

Talking STEM: an introduction for managers



“There are two areas of improvement required in the STEM initiative: one is attainment, we want those taking the STEM subjects to do better in them and the other is engagement, we want more young people to take STEM subjects particularly Post-16 and beyond.”

John Holman, National STEM Director

“Twenty-five years ago it would not have been possible to imagine the UK as a global leader in science and innovation in the world economy, but today it looks like an attainable goal. We can be one of the winners in 'the race to the top' but only if we run fast.”

Lord Sainsbury of Turville

This resource has been developed to support managers in identifying key successes and challenges along progression routes through Science, Technology, Engineering and Mathematics and to develop strategies for strengthening those routes.

The card activity

This resource is in two sections.

Section A, “Identifying key successes and challenges along progression routes through STEM”, is an audit of your current STEM offer focusing on recruitment, retention and achievement.

Section B “Critical success factors”, contains prompt questions under the following headings:

- **Promoting a positive agenda for STEM**
- **Developing an effective curriculum model for STEM**
- **Ensuring quality of delivery of STEM**
- **Promoting a positive learner experience of STEM.**

The purpose of these questions is to help you identify the strategies you already have in place which strengthen progression routes through STEM and prompt you to think about other strategies you may use. You may find you wish to dip into Section B while discussing Section A.

Here are some ways in which you may want to carry out the activity:

- on your own
- with a senior colleague
- with your senior management team
- in a mixed group with representation from different STEM areas of your organisation.

You could ask different groups or individuals to undertake the activity independently, then come together to discuss the outcomes and agree actions.

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A1



Thinking about recruitment

Section A

Identifying key successes and challenges along
progression routes through STEM

Discussion prompts A1

- Which courses do you offer across the STEM areas?
- Which STEM course do you offer which is most successful at **recruiting** students?

What factors do you think have led to this success?

- Which STEM course do you offer which is least successful at **recruiting** students?

What factors do you think have affected this?

What strategies could you use to improve recruitment?

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A2



Thinking about retention

Section A

Identifying key successes and challenges along
progression routes through STEM

Discussion prompts A2

- Which STEM course do you offer which is most successful at **retaining** students?

What factors do you think have led to this success?

- Which STEM course do you offer which is least successful at **retaining** students?

What factors do you think have affected this?

What strategies could you use to improve retention?

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A3



Thinking about achievement

Section A

Identifying key successes and challenges along
progression routes through STEM

Discussion prompts A3

- Which STEM course do you offer which has the highest **achievement** for the learners?
- What factors do you think have led to this success?
- Which STEM course do you offer which has the lowest **achievement**?

What factors do you think have affected this?

What strategies could you use to improve results?

- Which STEM course do you offer which has the highest **value-added** for the learners?

What factors do you think have led to this success?

Which STEM course do you offer which has the lowest **value-added**?

What factors do you think have affected this?

What strategies could you use to improve value-added?

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A4



LSIS LEARNING
AND SKILLS
IMPROVEMENT
SERVICE

Thinking about progression

Section A

Identifying key successes and challenges along
progression routes through STEM

Discussion prompts A4

- Which are the progression options for your learners?
- Which STEM course do you offer has the **highest progression** rate into further STEM study or STEM employment?
- What factors do you think have led to this success?

Which STEM course do you offer which has the **lowest progression** rate into further STEM study or STEM employment?

What factors do you think have affected this?

What strategies could you use to increase progression through STEM?

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B1



LSIS LEARNING
AND SKILLS
IMPROVEMENT
SERVICE

Promoting a positive agenda for STEM

Section B

Critical success factors

Discussion prompts B1

- Who has responsibility for STEM at senior management level?
What is/are their role(s) and what influence do they have on the curriculum offer?
How are these roles and the curriculum offer drawn together/coordinated?
- What strategies do we have in place to raise awareness of STEM amongst:
 - Senior managers?
 - Curriculum managers?
 - Teachers and trainers?
 - Advice and guidance staff?
 - Learners?
 - Parents?
- In what ways does our organisation promote the take up of STEM subjects?
- What strategies do we have in place to encourage the take up of STEM subjects by traditionally under-represented groups?
For example: Girls into physics and engineering.

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B2



LSIS LEARNING
AND SKILLS
IMPROVEMENT
SERVICE

Developing an effective curriculum model for STEM

Section B

Critical success factors

Discussion prompts B2

- What are the existing routes into STEM study from schools and other local providers?

How effective, relevant and clear are these existing routes?

What are the existing routes between different levels of STEM study?

How relevant and clear are these existing routes?

What strategies or actions might make existing progression routes more effective?

- Do we have relevant and clear routes between different levels of STEM study? E.g. from L2 to L3?

What are these routes?

- Are there relevant and clear routes from our organisation into local employment and Higher education?

What are these routes?

- How do we ensure our STEM offer meets the needs of individual learners?

- How do we ensure that our STEM offer meets the needs of local employers?

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B3



Ensuring quality of delivery of STEM

Section B

Critical success factors

Discussion prompts B3

- What opportunities do teaching staff have to work with others in their subject area to develop teaching and learning?
What opportunities do teaching staff have to work with staff in other STEM areas to develop teaching and learning?
- How are our Subject Learning Coaches used to promote and support improvement in teaching and learning?
- What opportunities do teaching staff have to form links with key partners such as local employers and HE institutions?
- How does the quality of teaching and learning STEM subjects compare to other curriculum areas?
- How do we ensure that appropriate resources are available for the teaching of STEM subjects?

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B4



LSIS LEARNING
AND SKILLS
IMPROVEMENT
SERVICE

Promoting a positive learner experience of STEM

Section B

Critical success factors

Discussion prompts B4

- Can we identify and describe our clearly defined and flexible progression routes through STEM?
- What strategies do we have in place to ensure learners joining STEM courses are motivated and have high expectations?
- What strategies do we use to maintain motivation to continue in STEM study or progress to STEM employment at the end of the course?
- What support do we offer learners?
Are there support needs specific to STEM learners?
- How do we use links with local employers and HE institutions to enrich the experience of learners studying STEM subjects?
- How do we ensure views of learners are taken into account when planning?

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Critical success factor



Discussion prompts