

> The Potential of Dual Study Programmes in the STEM Subjects

acatech POSITION PAPER – Executive Summary and Recommendations



Innovation is key to sustainable value creation and employment in Germany. However, even today there is already a shortage of adequately qualified personnel in some innovative industries. As a result of high staff turnover and the anticipated future increase in recruitment levels, a growing shortfall is becoming particularly apparent in the “STEM” field, which incorporates all professions that involve technology, mathematics and the natural sciences.

By continuing to strengthen dual study programmes we can help to secure a long-term supply of qualified personnel. Different studies and surveys together with heightened media interest all point to the fact that this blend of vocational training and academic education has become extremely popular in recent years.

A dual higher education course is characterised by the systematic combination of theory and practice. It usually involves close cooperation between an ordinary university or university of cooperative education and a company or other employer, thus combining two places of learning in a single study course.

This popularity is also due to the many advantages that dual study programmes have to offer. These advantages could have a particularly positive impact on the number of people applying to study STEM subjects. According to surveys of the main reasons why people choose dual study courses, the most frequently cited factors are the chance to obtain a dual qualification even though the training period is relatively short, the fact that students are paid a training allowance and the opportunity to make early contact with companies that could be potential future employers. The large practical component of dual study courses is particularly well suited to the applied STEM subjects. This is demonstrated by the current breakdown of dual study courses by subject group. 40 percent of all courses are in the field of engineering and a further 12 percent in information

At a glance

- The shortage of adequately qualified personnel presents a challenge for Germany’s technology industry.
- By integrating practical content and academic qualifications, dual study programmes offer a particularly attractive solution for the STEM subjects.
- These qualities also mean that dual study courses are able to provide new target groups with access to higher education and meet candidates’ requirements in a more targeted manner.
- The new target groups include women and people with a migration background.
- Prospective students can be put off dual study courses by the extra workload involved in switching between two different places of learning and continued failings with regard to the coordination of theoretical and practical content. These issues have yet to be resolved.

technology. However, in spite of these favourable statistics, the potential of dual study programmes has yet to be fully exploited. Every year, for one reason or another, a significant number of candidates who meet the entry requirements choose not to go to university. The benefits of dual study programmes could help to tap into this potential.

acatech initiated the study “Mobilisierung von Bildungspotenzialen für die MINT-Fachkräftesicherung – Der Beitrag des dualen Studiums” (Mobilisation of Educational Potential to Secure a Skilled STEM Workforce – the Contribution of Dual Study Programmes) with the primary aim of highlighting this untapped potential and formulating recommendations to generate interest in dual STEM study courses among both traditional and new target groups. This empirical study was carried

out at schools, higher education institutions, career advice centres and businesses. It focused on the question of *who chooses dual study courses and why?* In order to answer this question and enable both old and new target groups to be identified, the study began by investigating the most important qualities that students should possess in order to successfully complete a dual study course. According to the representatives of different educational institutions who participated in the survey, for secondary school graduates to be judged suitable candidates they should show a good level of ability, discipline and self-organisation, as well as maturity, independence and a high degree of personal initiative. However, suitable candidates for dual higher education courses also include holders of vocational qualifications and people who have dropped out of university either for financial reasons or because they felt their course lacked practical relevance. In addition to these known target groups, the study also identified a number of new groups with certain potential for this type of academic education. Amongst these new target groups are women, people with a migration background and people from less well-off families or families where there is no tradition of academic education. For these target groups, the main arguments in favour of a dual study course are the fact that students are paid a training allowance, the fact that it enables them to enter their chosen profession more rapidly and the good career prospects that it affords them.

Whether or not qualified candidates interested in doing a dual study course ultimately sign up for one is also heavily dependent on their personal assessment of the drawbacks of dual study programmes. The most frequently cited deterrents in the survey were the extra workload arising from the combination of academic study and in-company vocational training, together with the high degree of self-organisation required to coordinate two different places of learning. Moreover, many students complain that the academic and vocational components are not sufficiently well coordinated in practice and that students are often left to their own devices when it comes to applying their theoretical knowledge in a practical setting.

In order to minimise these drawbacks and further increase the appeal of dual study programmes, acatech has formulated the following recommendations:

Recommendations

General recommendations for higher education institutions, businesses and policymakers

- Improve **information** about dual study courses and increase the **visibility** of the dual study programmes as an attractive alternative form of education in its own right. The information and advisory resources for higher education institutions, businesses and prospective students should be combined on a single **platform**.
- **Common quality indicators and standards** should be developed that are valid for the different types of dual study courses and take account of their specific characteristics in terms of accreditation (e.g. by using a *dual quality label*). Higher education institutions, universities of cooperative education, businesses, chambers of commerce, employee representation bodies and students should all be **jointly** involved in developing these quality standards.
- The **coordination of the theoretical and practical components** should be improved. Particular attention should be paid to ensuring that it is feasible to complete dual study courses within the prescribed timeframe.

Recommendations for higher education institutions and businesses

- In order to assist students with their choice of course and facilitate study and careers advice, greater **transparency** should be provided with regard to the formats on offer and the selection criteria used by companies.
- Measures should be taken to transform the *elitist image* of dual study programmes. The close **combination of theory and practice** and the **training allowance** should be highlighted as **selling points** when recruiting students.
- **Advisory services** should target new groups (e.g. candidates from less well-off backgrounds or university students who are thinking about dropping out for reasons unconnected with their academic ability).
- The **selection criteria** for recruiting students (especially those used by businesses) should be **enhanced** – it is not enough to focus exclusively on grades.
- The academic content and in-company activities should be **more closely coordinated** (e.g. by creating joint committees to develop study courses).

- The practical parts of dual study courses must not be allowed to detract from their **academic rigour** – higher education institutions and businesses must show a clear commitment to academic rigour (both internally and externally). **Cross-company networks** should be created so that even **SMEs** with limited financial and staff resources are able to participate in dual study courses and comply with the relevant quality standards.
- Efforts should be made to encourage continuing professional development for people in employment and it should be made **easier** for students **to move** from one level to the next:
 - Higher education institutions should establish **Master's courses** for graduates of dual Bachelor's degree courses or **open up** existing courses to them.
 - Special **"bridge courses"** could help people with a dual Bachelor's degree to make the transition to a Master's degree.
- **Dual Master's course provision** should continue to be expanded. These courses should also combine practical and theoretical content, allowing people with dual Bachelor's degrees to continue their studies.

Recommendations for policymakers

- Provide **further education** for teachers and careers officers, particularly at "Gymnasiums" (academically-oriented secondary schools), in order to tackle the rather *circumspect attitude* towards dual study courses that currently prevails when providing careers advice.
- Promote dual study programmes as an **education policy initiative**, using specific support programmes or target agreements between government and higher education institutions in order to improve the dual model's visibility and create incentives for its expansion.

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