Career learning for the 21st century

LSIS LEARNING AND SKILLS IMPROVEMENT SERVICE

Module 10:

Introduction to career development for STEM learners

Contents

Download

This CPD module is available to download in PDF format from the Excellence Gateway, Career Development section.

Publisher

Introduction to career development for STEM learners workshop

Tutor notes

Workshop outline

This workshop has been designed for those working in the FE and skills sector who are either new to career development or wish to broaden their understanding of it. The workshop introduces participants to the importance of career development in exploring the options available for science, technology, engineering and mathematics (STEM). This topic has a high profile at present, due to the decreasing number of learners applying for these areas and increasing demand from business and organisations.

This module can be delivered by anyone who is an experienced or qualified training professional if they take the time to familiarise themselves with the materials including the web links, handouts and references. It would, however, be an advantage if the trainer had experience and/or training in career development, as it would enable wider and deeper exploration of the topics covered.

The materials can be delivered as they stand, contextualised or modified to suit the time available and the needs of the participants or organisation. The PowerPoint™ slides and handouts are available as separate files.

Three optional one-hour extension activities are included at the end of these notes.

This workshop is the 10th in a series of CPD workshops produced by LSIS and available to download from the LSIS Excellence Gateway. There are 10 others in the series:

- An introduction to career development
- Introduction to interviewing skills
- Introduction to values and ethics in career development
- Introduction to delivering career development through group work
- Introduction to evaluating and measuring impact in career development
- Introduction to reaching potential by raising aspirations
- Introduction to developing employability skills
- Introduction to career development for those with additional support needs
- Learning and earning: understanding the options for your learners
- Introduction to the Blueprint for Careers.

This series of workshops is supported by a one-day "Train the trainer" programme aimed at those who have responsibility for staff development, continuing professional development or for developing a team's or department's skills and knowledge in career development. The programme introduces all the workshops: their aims, objectives, exercises and content while exploring how to tailor the content to specific contexts. If you are interested in gaining further information about this programme, please contact ann.ruthven@lsis.org.uk.

LSIS has also developed an online resource, "Career learning for all", available free of charge on the LSIS virtual learning environment: just go to www.leadershiplearning.org.uk and create your own login. This has been designed for those involved in supporting learners with their career development, both specialists and non-specialists.

Workshop aim and objectives

The **aim** of the workshop is to develop an understanding of how the career development needs of learners on STEM programmes might be met.

The **objectives** of the workshop are to enable participants to:

- describe ways in which the FE and skills sector is responding to the STEM agenda
- discuss messages from research into STEM – and how these might affect career development practice
- identify some resources available to meet the career development needs of learners on STEM programmes or studying STEM subjects.

Example workshop timetable

Time	Session/s
09.30	Welcome, domestics, aim and objectives and introduction of presenter and session
09.35	Quiz – what do we know about STEM careers, courses and jobs?
10.10	The STEM agenda
10.15	Supporting effective recruitment, retention and progression
10.45	Refreshments
10.55	Messages from research
11.23	Informing, engaging and inspiring STEM learners
11.48	Resources to support career development in STEM
12.17	Summary
12.30	Conclusion

Checklist of resources required

☐ Fire evacuation procedures

☐ PowerPoint™ slides 1 to 22

☐ Flip chart or whiteboard and marker pens

☐ Screen and LCD projector

☐ Laptop for the presenter (and one laptop for every three or four participants – optional)

☐ Post-it™ notes

☐ Paper and pens or pencils, if participants do not have their own

☐ Copies of handouts 1, 2 and 3

☐ Connection to the internet for the presenter's and participants laptops, if possible

☐ Evaluation form: LSIS workshop – trainer's feedback (see page 33)

☐ Evaluation form: LSIS workshop – attendee's feedback (see page 34).
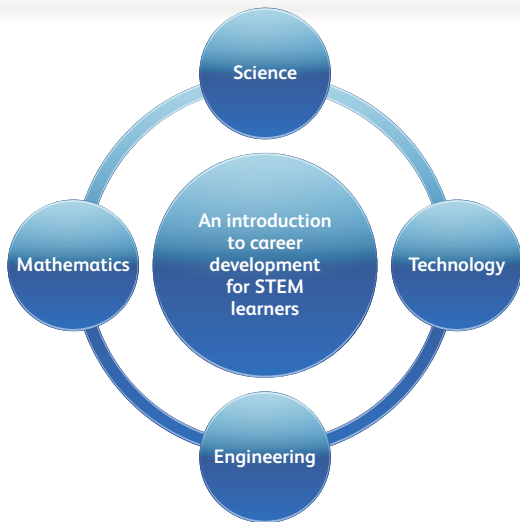
An introduction to career development for STEM learners

Presented by
Date

Slide 1

Customise this visual to show your name and the date of the workshop.

Introduce the topic and yourself as presenter, and welcome the group. Talk through domestics,
i.e. timings, breaks, toilets and fire evacuation procedures. Ask the group to turn off mobile phones.

Resources: Fire evacuation procedures.

Timing: 2 minutes.

Transition statement: Let's look at the aims and objectives for this session

Your notes:

Aims and objectives

Aim

To develop an understanding of how the career development needs of learners on STEM programmes might be met.

Objectives

By the end of the session participants will be able to:

- describe ways in which the learning and skills sector is responding to the STEM agenda
- discuss messages from research into STEM and how these might affect career development practice
- identify some resources available to meet the career development needs of learners on STEM programmes or studying STEM subjects.

Slide 2

Talk through the aim and objectives for the session and ask if there are any questions.

Resources:

Timing: 3 minutes.

Transition statement: Let's start by looking at how much we know generally about STEM careers, courses and jobs.

Your notes:

Introductions: what do we know about STEM careers, courses and jobs?

- Find a partner and introduce yourself if you do not know them well

- Have a look at the quiz together and tick the correct answers

- You have 15 minutes for this exercise.

Slide 3

Distribute the quiz questions and ask participants to find a partner and if necessary introduce themselves. Ask them to look at the quiz questions together, discuss these and select the correct answer.

Resources: Handout 1 – the quiz questions.

Timing: 15 minutes.

Transition statement: Let's have a look at how you have done.

Your notes:

Slide 4

Go around the pairs asking for answers to the quiz questions. Read out the correct answer from handout 2. Give out copies of handout 2 – Quiz answers and discuss the additional information listed under each question.

Show slide 4, which includes some challenges for practitioners arising from this quiz, and ask for views from the group. Ask the group if any of their organisations are addressing these issues.

Resources: Handout 2 – the quiz answers.

Timing: 15 minutes.

Transition statement: What do we think the implications of this are at national level?

Your notes:

The STEM agenda – Why the concern?

"We cannot stress too forcibly our concern at the critical shortage of graduates and postgraduates with STEM capabilities. This is a burning platform that has to be addressed or the UK will not remain competitive."

Council for Industry and Higher Education (CIHE)

Slide 5

The slide is self-explanatory – and demonstrates the economical imperative of increasing the number of STEM learners and graduates. Ask for participants' reactions and comments about the statement. This slide can lead to some discussion about whether the individual's interest or the economy's interest should dominate – and hence to a potentially interesting discussion in the group about impartiality and the implications of non-directive guidance.

If these comments do not come up, you could ask the question: "Should learners be encouraged to apply for subjects to suit the economy rather than their own interests?

Resources:

Timing: 5 minutes.

Transition statement: Now let's look at how the FE and skills sector is responding to these challenges.

Your notes:

STEM agenda – how is the learning and skills sector responding?

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- Increasing the appeal of STEM subjects to groups reluctant to select STEM subjects (women, older people and those from some black and ethnic minorities)

- Nurturing STEM learners

- Building effective curriculum links with HE and industry to motivate learners.

Progression through STEM, LSIS: www.excellencegateway.org.uk/STEM

Slide 6

Slide 6 is a precursor to the exercise on slide 7, which is designed to encourage participants to start thinking about how their practice can support the effective recruitment, retention and progression of STEM learners. It gives three examples of the kind of approaches and activities that can be undertaken.

Show slide 6 and ask participants if their organisations are doing any of these activities and if so, how, and if not, what could they do in these areas?

If you have more time, you could ask the group to consider more examples found in Progression through STEM, LSIS: www.excellencegateway.org.uk/STEM.

You may wish to look at the STEM materials on the Excellence Gateway in advance of the session. Slides 9 and 10 give further examples.

Resources:

Timing: 5 minutes.

Transition statement: How have you supported STEM learners?

Your notes:

Activity 1 – supporting effective recruitment, retention and progression

What strategies have you come across that support effective recruitment, retention and progression of your learners studying STEM subjects or on STEM programmes? How can you contribute to these? Please write your ideas on Post-it™ notes and stick on to the relevant flip chart.

You have 15 minutes to do this.

Slide 7

Ask participants to work in groups of 3 or 4, and address the questions on the slide, sharing ideas and then recording them on the Post-it™ notes, which should the be added to the pieces of the flip chart paper on the wall or on a white board, under the relevant headings: recruitment, retention or progression. Remind the groups that progression could include progressing from STEM subjects on to work-based learning and qualifications, as well as full-time provision.

Allocate 15 minutes for this, and explain that ideas will be shared afterwards. Participants can also be encouraged to consider the challenges raised on slide 4 when undertaking this activity.

After the 15 minutes allocated, participants gather around the flip charts for 10 minutes to discuss the ideas. Encourage participants to browse anything not covered during the coffee break. Ideas could be written up from the flip charts and circulated subsequently.

Resources: White board or pre-prepared sheets of flip chart paper headed 'Recruitment', 'Retention' and 'Progression', plus Post-it™ notes.

Timing: 25 minutes

Transition statement: Now let's look at some other responses, starting with recruitment and retention.

Your notes:

Supporting effective recruitment, retention and progression: some approaches

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Recruitment: Targeting events or taster courses at key groups / developing courses based on specific jobs and new employment opportunities / liaison with local schools to deliver full STEM curriculum.

Retention: Effective pre-course assessment linked to tracking and ensuring students are coping and providing flexible responses (e.g. mentors, extension work) / customised work experience.

Progression through STEM, LSIS: www.excellencegateway.org.uk/STEM

Slide 8

The following two slides give further examples of how organisations can improve the experience of STEM learners.

Show slide 8. Explain that examples can be found in Progression through STEM, LSIS: www.excellencegateway.org.uk/STEM, and encourage participants to look at the STEM materials to generate ideas for thinking about how they can they can support their own learners.

If you have time, you could ask the group to work through the report mentioned above.

Resources: White board or pre-prepared sheets of flip chart paper headed 'Recruitment', 'Retention' and 'Progression', plus Post-it™ notes.

Timing: 2 minutes

Transition statement: Let's consider progression.

Your notes:

Supporting effective recruitment, retention and progression: some approaches

Progression: accessing sources of inspiration, teaching staff informed about vocational and work-based pathways, developing degrees with employers / HEIs, mentoring by STEM professionals.

Progression through STEM, LSIS: www.excellencegateway.org.uk/STEM

Slide 9

Show slide 9 and allow the group to read through the contents. Ask the group who they could use as inspiration – refer to the recent television programmes e.g. "Bang Goes the Theory," and "Orbit," and to their presenters.

Ask the group for local employers who employ trainees and apprentices in STEM areas or who employ STEM graduates. Ask the group about local STEM programmes and courses.

Resources:

Timing: 3 minutes.

Transition statement: OK, now time for a break: let's take 10 minutes.

Your notes:

Messages from research 1

- Student interest in science at age 10 is high and with little gender difference. Interest deteriorates rapidly over the secondary years.

- Age 10–14 constitutes a critical period for the development of science career aspirations.

- Children and their families lack knowledge about careers that come from science.

Aspires Project: www.kcl.ac.uk/sspp/departments/education/research/aspires/aims.aspx

Slide 10

This next part of the session focuses on what research is telling us about learners' attitudes to STEM subjects, the progression and careers of STEM learners and what this means for our own practice.

The sources are identified on each slide if you wish to look at this research before the session. Go through the four slides, asking participants to jot down any implications that the results from the research have for their own work. You may wish to focus more time on particular slides, depending on the composition of your group of participants and the learners they support.

If time allows, you might like to ask them to comment on anything they find surprising or concerning.

Resources: As necessary, paper and pens on the table for participants to jot down ideas.

Timing: 15 minutes for slides 10 to 13.

Transition statement: We will now look at what the University of Derby's research found out.

Your notes:

Messages from research 2

- Well-established link between gender and career aspiration

- Clear parallel between enjoying the study of a subject and choice of industry

- Most young people go to their families for information about careers and subject choice – but half would ask their subject teacher for information on careers.

STEM Careers Awareness Timelines, University of Derby: www.derby.ac.uk/icegs

Slide 11

As you show the slide, keep reminding the group to note down implications for their own practice.

Resources:

Timing: 15 minutes for slides 10 to 13.

Transition statement: What's the government's view on this?

Your notes:

Messages from research 3

- The students who cope best with choices are those that have a clear idea about their future career

- There is a mismatch between pupils' expectations of their teachers to provide careers advice and teachers' view of their role

- STEM subjects: widely accepted by young people as being the most challenging subjects

- There is also the "geek" factor.

DfE, STEM team

Slide 12

As above, remind people to consider implications for themselves and their job roles.

Resources:

Timing: 15 minutes for slides 10 to 13.

Transition statement: Finally, let's look at what students on STEM programmes in higher education are saying about their experience.

Your notes:

Messages from research: HE

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- Interest and aptitude seem to drive degree choice

- Relevant work experience is very important for career learning and to help undergraduates decide on specific jobs

- Those who not 'career motivated' are less likely to want a degree-related career and less likely to choose the same course again

- Many students wanted more career support on degree choice – particularly on links between courses and careers.

Survey of STEM students from *STEM Graduates into Non-STEM jobs*: www.bis.gov.uk/policies/ higher-education/research-analysis

Slide 13

Say this is our final slide on this aspect so do consider the implications.

Resources: Two sets of prepared flip charts or areas of whiteboards with the headings Benefits and Costs.

Timing: 15 minutes for slides 10 to 13.

Transition statement: What do these messages mean for our own practice and how can we improve the situation?

Your notes:

What do these messages mean for our practice?

Work in pairs:

- Discuss your initial reactions to what these messages mean for your own work (3 minutes)

- Share your findings with the rest of the group.

Slide 14

Ask participants to work in pairs and to share their initial reactions to what these messages mean for their own work. Give them 3 minutes for this activity.

Ask for views from the whole group and note themes down on flip chart or whiteboard.

Resources: White board or flip chart and pens.

Timing: 8 minutes.

Transition statement: Let's look at this in more detail.

Your notes:

Slide 15

Show slide 15 and say that this slide gives further ideas for the kinds of strategies and approaches suggested by the research.

Ask the group if they have or use any of these strategies and ask about their impact. Pick up on ideas not yet discussed and anything particularly relevant for the group of participants and learners with whom they are working.

Ask participants to note down one action they are going to undertake as a result of this research.

Resources: Paper and pens.

Timing: 5 minutes.

Transition statement: We are now going to look at the wide variety of resources that are available on this topic.

Your notes:

Activity 2 – Informing, engaging and inspiring STEM learners

You have taken over responsibility in your organisation for the progression of learners on STEM programmes and have been asked to research and identify resources available to do this. In groups of three or four, share information on effective resources with which you are familiar, and then evaluate the materials you have been allocated, using handout 3. You have 20 minutes in total. Be ready to report back your findings to the whole group.

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Slide 16

There is a wide range of resources to support the progression of learners on STEM programmes, many of which are web-based. The aim of this activity is to share existing information on resources available, and to introduce participants to others.

This activity is best undertaken through an evaluation of web-based materials and sites, on the basis of participants working in groups of three or four equipped with a laptop computer, and following up the links that they are given. If it is not possible to access the equipment to do this, then materials can be printed off the various websites, but the element of exploration will be lost. It is suggested that each group is given two resources or links to investigate.

So that the groups can report back on a range of materials, ensure that each group is asked to focus initially on a different resource. The following is a list of web-based resources from which to choose. Clearly, others can be included that are appropriate for the learners being supported by participants. You should ensure that you are sufficiently familiar with the chosen links and websites to be comfortable navigating around these.

- Mentoring: www.iop.org/careers/mentoring/index.html
- STEMNET ambassadors giving careers talk or running workshops: www.stemnet.org.uk/listing/ambassador-case-studies
- Using different subjects in career areas: www.rsc.org/Education/SchoolStudents/profiles/index.asp
- Work experience: www.futuremorph.org/_db/_documents/STEM_Work_Experience_Placements_Guide_20100810011455.pdf
- Ensuring correct choice of options: www.russellgroup.ac.uk/informed-choices

- Joining a STEM network or online community: e.g. www.rsc.org/Membership/Networking/
- University of East Anglia careers advice service on Facebook: www.facebook.com/pages/Careers-Employability-University-of-East-Anglia-UEA/146186418765070
- A round-up of daily physics news, interesting research and IOP activities and events on Twitter: twitter.com/#!/physicsnews
- Information for parents: www.futuremorph.org/parents/parents_-_homepage.cfm
- Range of videos from those working in STEM and related jobs: ww.nationalstemcentre.org.uk/elibrary/resource/2589/case-study-plumbing
- Roles in Science: www.sciencecouncil.org/content/10-types-scientist-%E2%80%93-science-jobs-are-not-all-same
- Enabling learners and their parents or carers to find, and make the best use of, relevant work experience, work shadowing or volunteering: e.g. www.tomorrowsengineers.org.uk/students/work_experience.cfm

Distribute a copy handout 3 to each participant and ask each group to complete a copy, from which to report back to the rest of the participants.

The groups have 25 minutes to do this, including a few minutes to discuss materials of which they are already aware. If any group completes the evaluation of the first resource, they can move on to the second one.

The completed copies of handout 3 could be collected and the information compiled to send around to participants later.

If this exercise is not feasible in your situation, you could access one of the more general sites, for example, www.futuremorph.org/parents/parents_-_homepage.cfm and take the group through the site, asking them to complete the handouts individually.

Resources: Handout 3 – Informing, engaging, inspiring. One laptop per every group of three or four, or materials printed off the websites.

Timing: 25 minutes.

Transition statement: Let's have a look at some of these resources and websites.

Your notes:

Useful resources 1

- Information for parents and carers:
  www.futuremorph.org/parents/financial_assistance.cfm

- Information for staff: www.mathscareers.org.uk/careers_advisers.cfm

- STEMNET ambassadors giving careers talk or running workshops:
  www.stemnet.org.uk/listing/ambassador-case-studies

- Using different subjects in career areas:
  www.rsc.org/Education/SchoolStudents/profiles/index.asp
  www.mathscareers.org.uk/viewItem.cfm?cit_id=382711

Slides 17, 18 and 19

The three slides show the links for the suggested resources. If you are connected to the internet, as each group feeds back to the rest its assessment of the resource or site that it evaluated, the relevant website could be accessed to give a flavour of what it covers to participants.

As time allows, other links on slides 17 to 19 not assessed by the groups can be accessed to show other information and support available to STEM learners.

If you did the previous exercise by taking the group through one site, you could use this time to access some other sites you feel would be relevant to the group.

Resources:

Timing: 35 minutes for slides 17 to 19.

Transition statement: Now let's reflect on what we have covered today.

Your notes:

Useful resources 2

- Mentoring: www.iop.org/careers/mentoring/index.html

- Ensuring correct choice of options:
  www.russellgroup.ac.uk/informed-choices

- Joining a STEM network or online community:
  e.g. www.rsc.org/Membership/Networking/

- University of East Anglia careers advice service on Facebook:
  www.facebook.com/pages/Careers-Employability-University-of-East-Anglia-UEA/146186418765070

Slide 18

Useful resources 3

- A round-up of daily physics news, interesting research and IOP activities and events: http://twitter.com/#!/physicsnews

- Exploring different roles in science: www.sciencecouncil.org/content/10-types-scientist-%E2%80%93-science-jobs-are-not-all-same

- Enabling learners and their parents or carers to find, and make the best use of, relevant work experience, work shadowing or volunteering: e.g. www.tomorrowsengineers.org.uk/students/work_experience.cfm

- Range of videos: www.nationalstemcentre.org.uk/elibrary/resource/2589/case-study-plumbing

Slide 19

Summary

- How we can support the effective recruitment, retention and progression of STEM learners?

- What does research tell us about how we can improve our practice?

- List three resources that are available to help us.

Thank you for attending; please complete an evaluation form.

Slide 20

Say that the session is nearly at an end so you need to recap.

Ask the questions on the slide. If the group cannot answer any or are unsure go back to the relevant slides.

Resources:

Timing: 5 minutes.

Transition statement: So let's think about what you are taking away from today.

Your notes:

One thing I am taking away from today ...

Slide 21

Ask the group to share with the person sitting next to them one action they are going to take away as a result of today's session and to complete the evaluation forms.

Generally ask them for feedback on what they have learned from the session.

Say thank you for attending and that the following slides are references for their own personal use.

Resources: Evaluation forms.

Timing: 2 minutes.

Transition statement: I have included a list of the references used in this class to you can do further reading.

Your notes:

References

LSIS, 2009. *Progression through STEM: the challenges, issues and opportunities*. Coventry: LSIS. www.excellencegateway.org.uk/STEM

Mellors-Bourne, R, Connor, H and Jackson, C, 2011. STEM Graduates in non-STEM jobs. *BIS Research Paper No. 30*. London: BIS. www.bis.gov.uk/policies/higher-education/research-analysis

Centre for Science Education and Babcock, 2011. *Quick Guide to Mentoring Schemes in STEM*. London: DfE. www.shu.ac.uk/research/cse/stem-careers.html

VT Enterprise and Centre for Science Education, Sheffield Hallam University, 2009. *STEM Choices: A Resource Pack for Careers Education and Information, Advice and Guidance practitioners.*

Hutchinson, J, Rolfe, H, Moore, N, Bysshe, S, and Bentley, K, 2009. *STEM Careers Awareness Timelines*. International Centre for Guidance Studies, University of Derby. www.derby.ac.uk/icegs.

Slide 22

Thank the group for their participation.

Resources:

Timing:

Transition statement:

Your notes:

Handout 1 – Quiz: How much do you know about STEM choices and careers?

Questions

		Yes	No
1.	By 2017, over 50 per cent of new jobs will be in the field of STEM.	☐	☐
2.	Students wanting to study STEM degrees would be best advised to obtain A levels or equivalent in at least two science-related subjects.	☐	☐
3.	Students entering HE in 2010 could choose between nearly 5,000 STEM qualifications.	☐	☐
4.	In 2005/06, more than 10 per cent of those starting engineering apprenticeships were women.	☐	☐
5.	Those who take maths A level can earn on average 10 per cent more than those of similar ability and background who do not.	☐	☐
6.	Since 2002, the numbers of applicants to all STEM degrees has grown.	☐	☐
7.	There have been significant rises in the number of students studying psychology at A level in the last 20 years in relation to those studying other STEM subjects.	☐	☐
8.	In 2008, there were about the same number of students accepted on to sports science degrees as on to physics degrees.	☐	☐

Handout 2 – Quiz: How much do you know about STEM choices and careers?

Answers

1. **By 2017, over 50 per cent of new jobs will be in the field of STEM**.

   Yes. Recent research from the UKCES report (UK Commission for Employment and Skills. *Skills for Jobs: Today and Tomorrow. Volume 2: The Evidence Report. The National Strategic Skills Audit for England 2010*) indicates that 58 per cent of new jobs will be in the field of STEM by the year 2017. There is a skills shortage in processing and technician roles and this will increase significantly up to 2017, when there will also be the lowest number of 16 to 18-year-olds in the population, thus exacerbating the situation. In 2010, the CBI found that 45 per cent of companies were experiencing difficulty in recruiting STEM staff (*STEM Choices* pack, 2011, p7).

2. **Students wanting to study STEM degrees would be best advised to obtain A levels or equivalent in at least two science-related subjects**.

   Yes. Students wishing to be accepted on to STEM-related degrees would be best advised to obtain A levels or equivalent in at least two science-related subjects, but there can be more flexibility in the third or fourth A level studied, (*The SCORE Report Choosing the Right STEM Degree Course*). Studying maths to as high a level as possible at school or college is also recommended for a career in STEM. It is also important that applicants with A Level psychology or sports studies understand that to enter degrees in STEM they will also need to take two 'core' science A levels.

3. **Students entering HE in 2010 could choose between nearly 5,000 STEM qualifications**.

   Yes. For 2010 entry, there were 4,815 STEM qualifications on the Ucas database. Although the introduction of higher fees in higher education may lead to some rationalisation and restructuring of the STEM programmes available, this huge choice requires applicants to start early and give sufficient time to exploring possible career options and related courses.

4. **In 2005/06, more than 10 per cent of those starting engineering apprenticeships were women**.

   No. Only 3.7 per cent of those embarking on apprenticeships in engineering in 2005/06 were women, and only 1 per cent started on apprenticeships in vehicle maintenance and repair. The picture was similar in 2008, and the Institute of Engineering and Technology's annual workforce survey in 2012 indicated that the number of female engineering technicians has declined from five per cent to three per cent since 2008. The UK has the lowest proportion of female engineering professionals in the EU. Figures from Engineering UK indicate that just 22 per cent of 2011's A-level physics students were female. In higher education, the gap widens further, with women making up just 12 per cent of those enrolling on engineering courses.

This also has a significant impact on levels of pay for the female workforce. The mean gross annual pay in 2006 for engineering professionals was £34,839, but for those in childcare and related personal services it was £9.405. (*STEM Choices*, 2011, p14). Useful websites for exploring issues relating to STEM careers are:

- www.theukrc.org – you can click on the WISE section of the site from the home page
- www.stem-e-and-d-toolkit.co.uk

5. **Those who take maths A level can earn on average 10 per cent more than those of similar ability and background who do not**.

   Yes. In 1999 the Centre for Economic Performance found that both graduates and non-graduates who took maths A level ended up earning on average 10 per cent more than those of comparable ability and similar background who did not. In 2011, 43 per cent of graduates in STEM subjects were earning £25,000 or more three-and-a-half years after graduating, compared with 30 per cent of all graduates (University Business, 2011).

6. **Since 2002, the numbers of applicants to all STEM degrees has grown**.

   No. The numbers of applicants to STEM degree courses has grown overall since 2002, but not in engineering, where applications fell between 2002 and 2007. Between 2005/06 and 2010, the number of undergraduates studying maths, physics and chemistry at undergraduate level increased by 6.8 per cent (HEFCE, 2010).

7. **There have been significant rises in the number of students studying psychology at A level in the last 20 years in relation to those studying other STEM subjects.**

   Yes. By 2007, 52,000 students were studying psychology A level. For nearly 20 years there was a significant decline in the numbers studying maths, physics and chemistry at A-level: however this appears to have reversed in 2010, where uptake in maths, physics, chemistry and biology increased by nearly 8 per cent.

8. **In 2008, there were about the same number of students accepted on to sports science degrees as on to physics degrees**.

   No. In 2008, 7,694 students were accepted on to sports science degrees whereas only 3,040 were accepted on to degrees in physics: more than double the number. 12,908 students were accepted on to psychology degrees. Given the smaller size of employment sectors in subjects such as psychology, sports science and forensic science, it is much more difficult for graduates in these subjects to find employment directly related to their degree subject. In some cases, popularity in a particular subject is greatly affected by the media (*STEM Choices*, 2011, p11).

Handout 3 – Resources: Informing, engaging and inspiring

Name of resource	Target audience (e.g. learners, parents)	Content	Informs	Engages	Inspires

Complete the grid, giving a rating for each resource on the extent to which it informs, engages and inspires on a scale of 1 to 4, with 1 being the lowest rating.

LSIS workshop – trainer's feedback

Please use this form to feed back how useful you found the training materials provided. This is not to measure the success or otherwise of your class, but to help us improve the quality of the materials provided.

Name of workshop: Introduction to career development for STEM learners	Date of workshop:

Using a rating of 1 = very good to 7 = very poor, please answer the following questions:

	Rating
Overall how happy were you with the materials?	
How well did you think the course met its aim and objectives?	
How well did the course meets its aim and objectives?	
How would you rate the handouts?	
How would you rate the PowerPoint™ presentation?	
How would you rate the exercises?	
How would you rate the trainer's background information?	

Which parts did you find most useful?

Which parts did you find the least useful?

What do you think could be done to improve the materials?

Please comment on the suitability of the timings provided.

Any other comments?

LSIS workshop – attendee's feedback

Name of workshop: Introduction to career development for STEM learners	Date of workshop:

Using a rating of 1 = very good to 7 = very poor, please answer the following questions:

Overall how useful did you find the course?	
How would you rate the materials provided?	
How would you rate the trainer?	
How useful were the exercises?	
How would you rate the pace of the course?	
How would you rate the length of the course?	

Which parts did you find most useful?

Which parts did you find the least useful?

What do you think could be done to improve the workshop?

Any other comments?

Learning and Skills Improvement Service

The Learning and Skills Improvement Service (LSIS) is the sector-owned body supporting the development of excellent and sustainable FE provision across the learning and skills sector. Its aim is to accelerate the drive for excellence and, working in partnership with all parts of the sector, build on the sector's own capacity to design, commission and deliver improvement and strategic change.

Disability equality policy

LSIS is committed to promoting equality for disabled people and we strive to ensure that our communication and learning materials can be made available in accessible formats. Please let us know if you consider yourself disabled and require reasonable adjustments made to support you.

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