

Training for a profession

Introduction

Serge Catoire, Honorary Engineer General of Mines, Chairman of the Editorial Board of *Réalités industrielles*

The work of the General Delegation for Employment and Vocational Training (DGEFP)

Bruno Lucas, Inspector General of Social Affairs

This article is an introduction to share actions of the DGEFP (Delegacy for employment and vocational training) of the French Ministry of Labor and Inclusion, and more specifically the public policies for Industry in France.

The delegacy is at the service of companies, professional organizations and peoples who have a job. Under the authority of the minister, the DGEFP is in charge of conception, implements, pilots and to measure public policy in terms of: professional transitions; professional inclusion; continue vocational training and apprenticeship; social and economic mutations (accompanying companies in difficulty, previsionnal managing of skills and jobs...).

The delegacy builds the legal framework in concertation with others administrations, social partners and territorial authorities. It pilots and implements with the territorial services and extern partners.

The delegacy's aims are the access and return to employment, (priority to Not in Education, Employment or Training publics), securing career paths and competitiveness of companies.

The article is about economical mutations in the industry and the answers brought by the ministry trough contrats between social and economical partners and the administration, the advice in humans resources for small and medium size companies and the way to strengthen the attractivity of the sector.

Professions skills

The Labour market has entered into a triple transition

Jean Flamand, Project Manager, Labour-Employment-Skills Department, France Stratégie

The ageing of the population, the digitization of uses and the reduction of the carbon footprint are already shaping changes in the labour market. This article analyses three families of occupations closely associated with this triple transition: care occupations, "digital core" occupation and building occupations. Based on the latest "Occupations and Qualifications Forecast group"

report, we identify the risk of a labour shortage in those occupations by 2030, given the significant recruitment needs anticipated and the current level of recruitment difficulties. To meet this challenge, training remains a key measure, but other levers are also important to consider, such as improving the quality of employment, promoting gender diversity in the workplace and developing career transitions.

Skills shortage and reindustrialisation: A surprising paradox

Guillaume Basset, Deputy to the Director General of Foreign Investment at Business France, in charge of setting up industrial projects in the Territories and Olivier Lluansi, Partner at PwC Strategy&, lecturer at the *École des Mines de Paris*

The process of reindustrialisation in France remains fragile. By the end of 2022, industry's share of total value added had not yet returned to its pre-Covid level, and a close look at the indicators since September 2023 should make us extremely vigilant.

While the potential of our industries and regions is considerable, it is hampered by a widespread shortage of skills, particularly in industrial occupations. The number of vacant industrial jobs has tripled between 2017 and 2022, reaching around 60,000.

And yet, our training system is theoretically capable of providing the necessary manpower: the number of young people trained each year in industrial occupations corresponds - in volume terms - to recruitment needs. It is this paradox that we wish to explain and question.

Faced with a changing world, training to stay in control of your destiny

Sophie Viger, Managing Director of 42

Shortages of masks, semi-conductors, materials... supply chain disruptions have multiplied as a result of the health crisis. The idea of reindustrialising France was quickly put into practice and materialised in strong commitments from the public authorities from 2020, with a favourable response from companies and project leaders. Despite the consequences of the invasion of Ukraine on energy costs, which are particularly penalising for the sector, France has confirmed this ambition with the Green Industry Plan. But companies wishing to create new activities have to contend with other shortages: in land and ... in qualified profiles. The industry of the 21st century, which respects our environmental commitments and harnesses the power of digital technology, must and will have to call on new skills. So do we need a huge campaign to raise the

profile of these professions? Do we need a massive training plan? What educational objectives should we be aiming for when it comes to filling positions in evolving functions? Can the 42 educational model, which has won international acclaim, become a source of inspiration for current and future jobs in industry?

Lifelong learning for constantly evolving professions and skills

Ons Jelassi, Professor and Director of Télécom Paris Executive Education

Organizations are facing growing tensions, between economic imperatives, technological disruptions and the challenges of ecological transition. Governments have the imperative of digital and industrial sovereignty. Society is undergoing profound change, with generational fractures and a significantly longer working life. The outlooks offered by lifelong learning, upskilling and reskilling to meet economic, industrial and climate change needs, and to adapt to changes in the job market, are a response to the structural challenges of today's world. Télécom Paris, the leading digital engineering school, has placed these issues at the heart of its mission to develop talents and skills, and offers a range of training courses for enterprises and professionals that bring together all the school's expertise and employs some of the most innovative teaching and certification methods.

The needs of the economy

Employers' needs in digital professions and the adequacy of the training system

Michel Schmitt, Member of the General Economic Council

Employers in the digital sector are reporting major difficulties in recruiting the talent they need, to the point where this is holding back their growth. Having put this observation into objective terms, we analyse the training on offer and find that it is not so much the training on offer that is lacking as the attractiveness of these courses. Finally, in view of the very rapid changes in the skills required, we propose to reintroduce the «Vision prospective partagée des emplois et des compétences» (shared prospective vision of jobs and skills) in the field of digital professions.

Ecological transition: cross-industry skills provider OPCO 2i makes a commitment

Stéphanie Lagalle-Baranès, Managing Director of OPCO 2i

The world is changing, and so is industry. The ecological transition is leading to changes in professions and the skills they require. By 2025, companies' business needs will be evolving: some will be changing or increasing in volume, while others will be acquiring additional skills without any fundamental change to the way they do business. In order to support these changes and

anticipate the new skills required, OPCO 2i, the inter-industry skills operator, has undertaken forward-looking work and is preparing the 60,000 companies in the industry to meet these new challenges.

The work of the General Secretariat for Investment (SGPI), particularly in the context of the «skills and professions of the future» call for expressions of interest

François Germinet, Director of the Knowledge Unit of the General Secretariat for Investment (SGPI)

At a time when France is investing massively to build a first-rate green industry, which will enable it both to gain in sovereignty and to meet the challenges of the ecological transition, a battle is being waged to train sufficient numbers of the talent that this green industry will need. That's why the bold France 2030 investment plan, in addition to funding new plants, the technologies of tomorrow and raw materials supply chains, has earmarked €2.5 billion for this skills battle. For the first time since the launch of investments in the future in 2010, the training offer, its transformation and its attractiveness are directly financed in order to respond to this great call of the nation, within the framework, in particular, of the call for expressions of interest: «skills and professions of the future».

The UIMM's network of training centres, La Fabrique de l'Avenir

David Derré, Director of Employment and Training, Union des Industries et Métiers de la Métallurgie (UIMM)

The Union des Industries et Métiers de la Métallurgie (UIMM), the employers' organisation for the metalworking industry (42,000 companies and 1.6 million employees), has been involved in vocational training and apprenticeships since the 1920s. To meet the recruitment and skills needs of French industrial companies, it set up its own regional network of vocational training and apprenticeship organisations in the 1980s (UIMM training centres, CESI). To compensate for the shortcomings of existing public or private training provision, this network is run by the regional UIMMs to offer a local response to companies (136 training sites), young people, jobseekers and employees, as well as to drive the development of industrial apprenticeships (from CAP to engineering), experiment with innovative teaching methods (IFTI, employment skills approach, etc.), and implement the joint vocational certification policy by developing the CQPM.

Training organisations

The doctorate, a scientific professional experience that is a source of multiple skills

Stéphanie Danaux, Linda Lahleh,

Godefroy Leménager, Laure Tabouy, Sandra Touati and **Ewa Zlotek-Zlotkiewicz** with the help of all the members of the Board of Directors of the National Association of Doctors (ANDès)

The doctorate is a professional research experience that leads to the highest internationally recognised university degree. The many cross-disciplinary skills developed during the doctorate are built up throughout the professional research experience and are transferable to all professional sectors. Since it was founded over 50 years ago, the Association Nationale des Docteurs (ANDès) has set itself the goal of bringing together and representing the community, in particular to encourage the mobility of PhDs and ideas between universities and companies.

To achieve this objective, ANDès has set itself three missions: firstly, to contribute to the decompartmentalisation of professional spheres by positioning PhDs as «border crossers», and to take advantage of their expertise and know-how to meet the challenges of tomorrow's world; secondly, to highlight the added value represented by the professional experience of a PhD; and thirdly, to create and create synergies between PhD networks.

Careers and qualifications campuses at the heart of the «industrial renaissance»

Alain Cadix, Member of the Académie des technologies

A Campus des métiers et des qualifications (CMQ) is a network of vocational lycées, apprentice training centres, universities, grandes écoles and businesses, all focusing on a particular sector of activity or industry in a given region.

CMQs open up realistic prospects for higher education for vocational baccalaureate holders and prepare them for promising careers. In many cases, they are integrated into the technological streams of comprehensive lycées in their local area. The CMQs help to reduce inequality of opportunity. They also provide continuing training leading to qualifications. In this way, they contribute to job flexibility.

By developing projects of various types and sizes in response to skills needs, they are creating a dynamic that is part of our country's «industrial renaissance». Indeed, this is largely a regional phenomenon.

Companies are genuinely involved in the campuses. Recurrent support from government departments varies from one region to another, and should be increased in view of the challenges to be met and the potential of the CMQs.

The National Agency for Adult Vocational Training (Afpfa)

Myriam Calmels, Head of Industry - Skills and Training Engineering at the National Agency for Adult Vocational Training (Afpfa)

Afpfa offers training courses for adults in a variety of fields, including industry, IT, construction, administrative services and commerce. These courses are designed to meet market needs and enable adults to retrain or upgrade their skills. The emphasis is on practical experience and personalised support to encourage professional integration. AFPFA carries out studies on the development of professions and skills, contributes to the emergence of new professions and adapts to current social and economic challenges. It focuses on cross-disciplinary skills and offers a modular approach to promote employability. The teaching methodology is based on learning by doing, experience and teamwork. Afpfa is also committed to digitising its training courses and developing resources such as serious games, Mooc and immersive simulators. Afpfa also anticipates skills needs through skills incubators, in partnership with companies and other players. These incubators aim to develop the skills of working people and support companies in building the professions of tomorrow, particularly in the fields of digital and energy transition.

Airbus vocational school

Nicolas Coadou, Director of the Airbus vocational school

The Airbus vocational school is located on one of the Airbus industrial sites in Toulouse.

It trains students for three vocational baccalaureates: aeronautics (avionics, structure or systems option), machining and sheet metal work. It also offers a 1-year CAP in aeronautics, with two options: structure and avionics.

It also offers apprenticeships for a complementary Aeronautical Painting qualification (Bac +1), a Production Systems Maintenance BTS (Bac +2) in partnership with UIMM Occitanie and an Aeronautical BTS (Bac +2) in partnership with Lycée St Exupéry and UIMM.

Ranked as the top vocational school in the Figaro Étudiant 2023 rankings, the particularity of this vocational school lies above all in the passion spontaneously expressed by its students for the world of aeronautics, in which they are involved on a daily basis through their direct environment. The technical teaching is provided by Airbus employees who have chosen to teach or contribute to the running of the school. So it's hardly surprising that the school's motto is: "Learn to fly on your own wings".

Training for a profession, an imperative for the armed forces in a changing strategic context

Thibaut de VANSSAY de BLAVOUS, Director of Human Resources, Ministry of Defence

The Ministry of the Armed Forces is the largest recruiter of the French Government (28.000 new recruits a year) and its third largest employer (266.000 employees, three quarters of whom are military personnel).

The armed forces rely on men and women able to meet the constraints of operational engagement and who possess genuine technical expertise. In this respect, initial and continuing training is paramount for the Ministry of the Armed Forces, which devotes substantial resources to it.

Faced with a changing strategic context and technological innovations, the Ministry of the Armed Forces must constantly adapt its professional skills and its training offer.

Finally, training within the armed forces has a clear social dimension: an opportunity for young people, a vehicle for promotion and a guarantee to successfully reintegrate into civilian life.

AEROCAMPUS Aquitaine, Campus des Métiers et des Qualifications d'Excellence Aeronautics and Space

Anne-Catherine Guitard, Managing Director of AEROCAMPUS Aquitaine

AEROCAMPUS Aquitaine is a Centre of Vocational Excellence in the domain of Aeronautics and Space with Part-147 accreditation, the only one of its kind in Europe.

It offers initial training in aeronautical maintenance (from the vocational baccalaureate to advanced vocational diploma, by apprenticeship or scholastic route), vocational training for staff undergoing retraining and continued training for aeronautical employees (mechanics, avionics, composites, wiring, etc.). The campus also organises events and discovery breaks for children and young adults. Set in a wooded park with a 13th-century château, the campus offers reception areas (château, rooms, accommodation, catering) for organising events (conferences, seminars, workshops, training courses, etc.) and opens its facilities (offices and technical platforms) to both manufacturers and professionals in the industry. AEROCAMPUS Aquitaine is committed to accompanying and supporting the Aerospace and Defence industry, focusing on the major socio-economic issues of attractiveness, employability and influence.

Training for a job: new uses for digital training, the case of Naval Group

Hervé Guillou, Company Director and Chairman of Exail, **Lénaïc Segalen**, Director of the CINav association and **Cécile Augor-Thébault**, Director of Naval Group University

Digital transformation is on track. The constant evolution of employee skills is at the heart of everything we do. Training should be immediate, practical and pragmatic, short and personalized. Companies can no longer be out of step with this reality. Each company should choose how to invest in this change. Naval Group has chosen to set up an internal entity dedicated to employee and customer learning: Naval Group University. Digital technology is available in a variety of ways, depending on the resources available to employees. It evolves rapidly, requiring regular updating. For companies in the sector, and in particular medium-sized company, digital training is a powerful productivity and attractiveness tool available to all. These high costs argue in favor of pooling tools so that smaller structures can also benefit from the use of digital technology.

Apprenticeships in higher education

Frédéric Laloue, Member of the Inspectorate General of Social Affairs

The spectacular growth of apprenticeship programs in higher education is one of the most significant consequences of the September 5, 2018 law. The budgetary impact of this development is considerable, prompting the authorities to advocate a reallocation of funding towards apprenticeships in secondary education, which is comparatively more effective in terms of job access. However, the promise of social mobility that apprenticeship in higher education carries is rare and valuable; it urges us not to view this phenomenon solely from the perspective of strict budget rationalization.

Training at the Conservatoire national des arts et métiers (Cnam)

Bénédicte Fauvarque-Cosson, Director General of Cnam

Education, training and the acquisition of new skills are essential. They ensure greater integration into the world of work, promote equal opportunities and individual fulfilment. In a changing world, they are the keys to economic growth, national competitiveness, research and innovation. The Conservatoire national des arts et métiers (CNAM), a major public institution for higher education and research, is transforming itself to meet the new challenges of training, for everyone and everywhere. It is committed to serving everyone and the general interest. Cnam also supports public policies by adapting its training courses to the needs of society and the aspirations of its varied audiences. At a time when national sovereignty and international attractiveness are driving educational establishments into unprecedented competition, with elitism as the driving force and international rankings as the ultimate guide, Cnam's aim is to ensure that everyone has a better future. Faithful to its history, its values and its missions, Cnam stands out for the attention it pays to combining social inclusion and excellence.

Centre Inffo: a little-known but valuable player

Pascale Romenteau, Managing Director of the Centre for the Development of Information on Lifelong Learning (Centre Inffo)

Centre Inffo offers its expertise for the betterment of the vocational training sector, catering to both institutional players and training organizations, regardless of their size. Centre Inffo exclusively serves professionals and does not have a focus on the general public.

Centre Inffo interprets all the regulations and standards shaping the sector, providing information, clarification, and essential resources for those tasked with complying with them.

One clear demonstration of its value is evident in its commitment to quality. As a significant contributor to the implementation of the Qualiopi label, Centre Inffo has facilitated its adoption by numerous organizations, delivering benefits to all.

As a small state operator with associative status, Centre Inffo plays a crucial role in the effective execution of public policy in vocational training, marked by its technical complexity and periodic changes (major evolutions occurring approximately every 15 to 18 months). Operating in proximity to the State but not as its “enforcement arm”, and directly engaging with grassroots stakeholders, Centre Inffo serves as a key facilitator of public debate on vocational training matters, with the Winter University of Vocational Training (UHFP) as its flagship event. We invite you to join us for the next UHFP in January 2025 in Cannes!

Miscellany**Energy transition: are materials ready for large-scale use of hydrogen?**

Michel Darrieulat, Honorary Engineer General of Mines

To reach carbon neutrality in 2050, an extensive use of hydrogen as a fuel and an energy carrier is necessary. Prototypes and full-size appliances are already available. Their completion took advantage of the large choice of materials produced by years of research. Yet H₂ reacts with everything around it, mainly if it is in a prolonged way. Operating performance will decide between the various solutions.

The present article reviews the main issues on the materials used for the production, the storage, the transportation and the use of H₂. It points out technological locks and lists the fields in which progress is at hand, especially surface coatings and the design of solids with a controlled distribution of porosity. It also refers to the technologies that could emerge if adequate materials were developed. All this should give plenty of work to the laboratories in the decades to come.

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