simply identifying and seeking to minimise risk.

This report brings together evidence from a number of projects and initiatives aimed at looking at risk differently: at developing risk taking as part of innovation. The report also draws on other projects and literature on risk taking. The report takes a positive view, looking at risk taking as an essential ingredient of enterprise and innovation and as the route to reward.

For employers, the economy and society

The world of work has been changing and so have employers' needs. Workplace hierarchies based on lines of responsibility, qualifications and experience are giving way to flatter structures without middle levels of management. Many workplaces are structured around autonomous teams where skills of decision making and team working are paramount. Employers need a workforce with skills of communication, negotiation, team working, creativity, risk taking and adaptability. Research with employers highlights the importance of these skills for economic competitiveness.[2]

Organisations need to be able to adapt to markets and to changes in the wider economy, as the current economic downturn makes clear. In our highly competitive age, organisations need employees who can communicate effectively, form good working relationships quickly, absorb new information rapidly and come up with solutions and ideas.[3] Recent events in the financial markets have given risk a bad name, but risk taking is not about recklessness and gambling. Risk taking should be responsible, taking full account of possible consequences, winners and losers.

Employment structures are changing. The standard, full-time, working week is replaced by an array of new working arrangements. Flexible working is becoming increasingly common[4] and multiple job-holding, or 'portfolio working', is practised by an estimated 1.15 million people in the UK.[5] Self-employment has increased markedly in recent years, including in leading sectors such as the finance industry.[6] It is also predicted that employees will change jobs more often.[7] These changes demand new sets of skills for the current workforce and for young people entering the labour market. These skills and abilities include:

- capacity for innovation and creativity
- exploring risks and reward in order to make good decisions
- taking risks in ways that are responsible.

For the economy and society there can be no innovation without risk taking, and innovation is crucial for economic development and social well-being. It is central to scientific advancement and finding solutions to economic, political and social problems.

For schools and youth organisations

Other than in the context of personal health and safety, when risk taking and reward are addressed in schools it is largely within enterprise education. Yet there is scope to include risk taking within many areas of the primary and secondary school curriculums. Opportunities are most easily recognisable in subjects such as design and technology and financial capability. However, it is also part of the cross-curricular subjects of citizenship and personal learning and thinking skills. Teaching about risk taking helps schools to deliver these parts of the curriculum and improve pupils' skills across subject areas.

Learning about risk taking helps young people to make good decisions about subject choice and routes, ensuring that they make their own choices with guidance rather than pressure. Schools and colleges benefit by having well-motivated students who are studying the subjects that are right for them.

Risk taking can also assist young people to participate effectively in services that affect them. The benefits of this type of engagement have been experienced by projects supported by the Youth Opportunity Fund (YOF). These projects give young people a central role in

2. Leitch, S. (2006) 'Prosperity for all in the global economy – world class skills. Final report.' London: HM Treasury.
3. Margo, J. *et al.* (2006) 'Freedom's Orphans.' London: IPPR.
4. Health and Safety Executive (2006) 'HSE horizon scanning intelligence group short report: Flexible working and employment patterns.' London: HSE.
5. Simic, M. and Sethi, S. (2002) People with second jobs. 'Labour Market Trends.' May, pp. 239–47.
6. Lindsay, C. and Macaulay, C. (2004) Growth in self-employment in the UK. 'Labour Market Trends.' October, pp. 399–404.
7. Macaulay, C. (2003) Job mobility and job tenure in the UK. 'Labour Market Trends.' November, pp. 541–50.

commissioning activities in their own area, improving choice and influence over provision and facilities.[8]

Teaching about risk taking requires a different style of delivery, in which teachers and professionals facilitate learning while young people take control. Learning these new teaching styles can benefit professional practice and add to their skills and experience. Learning about risk taking should allow for reflection on success and failure. There are likely to be many areas of learning where this practice might be applied and where young people and professionals can develop skills of reflection and judgement.

8. See www.everychildmatters.gov.uk/youthmatters/youthfund/.
9. Keck, S. and Buonfino, A. (eds) 'The future face of enterprise.' London: Demos. p. 134.
10. Beck, V. *et al.* (2006) Increasing risk in the 'scary' world of work? Male and female resistance to crossing gender lines in apprenticeships in England and Wales. 'Journal of Education and Work.' 19 (3), pp. 271–89.
11. Newman, T. and Blackburn, S. (2002) 'Transitions in the lives of children and young people: Resilience factors. Interchange report 78.' Edinburgh: Scottish Executive Education Department.

For young people

Taking risks within curriculum subjects can enhance learning by enabling young people to make more decisions and to experiment with different ideas and approaches. Risk taking can be explored across the curriculum within areas such as citizenship and personal learning and thinking skills.

Risk taking is both a skill and a personal attribute. Young people can learn how to assess risk and reward to make better decisions in their studies and lives. Embedding risk and reward across the curriculum helps children and young people to see it as part of learning and progression. Learning to consider alternative courses of action and less obvious routes can develop personal attributes, particularly drive and confidence.

Risk taking is integral to enterprise. *The Apprentice* winner Tim Campbell argues that the emotional benefits of enterprise to young people should be recognised, so that this energy can be utilised for social good.[9]

Changes in skill requirements, working patterns and working lives mean that young people will need to make more decisions than previous generations. They will not have the option of securing a job for life or of treading the well-worn paths known to their parents. The growth in self-employment and freelancing provides individuals with much greater control of day-to-day business decisions and longer-term strategies. Success in self-employment and freelancing is dependent on being able to assess risk and reward in planning and delivering a product or service.

Young people will not only need skills and expertise, but also will need to know how to market themselves, sell their expertise and manage business finances. Learning to take risks can help young people to participate more generally in decisions that affect their lives and to acquire the skills essential for success in the future world of work.

Experiencing risk almost inevitably involves experiencing failure. Young people who are able to evaluate risk and reward are more likely to choose careers and jobs that are right for them. Career decision-making is an inherently risky business.[10] Avoiding risk by following convention and pressure from peers and family can lead to lost opportunities for young people.

Research on resilience suggests that the successful management of risk is a powerful factor in promoting resilience to adverse events among children and young people.[11] Taking risks and experiencing setbacks in safe environments allows young people to experience the emotional impact of risk taking without having damaging consequences. Therefore risk taking in simulated environments can help to prepare young people to deal with problems they may face in other contexts.

2. What is risk taking in the context of innovation?

Risk taking plays an essential role in innovation. The goal of risk taking is to maximise reward and to avoid failure. Reward can take the form of a product or service or idea that offers something new, beneficial or desirable. When developing something new, entrepreneurs take many risks: that their idea will not work, that someone will get there first or that their idea will not appeal to their target market.

Risk is widely discussed, but outside of management literature is rarely defined and is not well understood. While psychologists have explored risk taking among adult entrepreneurs,[12] little is known about risk taking in the context of innovation in young people. What is known is largely confined to issues such as drug taking and criminal activity.[13] Little has been done to unravel the processes by which young people learn to assess risk and reward and to make good and bold decisions.

Entrepreneurs as risk-tolerators

Psychological research has identified a number of ways in which entrepreneurs and innovators differ from other people. A key difference is their tolerance of risk. This may be explained either by their ability to see opportunity rather than risk or because they are able to take a measured approach, balancing risk and reward.[14] Research findings suggest that entrepreneurs categorise equivocal business scenarios more positively than other people, that they are more likely to perceive:

- strengths rather than weaknesses
- opportunities versus threats
- potential for performance improvement versus deterioration.[15]

Some of the barriers to risk taking have also been identified. Evidence from behavioural economics and particularly the theory of myopic loss aversion suggests that:

- most people do not perceive loss and gain in equal measure
- risk taking is discouraged by frequent progress checks.

With regard to financial incentive and disincentive, research findings suggest that people tend to be more sensitive to decreases in their wealth than to increases. It has even been estimated that losses are weighted twice as strongly as gains, so that a £100 loss is regarded, in risk terms, as roughly equivalent to a £200 gain.[16] This suggests that toleration of risk requires a different set of attitudes or behaviours than most individuals possess.

12. Busenitz, L. (1999) Entrepreneurial Risk and Strategic Decision Making. 'Journal of Applied Behavioral Science.' 35 (3), pp. 325–340.
13. Sharland, E. (2005) Young people, risk taking and risk making: Some thoughts for social work. 'British Journal of Social Work.' 36 (2), pp. 247–265.
14. Chell, E. and Athayde, R. (2009) 'The identification and measurement of innovative characteristics of young people.' London: NESTA.
15. Palick L. and Bagby R. (1995) Using cognitive theory to explain entrepreneurial risk-taking: Challenging conventional wisdom. 'Journal of Business Venturing.' 10 (6), pp. 425–438.
16. Tversky, A. and Kahneman, D. (1992) Advances in prospect theory: Cumulative representation of uncertainty, 'Journal of Risk and Uncertainty.' 5.

Some research suggests that 'myopia' is encouraged by frequent checking of loss and gains. It is therefore argued that risk-takers either do this less often or pay less attention than risk-avoiders to short-term outcomes.[17]

17. Thaler, R.H. *et al.* (1997) The effect of myopia and loss aversion on risk taking: An experimental test. 'Quarterly Journal of Economics.' May, pp. 647–661.
18. Palick, L. and Bagby, R. (1995), op. cit.
19. The pilot projects were evaluated for NESTA by Heather Piper, Manchester Metropolitan University.

Learning about risk

It is often assumed that entrepreneurs are somehow made differently from the rest of us, that their different approach to risk and reward is a result of personal traits that are innate. There is little evidence for this, however, and every indication that risk taking is a cognitive process and therefore something that can be learnt and refined with practice.[18]

It is possible to learn the elements of risk taking: seeing opportunity rather than risk and taking a measured approach, balancing risk and reward. The latter involves adopting processes of assessment and predicting the outcomes of alternative courses of action. The ability to see opportunity can also be learnt because it involves applying judgement on which ideas are likely to work and be successful and which are not.

Young people can learn about risk and reward in a range of settings but there is evidence that effective learning takes place within practical projects with real, tangible outcomes. NESTA supported five pilot schemes to develop an informed understanding about risk taking in young people or in the adult professionals who support them. These were known as the Taking a Leap project and ran between 2007 and 2009.[19]

The pilot projects on risk taking

NESTA commissioned the Taking a Leap project to explore risk taking in context, in order to gain a greater understanding of some of the skills and attitudes that can build entrepreneurial capacity. The projects were delivered by:

- the Design and Technology Association (DTA)
- the Prince's Trust
- Rotherham Ready
- the Royal Society for the Encouragement of Arts, Manufactures and Commerce (RSA)
- Space Unlimited.

The projects encompassed a range of objectives and activities, including learning how to take risks within design and technology, through work experience and by equipping adults to facilitate risk taking, innovation and creativity in young people. The objectives and outcomes of the projects are summarised in Appendix 1.

Key learnings from the pilots

The pilots highlight the importance of a number of key factors in promoting positive risk taking among young people. These include the link between risk taking and self-confidence and self-belief, and the role of adults and organisational cultures in promoting risk taking.

Projects that give young people the freedom to take risks in the context of innovation can help develop young people's confidence. In turn, greater self-confidence and self-belief equip young people for better decision making and calculated risk taking.

Young people's aversion to risk taking cannot be changed overnight and the commitment of schools and other organisations working with young people is crucial to changing attitudes and behaviour. Developing an organisational culture that encourages risk taking can act as a catalyst to change. The projects suggest that support from the top, for example, from a senior teacher, can generate interest and commitment to projects involving risk. It can also help to ensure that projects have sufficient time and resources.

The role of professionals in developing skills, knowledge and understanding of risk taking in young people is crucial. The input of adult mentors, as in the Rotherham Ready project, can help young people to develop a more informed understanding of risk taking in the context of real businesses.

Space Unlimited advocates that, to facilitate risk taking among young people, teachers and others working with young people should:

- understand more about themselves, their attitudes towards young people's capabilities and how they convey these to young people
- have a clear and distinct role in projects, to give young people ownership of their decisions; Space Unlimited uses terms such as 'keeper' for adults, while young people are 'explorers'
- ask children and young people questions that are open and don't advocate solutions
- factor in a thorough debriefing process to allow young people to report their experiences and views through feedback.

Other NESTA projects have generated ideas for how risk taking can be developed in young people. One such project is the Lowestoft Energy Challenge, an innovative pilot programme to encourage young people addressing issues connected to energy, sustainability and climate change. The project supports findings from Taking a Leap – that allowing young people some autonomy and providing minimal guidance can be effective. It also highlights the importance of senior management commitment and ongoing support to young people and staff.

Key additional learnings from the Lowestoft Energy Challenge include:

- the value that can be added by having external 'champions' in risk-taking projects
- the fact that levels of support needed by young people involved in risk-taking projects will vary between students, by age and ability
- the importance of good organisation, planning and recording.[20]

Learning about failure

Failure, the flip side of success, can be disappointing and discouraging. Successful entrepreneurs have to develop a healthy attitude to failure if they are not to fall at the first fence but continue to develop and refine their ideas.

In a recent report by Demos, the entrepreneur Kulveer Taggar, founder of Auctomatic – a tool for managing eBay trading – argues that 'the future face of enterprise will be defined by those who are willing to take risks, experiment vigorously, and continue in the face of

20. SQW Consulting (2009) 'The Lowestoft Energy Challenge: Final evaluation report.' London: NESTA.

failure'.[21] Young people can be encouraged to develop such an attitude through involvement in risk taking in a range of contexts.

21. Keck, S. and Buonfino, A. (eds), op. cit. p. 134.

A supportive environment helps young people to learn how to cope with failure. It is important that lessons are learnt from failure to inform future decisions, and that failure is seen as a learning experience rather than a bad mistake. For this to be effective, the learning environment should be supportive and take account of the emotional investment young people may have in their ideas, as well as the intellectual effort they represent. The pilots suggest that young people's confidence can be boosted through participation in risk-taking projects. The self-confidence of young people before participating in risk-taking projects also needs to be taken into consideration: high-achieving young people may be more self-confident and able to cope with risk than lower achievers who may need more support with failure.

Learning to deal with failure is a key part of the pilot projects supported by NESTA. Space Unlimited had found in its earlier work that, where adult facilitators give young people sufficient control of the direction and implementation of their ideas, the conditions are right for young people to make their own decisions and to feel all right about it. Its project therefore aimed to develop the tools and knowledge to help adults working with young people take their own risks and make their own mistakes. One of the project's six concluding principles, termed 'uncommon sense', is to be honest about outcomes. Another is to reflect on what they have learnt, which can include recognising and learning from failure.

3. Where and how can risk taking be learnt?

The emphasis of UK education policy is on achievement, measured largely in terms of success in public examinations and tests. It has been argued that the achievement agenda tends to discourage young people from risk taking and encourage risk avoidance.[22] If this is correct and risk-aversion is part of the ethos of the current UK education system, isolated activities and temporary projects are unlikely to be sufficient to bring about new ways of thinking. However, high achievement and risk taking are far from incompatible: through taking steps within selected activities, particularly within curriculum subjects and core aspects of education, new approaches and attitudes might be developed that can influence the way pupils and teachers think in many different areas of learning.

Vocationally oriented subjects are often seen as lending themselves to innovative practices and risk taking more easily than more academic disciplines. This is not only because of the aversion to risk taking within academic subjects, but also because innovation and risk are associated with outcomes rather than with ways of thinking. Other subjects with an applied element also have scope for innovation, however, for example, music, the natural sciences and drama.[23] To this list could be added art and the newer subjects, including business, media and film studies. Any subject that involves activities such as experimentation, observation, testing and adaptation can be used to develop and advance young people's skills and understanding of risk taking.

There are also opportunities for young people to learn about risk and reward after school and in other settings, as well within school. These might include youth projects, volunteering and activities such as drama and music. Learning in less formal settings can help to reinforce messages and skills learnt in school, and help young people develop their understanding of the contexts and conditions in which risk taking is most appropriate and effective.

22. Chell, E. and Athayde, R. (2009) op. cit. pp. 23-24
23. Ibid.

Economic well-being: careers, work-related learning and enterprise

This area of the school curriculum offers obvious opportunities to learn about risk and reward. The non-statutory framework for economic well-being was introduced as part of the new schools curriculum in September 2008. It forms part of the wider personal, social, health and economic education (PSHE) programme, alongside personal well-being as the other element.

The framework for economic wellbeing brings together the previously disparate areas of guidance on careers education, work-related learning, enterprise and financial capability. Applying to pupils aged 14 to 19, it covers provision in nine areas, with suggested minimum provision and outcomes. Risk is one of four key concepts in the programme, the others being career, capability and economic understanding. The National Curriculum explains that the aim of studying risk as part of economic wellbeing is to improve:

- understanding of risk in both positive and negative terms
- understanding the need to manage risk in the context of financial and career choices
- the capacity to take risks and to learn from mistakes.[24]

Enterprise education

The Qualifications and Curriculum Authority (QCA) advises that enterprise education helps young people to learn how to handle uncertainty, respond positively to change and create and implement new ideas and methods. Moreover, it says that 'they learn how to make and act on reasonable risk/reward assessments and develop a "can-do" attitude and the drive to make things happen'. It is expected that enterprise education should encourage young people 'to be innovative, to take and manage risks, and to develop determination and drive'.[25]

Although enterprise education has been part of the school curriculum for some years, there are few reported examples of the incorporation of risk into school enterprise activities. Among the many case studies of enterprise education on the QCA website, only a handful include risk taking. These include an investment game, *Portfolio Challenge*.

Portfolio Challenge: Learning about financial risk

Portfolio Challenge is an investment game for pupils aged 14 to 19 and their teachers. Teams from schools across the UK invest a virtual £100,000 in stocks and manage their portfolio of shares using genuine live data. The most successful team wins a trip to New York as well as a cash prize. Participating schools report increased understanding of the concept of risk associated with decision making as well as student understanding of investment, business and improved mathematics skills (www.qca.org.uk/qca_4026.aspx). The scheme is run by the ifs School of Finance, a not-for-profit organisation promoting employee share ownership, in partnership with Bloomberg and the FTSE group.

Financial capability

The financial capability component of the economic well-being curriculum is aimed at improving young people's skills in a number of key areas relating to financial risk:

- managing money
- understanding financial risk and reward
- explaining financial terms and products
- identifying how finance will play an important role in their lives and in achieving aspirations.[26]

The financial education charity pfeg (Personal Finance Education Group) has developed a range of resources for financial capability education including *Risk and Reward*, an interactive resource aimed at 14-to 16-year-olds. It has also produced a range of other resources for schools including: *Credit4Life*, a board game for 11-to 16-year-olds; *Paying for it*, a series of nine lesson plans covering issues of public finances; and *Money Management*, covering personal finance issues including planning and debt. Pfeg's website features 49 case studies

24. Qualifications and Curriculum Authority (2007) 'PSHE: Economic wellbeing and financial capability: Programme of study (non-statutory) for key stage 4.' London: HMSO. Available from: curriculum.qca.org.uk/key-stages-3-and-4/subjects/pshe/ewfc/keystage4/index.aspx.
25. Ibid.
26. Ibid.

of school events focused on financial management issues, including consideration of risk in personal finances and enterprise.[27]

Risk and Reward: Learning about risk taking in business development

Risk and Reward, developed by pfeg, is designed to simulate a real-life business situation. Young people are tasked with managing an event and dealing with the financial risks involved in an expanding business. Participants have to make decisions about staffing and marketing and deal with the financial risks they face as the business develops. The package was developed with the input of teachers and pupils of five specialist business and enterprise colleges.

Careers education

Careers education is also delivered within the economic well-being framework but, unlike other aspects of the programme, schools have a legal requirement to provide opportunities for careers education at Key Stage 3 (ages 11 to 13) and for careers education and work-related learning pupils aged 14 to 16.

There is clear potential for concepts of risk and reward to be explored within careers education and work-related learning activities. There is strong evidence that young people are influenced in their school subject choices and career decision-making by family and teachers.[28] This can lead to making 'safe' choices, where young people are constrained by factors such as social class and social and cultural environment.

Young people leaving full-time education at 16 appear to show strong anti-risk tendencies. The extent of gender segregation in choice of apprenticeships may be explained in part by a tendency to play safe rather than take the risks involved in stepping outside of others' expectations and social norms.[29] There may be particular scope for the concepts of risk and reward to be used to challenge gender stereotyping in decision making, and to help open up opportunities for young people in areas they might not have considered. For girls in particular, the financial and career rewards of choosing 'male' careers such as engineering can be balanced against the risks of being in a minority and of challenging convention.[30]

Young people's attitudes to the future of risk

NESTA's Future Innovators team commissioned Demos to undertake a short study examining young people's attitudes to the future of risk. Researchers interviewed young people at Harefield Academy in Uxbridge on attitudes to risk taking. The young people interviewed were aged 15 and 16 and about to make decisions about their future, such as the careers and qualifications they were going to pursue.[31] The young people interviewed expressed a range of views and attitudes towards risk, with the following emerging as key themes and issues for them:

- the fear involved in taking a risk, and dislike of failure
- the necessity of risk to make the most of life, to avoid lost opportunities and regret
- handling risk by doing one's best and using advice and guidance from others, such as teachers and parents.

There is evidence that young people place high value on being able to exert more choice and agency over their lives and dislike having decisions about their future made for them.[32] The risk associated with taking different routes is demonstrated by the example of Tom

27. For more information about pfeg, resources and case studies, see www.pfeg.org/
28. Blenkinsop, S. *et al.* (2006) 'How do young people make choices at 14 and 16? Research report 773.' London: DfES.
29. Beck, V. *et al.* (2006) op. cit.
30. Equal Opportunities Commission (2005) 'Free to choose: Tackling gender barriers to better jobs. Great Britain Summary Report.' Manchester: EOC. Available from: http://83.137.212.42/sitearchive/eoc/PDF/occsegGFI_GBsummary.pdf?page=17445.
31. A video of the project is available from: www.nesta.org.uk/young-people-s-attitude-to-risk-taking/.
32. Raphael Reed, L. *et al.* (2007) 'Young participation in higher education in the parliamentary constituencies of Birmingham Hodge Hill, Bristol South, Nottingham North and Sheffield Brightside.' Bristol: HEFCE.

Mursell's web-based Not Going to Uni project. Frustrated at the lack of information made available to school leavers about their options, and myths about the necessity of having a degree, Tom identified a gap in information on alternatives to university.

Not only was he taking a risk himself in deciding against what is commonly seen as the 'safe' option for young people, but he was also assisting other young people to take this risk. The Not Going to Uni website is packed with information about courses, jobs and careers and advice on how to make choices. Helping young people to make decisions using facts rather than myths and stereotypes, and to make these decisions actively, is key to the Not Going to Uni project.[33]

Curriculum subjects

Science, design and technology

The natural sciences lend themselves easily to risk taking because they involve stages of decision making, experimentation, testing, observation and adaptation. However, there is evidence that science teaching often fails to include risk taking. A recent review by Ofsted reports that teaching at primary-school level gives prominence to knowledge and understanding of science rather than scientific enquiry. As a consequence, Ofsted found:

> This often led to minimal risk-taking with a heavy reliance on worksheets and on telling pupils what to do rather than encouraging them to make decisions for themselves.[34]

Much science teaching in the secondary schools visited by Ofsted for its review was also found to focus on passing on information, at the expense of active pupil involvement in scientific investigation.[35] There is clearly scope for improvement in the delivery of science at both primary and secondary school levels and for the incorporation of risk taking into scientific learning.

The design and technology curriculum is frequently mentioned in the context of innovation and enterprise because it is the closest school subject to manufacture, production and trade. It is also one of the few curriculum subjects which is perceived to involve risk, as a report for the UK Engineering Council states:

> Designing involves living in a future world: conceiving and planning what does not yet exist. It is therefore inevitably and continually concerned with uncertainty and risk.[36]

Design and technology should ideally allow young people to develop skills in such areas as modelling outcomes and managing complexity and uncertainty, but this is not always achieved. A recent review of design and technology teaching by Ofsted found that at least two-thirds of primary schools and a third of secondary schools examined are not realising the potential of design and technology, which could help all learners become confident and capable members of a technologically advanced society. A particular problem was identified in the lack of strategic, long-term planning and support.[37] These are essential ingredients of learning about risk and reward and suggest huge lost opportunities within design and technology teaching.

NESTA's education programme has identified examples of young people who have used the opportunities offered through their design and technology classes to develop new ideas and innovative products.

33. Further information about the project is available from: www.notgoingtouni.co.uk.
34. Ofsted (2008) 'Success in science.' London: Ofsted. p. 16.
35. Ibid. p. 17.
36. Kimbell, R. and Perry, D. (2001) 'Design and technology in a knowledge economy.' London: Engineering Council. Available from: www.engc.org.uk/documents/Des+Tech.pdf.
37. Ofsted (2008) 'Education for a technologically advanced nation: Design and technology in schools 2004–07.' London: Ofsted. Available from: www.ofsted.gov.uk/Ofsted-home/Publications-and-research.

Emily Cummins designed a fridge which runs without electricity as part of her A Level product design project. The idea was inspired by her concern about global warming and built on earlier designs she developed for a water transporter. In deciding to run with the idea for her coursework, Emily was taking a risk that it would not be successful and potentially jeopardising her A Level grade. She achieved her aims with the help of mentors and with detailed research and planning.[38]

Ruth Amos was looking for a project to work on as part of her Resistant Materials GCSE. Inspired by hearing about the mobility problems of her teacher's father, following a stroke, Ruth came up with the idea of a mechanical device to support people who have difficulty in climbing stairs but don't want a stairlift. Ruth invented the Stair Steady device after much desk research and visits to manufacturing companies. The device has gone into production and is patented. See www.stairsteady.net.

Geography

Geography and the media: Assessing risk in local development proposals

Building on an investigation within geography classes, a group of Year 11 students approached a local radio station with the idea of making a programme for young people on the impact of council development plans for a local housing estate. Students used risk-management skills to consider whether the proposed impact would provide sufficient affordable housing, leisure facilities and employment opportunities to attract young people to stay in the area. In preparation for the radio programme, students gathered statistical evidence, viewed development plans and recorded the opinions of local young people.

Mathematics

Mathematics and enterprise: Choosing between business options

After working as a volunteer in South Africa, a mathematics teacher developed links between a school in the UK and a vocational school in South Africa involved in the production of clothing for sale in their locality. Students in the UK were given the task of exploring the potential for importing and selling these goods in the UK and drew up full costings for this. At the same time they costed an alternative proposal involving the use of logos designed by students in Africa for the production of T-shirts in the UK. The students decided to pursue the second option, on the grounds of its greater potential for income generation. This project demonstrates the balancing of risk and reward in developing an enterprise project.

Art

Room 13

Room 13 is a social enterprise consisting of art studios located in schools in Scotland, England and internationally. The central idea of Room 13 is to engage children and young people with artists, educators and thinkers to promote creativity. There is no standard model: each Room 13 specialises in different art forms and with different artists. What they have in common is that each Room 13 studio facilitates the artistic work of children and young people alongside a professional adult artist-in-residence. This provides a two-way exchange of ideas, skills and experience. The Room 13 network reflects a growing international interest in social enterprise and creativity, and projects have found that their impact resonates beyond the school-base to the wider community.[39]

Economics and business studies

Economics is not widely taught in secondary schools, particularly at GCSE level, but there is clearly scope within the subject to learn about financial risk taking and reward. The GCSE syllabus includes risk taking within the context of business growth.

38. See www.ignitefutures.org.uk/media/uploads/ignite_newsletter_06_rev.pdf.
39. For more information on Room 13, see www.room13scotland.com/index.php.

Like economics, business studies is offered as an option at 14 to 19 by some schools and colleges. A number of courses are available in the subject, including BTEC certificates and diplomas, GCSE, AS/A2 and the new Diploma in business, administration and finance. The syllabuses for these courses cover issues of risk. The GCSE and AS/A2 course specifications include consideration of the nature and rewards of risk taking and support for risk taking from the government and elsewhere.[40] BTEC courses also cover the issue of risk[41] and the new business, administration and finance Diploma syllabus covers the role of risk in a number of business contexts, including entrepreneurship, developing business ideas and business planning.[42]

Teachers delivering business studies courses have access to a wide array of sources to assist in the teaching of risk and reward. The *Times* A Level business studies resources for students and teachers include risk as a key theme,[43] including a case study of the management of risk through effective team-based decision making at RWE npower.[44]

40. For the AQA GCSE specification, see store.aqa.org.uk/qual/pdf/AQA-3133-W-SP-09.PDF [Accessed March 2009].
41. For information on the BTEC syllabus in business, see www.edexcel.com/quals/firsts/business-serv/business/Pages/default.aspx.
42. For the business, administration and finance diploma syllabus, see www.edexcel.com/quals/diploma/baf/Pages/default.aspx.
43. These resources are available from: www.thetimes100.co.uk/index.php.
44. The case study is available from: www.thetimes100.co.uk/downloads/npower/npower_13_full.pdf [Accessed March 2009].
45. SQW Consulting (2009) p. 5.
46. Programmes of study for Key Stages 3 and 4 citizenship.

Other curriculum areas and cross-curricular learning

The diversity of curriculum subjects and activities in which risk and reward can be explored shows that schools have many choices about how and where to improve young people's knowledge, skills and understanding. In addition to the examples presented in this chapter, there are opportunities to deliver learning about risk and reward in other areas of the curriculum, including citizenship and personal, learning and thinking skills. There are also opportunities to link risk taking across curriculum areas.

In secondary schools this requires careful planning and coordination, which may be resource-intensive. The Lowestoft Energy Challenge found that this is less of a problem in primary schools than at secondary level. Primary schools have more flexibility within their curriculums and may find it easier than secondary schools to provide lessons in enterprise and risk across several curriculum subjects.[45]

One aim of citizenship education is to equip young people with the knowledge and skills they need to play an effective role in public life. This includes being responsible citizens who can make a positive contribution to society. Another aim is to build young people's confidence so that they can lead fulfilling lives. Greater appreciation of risk and reward might help to achieve these aims.[46]

Citizenship is also intended to improve young people's success in learning and making progress. This goal is not confined to citizenship but is one of the aims of the cross-curricular Personal Learning and Thinking Skills framework for pupils aged 11 to 19. The framework encompasses six groups of skills that, in addition to English, mathematics and ICT, are essential to success in learning, life and work. The six skill groups are:

- independent enquiry
- creative thinking
- reflective learning
- team working
- self-management
- effective participation.

These skill groups are intended to support and complement learning within curriculum subjects.[47] Their application offers scope to explore risk and reward, particularly as part of self-management, which includes the ability to 'anticipate, take and manage risks'. Clearly, to be most effective, this needs to be interpreted widely by schools, rather than focused narrowly on issues of safety and harm.

47. For detail of the framework, see curriculum.qca.org.uk/key-stages-3-and-4/subjects/index.aspx.

4. What are the barriers and enablers?

Barriers to be overcome

There are numerous barriers to risk taking in activities involving children and young people. Many of these stem from a tendency by teachers and other professionals to prefer activities with planned outcomes and from an aversion to failure. While it is seen as an essential feature of the business world, risk taking is viewed negatively in relation to the lives of children and young people. It is associated with hazards and negative activity, and seen as something to be avoided.

In the context of work and business, risk taking is regarded as something done by entrepreneurs in their own businesses rather than relevant to people in all types of employment, and in relation to decisions about their own careers.

Risk taking needs be re-framed and viewed as a positive, innovative and forward-thinking activity relevant to all areas of life.

Pressure on achievement

Opportunities to learn about risk in the curriculum may be constrained by pressure on schools to meet targets for pupil achievement, particularly in public exams at 16 and 18 and in National Curriculum tests.[48] These pressures encourage teachers to play safe and deliver teaching close to the syllabus rather than experiment with new ideas and activities.

Learning about risk taking can be delivered across the curriculum, and there is certainly some degree of freedom in primary school to coordinate work between curriculum subjects. But primary schools face constraints in the time they can devote to non-core subjects and are under pressure to meet literacy and numeracy targets.[49]

Fear of failure

Taking risks can result in success or failure. There is no doubt that failure can be disappointing and discouraging. At the same time, it can help to build resilience.[50] Experiencing failure in a supportive environment may help children and young people to learn how to cope with failure and to move on. To make this possible, adults working with young people should take account of the emotional investment young people may have in their ideas and achievements, as well as the intellectual effort they represent, and offer appropriate guidance and support.

Fear of failure may be a factor in over-involvement of adults, including teachers and other professionals, in projects involving risk taking. Where adults dominate activities and tightly control activities and results, children and young people can learn less than if they make their own decisions and sometimes mistakes.

48. Goldstein, H. (2008) op. cit.
49. The recent Cambridge Primary Review concludes that the primary school curriculum is too narrow and focused on mathematics and English at the expense of other subjects. For reports published from the review, see www.primaryreview.org.uk/Publications/Interimreports.html.
50. Newman, T. and Blackburn, S. (2002) op. cit.

Enablers

Young people need support and guidance in taking risks. The level of support needed from adult facilitators varies according to factors such as age and ability, so that primary school pupils may need considerably more help and guidance than 14-to 19-year-olds.

Adults involved in innovation projects with young people should have a clear and distinct role, leaving key decisions to them. They should facilitate risk taking by asking open questions and not advocate solutions. Only in this way can young people make their own assessments and risks, and experience the rewards, or failure, for themselves. Time for reflection is also necessary to ensure that young people learn from their experiences of risk taking, including their mistakes. Reflection can also draw out any learnings for other areas of young people's studies and lives.

Rotherham Ready, one of the Taking a Leap pilot projects, found that adult mentors from the business world can help young people to understand the role that risk plays in the world of work. Other projects, including the Lowestoft Energy Challenge, found that external champions could have a positive influence on young people's decision making. Partnership between schools, other settings for young people and external organisations can prove highly effective in advancing understanding of risk, by relating it to real situations and real people.

Space Unlimited and Room 13 showed how entrepreneurs and professionals benefited from the input of children and young people into their projects. Examples such as these could be used to encourage other employers to participate in such schemes.

Spaces and places

Research on young people and risk taking from a sociological perspective perceives them as acting from within their own social, material, cultural and relational worlds. Therefore, young people take risks with their own health or their safety within a particular social context and set of circumstances.[51] It is conceivable that positive risk taking also requires a particular context and set of circumstances. Schools and other organisations working with young people can help to create these conditions and to develop young people's risk-taking skills to positive ends.

Evidence from the Taking a Leap project suggests that organisational culture is a key to promoting risk taking and that this is facilitated by support from the top. The active involvement or endorsement of projects by a senior teacher can help to generate interest and commitment and help ensure that projects are allocated sufficient time and resources.

Risk taking can be delivered in many curriculum subjects and examples are available of projects that have encompassed risk in subjects as diverse as design and technology, geography and art. Some examples of innovative projects have been presented in this report, and there are likely to be others. Schools and external organisations engaged in projects with risk-taking and innovation elements should be encouraged to share their experiences so that good ideas and practices can be more widely adopted.

The area of the curriculum that offers the clearest opportunities to learn about risk and reward is within the non-statutory framework for economic well-being, which includes careers education, work-related learning and enterprise, including financial capability. Schools have access to a range of materials and guidance on delivering risk in these areas of the curriculum. There are many untapped opportunities to apply concepts of risk taking to broaden young people's horizons in relation to careers, particularly where ideas are constrained by peer pressure, family expectations and stereotyped notions, for example about gender roles.[52]

51. Sharland, E. (2006) op. cit.
52. Beck, V. et. al. (2006) op. cit.

The cross-curricular subjects of citizenship and personal, learning and thinking skills also offer opportunities to explore risk and to link risk taking across subjects and areas of work. A key aim of citizenship is to build young people's confidence so that they can lead fulfilling lives and make a positive contribution to society. Risk and reward is therefore highly relevant to this area of study. The cross-curricular Personal, Learning and Thinking Skills framework includes development of skills in self-management, which includes the ability to 'anticipate, take and manage risks'. Possibilities to deliver key messages about risk and reward need not therefore be confined to curriculum subjects.

There are also numerous opportunities for young people to learn about risk outside of school in settings such as youth projects and volunteering and in activities such as drama and music. Learning in less formal settings can help to reinforce messages and skills learnt in school, and also help young people develop an understanding of the breadth of contexts and conditions in which risk taking is most appropriate and effective.

Appendix 1: The five Taking a Leap pilot projects on risk taking

Lead organisation	Partners	Key objectives	Key outcomes
The Design and Technology Association (DTA) www.data.org.uk	Years 4 to 6 pupils and teachers in 18 Shropshire schools	To use design and technology to equip pupils with the cognitive, emotional and social skills required for risk taking To build teachers' capacity for approaches to maximise pupils' innovation and risk taking	Understanding how teachers can set up learning environments and activities that promote risk taking in design and technology Understanding how to make designing adventurous rather than pedestrian for children aged 8 to 11
The Prince's Trust www.princes-trust.org.uk	Innovation consultancy What If	To inspire enterprising attitudes and behaviour towards risk in disadvantaged young people and in professionals working with them To train Prince's Trust staff and youth ambassadors in techniques to inspire enterprising attitudes, including towards risk, among young people enrolled on their Group Awards programme	A training resource pack and delivery of training sessions for innovation ambassadors to enable them to help young people develop their ideas
Rotherham Ready www.rotherhamready.org.uk	Rotherham Council's children and young people's services with Year 10 pupils and teachers in four schools, local entrepreneurs, performers and politicians	To enable young people to develop risk taking skills through work experience, mentoring and other contexts To support adults working with young people to support and encourage risk-taking	Processes and materials for developing risk taking, including risk-taking scenarios with guidance materials Understanding how to evaluate the development of understanding of risk in learning and other contexts
The Royal Society for the Encouragement of Arts, Manufactures and Commerce (RSA) www.thersa.org	RSA and US market research company Brainjuicer	To develop an online psychometric tool to assist young people in evaluating their decision-making skills in response to everyday risks To explore attitude to risk and encourage better decision making	Development of risk-taking skills through an online tool Greater understanding of risk and a change in behaviour in relation to risk taking among young people
Space Unlimited www.spaceunlimited.org	Space Unlimited, businesses and young people working on real business objectives	To learn how to prepare and support adults to facilitate innovation and creativity among young people, including managing their own reactions to risk and uncertainty To discover how young people can help adults feel more comfortable with risk	Understanding of how adults can create effective conditions for risk taking among young people To understand barriers to the creation of effective conditions for creativity and innovation among young people resulting from adult input

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