

Join in STEM: BMBWF action plan for more STEM experts

Almost all of the major challenges of our time, such as advancing digitalisation, climate change or energy crises, can be mastered with skills in Science, Technology, Engineering and Mathematics (STEM). The labour market need for STEM experts is greater than ever and the demand is growing. Austria is therefore dependent on committed, highly qualified experts in this field. It is important to inspire as many young people as possible – especially women – for STEM and to ensure that they successfully complete a STEM education.

The higher the level of STEM education in a society, the lower the risk of naive faith in, or uninformed and unreflective rejection of, science and technology. A minimum level of scientific and technological literacy is also a prerequisite for participation in public discourse.

Therefore, the RTI Strategy 2030 - Strategy for Research, Technology and Innovation of the Austrian Federal Government - focuses on knowledge, talents and skills. The aim is to increase the proportion of graduates in STEM subjects by 20% and the proportion of women amongst graduates in technical subjects by 5% by 2030. The Austrian Higher Education Plan 2030 takes up these goals, aiming to increase the share of STEM degrees from 28.5% to 34.2% of all degrees between 2020 and 2030.

The BMBWF Action Plan strengthens STEM competences and contributes to achieving these ambitious goals through the following action lines:

1 Intensification of regional networking: umbrella brand STEM Regions

The umbrella brand "STEM Regions" will further promote the regional interaction of the numerous activities along the entire education chain, among other things through networks, which will make STEM education even more effective, attractive and sustainable for everyone in the future. Young people – especially young women – should continuously experience STEM topics in theory and practice - not only in kindergarten and school, but also at formal learning spaces outside the classroom such as research institutions, universities, companies or private institutions. Together with its partners, the Federation of Austrian Industries (IV), the Austrian Agency for Education and Internationalisation (OeAD) and the MINTality Foundation, the BMBWF will award a STEM Regions Label to innovative STEM regions.

2 Establishment an online platform for linking and highlighting STEM activities including STEM Regions together with the Austrian initiative Trust in Science and Democracy

A new platform makes initiatives and programmes at all levels (federal, provincial, regional) visible throughout Austria, makes them easier to find and promotes their networking.

3 Attractive, contemporary presentation and promotion of STEM careers

Role models, science ambassadors, mentors and peers get promoted across all channels (e.g. social media, student fair BeSt3, apps) for educational and career guidance, information and counselling. Current modes of communication will be expanded, for example, through partnerships with influencers. Counselling and information services start early and continue throughout young people's educational journey. The opportunity to contribute to our society in a more social and sustainable way through STEM jobs is emphasised, and stereotypes about IT and technology professions as male-dominated and "antisocial" are actively challenged.

4 Supporting STEM talents along their educational pathway

No STEM talent should be lost along the educational pathway. Neither at the transition from lower to upper secondary level, nor at the transition from school to university. Cooperation between educational institutions at these junctions facilitates a sustainable STEM education biography, e.g. by coordinating the requirements in physics, mathematics and computer science across all educational levels.

5 Well-trained teachers and curricula/study programmes promote STEM learning

The University Course Digital Education strengthens STEM competences already among elementary teachers. The interdisciplinary approach to STEM, the enrichment of STEM with creative and artistic approaches, and the inclusion of social/ethical issues related to the use of technology and artificial intelligence are integral parts of the education and training of teachers, as well as of STEM curricula and study programmes. The STEM didactics at the STEM Middle Schools (lower secondary schools) play a pioneering role in this respect. Basic Digital Education is a compulsory subject at in all lower level secondary schools. In higher education, a so-called STEAM Networking Platform and a STEAM Award will highlight and promote innovative pedagogical approaches involving creativity/art.

6 Experiencing and exploring STEM

Programmes that bring STEM research to life in the classroom will be intensified, such as the school visits of the Science Ambassadors. In order to promote computational thinking and creative problem solving among pupils at an early age, the practical kindergartens of the Teacher Education Colleges for Early Childhood Education (BAfEP) have been equipped with programmable Beebot and Bluebot robots. The digi.case will be used in primary schools throughout Austria from the 2023/24 school year. Educational institutions with innovative, inclusive and inspiring STEM didactics are awarded the STEM Quality Label.

7 Educate STEM experts in Austria

Whether STEM apprenticeship, Post-secondary VET course, College for Higher Technical Vocational Education or technical higher education institution: STEM talents should complete their STEM degree in Austria. STEM experts educated here up to upper secondary graduation are very likely to remain with the country and the Austrian labour market in the long term. With the Institute of Digital Sciences Austria, a technical university with a focus on digitalisation and transformation research will be established in Linz. At Colleges for Higher Technical Vocational Education, Post-secondary VET courses and universities of applied sciences the supply of STEM places for beginners is being expanded with federal funding. In the university sector, measures are being taken to make studies more attractive, improve studyability and reduce drop-out rates. The creation of re-skilling and up-skilling opportunities such as microcredentials, including in adult education, and more study opportunities that facilitate and accompany careers, will make it easier for broad sections of the population to obtain a STEM degree.

8 Raising awareness: everyone can join in STEM!

As part of the school-based educational and vocational orientation ibobb, gender-related STEM stereotypes are broken down, including in girls' family environments. Young women's confidence in their maths and technology skills is boosted by STEM teachers. More STEM content in girl-dominated school types and inclusive admission procedures make it easier for women in particular to access STEM education. Inclusive didactics enable STEM graduation regardless of gender, previous education, migration background and parents' educational background.