



UNIVERSITY
of DERBY

Business games and enterprise competitions. What works?

Item Type	Research Report
Authors	Hanson, Jill; Hooley, Tristram; Cox, Annette
Citation	Hanson, J., Hooley, T. and Cox, A. (2017). Business games and enterprise competitions. What works? London: The Careers & Enterprise Company.
Publisher	Careers and Enterprise Company
Download date	22/12/2020 09:41:04
Link to Item	http://hdl.handle.net/10545/621980

Business games and enterprise competitions.

What works?



The Careers & Enterprise Company is evidence led and works closely with the following strategic partners:

- Career Development Institute (CDI)
- Chartered Institute of Personnel and Development (CIPD)
- Confederation of British Industry (CBI)
- Gatsby Charitable Foundation
- Teach First
- The Federation of Small Businesses (FSB)
- The Institute of Directors (IOD)
- WorldSkills
- Young Enterprise

The Careers & Enterprise Company works with the following organisations to deliver business games and enterprise competitions in schools and colleges in England.

- Ahead Partnership Limited
- Careers and Enterprise Cloud
- Class of Your Own Ltd
- CSW Group Limited
- Debate Mate Ltd
- EBP Kent
- EngineeringUK
- Envision
- Global Generation
- Greenpower Education Trust
- Learn By Design/ By Design Group
- Solutions for the Planet
- Stoke City Community Trust
- Teentech CIC
- The EBP
- The Ideas Foundation
- The Manufacturing Institute
- The Prince's Trust
- The White Room Consultancy Ltd
- Young Enterprise

Publication information

This paper is published by
The Careers & Enterprise Company.

Hanson, J., Hooley, T. and Cox, A. (2017).
Business games and enterprise competitions.
What works? London: The Careers &
Enterprise Company.

Acknowledgements

The authors would like to thank
Anthony Mann (Education and Employers),
Sarah Middleton (Young Enterprise) and
Paul and Ben Dyer (National Enterprise
Challenge) for providing information,
guidance and comments on drafts during
the development of this paper.

Contents

About this paper	IV
In brief	V
Executive summary	VI
Lessons for practice	VII
Introduction	1
What are business games and enterprise competitions?	3
Types of business games and enterprise competitions	5
Example of business games and enterprise competitions	7
The impacts of business games and enterprise competitions	11
Lessons for practice	15
Developing the evidence base	18
Conclusion	19
References	21

About this paper

This paper provides the underpinning evidence on business games and enterprise competitions. Schools, colleges and providers of careers and enterprise programmes are invited to use this evidence to inform the programmes that they are running and developing.

The paper draws together academic and 'grey' literature (such as policy papers, speeches and programme evaluation reports), with the aim of, first, clarifying possible impacts from business games and enterprise competitions and, second, exploring what effective practice looks like.

II

There is a wide range of ways to deliver enterprise education. This paper will focus on enterprise competitions and business games, in part because previous research by The Careers & Enterprise Company identified this as a promising approach.

In brief



There is a range of evidence which provides insights on the effectiveness of business games and enterprise competitions. The evidence suggests that business games and enterprise competitions are 'potentially effective' (a 2 on the Early Intervention Foundation evidence scale) because we have identified multiple evaluations which typically demonstrate positive outcomes for participants, but these interventions have limited samples or methodological robustness.



The evidence suggests that business games and enterprise competitions can have a significant and observable impact on cognitive abilities, employability skills, personal effectiveness, knowledge and career readiness.

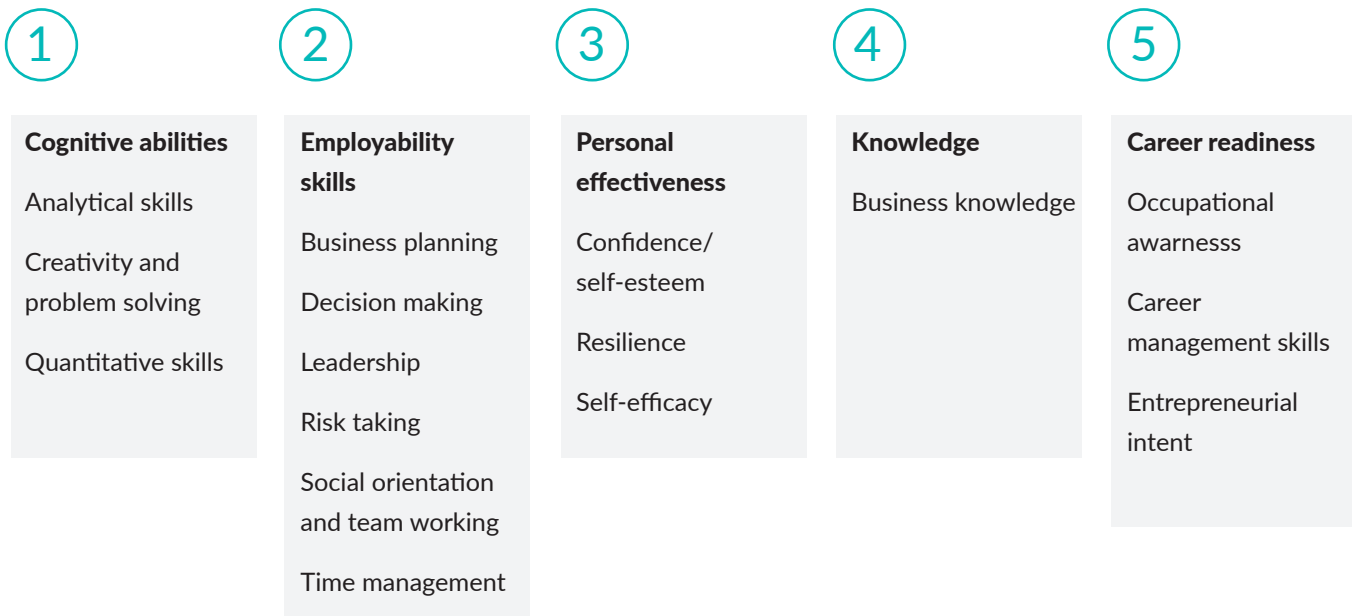


The evidence offers several important lessons for practice. It suggests that high quality business games and enterprise competitions need to be well designed, authentic, offer participants autonomy, encourage teamwork and provide feedback.

Executive summary

Enterprise competitions and business games provide opportunities for active learning about work and entrepreneurship. The evidence suggests that they are 'potentially effective' based on multiple evaluations which typically demonstrate positive outcomes for participants, although they have limited samples or methodological robustness.

Existing studies have observed impacts associated with enterprise competitions across five domains.



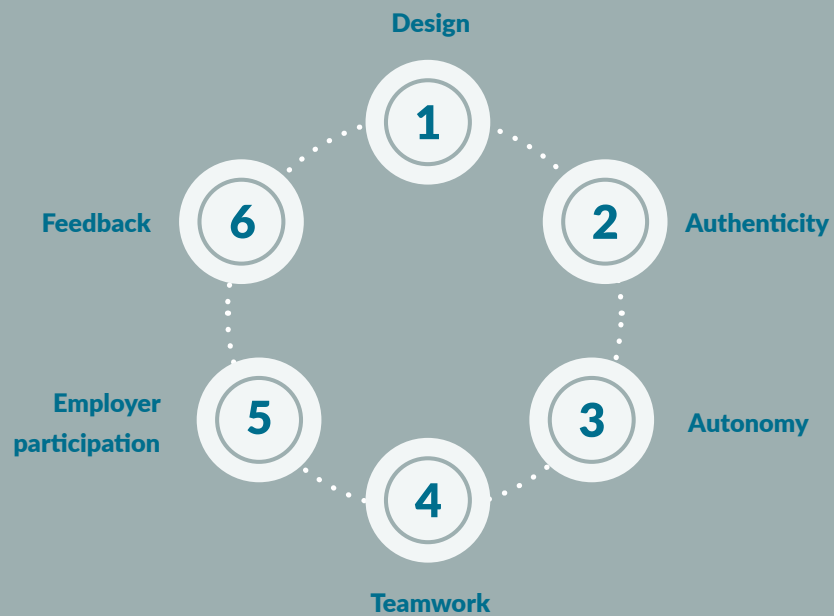
The experiential nature of such activities can be engaging and encourage the development of such abilities, skills and knowledge in a different way from more conventional career learning activities.

Since there are several such competitions and games run nationally with no cash cost

to schools or students, they present a viable and stimulating way for students to gain experience of enterprise and business.

The evidence provides several useful pointers for running business games and enterprise competitions.

Lessons for practice



Design

Games and competitions should be carefully designed with clear objectives and a context which is meaningful to students. They should be stretching but not overwhelming for participants.

Authenticity

Games and competitions should ensure simulations of reality are as authentic as possible.

Autonomy

Participants should have autonomy and opportunity to experiment.

Teamwork

Games and competitions should ideally be constructed to encourage teamwork.

Employer participation

Employers and working people should be involved as coaches and/or mentors.

Feedback

It is important for participants to receive feedback from employers and teachers on their decision-making and actions at key stages throughout the game or competition. A final debrief should take place at the end of the game to allow participants to assess their own performance and reflect on what they have learnt.

Introduction

Making the transition from education to work can be challenging for young people. Employers report that they find it difficult to fill vacancies and find the skills that they need.¹

This is particularly acute with respect to school leavers, who many employers report lack essential business skills and require a significant amount of training before being able to work.^{2,3} School leavers also feel unprepared for work with a recent survey by Education and Employers finding that 53% of all young people felt that their schooling had not prepared them for adult working life⁴ with this finding being echoed in other similar studies.⁵

Research by YouGov on behalf of EDGE found a strong consensus amongst teachers, employers, young people and their parents that there should be a greater level of employer involvement in education.⁶ There are a wide range of potential ways in which schools can make use of such involvement to support young people's transitions to work.⁷ In this paper we focus on business games and enterprise competitions. These kinds of interventions can be useful to young people as they develop a range of skills and knowledge in a way which simulates the workplace. Where these interventions are used to support young people's career learning there are a

range of benefits for the individual and the economy.⁸ However, provision of careers and enterprise support is patchy and inconsistent in schools in England.^{9,10}

Lord Young highlighted the importance of enterprise education in his 2014 report *Enterprise for All*.¹¹ He pointed out that enterprise education is not only about encouraging young people to consider self-employment and entrepreneurship, but also about fostering 'a can-do and positive attitude and equipping people with the confidence to develop a career and vocational interests'. The business games and enterprise competitions that we examine in this paper are a sub-set of enterprise education. Enterprise education includes both specific enterprise activities such as business games and enterprise competitions as well as describing an approach to pedagogy and the organisation of the wider curriculum.^{12,13} However, a recent report by Ofsted found that access to enterprise education in England was inconsistent and that it was often poorly planned and delivered.¹⁴

1. Vivian, D. and colleagues (2016). *The UK Commission's Employer Skills Survey 2015: UK Results*. London: UKCES.
2. Chartered Institute of Management Accountants (CIMA). (2016). *School leavers' skills gap undermining British productivity*. Available from <http://www.cimaglobal.com/Press/Press-releases/2016/School-leavers-skills-gap-undermining-British-productivity/> [Accessed 2nd December 2016].
3. British Chamber of Commerce (2014). *Developing the talents of the next generation*. <http://www.britishchambers.org.uk/assets/downloads/J4990%20-%20A4%20BCC%20WORKFORCE%20SURVEY%20INFOGRAPHIC%20final.pdf> [Accessed 2nd December 2016].
4. Mann, A., Kashefpakdel, E., Rehill, J. & Huddleston, P. (2016). *Contemporary Transitions: Young Britons Reflect on Life after Secondary School and College*. London: Education and Employers.
5. Youth Unemployment UK. (2016). *GetMyFirstJob - 60% of UK school leavers admit to feeling unprepared for world of work, reveals new survey*. Available from <http://www.yeuk.org.uk/get-first-job-60-uk-school-leavers-admit-feeling-unprepared-world-work-reveals-new-survey/> [Accessed 2nd December 2016].
6. YouGov. (2010). *EDGE Annual Programme of Stakeholder Surveys*. London: YouGov.
7. Hughes, D., Mann, A., Barnes, S., Baldauf, B. and McKeown, R. (2016). *Careers Education: International Literature Review*. London: Education Endowment Foundation.
8. Hookey, T. and Dodd, V. (2015). *The Economic Benefits of Career Guidance*. Careers England.
9. Langley, E., Hookey, T., Bertuchi, D. (2014). *A Career Postcode Lottery? Local Authority Provision of Youth and Career Support Following the 2011 Education Act*. Derby: International Centre for Guidance Studies, University of Derby.
10. Archer, L. and Moote, J. (2016). *ASPIRES 2 Project Spotlight: Year 11 Students' Views of Careers Education and Work Experience*. London: Kings College.
11. Young, D. (2014). *Enterprise for All*. London: UK Government.
12. Department for Children, Schools and Families. (2010). *A guide to enterprise education*. Accessed from http://www.readyunlimited.com/wp-content/uploads/2015/09/Guide_to_Enterprise_Education-DCSF.pdf. [Accessed 12th March 2017].
13. McLarty, L., Highley, H. and Alderson, S. (2010). *Evaluation of Enterprise Education in England*. London: Department of Education.
14. Ofsted. (2016). *Getting Ready for Work*. Manchester: Ofsted.

Previously Ofsted has argued that there are six key criteria to ensure good enterprise education in schools.

1. A commitment by school leaders to enterprise education and having a sufficiently senior member of staff to champion it throughout the school
2. A common understanding of what enterprise education is, based on an agreed definition.
3. Ensuring that there is a coherent programme that embraces all pupils; that learning outcomes are clearly identified and that there is progression in pupils' knowledge, understanding and skills.
4. Having systems in place to assess pupils' progress in relation to enterprise education as well as to monitor the quality of provision in this area.
5. Having an effective programme of training to develop teachers' understanding of enterprise education and their expertise in delivering it.
6. Making effective use of links with employers to ensure that the content of courses is up to date and reflects current business activity.¹⁵

These criteria offer a framework for the delivery of enterprise education which aligns well with wider frameworks that exist such as the Gatsby Benchmarks for good careers guidance.¹⁶ In general career and enterprise education needs to be well planned, coherent, well-integrated into the curriculum, co-ordinated by professionals who understand both the content that they are delivering and the teaching methods through which it is delivered, and finally and distinctively, such education should make good use of input from employers and working people. However, within these broad principles of good practice there is a wide range of ways to deliver enterprise education.¹⁷

This paper will focus on enterprise competitions and business games, in part because previous research by The Careers & Enterprise Company identified this as a promising approach¹⁸ and in part because the research base suggests that gamified learning is engaging and well aligned to support the objectives of career and enterprise learning.^{19 20}

15. Ofsted. (2011). *Economics, Business and Enterprise Education. A Summary of Inspection Evidence: April 2007 to March 2010*. Manchester: Ofsted.

16. The Gatsby Charitable Foundation (2014). *Good Career Guidance*. London: The Gatsby Charitable Foundation.

17. Coiffait, L., Dawkins, J., Kirwan, R. and Mann, A. (2012). *Enterprise Education: Value and Direction An Interim Report*. London: Education and Employment Taskforce

18. The Careers & Enterprise Company. (2016). *What Works in Careers & Enterprise?* London: The Careers & Enterprise Company.

19. Antonaci, A., Dagnino, F. M., Ott, M., Bellotti, F., Berta, R., De Gloria, A., Lavagnino, E., Romera, M. and Mayer, I. (2015). A gamified collaborative course in entrepreneurship: Focus on objectives and tools. *Computers in Human Behavior*, 51, 1276-1283.

20. Vickers, I., Baldock, R., Etherington, D., North, D. (2006). *Review of the Enterprise Promotion Fund*. Available from https://eprints.mdx.ac.uk/3772/1/Review_of_enterprise_promotion_fund.pdf [Accessed 13th January 2017].

What are business games and enterprise competitions?

Business games and enterprise competitions are a well-established form of career and enterprise education which create an experiential learning opportunity for young people. Examples of these kinds of activities have been employed at all stages of education and in countries across the world.²¹

There is a strong tradition of enterprise education in primary schools.²² While this is not the focus of this paper, this is an area that merits further attention in the future. There is also a strong tradition of enterprise education within higher education, although again this is not the focus of this paper. We have made use of evidence drawn from across the lifecourse where it offers insights that are useful to our core focus on secondary schools and colleges. We will discuss the need for more studies focused on the 11-18 age group in section 5 of this paper.

As we explore these interventions, it is important to think about what the difference is between 'enterprise' and 'business' and between 'competitions' and 'games'. Enterprise activities focus on the creation or formation of a business, while business activities focus more on the management of an already established business. Thus, in an enterprise game or competition the goal is usually the development of an idea into a business. This may include several stages such as the initial pitch, setting out a business proposal, implementing the business plan and, in some cases, taking a product or service to market. Business games and competitions focus more on how teams deal with business scenarios, so the focus is on making business decisions with respect to both internal factors such as finance and external factors such as stock markets.



21. Haftendon, K. and Carmela, S. (2004). *Facilitating Youth Entrepreneurship Part II: A Directory of Awareness and Promotion Programmes in Formal and Non-Formal Education*. Geneva: International Labour Office.

22. Enterprise Village. (2010). *Enterprise Education in Primary Schools*. London: Specialist Schools and Academies Trust.

Competitions are...

contests where individuals or teams compete to beat other teams by developing (and in some cases implementing) an idea and/or product or service. These competitions could be simulated (e.g. played in a classroom with fake money) or real (e.g. setting up a micro-enterprise which sells real products to real people).

Games are...

activities which have rules and goals and which challenge the participants, and which may be individual or team-based. They are distinct from 'real' activities and usually attempt to simulate a real life scenario. These simulations allow young people to explore setting up a business or managing a company in a safe environment without any serious personal or financial consequences. Such safe spaces for career learning are important as they allow experiential learning to take place in a way that recognises that young people may find it difficult to assess risks²³ and consequently protects them from exposing themselves to such risks.

Enterprise competitions and business games typically bring young people into contact with employers or working people who act as mentors/coaches and/or judges. The students compete, usually in teams against each other, to develop and/or run an enterprise or business. Competitions can be short, perhaps only lasting for a lesson or they can be long, running for an academic year or more.

Greco and colleagues²⁴ argue that such games and competitions should have two main purposes:

1. to facilitate learning and understanding of different business topics and skills; and
2. to evaluate the participants' performances.

Enterprise competitions and business games therefore cover a wide range of different learning opportunities. What unites them is the focus on experiential learning and the simulation of work.

23. Blakemore, S. J., and Robbins, T. W. (2012). Decision-making in the adolescent brain. *Nature Neuroscience*, 15(9), 1184-1191.

24. Greco, M., Baldissin, N. and Nonino, F., 2013. An exploratory taxonomy of business games. *Simulation & Gaming*, 44(5), 645-682.

Types of business games and enterprise competitions

There are a range of different ways in which enterprise competitions and business games can be organised. Watts argues that there are five forms of enterprise or business simulation which are commonly used in schools:²⁵

- **'design and make' simulations** in which participants engage in product design and prototype construction;
- **production simulations** which mirror assembly lines or other forms of mass production;
- **work practice units** which simulate businesses to provide an experience of work places;
- **school work tasks** where students take on job roles or tasks within the school, for example receptionist or peer tutor; and
- **mini-enterprises** which enable students to explore higher end business processes such as establishing a company, designing a product, making a product and trading for a specified period of time.

Over recent years, it has become increasingly common to integrate digital elements to support engagement and enhance the quality of the simulation.^{26, 27}

All these business games and enterprise competitions require participants to undertake a range of business tasks. However, more complex types of games and competitions demand more complex skills and knowledge. Depending on individual design, they may require participants to engage in planning, organisation, leadership, creativity, group work, problem solving, decision making and communication.

Some games and competitions may also require participants to learn about or demonstrate mastery of key business domains such as personnel, marketing, management and finance. Games with a stronger focus on enterprise will also ask participants to create a new product or service and to learn skills relevant to setting up and running their own business. These might include learning about the business cycle through developing an idea, establishing a company, developing a product or service, trading, distributing, marketing and potentially ultimately winding down the company.

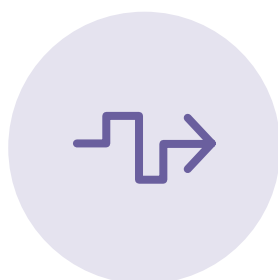
Business games and enterprise competitions are designed primarily to foster career and enterprise learning which can variously integrate with and supplement learning in the mainstream curriculum and associated qualifications.²⁸

25. Watts, A.G. (2015). A conceptual framework for work simulation. In Hooley, T. and Barham, L. (Eds.) *Career Development Policy and Practice: The Tony Watts Reader*. UK: Highflyers Resources Ltd.

26. Dunwell, I., Lameris, P., de Freitas, S., Petridis, P., Hendrix, M., Arnab, S. and Star, K. (2014). Providing Career Guidance to Adolescents through Digital Games: A Case Study. *International Journal of Game-Based Learning (IJGBL)*, 4(4), 58-70.

27. Protopsaltis, A., Borotis, S., Connolly, T. and Hainey, T. (2014). Teaching entrepreneurship using serious games in a Web 2.0 environment. In *Interactive Mobile Communication Technologies and Learning (IMCL)*, (pp. 242-246). IEEE.

28. Stanley, J. & Mann, A. (2014). A theoretical framework for employer engagement. In Mann, A., Stanley, J. & Archer, L. (Eds.) *Understanding Employer Engagement in Education: Theories and Evidence*. London: Routledge.



Such competitions also provide an opportunity for young people to gain access to employers and to build their social networks and cultural capital. In addition the game or competition format is also designed to be enjoyable and to foster engagement in career and enterprise learning.²⁹

In some games and competitions groups play within a common environment. This means that decisions made by teams may have consequences for other teams as well as their own. In other formats, teams may compete against each other to gain an accolade for their idea/company, or to make the most profit, but their decision making has no consequences for any team other than their own.

Games and competitions offer participants a range of possible choices during the game. In many cases while there may not be a 'right' choice, there can be wrong ones. Well-designed games build feedback into the process, so that when a player makes a bad choice they receive signals from the game and clues as to what the right choice might have been.³⁰ This kind of signalling and feedback is key to an effective

simulation and supports participants to learn from experience just as they would through a real working situation.³¹

Although simulations are a simplified version of reality, they can still be a useful vehicle for developing an understanding of the complexity and inter-relatedness of business and organisations. The ability of a game to simulate reality is a key part of its design. Some games seek to create a simulation within narrow constraints, for example games or competitions which are conducted in the classroom and which do not directly involve employers, but which teach participants how managing an organisation works. Rollercoaster Tycoon (see boxout 1 overleaf) provides a good example of this kind of game.³² At the other end of the spectrum there are competitions that incorporate real elements and which potentially offer participants experiences of entrepreneurship or the world of work. Young Enterprise offer a suite of programmes that range in scope and duration, for example, the Company Programme (see boxout 2 overleaf) requires participants to develop saleable products and then to sell them.

29. Fripp, J. (1997). A future for business simulations? *Journal of European Industrial Training*, 21(4), 138-142.

30. Adobor, H. and Daneshfar, A. (2006). Management simulations: determining their effectiveness. *Journal of Management Development*, 25(2), 151-168.

31. Blažič, A. J., and Blažič, B. D. J. (2015). Exploring and upgrading the educational business-game taxonomy. *Journal of Educational Computing Research*, 52(3), 303-340.

32. Sanford, R., Ulicsak, M., Facer, K. and Rudd, T., (2006) Teaching with games. *Computer Education-Stafford-Computer Education Group*, 112, p.12.

Example of business games and enterprise competitions

www.rollercoastertycoon.com

1. Rollercoaster Tycoon

Rollercoaster Tycoon is a computer simulation business game for secondary school students who act as theme park managers. The participants control specific elements with the goal of improving park performance that is measured through the happiness of the park staff and guests. Interactions between aspects such as admission process, ride excitement and park facilities lead to the development of complex situations. For example, placing a food stall next to a high-speed rollercoaster can lead to an increased number of vomiting guests.



www.young-enterprise.org.uk



2. Young Enterprise Company programme

Students work in teams to set up and run a business or social enterprise. Each student takes on a job role and works as part of the team to be responsible for an area of the business such as finance, sales or marketing.

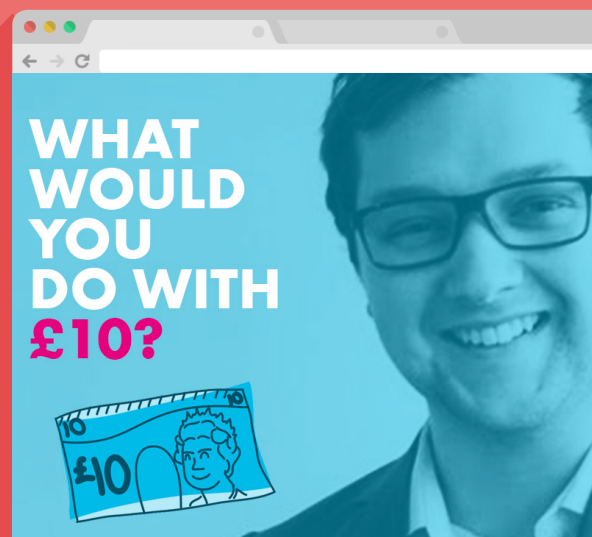
Students can manage money, open a bank account, interact with business volunteers and customers at sales events such as local trade fairs and present to an audience. The competition can last up to an academic year but is flexible.

www.tenner.org.uk

3. The Tenner Challenge

The Tenner Challenge is a Young Enterprise competition for 11-19 year olds and is free for schools to enter. Each registered young person is pledged a tenner to use as start-up capital to get their own business off the ground. They have four weeks to make as much profit as possible. The programme aims to develop greater self-awareness; insight into how businesses are structured and the different roles and career opportunities that exist; understanding of self-employment/entrepreneurship; insight into different careers and valuable skills and provide practical experience of financial mathematics in a real-life context. Last year over 20,000 young people took part and on average team profit was nearly £100. The top 50 teams made over £25k profit. Previous winners Avonbourne College created a venture called 'Little Poppies' which made over £5000. They sold hand-made Mother's Day and general greetings cards, each of which contained a small packet of poppy seeds to mark the occasion. The team also baked nutritious cakes with poppy seeds to match their theme. 82% of students felt Tenner provided a unique opportunity to learn & achieve new things, 69% of young people experienced a progression in 1 to 5 employability competencies.

www.therealexperience.co.uk



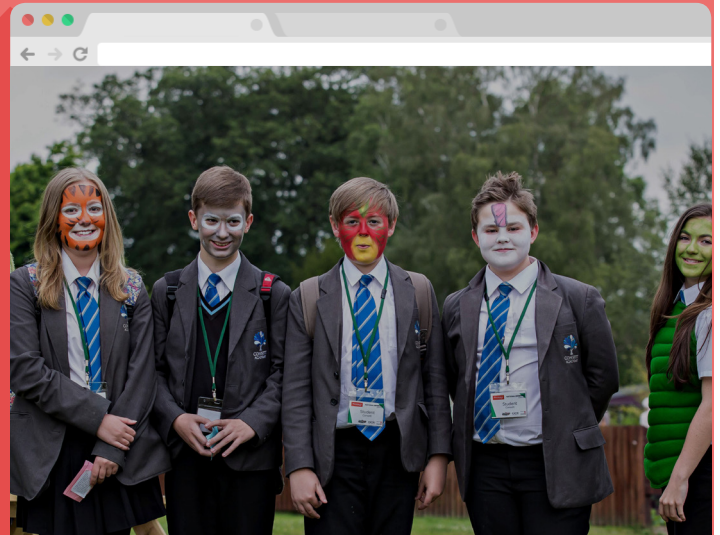
4. The Real Business Challenge

The Real Business Challenge is run in partnership with Coca Cola and is aimed at 14-17 year old students in the UK. It is free to take part. The aim of the challenge is to develop enterprise skills by completing a series of business tasks set by Coca Cola. Teams are supported by a mentor from Coca Cola. Anecdotal evidence suggests the programme raises awareness of the world of work, particularly the corporate world, and facilitates the skills related to team work, creativity, time management, communication and presentation of ideas.

www.nationalenterprisechallenge.co.uk

5. National Enterprise Challenge

The National Enterprise Challenge is run by Ryman and The Inspirational Learning Group. It is a costed activity aimed at children in Key Stages 3 and 4 in the UK and intends to develop enterprise and employability skills such as teamwork, communication, leadership, creativity and presenting information. Students undertake business tasks set by real organisations such as Ryman and Alton Towers. Anecdotal evidence suggests that the competition provides practical experience of creating and communicating ideas and team work and raises awareness of what the world of business is like.



There are a number of other national level business games designed to help develop enterprise and soft skills in school age students, some of which are sponsored by large companies (see boxouts 3, 4 and 5).

The idea of simulating the world of work is central to enterprise competitions and business games. A simulation is a representation of a real, operating event or situation.³³ Such simulations are designed to be 'a working representation of reality' with 'relevant behavioural similarity to the original system' although 'it may be an abstracted, simplified or accelerated model of a process'.³⁴ A key decision in developing

the simulation is how to calibrate the level of difficulty of the problem to the ability of the participants. Designing games which stretch participants but do not overwhelm them is critical.³⁷ It is also important for participants to experience some failure though as this reflects real life in the business world as opposed to what is more typical of an educational context. This can be done by building infrastructure to the game or competition that supports participants, normalises failure and, crucially, ensures that learning from this failure takes place.

33. Percival, F. and Ellington, H.I. (1980). The place of case studies in the simulation/gaming field. In Race, P. & Brook, D. (Eds) *Perspectives on Academic Gaming and Simulation 5: Simulation and Gaming for the 1980's*. London: Kogan Page.

34. Ruohomäki, V. (1995). Viewpoints on learning and education with simulation games. In *Simulation games and learning in production management* (pp. 13-25). Springer US.

The opportunity to simulate reality is a valuable tool when trying to teach young people about the world of work. Many young people have little direct experience of work and limited opportunity to gain such experience prior to leaving education.³⁶ While it is possible to provide young people with information about work, offering information alone is unlikely to

develop the skills that employers say they want.³⁷ However, simulations open the possibility for experiential career learning.

There are a number of questions summarising some key choices facing game designers when building enterprise games or competitions.³¹

Questions for game designers

Who is the game designed for? e.g. What age group and ability level?

How real is the game?
What ensures an accurate representation of reality?

How do the participants relate to other people during the game (teachers, employers, parents etc.)?

Where should the game be played?

How much autonomy do participants have? Is any choice possible? Will they be allowed to get it completely wrong?

How do the participants relate to each other during the game? Are they a team? In competition? In communication? In secret?

When should the game be played and for how long?

Is the game competitive?
How many people can win?
What constitutes a win?

What are participants expected to learn through playing the game? What are the learning outcomes?

How should the participants interact with the game? What makes the game interesting or enjoyable for the participants?

How do the participants receive feedback on their performance both during and at the end of the game?

What scaffolding and resources exist to support participants learning during the game, particularly with respect to the reality of failure?

What is the objective of the game for the participants?
What will constitute a successful outcome?

35. Kriz, W.C., and Auchter, E. (2016) 10 years of evaluation research into gaming simulation for German entrepreneurship and new study on its long-term effects. *Simulation & Gaming*, 47(20), 179-205.

36. Conlon, G., Patrignani, P. and Mantovani, I. (2015). *The Death of the Saturday Job*. London: UKCES.

37. Oxenbridge, S. and Evesson, J. (2012). Young people entering work: A review of the research. *ACAS Research Papers*, 18/12.

The impacts of business games and enterprise competitions

Building a successful career requires young people to demonstrate decision-making skills, communication skills, critical thinking skills and use knowledge and understanding from a range of disciplines.³⁸ Although not all studies find a clear or positive impact from participating in enterprise competitions and business games, most find that these interventions can help to foster desirable skills, attitudes and aptitudes.^{35 39 40}

Example study: Young Enterprise Alumni

The evidence base includes both academic literature and programme evaluations. Delivery organisations have a critical role in advancing the evidence base in this area. With respect to enterprise competitions and business games, Young Enterprise (YE) have played a critical role by evaluating their own programmes and sharing the findings for the whole sector.⁴³

In a rare example of longitudinal research in this area YE surveyed 371 YE alumni from across the UK and a comparable group of 202 people who had never taken part in a YE programme. Young Enterprise alumni reported that participating in YE had **improved their ability to achieve objectives, cope with problems, deal with change, do business planning, start up a company, build business relationships and networks, innovate, spot opportunities and evaluate ideas**. It also showed that Young Enterprise alumni had a much

greater likelihood of subsequently running their own business compared to people from the control group. Where alumni were running their own businesses, they also tended to have a higher turnover than the control group, to employ more people, to be more likely to be operating as a limited company and to be more likely to be serial entrepreneurs.

Such findings are promising but need to be reproduced in more robust studies which more explicitly address self-selection bias and which recruit the control group and the experimental group to ensure maximum comparability. Using randomisation in the allocation of the intervention would be one way to achieve this.

We will examine how the evidence base can be developed further in section 5.

38. Abdullah, N. L., Hanafiah, M. H. and Hashim, N. A. (2013). Developing creative teaching module: Business simulation in teaching strategic management. *International Education Studies*, 6(6), 95.

39. Faria, A.J., Hutchinson, D., Wellington, W.J. and Gold, S. (2009) Developments in business gaming a review of the past 40 years. *Simulation & Gaming*, 40(4), pp.464-487

40. Wilson, K. A., Bedwell, W. L., Lazzara, E. H., Salas, E., Burke, C. S., Estock, J. L. and Conkey, C. (2009). Relationships between game attributes and learning outcomes review and research proposals. *Simulation & Gaming*, 40(2), 217-266.

In this section we discuss evidence of impacts of business games and enterprise competitions. We have organised these observed impacts under five domains: (1) cognitive abilities; (2) employability skills; (3) personal effectiveness; (4) knowledge; and (5) career readiness.



We have reviewed a large number of studies and for reasons of space are not able to provide details on all of the studies examined. The overwhelming majority of the research on which these conclusions are based are small scale studies with limited methodological robustness.

However, they are suggestive of some clear patterns of impact. In section 5 we critically examine the strength of the evidence base and make some clear recommendations as to how it could be improved.

1. Cognitive abilities

Cognitive ability is the capacity to understand complex ideas, learn from experience, reason, problem solve, and adapt, create knowledge, organise and apply it.^{42 43} Business games and enterprise competitions require participants to observe, reflect, create concepts, pull their observations together to develop theories. They also require the application of previous learning to inform decision making and problem solving and independent learning.⁴⁴ Given the range of cognitive abilities that business games and enterprise competitions require for participants to be successful in them, it is possible to make a

logical connection between playing these games and developing cognitive abilities. Teachers in a study by Education and Employers felt that business games and enterprise competitions were particularly suited to developing cognitive abilities such as problem solving.⁴⁵

Research has demonstrated that a range of cognitive abilities are developed as an outcome of business games and enterprise competitions.^{46 47} This includes the following areas.

- **Analytical skills.** Participation in enterprise competitions and business games can increase participants' capacity to analyse complex problems.^{35 48 49}
- **Creativity and problem solving.** Games and competitions can also increase participants' capacity to generate ideas and creative solutions to problems.^{28 39}
40 52 53
- **Quantitative skills.** Studies have shown that participation in business games and enterprise competitions can support participants to handle data more effectively and use numerical evidence more systematically than those who had not competed in the game.^{31 41}

41. Young Enterprise (2012). Impact: 50 Years of Young Enterprise. Kingston: Kingston University Business School.

42. Neisser, U., Boodoo, G., Bouchard, T. J., Jr., Boykin, A.W., Brody, N., Ceci, S. J., Halpern, D. F., Lohelin, J. C., Perloff, R., Sternberg, R. J., and Urbina, S. (1996). Intelligence: Knowns and unknowns. *American Psychologist*, 51, 77-101.

43. Sternberg, R. J. (1997). The concept of intelligence and its role in lifelong learning and success. *American Psychologist*, 52, 1030-1037.

44. Avramenko, A. (2012). Enhancing students' employability through business simulation. *Education+ Training*, 54(5), 355-367.

45. Mann, A., Dawkins, J. and McKeown, R. (2017). *Towards An Employer Engagement Toolkit: British Teachers' Perspectives on the Comparative Efficacy of Work-Related Learning Activities*. London: Education and Employers.

46. Whiteley, T. R. and Faria, A. J. (2016, January). A study of the relationship between student final exam performance and simulation game participation. In *Simulation-Gaming: On the Improvement of Competence in Dealing with Complexity, Uncertainty and Value Conflicts: Proceedings of the International Simulation and Gaming Association's 19th International Conference, Utrecht University, Netherlands, 16-19 August 1988* (p. 137). Elsevier.

47. Doyle, D. F. and Brown, W. (2000) Using a business simulation to teach applied skills – the benefits and the challenges of using student teams from multiple countries. *Journal of European Industrial Training*, 24(6), 330 - 336

48. Huber, L.R., Sloof, R., and Van Praag, M. (2012). *The Effect of Early Entrepreneurship Education: Evidence from a Randomized Field Experiment* (IZA Discussion Paper No. 6512). Bonn: IZA.

49. Clarke, E. (2009). Learning outcomes from business simulation exercises: Challenges for the implementation of learning technologies. *Education+ Training*, 51(5/6), 448-459

50. Athayde, R. (2012). The impact of enterprise education on attitudes to enterprise in young people: an evaluation study. *Education+ training*, 54(8/9), 709-726.



2. Employability skills

A key aim of many enterprise competitions is to develop a range of employability skills which encompass what are variously described as enterprise, business and soft skills. Enterprise skills are “the skills, knowledge and attributes needed to apply creative ideas and innovations to practical solutions”.^{52 53 54} This capability is supported by more general business skills such as finance, management and decision-making.⁴⁵ Soft skills refer to interpersonal skills which include team work, communication, negotiation and leadership.

Studies have identified a range of skills that can be developed by enterprise competitions and business games.

- **Business planning.** Participants in one study were shown to be better able to produce good business plans after taking part in a simulated business game.⁴⁸
- **Decision making.** Business games and enterprise competitions can support the development of decision-making skills.⁴⁹
- **Leadership.** Participating in enterprise competitions and business games can support individuals’ capacity to lead others.⁵¹
- **Risk taking.** Business games and enterprise competitions can help participants to assess and manage risks and be more willing to take risks where appropriate.⁴⁸
- **Networking and team working.** The team and social nature of business games and enterprise competitions

helps develop the ability to make social contacts.^{48 54 55 56} This was an area that was highlighted by teachers as being a particular benefit that they associated with business games and enterprise competitions.⁴⁵

- **Time management.** Business games and enterprise competitions can also support the development of time management skills.³⁵

3. Personal effectiveness

Some enterprise competitions and business games have been shown to positively influence a range of personal attributes that contribute to an individual’s effectiveness. These include the following areas.

- **Confidence/self-esteem.** Some studies have observed that enterprise competitions and business games can have a positive effect on young peoples’ confidence and self-esteem.^{57 58 59}
- **Resilience.** Resilience describes individuals ability to bounce-back after a setback. A number of studies have found that participants in enterprise competitions and business games have reported increased resilience.^{12 58 59}
- **Self-efficacy.** Self-efficacy is a term that describes how far an individual believes that their actions and decisions will influence what happens to them. There is some evidence that participation in enterprise competitions and business games increases self-efficacy.³⁸

51. Peterman, N. E. and Kennedy, J. (2003). Enterprise education: Influencing students’ perceptions of entrepreneurship. *Entrepreneurship Theory and Practice*, 28(2), 129-144.

52. Rae, D (2007). Connecting enterprise and graduate employability. Challenges to the higher education culture and curriculum? *Education & Training*, 49, 8/9, pp 605 – 619.

53. Department for Children, Schools and Families. (2010). A guide to enterprise education. Accessed from http://www.readyunlimited.com/wp-content/uploads/2015/09/Guide_to_Enterprise_Education-DCSF.pdf. [Accessed 12th March 2017.]

54. Oosterbeek, H., Van Praag, M., & Ijsselstein, A. (2010). The impact of entrepreneurship education on entrepreneurship skills and motivation. *European economic review*, 54(3), 442-454.

55. Bhardwaj, J. (2014). Evaluation of the lasting impacts on employability of co-operative serious game-playing by first year Computing students: An exploratory analysis. In 2014 *IEEE Frontiers in Education Conference (FIE) Proceedings* (pp. 1-9). IEEE.

56. Williamson, H. (1989). Mini-enterprise in schools: the pupils’ experience. *British Journal of Education and Work*, 3(1), 71-82.

57. Young Enterprise (2016) Company Programme 2015-2016 Impact Report. Young Enterprise

58. Moore, N., Sarah, A., Robinson, D. & Hoare, M. (2016). *Young Enterprise: Evaluating the impact of the Team Programme*. Derby: International Centre for Guidance Studies, University of Derby

59. Young Enterprise (2016) Tenner Challenge Evaluation. Young Enterprise



4. Knowledge

Some competitions and games are designed to help students develop their knowledge in specific areas of business or enterprise.⁶⁰ A number of studies show it is often difficult to find clear evidence of games and competitions developing business relevant knowledge.^{61 62 63} However some promising evidence in this area has found impacts on knowledge development.⁴⁹ For example, an evaluation of a business game in German universities found that students perceived that they had developed their business knowledge through participating in the competition and their performance on a business knowledge test was significantly better after playing the game.³⁵

5. Career readiness

Business and enterprise games and competitions are sometimes used as part of a business studies curriculum. However, in schools they are more commonly used in career and enterprise education. The evidence suggests that they can enhance career readiness in a range of ways.

- **Career management skills.** Business games and enterprise competitions have also been observed to boost participants career management skills, for example awareness of skills, strengths and achievements and career decision making skills.²⁷
- **Entrepreneurial intent.** Relatively few young people view entrepreneurship as a viable career option.⁶⁴ Much enterprise education seeks to actively change this and to expand young people's entrepreneurial intent. Some research finds that participating in games and competitions has a positive effect on the likelihood of young people to consider entrepreneurial^{27 51 65} and social entrepreneurial⁶⁶ careers. Such research is promising but needs to be reproduced with more robust studies which pay close attention to how the sample is recruited. Conversely, other studies find that participating in such games reduces entrepreneurial intent, perhaps because they provide insights into what entrepreneurial careers involve.^{54 67 68} Increasing awareness of opportunities and understanding of what is involved may ultimately be helpful in improving alignment between aspirations and capabilities.
- **Occupational awareness.** Some research suggests that enterprise competitions and business games can encourage young people to find out about and consider career paths which they were previously unaware of.⁷

60. Gentry, J. W., Jackson, G. C., & Morgan, F. W. (1988). PROLOG: A Business Logistics Simulation Game. *Journal of Marketing Education*, 10(3), 74-83.

61. Feldman, H. D. (1995). Computer-based simulation games: A viable educational technique for entrepreneurship classes? *Simulation & Gaming*, 26, 346-360.

62. Murff, E., and Teach, R. (2009). Entrepreneurship: A game of risk and reward Phase I—The search for opportunity. *Developments in Business Simulation and Experiential Learning*, 36, 183-189.

63. Thavikulwat, P. (1995). Computer-assisted gaming for entrepreneurship education. *Simulation & Gaming*, 26, 328-345.

64. Black, L., Corbin, B., Warburton, T. and Campbell, A. (2003). *The Contribution of 'World View' to Pupils' Attitudes on Enterprise, Entrepreneurship and Entrepreneurial Learning*. Manchester: Manchester Metropolitan University Business School.

65. Athayde, R. (2009). Measuring enterprise potential in young people. *Entrepreneurship Theory and Practice*, 33(2), 481-500.

66. Damani, B., Sardeshpande, V., and Gaitonde, U. (2015). Use of serious games for creating awareness about social enterprises. *Journal of Computers in Education*, 2(4), 493-511.

67. Newbery, R., Lean, J. and Moizer, J. (2016). Evaluating the impact of serious games: the effect of gaming on entrepreneurial intent. *Information Technology & People*, 29(4), 733 - 749.

68. Oosterbrook, H., van Praag, M. and Ijsselstein, A. (2008). *The Impact of Entrepreneurship Education on Entrepreneurship Competencies and Intentions: An Evaluation of the Junior Achievement Student Mini-Company Program*. Bonn: IZA.

Lessons for practice

The literature on business games and enterprise competitions suggests that they deliver a range of impacts on cognitive abilities; employability skills; personal effectiveness; knowledge; and career readiness.

However, there is a wide variety of types of business game or enterprise competition. These range from some very brief interventions (perhaps just lasting for one lesson) to lengthy ones (which may run across a whole academic year). There is also a wide variety of ways in which game participants are supported (e.g. through the provision of resources, mentors and taught interventions) and their learning is guaranteed (e.g. the use of feedback, reflective logs and formal and informal assessment). At present the literature does not provide comparative studies on which to base clear recommendations on what the ideal organisation of a game or competition, although there is some very helpful recent research which has provided insights on different interventions from the perspectives of teachers and young people.⁴⁵⁻⁶⁹ However, it is possible to draw out some features which can support the design of future interventions.

Design

The game or competition should have clear objectives which are understood by the participants.⁷⁰ Clear objectives not only help the participants but also support effective monitoring and evaluation.

The difficulty of the game must be appropriate for participant's abilities.⁴⁸ If a competition is too easy participants can lose interest and motivation. However, if it is too difficult participants may become discouraged or simply not able to compete effectively. Likewise, a competition that is perceived as either too trivial or too complex is less effective because the participants find it difficult to see the linkages between the game and reality.

Authenticity

Games and competitions should be designed to ensure that they represent the real world as faithfully as possible.³⁴ There is a positive relationship between the fidelity of the representation and the degree of learning fostered by the game. To achieve this the context should be realistic and familiar and participants should be able to recognise that it reflects real life situations.¹⁸

⁷¹⁻⁷² While familiarity is likely to support participants' engagement with the game it does raise some challenges associated with the aims of career and enterprise education. Career and enterprise education seeks to encourage young people to engage with unfamiliar parts of the labour market as well as those that are well known.

69. Mann, A. and Kashefpakdel, E. (2014) The views of young Britons (aged 19-24) on their teenage experiences of school-mediated employer engagement. In Mann, A., Stanley, J. & Archer, L. (Eds.) *Understanding Employer Engagement in Education: Theories and Evidence*. London: Routledge.

70. Hytti, U. and O'Gorman, C. (2004). What is "enterprise education"? An analysis of the objectives and methods of enterprise education programmes in four European countries. *Education+ Training*, 46(1), 11-23.

71. Lainema, T. (2004). Redesigning the traditional business gaming process. Aiming to capture business process authenticity. *Journal of Information Technology Education*, 3(3), 35-52.

72. Backström-Widjeskog, B. (2010). Teachers' thoughts on entrepreneurship education. In Skogen, K. and Sjøvoll, J. (Eds.) *Creativity and Innovation – Preconditions for Entrepreneurial Education*. Trondheim: Tapir Academic Press.



It is therefore important that games balance familiarity and encounters with new ideas and areas.

To ensure authenticity it is important that the consequences of actions in games are credible and that the outcome cannot always be predicted. This means that the game or competition should have a random element to more effectively simulate real world situations. Thus good decisions can still produce negative outcomes because of a series of unlucky events, or bad decisions can have positive outcomes because of a series of fortunate events. Participants can then be encouraged to reflect on what accounts for their success or otherwise within the game, to reflect on the nature of chance and think about what actions they could have taken to improve their likelihood of being 'lucky'.

Autonomy

The participants need to be allowed to experiment and learn independently.³⁹ Williamson found that this was one of the most popular aspects of business games and enterprise competitions with young people.⁵⁶ Business games and enterprise competitions require participants to be given greater responsibility for their own process of discovery and learning. The teacher does not normally give advice on game-playing strategies to help pupils 'win' although it is common to use a business

mentor as part of the team. However, this does not mean that the teacher does not have a role to play. Participants need to be prepared for the game, their progress monitored and gently guided when they get too far off track.⁵⁶

Teamwork

The competition or game should have a strong team element if one of the objectives is to develop soft skills. The composition of the team raises a number of issues. While allowing students to choose their own teams may lead to more harmonious groups it offers a poor simulation of the workplace.⁷³ Williamson argues that the creation of teams made up of mixed groups provides a good opportunity for learning about workplace relations.⁵⁶

Employer participation

The involvement of employers as coaches and/or mentors is crucial as teachers often lack the underpinning knowledge (economic, business and financial knowledge and understanding) on which such games depend. The coach or mentor should take the game seriously and treat participants with respect, ask questions to facilitate decision making and problem solving and provide feedback at key stages, be properly trained and encourage autonomy rather than telling participants what to do.^{18 32 56}

73. Riese, H. (2013). Mini-enterprise projects: friendship, business and learning. *Journal of Education and Work*, 26(4), 453-471.

74. Adobor, H., & Daneshfar, A. (2006). Management simulations: determining their effectiveness. *The Journal of Management Development*, 25(2), 151-168.



Feedback

It is important for participants to receive feedback from employers and teachers on their decision-making and actions at key stages throughout the competition or game.¹⁸ Regular feedback within the game enables them to develop while playing and to improve their performance as the game develops.

Ideally, participants should receive feedback after every round of play to help them to reflect on their learning. Such feedback can take the form of participants observing, discussing and understanding the performance of the various teams. They can then move on to explain their performance by reflecting on individual decisions they made and consequences for the team's performance. Such discussions provide good opportunities for mentors and coaches to work with their teams and for the teacher or tutor to link the game both to wider learning objectives and the world of work.

A final debrief should take place at the end of the game to allow participants to review their performance, see how it compares to others and to reflect on what they have learnt.

Developing the evidence base

The evidence on enterprise competitions suggests that they are 'potentially effective'.¹⁸ It highlights a range of reported impacts on cognitive abilities, skills, knowledge and career readiness. While there are a number of studies which have examined this intervention, and identified impacts, these studies often have limited samples or lack methodological robustness.^{75 76}

Key areas for improving the evidence base include:

- conducting more evaluations of business games and enterprise competitions as part of careers education in school settings rather than colleges or higher education institutions;
- using more objective measures of learning to supplement participant self-reports e.g. test or coursework grades;
- using more consistent and objective measures for long-term follow up e.g. consistently reporting salary, business turnover, job satisfaction etc;
- improvements in research design to avoid limitations of sample bias. This might include greater use of randomisation or stratified sampling and is particularly important for the construction of viable control groups;⁴⁰
- comparisons of pupils taking part in different types and lengths of game or competition as a way to explore the relative efficacy of different game designs; and
- undertaking more independent evaluations which are not conducted or funded by organisations responsible for the delivery of the intervention.²⁶

It is also worth noting that the literature identifies a very wide range of observed impacts that are associated with enterprise competitions and business games. It is unlikely that such an intervention can be equally impactful in all of these domains. There would therefore be value in programme managers thinking about what the core aims of such programmes are and focusing evaluation on these domains. Along with the other suggestions in the list above this would support the emergence of a more definitive evidence base.

As the evidence base develops there would be value in further literature reviews and meta-analyses. However, at present there is probably insufficient evidence conducted with comparable methodologies to support either a systematic literature review or a statistical meta-analysis. This review is the first attempt we can locate which has sought to draw together the evidence base on business games and enterprise competitions as a careers education intervention and it is important to continue the task of synthesising the evidence base.

75. Hytti, U. and Kuopusjärvi, P. (2004) *Evaluating and Measuring Entrepreneurship and Enterprise Education: Methods, Tools and Practices*. Turku, Finland: Turku School of Economics and Business Administration.

76. Greene, F.J. and Storey, D.J. (2005) *Evaluating Youth Entrepreneurship: The Case of The Prince's Trust*. Centre for Small and Medium Sized Enterprises, Warwick Business School

Conclusion

Enterprise competitions and business games provide opportunities for active learning about work and entrepreneurship. The evidence suggests that they are potentially effective in enhancing five domains: (1) cognitive abilities; (2) employability skills; (3) personal effectiveness; (4) knowledge; and (5) career readiness.

The evidence base provides us with some clear guidance about how to run effective enterprise and business competitions and games. It highlights the importance of careful design, authenticity, autonomy, teamwork, employer participation and feedback. When games and competitions are run in this way, the evidence suggests that they are most likely to be effective in achieving their goals.

Since there are several such competitions and games run nationally with no cash cost to schools or pupils, they present a viable and stimulating way for students to gain experience of enterprise and business.

References

- Abdullah, N. L., Hanafiah, M. H., and Hashim, N. A. (2013). Developing creative teaching module: Business simulation in teaching strategic management. *International Education Studies*, 6(6), 95-107.
- Adobor, H. and Daneshfar, A. (2006) Management simulations: determining their effectiveness. *Journal of Management Development*, 25(2), 151-168.
- Athayde, R. (2009). Measuring enterprise potential in young people. *Entrepreneurship Theory and Practice*, 33(2), 481-500.
- Antonaci, A., Dagnino, F. M., Ott, M., Bellotti, F., Berta, R., De Gloria, A., Lavagnino, E., Romera, M. and Mayer, I. (2015). A gamified collaborative course in entrepreneurship: Focus on objectives and tools. *Computers in Human Behavior*, 51, 1276-1283.
- Archer, L. and Moote, J. (2016). ASPIRES 2 Project Spotlight: Year 11 Students' Views of Careers Education and Work Experience. London: Kings College.
- Athayde, R. (2012). The impact of enterprise education on attitudes to enterprise in young people: an evaluation study. *Education+ Training*, 54(8/9), 709-726.
- Avramenko, A. (2012). Enhancing students' employability through business simulation. *Education+ Training*, 54(5), 355-367.
- Backström-Widjeskog, B. (2010). Teachers' thoughts on entrepreneurship education. In Skogen, K. and Sjøvoll, J. (Eds.) *Creativity and Innovation - Preconditions for Entrepreneurial Education*. Trondheim: Tapir Academic Press.
- Bhardwaj, J. (2014). Evaluation of the lasting impacts on employability of co-operative serious game-playing by first year Computing students: An exploratory analysis. In 2014 *IEEE Frontiers in Education Conference (FIE) Proceedings* (pp. 1-9). IEEE.
- Black, L., Corbin, B., Warburton, T. and Campbell, A. (2003). *The Contribution of 'World View' to Pupils' Attitudes on Enterprise, Entrepreneurship and Entrepreneurial Learning*. Manchester: Manchester Metropolitan University Business School.
- Blakemore, S. J., and Robbins, T. W. (2012). Decision-making in the adolescent brain. *Nature Neuroscience*, 15(9), 1184-1191.
- Blažič, A. J., and Blažič, B. D. J. (2015). Exploring and Upgrading the Educational Business-Game Taxonomy. *Journal of Educational Computing Research*, 52(3), 303-340.
- British Chamber of Commerce (2014) *Developing the Talents of the Next Generation*. Available from <http://www.britishchambers.org.uk/assets/downloads/J1990%20-%20A4%20BCC%20WORKFORCE%20SURVEY%20INFOGRAPHIC%20final.pdf> [Accessed 2nd December 2016].
- Clarke, E. (2009). Learning outcomes from business simulation exercises: Challenges for the implementation of learning technologies. *Education+ Training*, 51(5/6), 448-459.
- Chartered Institute of Management Accountants (CIMA). (2016). *School leavers' skills gap undermining British productivity*. Available from <http://www.cimaglobal.com/Press/Press-releases/2016/School-leavers-skills-gap-undermining-British-productivity/> [Accessed 2nd December 2016].
- Conlon, G., Patrignani, P. and Mantovani, I. (2015). *The Death of the Saturday Job*. London: UKCES.
- Coiffait, L., Dawkins, J., Kirwan, R and Mann, A. (2012) *Enterprise Education: Value and Direction: An Interim Report*. London: Education and Employers Taskforce.
- Damani, B., Sardeshpande, V., and Gaitonde, U. (2015). Use of serious games for creating awareness about social enterprises. *Journal of Computers in Education*, 2(4), 493-511.
- Department for Children, Schools and Families. (2010). *A guide to enterprise education*. Available from http://www.readyunlimited.com/wp-content/uploads/2015/09/Guide_to_Enterprise_Education-DCSF.pdf [Accessed 28th November 2016].
- Doyle, D. F. & Brown, W. (2000) Using a business simulation to teach applied skills – the benefits and the challenges of using student teams from multiple countries. *Journal of European Industrial Training*, 24(6), 330 – 336.
- Dunwell, I., Lamas, P., de Freitas, S., Petridis, P., Hendrix, M., Arnab, S. and Star, K. (2014). Providing Career Guidance to Adolescents through Digital Games: A Case Study. *International Journal of Game-Based Learning (IJGBL)*, 4(4), 58-70.
- Enterprise Village. (2010). *Enterprise Education in Primary Schools*. London: Specialist Schools and Academies Trust.
- Faria, A.J., Hutchinson, D., Wellington, W.J. and Gold, S. (2009). Developments in business gaming a review of the past 40 years. *Simulation & Gaming*, 40(4), 464-487.
- Feldman, H. D. (1995). Computer-based simulation games: A viable educational technique for entrepreneurship classes? *Simulation & Gaming*, 26, 346-360.
- Fripp, J. (1997). A future for business simulations? *Journal of European Industrial Training*, 21(4), 138-142.
- Gatsby Charitable Foundation (2014). *Good Career Guidance*. London: Gatsby Charitable Foundation.
- Gentry, J. W., Jackson, G. C., & Morgan, F. W. (1988). PROLOG: A Business Logistics Simulation Game. *Journal of Marketing Education*, 10(3), 74-83.
- Greco, M., Baldissin, N., & Nonino, F. (2013). An exploratory taxonomy of business games. *Simulation & Gaming*, 44(5), 645-682.
- Greene, F.J. and Storey, D.J. (2005) *Evaluating youth entrepreneurship: the case of The Prince's Trust*. Centre for Small and Medium Sized Enterprises, Warwick Business School.
- Haftendon, K. and Carmela, S. (2004). *Facilitating Youth Entrepreneurship Part II: A Directory of Awareness and Promotion Programmes in Formal and Non-Formal Education*. Geneva: International Labour Office.
- Hooley, T. and Dodd, V. (2015). *The Economic Benefits of Career Guidance*. Careers England.
- Huber, L.R., Sloof, R., and Van Praag, M. (2012). *The Effect of Early Entrepreneurship Education: Evidence from a Randomized Field Experiment* (IZA Discussion Paper No. 6512). Bonn: IZA.
- Hughes, D., Mann, A., Barnes, S., Baldauf, B. and McKeown, R. (2016). *Careers Education: International Literature Review*. London: Education Endowment Foundation.
- Hytti, U. and Kuopusjärvi, P. (2004) *Evaluating and Measuring Entrepreneurship and Enterprise Education: Methods, Tools and Practices*. Turku, Finland: Turku School of Economics and Business Administration.
- Hytti, U. and O'Gorman, C. (2004). What is "enterprise education"? An analysis of the objectives and methods of enterprise education programmes in four European countries. *Education+ Training*, 46(1), 11-23.
- Kriz, W.C. and Auchter, E. (2016) 10 years of evaluation research into gaming simulation for German entrepreneurship and new study on its long-term effects. *Simulation & Gaming*, 47(20), 179-205.
- Lainema, T. (2004). Redesigning the traditional business gaming process. Aiming to capture business process authenticity. *Journal of Information Technology Education*, 3(3), 35-52.
- Langley, E., Hooley, T. and Bertuchi, D. (2014). *A Career Postcode Lottery? Local Authority Provision of Youth and Career Support Following the 2011 Education Act*. Derby: International Centre for Guidance Studies, University of Derby.
- Mann, A., Dawkins, J. and McKeown, R. (2017). *Towards An Employer Engagement Toolkit: British Teachers' Perspectives on the Comparative Efficacy of Work-Related Learning Activities*. London: Education and Employers.
- Mann, A. and Kashefpakdel, E. (2014) The views of young Britons (aged 19-24) on their teenage experiences of school-mediated employer engagement. In Mann, A., Stanley, J. & Archer, L. (Eds.) *Understanding Employer Engagement in Education: Theories and Evidence*. London: Routledge.
- Mann, A., Kashefpakdel, E., Rehill, J. & Huddleston, P. (2016). *Contemporary Transitions: Young Britons Reflect on Life after Secondary School and College*. London: Education and Employers.
- McLarty, L., Highley, H. and Alderson, S. (2010). *Evaluation of Enterprise Education in England*. London: Department of Education.
- Moore, N., Sarah, A., Robinson, D. & Hoare, M. (2016). *Young Enterprise: Evaluating the impact of the Team Programme*. Derby: International Centre for Guidance Studies, University of Derby.
- Murff, E., & Teach, R. (2009). Entrepreneurship: A game of risk and reward Phase I – The search for opportunity. *Developments in Business Simulation and Experiential Learning*, 36, 183-189.
- Neisser, U., Boodoo, G., Bouchard, T. J., Jr., Boykin, A.W., Brody, N., Ceci, S. J., Halpern, D. F., Lohelin, J. C., Perloff, R., Sternberg, R. J. and Urbina, S. (1996). Intelligence: Knowns and unknowns. *American Psychologist*, 51, 77-101.
- Newbery, R., Lean, J. and Moizer, J. (2016). Evaluating the impact of serious games: the effect of gaming on entrepreneurial intent. *Information Technology & People*, 29(4), 733 – 749.
- Ofsted. (2011). *Economics, Business and Enterprise Education. A Summary of Inspection Evidence: April 2007 to March 2010*. Manchester: Ofsted.
- Ofsted. (2016). *Getting Ready for Work*. Manchester: Ofsted.
- Oosterbrook, H., van Praag, M. and Ijsselstein, A. (2008). *The Impact of Entrepreneurship Education on Entrepreneurship Competencies and Intentions: An Evaluation of the Junior Achievement Student Mini-Company Program*. Bonn: IZA.
- Oosterbeek, H., van Praag, M., and Ijsselstein, A. (2010). The impact of entrepreneurship education on entrepreneurship skills and motivation. *European economic review*, 54(3), 442-454.
- Oxenbridge, S. and Evesson, J. (2012). Young people entering work: A review of the research. ACAS Research Papers, 18/12.
- Percival, F. and Ellington, H.I. (1980). The place of case studies in the simulation/gaming field. In Race, P. & Brook, D. (Eds.) *Perspectives on Academic Gaming and Simulation 5: Simulation and Gaming for the 1980's*. London: Kogan Page.

Peterman, N. E., and Kennedy, J. (2003). Enterprise education: Influencing students' perceptions of entrepreneurship. *Entrepreneurship theory and practice*, 28(2), 129-144.

Protopsaltis, A., Borotis, S., Connolly, T. and Hainey, T. (2014). Teaching entrepreneurship using serious games in a Web 2.0 environment. In *Interactive Mobile Communication Technologies and Learning (IMCL)*, (pp. 242-246). IEEE

Rae, D. (2007). Connecting enterprise and graduate employability. Challenges to the higher education culture and curriculum? *Education & Training*, 49(8/9), 605 - 619.

Riese, H. (2013). Mini-enterprise projects: friendship, business and learning. *Journal of Education and Work*, 26(4), 453-471.

Ruohomäki, V. (1995). Viewpoints on learning and education with simulation games. In *Simulation games and learning in production management* (pp. 13-25). Springer US.

Sanford, R., Ulicsak, M., Facer, K. and Rudd, T., (2006) Teaching with games. *Computer Education-Stafford-Computer Education Group* -, 112, p.12.

Stanley, J. & Mann, A. (2014). A theoretical framework for employer engagement. In Mann, A., Stanley, J. & Archer, L. (Eds.) *Understanding Employer Engagement in Education: Theories and Evidence*. London: Routledge.

Sternberg, R. J. (1997). The concept of intelligence and its role in lifelong learning and success. *American Psychologist*, 52, 1030-1037.

The Careers & Enterprise Company. (2016). *What Works in Careers & Enterprise?* London: The Careers & Enterprise Company.

Thavikulwat, P. (1995). Computer-assisted gaming for entrepreneurship education. *Simulation & Gaming*, 26, 328-345.

Vickers, I., Baldock, R., Etherington, D., North, D. (2006). Review of the Enterprise Promotion Fund. Available from https://eprints.mdx.ac.uk/3772/1/Review_of_enterprise_promotion_fund.pdf [Accessed 13th January 2017].

Vivian, D., Winterbotham, M., Shury, J., Skone James, A., Huntley Hewitt, J., Tweddle, M., Downing, C., Thornton, A., Sutton, R., Stanfield, C. and Leach, A. (2016). *The UK Commission's Employer Skills Survey 2015: UK Results*. London: UKCES.

Watts, A.G. (2015). A Conceptual Framework For Work Simulation. In Hooley, T. and Barham, L. (Eds.) *Career Development Policy and Practice: The Tony Watts Reader*. UK: Highflyers Resources Ltd.

Whiteley, T. R., and Faria, A. J. (2016). A study of the relationship between student final exam performance and simulation game participation. In *Simulation-Gaming: On the Improvement of Competence in Dealing with Complexity, Uncertainty and Value Conflicts: Proceedings of the International Simulation and Gaming Association's 19th International Conference, Utrecht University, Netherlands, 16-19 August 1988* (p. 137). Elsevier.

Williamson, H. (1989). Mini-enterprise in schools: the pupils' experience. *British Journal of Education and Work*, 3(1), 71-82.

Wilson, K. A., Bedwell, W. L., Lazzara, E. H., Salas, E., Burke, C. S., Estock, J. L., and Conkey, C. (2009). Relationships between game attributes and learning outcomes review and research proposals. *Simulation & gaming*, 40(2), 217-266.

YouGov. (2010). *EDGE Annual Programme of Stakeholder Surveys*. London: YouGov.

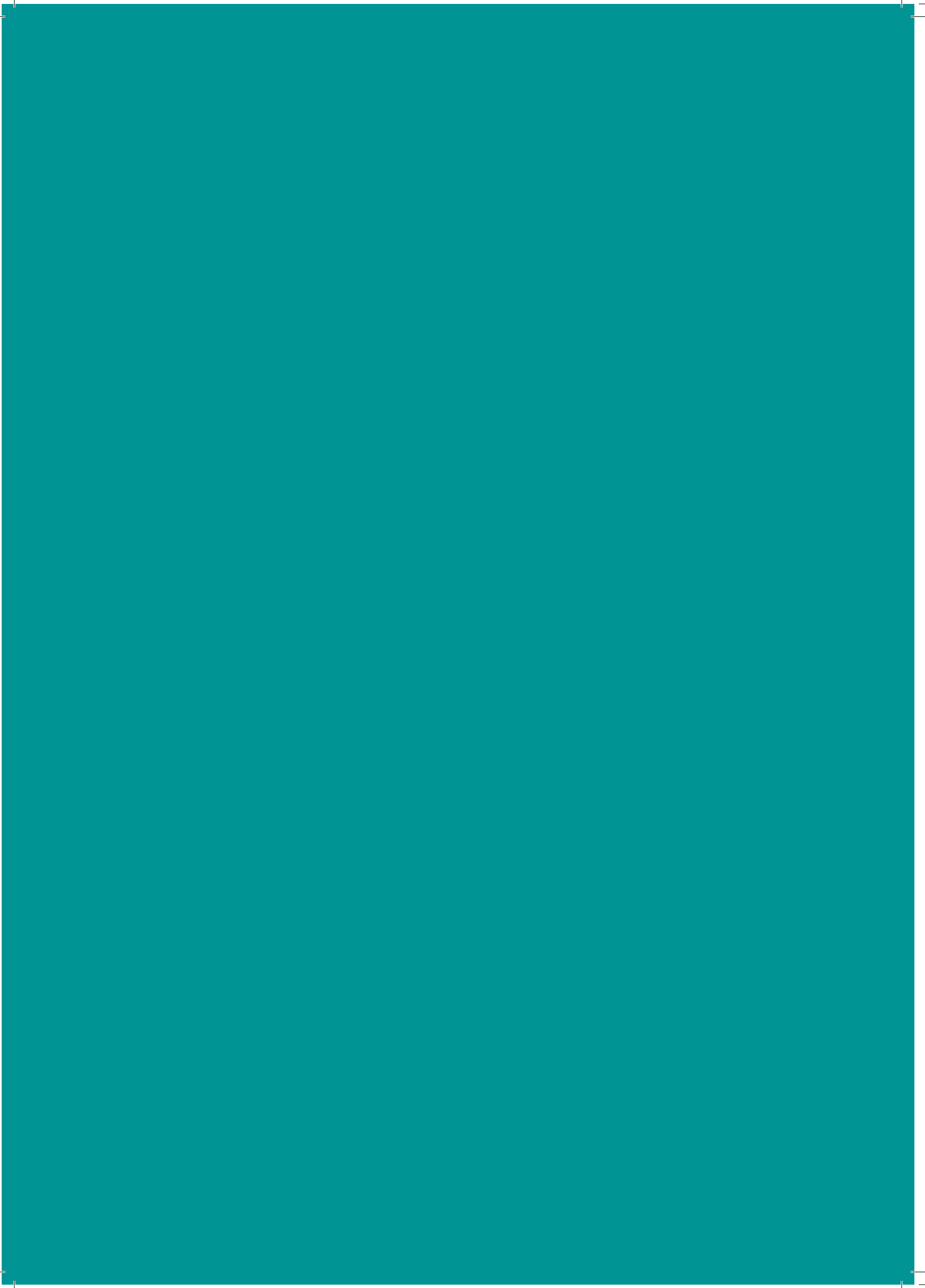
Young, D. (2014). *Enterprise for All*. London: UK Government.

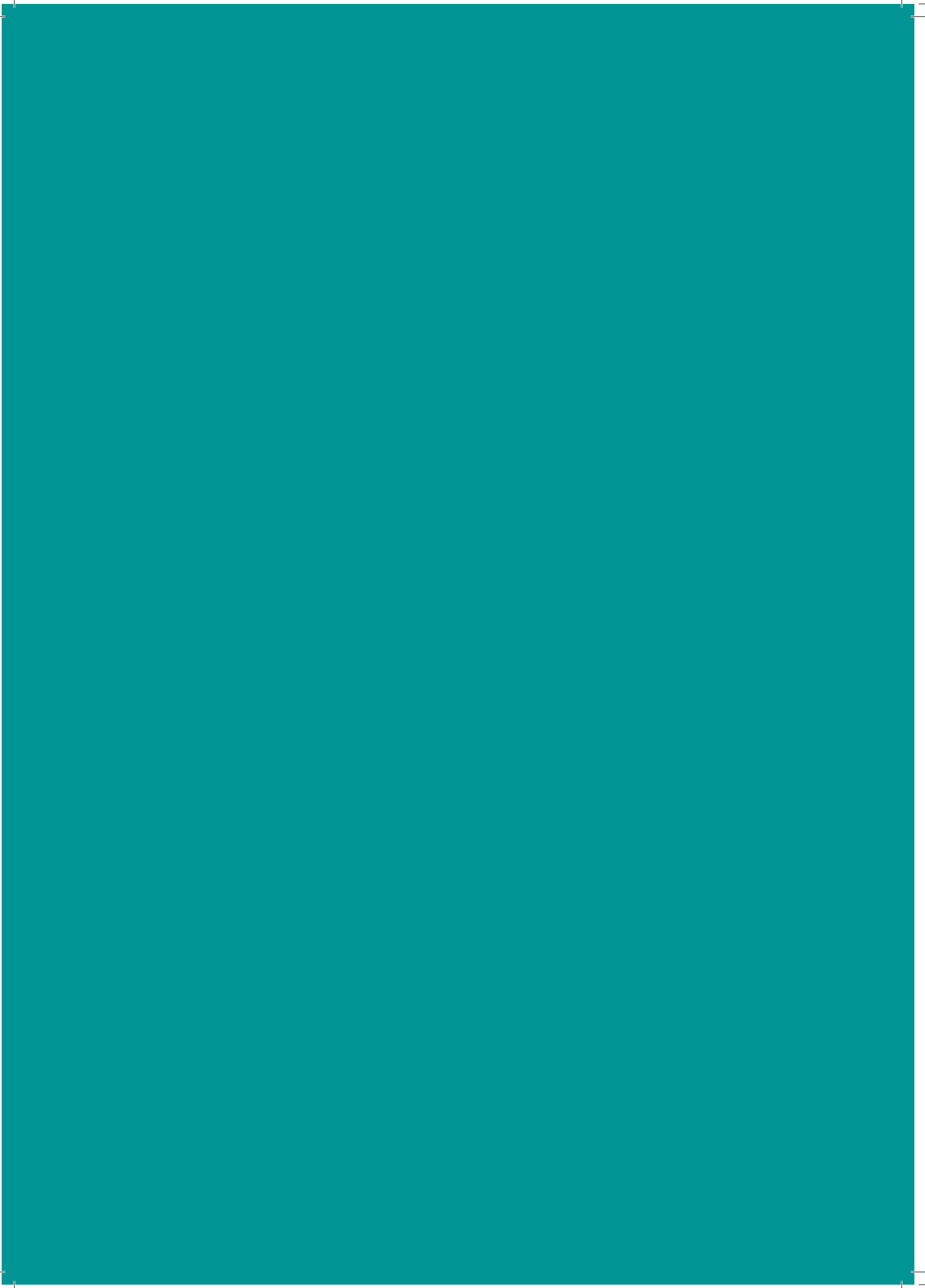
Young Enterprise. (2012). *Impact: 50 years of Young Enterprise*. Kingston University Business School.

Young Enterprise (2016) Company Programme 2015-2016 Impact Report. <https://www.young-enterprise.org.uk/wp-content/uploads/2014/09/YE-Impact-Report-2016-FINAL-1.pdf> [Accessed 8th February, 2017]

Young Enterprise (2016) Tenner Challenge Evaluation. https://www.young-enterprise.org.uk/wp-content/uploads/2014/09/Tenner-2016_final-1.pdf [Accessed 8th February, 2017]

Youth Unemployment UK. (2016). GetMyFirstJob - 60% of UK school leavers admit to feeling unprepared for world of work, reveals new survey. <http://www.yeuk.org.uk/get-first-job-60-uk-school-leavers-admit-feeling-unprepared-world-work-reveals-new-survey/> [Accessed 2nd December 2016]





**This paper is published by
The Careers & Enterprise Company.**

The Careers & Enterprise Company exists to help young people transition from education to employment by assisting them to develop the insights, understanding and skills that will lead to them building a career.

The Careers and Enterprise Company recognise the importance of rigorous evaluation; we are working with the Education Endowment Foundation and Bank of America Foundation to develop the most effective approach to careers and enterprise education. Through our partnership, we will trial, support and develop 'best in class' solutions with CSW Group on work experience and Envision on volunteering and enterprise education that will help equip young people with the skills and knowledge they need to successfully transition from education into meaningful employment.

The Careers & Enterprise Company

2-7 Clerkenwell Green
London
EC1R 0DE

 **@CareerEnt**

www.careersandenterprise.co.uk