



# CHINA-SWITZERLAND WHITE PAPER ON VOCATIONAL EDUCATION

中瑞职业教育白皮书

2024



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亲爱的读者，

瑞士已经连续十余年被评为世界上最具创新力和竞争力的经济体。瑞士也是欧洲青年失业率最低的国家之一，即使在流行病肆虐的年代也是如此。

成功背后的原因有很多--表现优异的公司、完善的基础设施、高效的政府机构--但如果没有健全的教育体系，这些成就将是天方夜谭。健全的教育体系包括出色的公立学校、优秀的大学，以及最重要的是，也包括优质的职业教育与培训体系（VPET）。

2022 年，首版《中瑞职业教育白皮书》概述了瑞士和中国的职业教育与培训体系，并展示了瑞士企业在中国开展的部分职业教育与培训项目。

第二版《中瑞职业教育白皮书》在此之上更进一步。白皮书通过采访多家活跃在中国的瑞士企业，重点介绍了瑞士职业教育在中国不断变化的行业需求和技能提升需求中所发挥的作用。白皮书还阐述了瑞士企业希望继续深化职教合作的领域，以及企业在华开展职教合作所面临的挑战。

事实上，瑞士职业教育与培训体系的成功源于企业体系化的责任。在瑞士，企业主导学徒课程的开发。本白皮书充分表明，瑞士企业在中国也承担了类似责任。通过在华实施技能型项目，瑞士企业为中国缩小劳动力技能差距和培养面向未来的人才做出了贡献。

瑞士和中国有很多值得庆祝的里程碑。2024 年是中瑞自由贸易协定签署 10 周年。明年，我们将庆祝中瑞建交 75 周年。本白皮书不仅重点介绍了瑞士企业在中国的职业教育与培训领域所取得的成就（不胜枚举！），我还希望它能激励我们瑞中两国在职业教育与培训领域开展更多有意义的合作。

白瑞谊

瑞士驻华大使

## Dear readers

For over a decade, Switzerland has been ranked as the world's most innovative and competitive economy. The country also maintains one of the lowest youth unemployment rates in Europe, even throughout the pandemic-affected years.

Although there are many reasons that explain these successes - high-performing companies, excellent infrastructure, efficient state organization – these achievements would not be possible without a robust educational system. This system includes quality public schools, outstanding universities and most importantly a successful vocational and professional education system (VPET).

In 2022, the first China Switzerland White Paper on Vocational Education gave an overview of the Swiss and Chinese VPET systems. It also showcased some of the VPET programs Swiss companies have established in China.

This second edition of the White Paper on Sino-Swiss VPET collaboration goes a step further. Through a series of interviews with Swiss companies active in China, it focuses on the role Swiss VPET plays in companies' evolving industry demands and upskilling requirements in China. The paper also demonstrates where Swiss companies would like to go further and what obstacles they face.

Indeed, the success of the Swiss VPET system is rooted in the private sectors' systemic responsibility. In Switzerland, companies have the lead in developing the apprentice's curriculum. This paper makes abundantly clear, that Swiss companies are also taking on responsibility here in China. Through their skills-based programs, they are contributing towards closing the skills gap and training future talents.

Switzerland and China have a lot of reasons to celebrate. The year 2024 marks the 10th anniversary of the Sino-Swiss Free Trade Agreement. Next year, we'll celebrate 75 years of Sino-Swiss diplomatic relations. This paper not only highlights what Swiss companies already achieved in China in the VPET field (it's a lot), I hope that it will also inspire additional meaningful collaborations in the field of Vocational Education and Training.

Jürg Burri  
Ambassador of Switzerland to China





# **China-Switzerland White Paper on Vocational Education 2024**

中瑞职业教育白皮书 2024

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From Classroom to Career: Addressing Skill Needs through  
Swiss-Chinese Cooperation

从课堂到职场：加强瑞中合作 满足人才需求



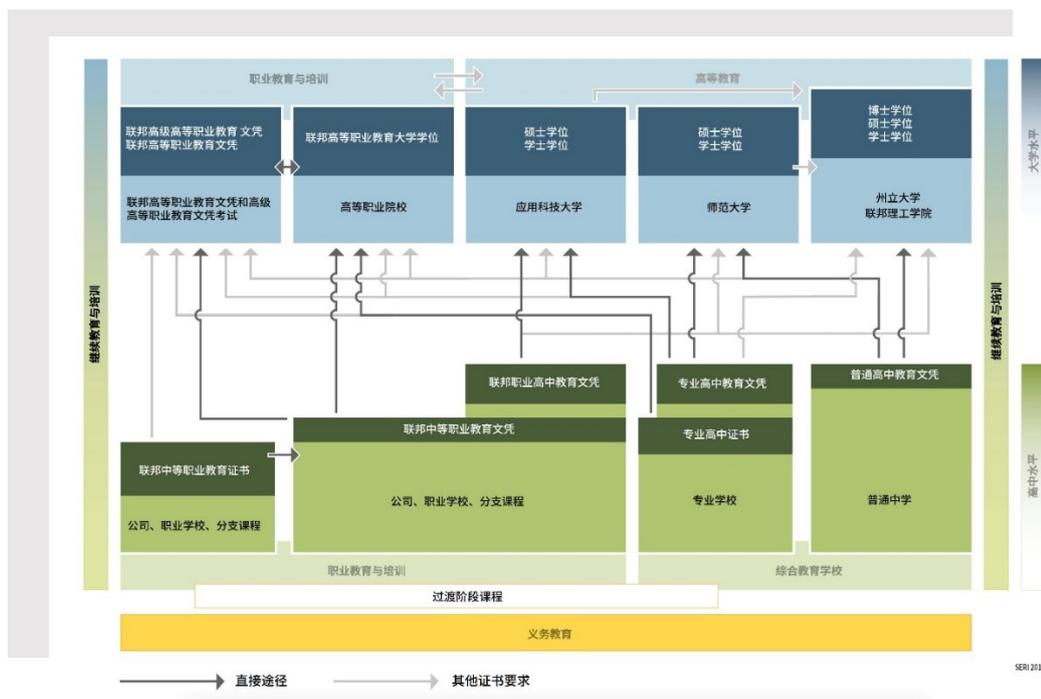
## I. Executive Summary

### 一、摘要

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This white paper aims to address the pressing issue of skill gaps in the modern workforce by exploring the potential of Swiss-Chinese cooperation in vocational education. With rapid technological advancements and evolving industry demands, there is an urgent need to develop both soft and hard skills among the workforce. The insights gained from industry leaders highlight significant gaps in digital, technical, and soft skills. This paper proposes actionable recommendations for educational institutions, companies, and policymakers to foster effective skills training and collaboration models, ultimately bridging the gap between classroom learning and career readiness. Key recommendations include establishing internships and apprenticeships, enhancing digital literacy, developing integrated training programs, and strengthening industry-academia cooperation.

本白皮书旨在通过探索中瑞职业教育合作的潜力，解决现代劳动力技能缺口这一紧迫问题。随着技术的快速发展和行业需求的不断变化，迫切需要培养劳动力的软技能和硬技能。从行业领导者那里获得的见解凸显了在数字、技术和软技能方面的巨大差距。本文为教育机构、公司和政策制定者提出了可行的建议，以促进有效的技能培训和合作模式，最终缩小课堂学习与职业准备之间的差距。本白皮书提出的主要建议包括设立实习和学徒制岗位、提高数字素养、制定综合培训计划，以及加强产学合作。



## 二、导言

瑞士职业教育与培训联盟是由中国瑞士商会、瑞士联邦政府科技文化中心和瑞士驻华大使馆密切合作发起的一项倡议。联盟的活动包括在中国各地举办的职业教育路演以及编制本白皮书。联盟的工作旨在加强瑞士企业的影响力，提高瑞士职业教育与培训的认知度，并促成实质性合作。

在快节奏和不断变化的当前经济环境中，技能提升的重要性不言而喻。随着各行各业的技术进步，行业对能够适应新挑战、能引领创新的技能型劳动力的需求越来越大。职业教育是连接课堂教育和实际应用的重要桥梁，确保学生具备在职场茁壮成长的技能。

瑞士的职业技术教育与培训体系因其与劳动力市场高度关联、帮助降低青年失业率和优质的技能培训而备受推崇。这一体系打造了人才终身成长的立交桥，在瑞士具有良好声誉，经济效益高，并通过集体治理分担各方责任。经过几十

年的发展，瑞士职业技术教育与培训体系不断适应数字化等新挑战，并根据瑞士的具体国情不断发展。虽然瑞士体系无法直接移植到其他国家，但许多瑞士企业均在中国提供技能培训，此类培训受到瑞士职业教育与培训体系的启发，并根据中国本土情况进行了调整，被称为“有中国特色的瑞士职业教育”。本白皮书探讨了瑞士企业如何在中国开展瑞士职业教育与培训。

瑞中两国在教育领域的合作是满足瑞士在华企业技能需求的重要一步。在 2022 年第一版瑞中职业教育白皮书的成功基础之上，本白皮书深入探讨了劳动力市场中现存的技能差距，亦探索了瑞中两国教育机构和企业之间能继续加强合作的领域。本白皮书的旨在指出目前劳动力市场紧缺的关键技能，了解造成这些技能差距的根本原因，并为解决这些问题提供全面的建议。

我们的研究方法是与瑞士在华多家著名公司的代表进行深入访谈。这些公司因其在各行各业的卓越表现而广受认可，他们就公司对员工特定技能的要求、在寻找高技能人才时所面临的挑战以及有效培训方案等方面提供了宝贵的见解。

本白皮书首先对技能差距进行了详细分析，然后提出了针对具体行业的洞察与建议，最后讨论了校企合作的有效模式。我们旨在通过这种全面的论述加深对当前职业教育现状的理解，并提供可行的战略来缩小技能差距，最终促进学生从课堂到职场的顺利过渡。

*Vocational education serves as a critical bridge between academic learning and practical application, ensuring that individuals are equipped with the necessary competencies to thrive in their careers.*

## II. Introduction

The creation of the Swiss VPET (Vocational and Professional Education and Training) Alliance, an initiative of the Swisscham China in close partnership with the Swissnex Network and the Embassy of Switzerland in China, has been pivotal in shaping Swiss-Chinese education cooperation. The alliance's activities, including VPET roadshows around China and the publication of this white paper, aim to strengthen the presence of Swiss companies, build up reputation of Swiss VPET and promote effective collaboration projects.

In today's fast-paced and ever-changing economic landscape, the importance of skills development cannot be overstated. As industries evolve with technological advancements, the demand for a skilled workforce capable of adapting to new challenges and innovations has become paramount. Vocational education serves as a critical bridge between academic learning and practical application, ensuring that individuals are equipped with the necessary competencies to thrive in their careers.

Switzerland's VPET system is highly regarded for its ability to correlate with the labor market, reduce youth unemployment, and produce high-quality training. This system, which is permeable and prestigious, is cost-efficient and features shared responsibility through a collective governance structure. Developed over decades, the Swiss VPET system continues to adapt to new challenges, such as digitalization, and is tailored to Switzerland's specific context. While it cannot be directly transferred to another country, many Swiss companies offer skills-based training in China, inspired by the Swiss VPET system but adapted to the local context—referred to as "Swiss VPET with Chinese characteristics." This white paper examines how Swiss VPET is adapted in China by Swiss companies.

The collaboration between Switzerland and China in the realm of educational development has been a significant step toward addressing this need. Building on the insights and successes of the 2022 *White Paper*, this document delves deeper into the specific skill gaps that exist within the workforce and explores the potential for enhanced cooperation between Swiss and Chinese educational institutions and companies. The primary goal of this white paper is to identify the key skills that are currently lacking, understand the underlying reasons for these gaps, and provide comprehensive recommendations to address them.

Our approach involved conducting in-depth interviews with representatives from various prominent Swiss companies. These companies, recognized for their excellence in different sectors, provided valuable insights into the specific skills they seek in their employees, the challenges they face in finding adequately skilled personnel, and their perspectives on effective training methodologies.

This white paper is structured to first present a detailed skills gap analysis, followed by industry-specific insights and recommendations, and finally, a discussion on effective business models for collaboration between educational institutions and companies. Through this comprehensive approach, we aim to foster a deeper understanding of the current landscape of vocational education and provide actionable strategies to bridge the skills gap, ultimately facilitating a smoother transition from classroom to career.

### 三、技能差距分析

从瑞士在华企业处收集到的信息显示，当前劳动力在软技能和硬技能方面都存在巨大差距。

#### 劳动力技能差距 | 软技能

在团队中高效工作的能力至关重要，但员工却往往缺乏这种能力。团队合作在几乎所有职业环境中都是必不可少的，它可以促进协作、创造力和生产力。雇主表示，员工经常在协调工作、分担责任和支持同事方面遇到困难，这可能会阻碍项目的成功，降低组织的凝聚力。

团队合作

清晰有效的沟通技能是在采访中反复出现的高频词。强大的沟通技能对于传达想法、解决冲突和建立关系至关重要。然而，许多员工缺乏清晰表达见解、积极倾听和参与建设性对话的能力。这种缺陷会导致误解、产生错误并降低效率。

沟通技巧

员工必须具备批判性思维和创新性解决问题的能力。解决问题的能力对于发现问题、提出解决方案和实施战略至关重要。员工在分析情况、进行创造性思考和做出明智决定方面经常面临挑战，从而可能会阻碍创新和进步。

解决问题能力

技术和行业的快节奏变化需要一支能够快速适应的员工队伍。适应性包括对新思想持开放态度、方法灵活、面对变化有韧性。许多员工在适应新技术、新工艺和新市场需求方面举步维艰，这限制了他们在工作中与时俱进和持续高效工作的能力。

适应能力

领导技能对于推动项目和有效管理团队非常重要。高效的领导者能够鼓舞、激励和引导团队实现目标。然而，员工在领导能力方面存在着明显的差距，他们往往缺乏高效能领导所需的自信、远见和人际交往技巧。

领导能力

### III. Skills Gap Analysis

The insights gathered from leading companies reveal significant gaps in both soft and hard skills within the current workforce.

#### Soft Skills | Identification of Skills Lacking in the Workforce

##### Teamwork

The ability to work effectively in a team is crucial yet often lacking. Teamwork is essential in almost all professional environments, fostering collaboration, creativity, and productivity. Employees often struggle with coordinating efforts, sharing responsibilities, and supporting colleagues, which can hinder project success and organizational cohesion.

##### Communication Skills

Clear and effective communication is a recurring theme. Strong communication skills are vital for conveying ideas, resolving conflicts, and building relationships. However, many employees lack the ability to articulate their thoughts clearly, listen actively, and engage in constructive dialogue. This deficiency can lead to misunderstandings, errors, and reduced efficiency.

##### Problem-Solving

The necessity for employees who can think critically and solve problems innovatively is emphasized. Problem-solving skills are critical in identifying issues, generating solutions, and implementing strategies. Employees often face challenges in analyzing situations, thinking creatively, and making informed decisions, which can impede innovation and progress.

##### Adaptability

The fast-paced changes in technology and industry require a workforce that can quickly adapt. Adaptability involves being open to new ideas, flexible in approaches, and resilient in the face of change. Many workers struggle to adjust to new technologies, processes, and market demands, limiting their ability to stay relevant and effective in their roles.

##### Leadership

Leadership skills are important for driving projects and managing teams effectively. Effective leaders inspire, motivate, and guide their teams towards achieving goals. However, there is a noticeable gap in leadership capabilities, with employees often lacking the confidence, vision, and interpersonal skills required to lead effectively.



## 硬技能

### 技术知识

对自动化、机器人、机械工程和电气工程等特定技术技能的需求很大。这些技能对于正在进行技术改造的行业至关重要。精通这些领域的工人短缺会阻碍先进技术的应用，限制生产率。例如，在先进工程和制造领域，工人通常需要具备技术图纸解读、质量控制、机械加工和制造、电气工作、机械能力、安全程序、CAD 软件和装配等技能。熟练阅读蓝图、确保质量标准、使用加工工具和遵守安全规则是必不可少的。这些底层技能是在先进制造和工程行业中脱颖而出的基础。

### 数字化技能

随着数字化的兴起，信息技术、数据分析和数字精密工程方面的技能备受青睐。数字技能包括编码、数据管理和网络安全等一系列能力。数字技能方面的差距使企业容易受到网络威

胁，数据处理效率低下，技术进步滞后。

例如，一家企业强调急需数字技能来优化招聘流程，通过数据分析优化劳动力管理，并支持客户适应数字化转型。同样，徠卡测量系统也非常依赖数字技能来创新和整合尖端技术，如用于精密测绘和测量应用的激光雷达和全球定位系统。

### 专业行业技能

烹饪艺术、地理空间数据分析和听力学等行业需要专业技能，以在细分市场中保持高标准和竞争力。一家烹饪行业公司通过强调使用先进技术和顶级配料制作创新菜肴的专业技能的需求，说明了技术技能的差距。开发这些专业技能不仅能提高客户吸引力和品牌声誉，还能确保在不断变化的市场环境中保持领先。

### 听力专业技能差距

中国听力行业存在明显的专业技能差距，技术人员经常在使用听力计、进行精确听力测试、操作耳镜、制作精确耳模印模

以及为复杂的助听器编程等基本任务上感到困难。此类技术缺口影响了服务质量、运营效率和客户满意度，最终降低了企业的市场竞争力。瑞士等国已经建立听力学职业和高等教育专业，中国缺乏听力保健专业人员的系统教育体系。这一缺口对非医院环境的影响尤为明显，而大多数听力服务都是在非医院环境中提供的，这就迫切需要结构化的技能培训计划来提升行业标准，满足不断发展的技术需求。

### 维护和维修技能

维护和修理复杂系统的实用技能至关重要。维护和修理技能可延长机械设备的使用寿命并保持其功能。一家在全球运营和维护庞大电梯网络的企业表示，他们的技术人员必须具备诊断、维修和维护这些系统的实用专业知识，以防止故障并尽可能减少停机时间并确保乘客安全。有效的维护不仅能延长设备的使用寿命，还能降低运营成本，提高垂直运输解决方案的整体效率。

### Technical Knowledge

There is a significant demand for specific technical skills such as automation, robotics, mechanical engineering, and electrical engineering. These skills are critical for industries undergoing technological transformation. The shortage of workers proficient in these areas can hinder the adoption of advanced technologies and limit productivity. For instance, in the advanced engineering and manufacturing sector, workers commonly require skills in technical drawing interpretation, quality control, machining and fabrication, electrical work, mechanical aptitude, safety procedures, CAD software, and assembly. Proficiency in reading blueprints, ensuring quality standards, using fabrication tools, and adhering to safety protocols is essential. These shared skills form the foundation needed for effective contributions in advanced manufacturing and engineering environments.

### Digital Skills

With the rise of digitalization, skills in IT, data analysis, and digital precision engineering are highly sought after. Digital skills encompass a range of competencies, including coding, data management, and cybersecurity. The gap in digital skills leaves organizations vulnerable to cyber threats, inefficient

in data handling, and lagging in technological advancements. For example, one organization emphasizes the critical need for digital skills to enhance its recruitment processes, optimize workforce management through data analytics, and support clients in adapting to digital transformations.

Similarly, Leica Geosystems, relies heavily on digital skills to innovate and integrate cutting-edge technologies such as LiDAR and GPS for precision mapping and surveying applications.

### Specialized Industry Skills

Industries such as culinary arts, geospatial data analysis, and audiology require specialized skills to uphold high standards and competitiveness in niche markets. A company in the culinary sector illustrates the technical skill gap by highlighting the need for expertise in creating innovative dishes with advanced techniques and top-tier ingredients.

Developing these specialized skills not only enhances customer appeal and brand reputation but also ensures sustained relevance in a dynamic market landscape.

### Skill Gaps in Audiology

The significant technical skill gaps in China's audiology industry are evident as professionals frequently struggle with fundamental tasks such as using audiometers,

## Hard Skills

conducting precise hearing tests, operating otoscopes, making accurate ear mold impressions, and programming sophisticated hearing aids.

These deficiencies undermine service quality, operational efficiency, and customer satisfaction, ultimately compromising market competitiveness.

Unlike countries with established vocational and university training programs in audiology, such as Switzerland, China lacks systematic educational pathways for hearing care professionals.

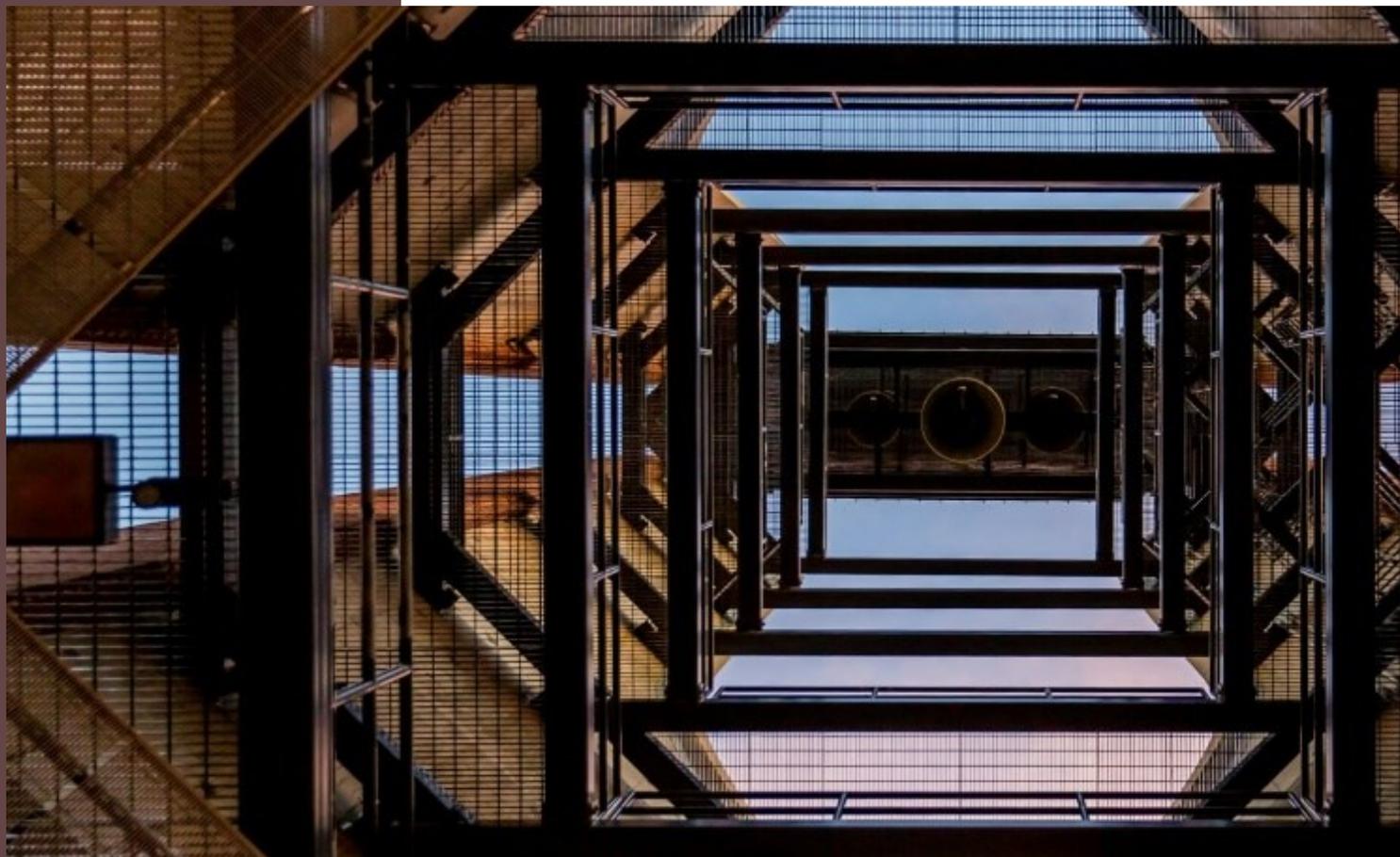
This gap particularly impacts non-hospital settings, where the majority of hearing services are delivered, highlighting the urgent need for structured skill development initiatives to elevate industry standards and meet evolving technological demands

### Maintenance and Repair Skills

Practical skills in maintaining and repairing complex systems are essential. Maintenance and repair skills ensure the longevity and functionality of machinery and equipment. The absence of these skills can lead to increased downtime, higher costs, and reduced operational efficiency. One company particularly pointed out the need for these skills in their workforce.

## 技能差距的原因分析

造成这些技能差距主要有以下因素



### 课程设置

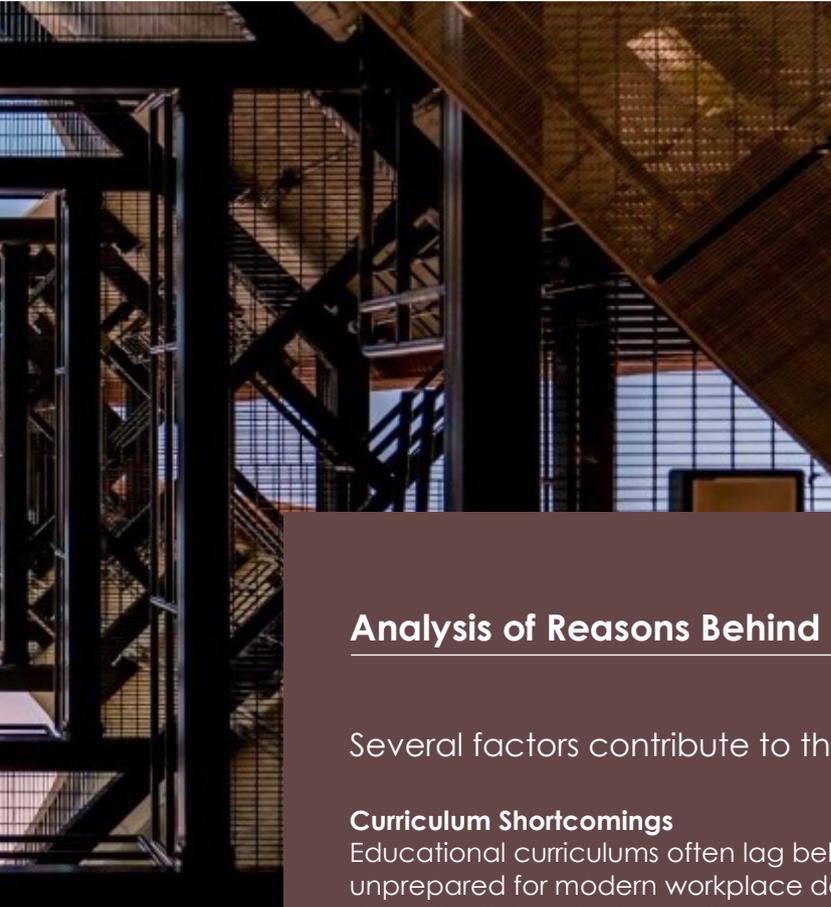
校内课程设置往往落后于行业发展，使毕业生无法适应现代职场的需求。传统教育体系注重理论知识，往往忽视实际应用和行业相关性。因此，毕业生在进入职场时没有掌握必要的技能，无法达到行业标准和期望。

### 技术进步超越教育

快速的技术变革意味着教育机构难以跟上雇主对技能要求的步伐。高速的技术创新使教育目标一直处在变动状态中，将最新进展及时纳入课程也是一个重大挑战。这种技术与教育的脱节导致劳动力无法掌握最新的技能和知识。徕卡测量系统特别强调了这一点。

### 缺乏实践培训机会

学校教育期间的实践培训和实际经验不足，导致劳动力理论知识丰富，但缺乏实际应用技能。实践培训对于培养只有积攒足够多的工作经验才能获得的能力至关重要。学术学习与实际操作之间的差距使员工无法胜任工作要求。



## **Analysis of Reasons Behind Skill Gaps**

Several factors contribute to these skill gaps:

### **Curriculum Shortcomings**

Educational curriculums often lag behind industry advancements, leaving graduates unprepared for modern workplace demands. Traditional education systems focus on theoretical knowledge, often neglecting practical application and real-world relevance. As a result, graduates enter the workforce without the necessary skills to meet industry standards and expectations.

### **Technological Advancements Outpacing Education**

Rapid technological changes mean that educational institutions struggle to keep pace with the skills required by employers. The speed of technological innovation creates a moving target for educational programs, making it challenging to incorporate the latest advancements into curricula. This disconnect leads to a workforce that is not equipped with the most current skills and knowledge. Leica Geosystems highlighted this challenge.

### **Lack of Practical Training Opportunities**

Insufficient hands-on training and real-world experience during education result in a workforce that is theoretically knowledgeable but lacks practical application skills. Practical training is crucial for developing competencies that can only be acquired through experience. The gap between academic learning and practical implementation leaves employees unprepared for the demands of their roles.



## 未来发展所需的技能

为了弥补这些技能差距并为未来的行业增长做好准备  
以下技能必不可少

### 数字技能

熟练掌握人工智能  
和高科技技能

随着各行各业日益数字化，熟练掌握人工智能和其他高科技技能至关重要。这些技能使员工能够开发、实施和管理先进的技术解决方案，推动创新和提高效率。

### 数据分析和 IT 技能

管理和分析海量数据的能力至关重要。数据分析技能使组织能够做出明智的决策、优化运营和发现新机遇。IT 技能对于维护技术基础设施的稳定和安全必不可少。

### 软技能

较强的解决问题  
和批判性思维能力

较强的解决问题和批判性思维能力对于应对复杂的挑战至关重要。这些技能涉及分析情况、评估选项和制定有效的解决方案。这些技能对于促进创新、改进流程和实现战略目标至关重要。



### 特定行业技能

根据医疗保健、制造业和智慧城市等行业的需求量身定制的特定行业技能至关重要。这些技能可确保员工能够满足其所在行业的独特需求，保持高标准，并为行业增长和创新做出贡献。

### 较强的沟通能力

有效的沟通能促进清晰、高效的信息交流。强大的沟通技能使员工能够表达想法、与同事合作、与利益相关者接洽，从而提高组织的整体绩效。

### 专业技术技能

#### 尖端技术知识

自动化、机器人和精密工程等领域的高级技术知识对于推动技术进步至关重要。这些技能使员工能够设计、实施和管理复杂的系统和流程。

### 技能需求企业洞察

行业领导者会优先考虑员工的软技能和硬技能综合实力。他们非常重视自动化、数字技术和特定行业技术等特定领域的专业技术能力。团队合作、沟通、领导力和适应能力等软技能同样重要，这些软技能对于员工在动态工作环境中有效协作和解决问题起到关键作用。

## Required Skills for Future Development

To address these gaps and prepare for future industry growth, the following skills are deemed essential:

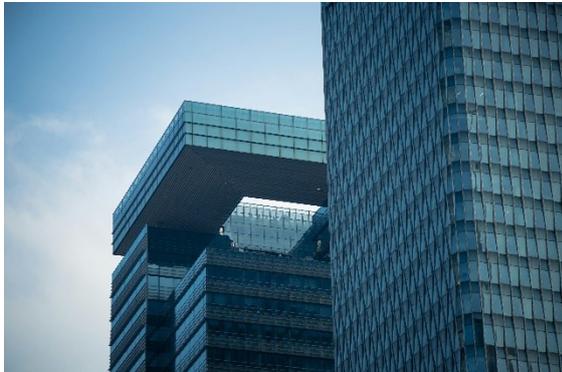
### Digital Skills

#### Proficiency in Artificial Intelligence and High-Tech Skills

As industries become increasingly digitized, proficiency in AI and other high-tech skills is critical. These skills enable employees to develop, implement, and manage advanced technological solutions, driving innovation and efficiency.

#### Data Analysis and IT Skills

The ability to manage and interpret vast amounts of data is essential. Data analysis skills enable organizations to make informed decisions, optimize operations, and identify new opportunities. IT skills are necessary for maintaining robust and secure technological infrastructures.



### Soft Skills

#### Enhanced Problem-Solving and Critical Thinking

Enhanced problem-solving and critical thinking abilities are vital for navigating complex challenges. These skills involve analyzing situations, evaluating options, and devising effective solutions. They are crucial for fostering innovation, improving processes, and achieving strategic goals.

#### Strong Communication Skills

Effective communication facilitates clear and efficient information exchange. Strong communication skills enable employees to articulate ideas, collaborate with colleagues, and engage with stakeholders, enhancing overall organizational performance.

#### Specialized Technical Skills

##### Advanced Technical Knowledge

Advanced technical knowledge in fields such as automation, robotics, and precision engineering is essential for driving technological advancements. These skills enable employees to design, implement, and manage sophisticated systems and processes.

##### Industry-Specific Skills

Industry-specific skills tailored to the needs of sectors like healthcare, manufacturing, and smart cities are crucial. These skills ensure that employees can meet the unique demands of their industries, maintain high standards, and contribute to sectoral growth and innovation.

#### Insights on Desired Skills

Industry leaders prioritize a combination of soft and hard skills in their employees. There is a strong emphasis on technical proficiency in specific areas such as automation, digital technologies, and industry-specific technical skills. Equally important are soft skills such as teamwork, communication, leadership, and adaptability, which are crucial for effective collaboration and problem-solving in a dynamic work environment.





#### **IV. Industry Perspectives and Recommendations**

The interviews provided a wealth of insights into the skills required by modern industries and the challenges faced in acquiring these skills. Here, we summarize the key findings, identify common themes, and provide recommendations for improving skills training in educational institutions.

#### **四、行业洞察与建议**

通过访谈，我们深入了解了现代企业所需的技能以及企业在招聘技能人才时所面临的挑战。在此，我们总结了主要调查结果，找出了企业们共同的洞察，并为改进教育机构的技能培训提出了建议。



## Key Findings from Interviews

Across various industries, there is a consistent demand for a blend of technical and soft skills. Companies emphasize the need for specialized technical knowledge in fields relevant to their operations, coupled with strong interpersonal skills. The rapid pace of technological change has created a gap in digital skills, necessitating enhanced training programs to equip the workforce with the necessary competencies.

Throughout the interview, it was noted that skills in automation and robotics are deemed essential for operations in industrial automation. The importance of digital skills, particularly in data analysis and IT, was emphasized to address the demands of a rapidly digitizing job market. Additionally, technical knowledge in elevator technology and electrical engineering was identified as vital for maintaining and innovating products and services.

## 访谈的主要结论

各行各业对技术和软技能的融合有着一致的需求。企业强调人才需要拥有与业务相关领域的专业技术知识，同时还要有很强的人际交往能力。快速的技术变革造成了数字技能方面的差距，因此企业有必要加强培训计划，使员工具备必要的能力。

整个访谈过程中，受访人普遍认为自动化和机器人技术方面的技能是工业自动化运营中必不可少的。数字化技能，特别是数据分析和信息技术方面的技能，对于满足快速数字化的就业市场需求的重要性得到了强调。此外，电梯技术和电气工程方面的技术知识对于产品和服务的维护和创新也至关重要。

## 各行业共同关注的硬技能

### a. 自动化与机器人技能（工业自动化与制造）

**技术知识：**对自动化、机器人、机械工程和电气工程方面的技能需求很大。这些能力对于开发和维护制造业和工业自动化领域的先进系统至关重要。一位受访人员表示这些技能在其机器人和自动化行业极其重要，着重说明了人才短缺会如何阻碍技术进步和生产力的提高。



### b. 数字技能（信息技术和数据驱动型产业）

**数字能力：**信息技术、数据分析、网络安全和数字精密工程方面的技能越来越重要。这些技能使组织能够有效地管理数据，防范网络威胁，并利用技术提高运营效率。德克集团及徕卡测量系统强调，要跟上就业市场和行业快速数字化转型的步伐，就必须掌握数字化技能。

### c. 特定行业的技术技能（医疗保健、地理空间、听力学）

**专业知识：**特定行业的技能至关重要，如医疗保健技术、地理空间数据分析和听力学方面的技能。这些技能确保企业在细分市场维持高标准和高水平创新。一家企业强调了听力学专业技能在保持听力解决方案的质量并推动创新上的重要性。

### d. 维护和修理技能（工程和技术服务）

**实际专业知识：**维护和修理复杂系统的技能对于确保设备的运行效率和使用寿命至关重要。一家企业指出了维护技能在确保电梯系统可靠性和安全性方面的重要性。

### e. 烹饪艺术（酒店与餐饮业）

**烹饪技能：**专业烹饪技能对于食品行业的创新和卓越至关重要。该专业强调先进的烹饪技术和知识，将瑞士的职业教育与当地的技能培训相结合，以解决烹饪和酒店业的人才缺口。



## Common Themes Across Industries

### a. Automation and Robotics (Industrial Automation and Manufacturing)

**Technical Knowledge:** There is a significant demand for skills in automation, robotics, mechanical engineering, and electrical engineering. These competencies are crucial for the development and maintenance of advanced systems in manufacturing and industrial automation. One example underscores the importance of these skills in robotic and automation systems, highlighting how a shortage can hinder technological advancements and productivity.

### b. Digital Skills (Information Technology and Data-Driven Industries)

**Digital Proficiency:** Skills in IT, data analysis, cybersecurity, and digital precision engineering are increasingly vital. These skills enable organizations to manage data effectively, protect against cyber threats, and leverage technology for operational efficiency. Adecco and Leica Geosystems emphasize the necessity of digital skills to keep pace with the rapid digital transformation in the job market and industry.

### c. Industry-Specific Technical Skills (Healthcare, Geospatial, Audiology)

**Specialized Knowledge:** Industry-specific skills such as those in healthcare technology, geospatial data analysis, and audiology are critical. These skills ensure high standards and innovation in niche markets. For instance, the need for specialized skills in audiology is highlighted to maintain quality and drive innovation in hearing solutions.

### d. Maintenance and Repair Skills (Engineering and Technical Services)

**Practical Expertise:** Skills in maintaining and repairing complex systems are essential to ensure operational efficiency and longevity of equipment. One company points out the importance of maintenance skills in ensuring the reliability and safety of their elevator systems.

### e. Culinary Arts (Hospitality and Food Industry)

**Culinary Expertise:** Specialized culinary skills are vital for innovation and excellence in the food industry. Advanced culinary techniques and knowledge are emphasized, with programs blending Swiss vocational education with local practical training to address skill gaps in the culinary and hospitality industry.

## 各行业共同关注的软技能



**团队合作：**有效的团队合作对于协作、创造力和生产力至关重要。各行各业都需要能够协调工作、分担责任和支持同事的员工。ABB 及徕卡测量系统提到，团队在实现凝聚力方面存在挑战，并且影响了项目的成功推进。

**解决问题：**批判性思考和解决问题的能力对于创新和进步至关重要。部分受访企业强调需要能够分析情况并制定有效解决方案的员工。

**领导能力：**员工需要有很强的领导能力，才能有效地推动项目和管理团队。部分受访企业提出，员工的领导能力存在明显差距，影响了团队绩效和项目成果。

**沟通技巧：**清晰的沟通对于交流思想、解决冲突和建立关系至关重要。沟通不畅可能导致误解、降低效率。

**适应性：**员工需要快速适应技术变革和市场需求。受访企业强调，适应性是在快速发展的行业中保持竞争力的关键。

## Soft Skills Across All Industries

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### Teamwork

Effective teamwork is crucial for collaboration, creativity, and productivity. Industries require employees who can coordinate efforts, share responsibilities, and support colleagues.

ABB and Leica Geosystems note challenges in achieving cohesive teamwork, impacting project success.

### Communication Skills

Clear communication is essential for idea exchange, conflict resolution, and relationship building. Poor communication can lead to misunderstandings and inefficiencies.

### Problem-Solving

The ability to think critically and solve problems is vital for innovation and progress.

There is a stress on the need for employees who can analyze situations and devise effective solutions.

### Adaptability

Workers need to adapt quickly to technological changes and market demands. Adaptability is highlighted as crucial for staying relevant in fast-evolving industries.



### Leadership

Strong leadership skills are needed to drive projects and manage teams effectively. A noticeable gap in leadership capabilities is often pointed out, affecting team performance and project outcomes.





# Recommendations for Improving Skills Training in Schools

## 关于改进学校技能培训的建议

### **Integrated Training Programs:**

Develop integrated training programs that combine academic learning with practical experience. For instance, a mechanical engineering program could include a dedicated module on the application of AI in predictive maintenance. Collaborate with leading tech companies to provide students with access to cutting-edge tools and software, ensuring they are well-versed in the latest industry innovations.

#### *制定综合培训计划:*

制定综合培训计划，将课堂学习与实践经验相结合。例如，机械工程课程可以加入一个关于人工智能在预测性维护中的应用的专门模块。学校可与领先的科技公司合作，为学生提供使用尖端工具和软件的机会，确保他们熟练使用最新的行业创新解决方案。

### **Industry-Academia Collaboration:**

Establish long-term strategic partnerships between educational institutions and key industry players. Implement a co-teaching model where industry experts are embedded within academic departments to provide ongoing mentorship and industry-specific training. Regularly update curricula based on feedback from industry partners to ensure alignment with current market demands and technological advancements.

#### *产学合作:*

教育机构和主要行业参与者之间应建立长期战略合作伙伴关系，实施合作教学模式，将行业专家邀请至课堂参与教学，提供持续的指导和针对行业的培训。学校可根据行业合作伙伴的反馈定期更新课程，确保专业设置与当前的市场需求和技术进步保持一致。

**Internships and Apprenticeships:** Introduce rotational internship programs that allow students to gain experience in multiple departments within a single company or across different companies within the same industry. This approach helps students develop a more comprehensive understanding of the business operations and identify their areas of interest. Additionally, create a robust mentorship program where each intern is paired with a senior industry professional who provides guidance and career advice throughout the internship.

*实习和学徒:* 引入轮岗实习计划，让学生在一家公司的多个部门或同一行业的不同公司获得工作经验。这种方法有助于学生更全面地了解企业运营情况，并确定自己感兴趣的领域。此外，学校可创建强有力的导师计划，让每位实习生与一位资深行业专业人士结成师徒关系，由导师在整个实习期间为实习生提供指导和职业建议。

**Workshops and Seminars:** Organize thematic workshops and seminars focusing on specific industry challenges and emerging trends. For example, a series of workshops on sustainable practices in manufacturing can include hands-on activities, case studies, and guest speakers from companies leading in sustainability. These events should be interactive, encouraging students to engage in problem-solving activities and apply theoretical knowledge to real-world scenarios.

*讲习班和研讨会:* 组织专题讲习班和研讨会，重点关注具体的行业挑战和新兴趋势。例如，关于制造业可持续发展实践的系列研讨会可包括实践活动、案例研讨、邀请来自可持续发展领域领先企业的发言人报告等活动。这些活动应具有互动性，鼓励学生参与解决问题的活动，并将理论知识应用到实际场景中。

## 五、合作模式：校企合作的有效模式



### 现有合作模式概述

教育机构与企业之间的有效合作模式包括：

#### 为学校提供设备：

企业可以向教育机构提供机械设备，让学生在符合行业标准的设备上学习。例如，一家制造公司可以向一所技术院校捐赠提供先进的机械和自动化设备，使学生能够亲身体验最新的设备。

#### 联合培训计划：

教育机构和企业可以制定联合培训计划，提供符合行业标准的专业课程和培训。例如，一家医疗保健公司可以与一所医学院合作，开发有关先进医疗设备使用的培训项目，确保学生做好充分准备，满足医疗卫生行业的需求。

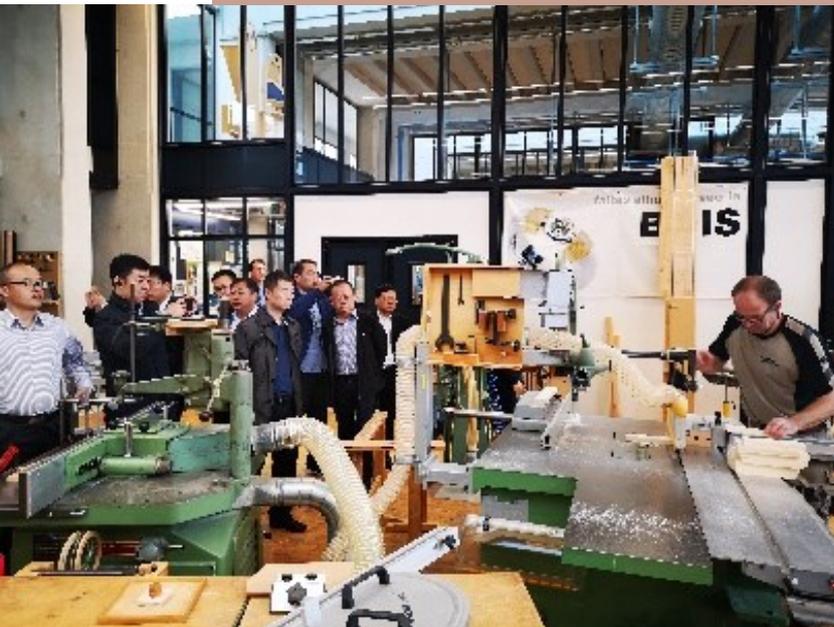
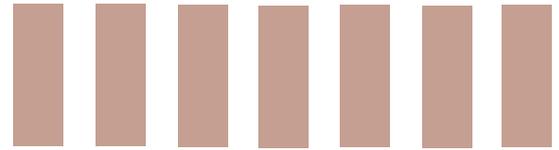
#### 实习和学徒：

公司可以提供实习和学徒机会，为学生提供实践经验和实用技能。例如，科技公司可以提供实习机会，让学生参与实际项目，获得宝贵的经验，培养直接适用于未来职业的技能。



## V. Business Models: Collaboration between Institutions and Companies

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### Overview of Existing Business Models for Collaboration

Effective collaboration models between educational institutions and companies include:

*Providing Equipment to Schools:* Companies can supply machinery and equipment to educational institutions, allowing students to learn on industry-standard tools. For example, a manufacturing company could donate or provide advanced machinery and automatic equipment to a technical school, enabling students to gain hands-on experience with the latest technology.

*Joint Training Programs:* Educational institutions and companies can develop joint training programs to offer specialized courses and training that meet industry standards. For instance, a healthcare company could collaborate with a medical school to develop a training program on the use of advanced medical equipment, ensuring that students are well-prepared for the demands of the healthcare industry.

*Internships and Apprenticeships:* Companies can offer internships and apprenticeships to provide students with hands-on experience and practical skills. For example, a tech company could offer internships where students work on real projects, gaining valuable experience and developing skills that are directly applicable to their future careers.



## 校企合作的收益

### 教育机构

#### 获得先进技术

学校可获得最新的行业技术和设备。这样，学生可以学习他们在未来职场中将会用到的工具和系统，为就业做好更充分的准备。

#### 强化课程设置

校企合作可帮助学校开发符合行业需求的课程。这可确保学生学习到与所选领域最相关的技能和知识。

#### 真实职场体验

学生从实践培训和真实的行业场景中获益。这有助于他们发展实用技能，获得宝贵经验，从而提高就业能力。

### 企业

#### 建设人才梯队

公司可以培养熟悉其技术和流程的熟练工人。这有助于解决技能短缺问题，确保公司留存成功所需的人才。

#### 促进创新和研发

与教育机构的合作可以推动创新和研发。例如，联合研究项目可以开发新技术和新工艺，使公司和学术机构都能从中受益。

#### 企业社会责任

通过投资教育，公司可为社会发展做出贡献，并履行其企业社会责任。这可以提高公司的声誉，加强与利益相关方的联系。

## Benefits of Collaborations



### **For Companies:**

#### **Talent Pipeline:**

Companies can develop a pipeline of skilled workers who are familiar with their technologies and processes. This can help to address skill shortages and ensure that companies have access to the talent they need to succeed.

#### **Innovation and R&D:**

Collaboration with educational institutions can drive innovation and research and development. For example, joint research projects can lead to the development of new technologies and processes that benefit both the company and the academic institution.

#### **Corporate Social Responsibility:**

By investing in education, companies contribute to societal development and fulfill their corporate social responsibilities. This can enhance the company's reputation and strengthen its relationships with stakeholders.

### **For Institutions:**

#### **Access to Advanced Technology:**

Schools gain access to the latest industry technology and equipment. This allows students to learn on the tools and systems they will use in their careers, enhancing their readiness for the workforce.

#### **Enhanced Curriculum:**

Collaboration helps schools develop curricula that are aligned with industry needs. This ensures that students are learning the skills and knowledge that are most relevant to their chosen fields.

#### **Real-World Experience:**

Students benefit from hands-on training and exposure to real-world industry scenarios. This helps them to develop practical skills and gain valuable experience that can improve their employability.





## 成功案例研究

### 联合培训计划

通过校企合作培训开发出符合行业标准的专业课程。

#### 实例：企业与职业学校的联合培训

一家全球领先的电梯和自动扶梯企业与职业学校合作开发了一项综合培训计划。该计划将企业的特定技术要求和安全协议融入课程，确保学生为进入该行业做好充分准备。例如，合作学校的学生会接受有关迅达产品和操作标准的培训，其中包括获得国家要求从业人员获得的特种设备作业人员资格证书。企业将技能等级做了分级（黄带、绿带、红带、黑带），以系统地提高学员的技术和安全技能。

#### 实例：徠卡测量系统与高校的合作

隶属海克斯康的徠卡测量系统与院校合作，将其先进的测量和地理空间技术融入学术项目中。具体合作包括建立联合实验室和使用企业设备提供实践培训。学生们可以亲身体验最先进的工具，确保他们在毕业时能够熟练掌握最新的行业技术，从而在就业市场提升竞争力。

#### 实例：与瑞士知识合作伙伴的合作

一家瑞士公司与瑞士某知识合作伙伴以及瑞士厨师协会合作，通过教学平台和实践课程，采用线上及线下相结合的方式提供结构化烹饪培训计划。学员可根据自己的时间，在家中舒适地学习大部分内容，具有很高的灵活性。面授课程由 GSL 认证厨师 Danny Feng、Evo Ni 在中国上海授课。这为学员在行业专家的亲自指导下提高技能提供了独一无二的机会。

### 实习和学徒

事实证明，提供实习和学徒机会是企业培训未来员工的有效途径。这些人才计划不仅为学生提供实践经验，也可帮助企业发现和招聘优秀人才。

#### 实例：企业实习项目

一家全球领先的瑞士工业技术企业在中国各地开展实习项目，为学生提供机器人和电气工程方面的实践经验。该企业的实习项目不仅注重提供技术技能培养，还帮助学生取得国家权威机构认可的职业技能资格认证。该企业已与 500 多所院校合作，将机器人和电气课程纳入课程设置，确保学生获得直接应用于行业的实用技能。

#### 实例：继续教育培训

某瑞士企业采用双轨制培训策略，同时开展校内培训和毕业后继续教育。企业与学校合作，为学生提供该企业先进加工设备的现场实操培训。学生毕业进入企业之后，企业每月继续面向员工开展培训课程，确保他们掌握最新的技术和工艺。这种双管齐下的方法有助于缩小课堂学习与行业要求之间的差距，确保培养出一支技术过硬、能力出众的员工队伍。

## Case Studies of Successful Collaborations

**Joint Training Programs:** Collaborative training programs between educational institutions and companies have resulted in the development of specialized courses that meet industry standards.

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### **Example: Collaborative Training with Vocational Schools**

A leading Swiss elevator and escalator company has developed a comprehensive training program in collaboration with vocational schools. This program integrates their specific technical requirements and safety protocols into the curriculum, ensuring that students are well-prepared for the industry. For instance, students at partner schools receive training on the company's products and operational standards, which includes obtaining the necessary state-required special operation certificates. The company defines different skill levels (yellow belt, green belt, red belt, black belt) to systematically enhance the technical and safety skills of the trainees.

### **Example: Leica's College Collaboration**

Leica Geosystems, a part of Hexagon, collaborates with colleges to integrate their advanced measurement and geospatial technologies into academic programs. These partnerships include setting up joint laboratories and providing practical training using the company's equipment. Students benefit from hands-on experience with state-of-the-art tools, which enhances their employability and ensures they are proficient in the latest industry technologies upon graduation.

### **Example: Partnership with a Swiss knowledge provider**

One Swiss company, in partnership with Global Swiss Learning and the Swiss Chefs Association, employs a structured culinary training program delivered both online and in-person, through a teaching platform and practical sessions. Offering complete flexibility, participants can study most of the material from the comfort of their own homes, tailoring the learning to their schedules. The in-person sessions are conducted by GSL-certified chefs Danny Feng and Evo Ni in Shanghai, China. This provides a unique opportunity for participants to enhance their skills under the personal guidance of industry experts.

**Internships and Apprenticeships:** Offering internships and apprenticeships has proven to be an effective way for companies to train future employees. These programs provide students with practical experience and help companies identify and recruit talented individuals.

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### **Example: Internship Programs**

A global leader in industrial technology offers extensive internship programs across China. These programs are designed to provide students with hands-on experience in robotics and electrical engineering. The trainees not only focus on technical skills but also include certifications recognized by national authorities. For example, the company has partnered with over 500 schools to incorporate their robotic and electrical courses into the curriculum, ensuring that students gain practical skills directly applicable in the industry.

### **Example: Continuous Training**

One company implements a dual approach to training, offering both in-school training programs and post-graduation continuous education. The company collaborates with schools to provide students with practical, on-site training on advanced machining equipment. Post-graduation, the company continues to offer monthly training sessions to employees to ensure they stay updated with the latest technologies and processes. This dual approach helps bridge the gap between academic knowledge and industry requirements, ensuring a skilled and competent workforce.



## 六、结论

本白皮书强调了现代企业对软技能和硬技能的迫切需求，并强调了瑞中合作在解决这些技能差距方面的重要性。通过促进教育机构与企业之间的合作，我们可以创建一个强大的生态系统，帮助学生获得在职场中茁壮成长的必要能力。

通过采纳这些建议，学校和企业可以更好地让学生做好准备，培养终身学习、不断适应职场的文化。这种方法不仅有利于学生个人的职业发展，还能支持中国更广泛的经济增长和创新。

### 关键建议清单：

#### 提高数字素养

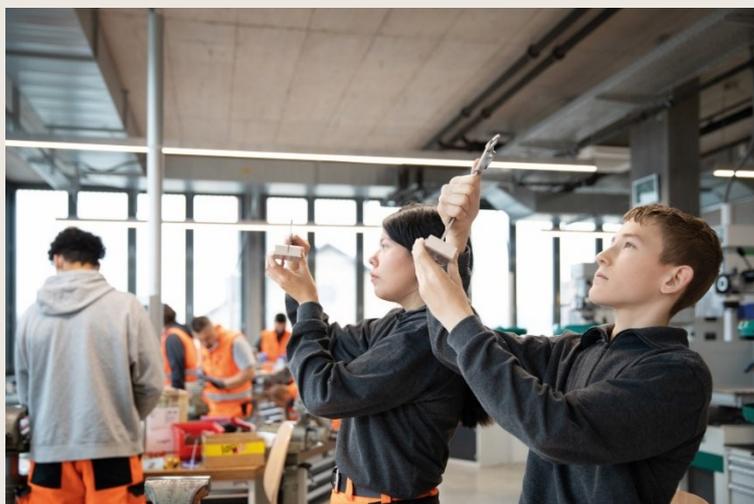
- 将数字技能培训纳入各级教育。
- 与科技公司合作，提供使用最新数字工具和软件的机会。
- 举办以新兴数字技术为重点的讲习班和研讨会。

#### 提供更多的实际培训机会

- 建立实习和学徒制度，提供相关行业的实践经验。
- 制定轮岗实习计划，让学生接触不同的部门和角色。
- 与行业合作，确保培训计划符合当前的市场需求。

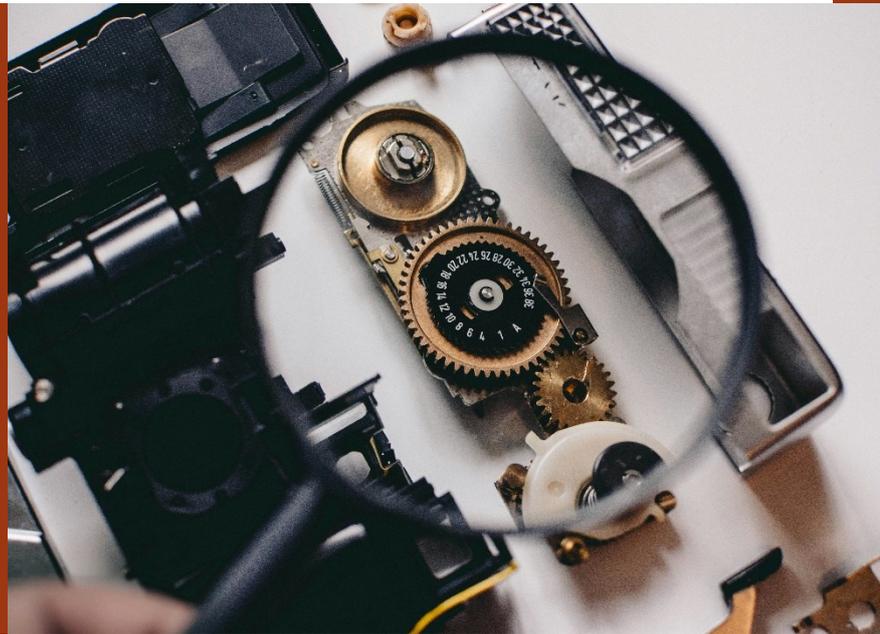
#### 制定综合培训计划

- 创建专门的培训模块，将学术学习与实际应用相结合。
- 与行业专家合作，共同开发包含真实场景的课程。
- 实施双师教学模式，由教育工作者和行业专业人员共同开展教学。



## VI. Conclusion

In conclusion, this white paper highlights the critical need for both soft and hard skills in the modern workforce and underscores the importance of Swiss-Chinese cooperation in addressing these skill gaps. By fostering collaboration between educational institutions and companies, we can create a robust system that equips students with the necessary competencies to thrive in their careers.



### Key

### Recommendations

### Checklist

By following these recommendations, we can better prepare students for the demands of the modern workforce, fostering a culture of continuous learning and adaptability. This approach not only benefits individual career development but also supports broader economic growth and innovation.

#### Enhance Digital Literacy:

- Incorporate digital skills training into all levels of education.
- Partner with tech companies to provide access to the latest digital tools and software.
- Offer workshops and seminars focused on emerging digital technologies.

#### Provide More Practical Training Opportunities:

- Establish internships and apprenticeships that offer hands-on experience in relevant industries.
- Develop rotational internship programs to expose students to various departments and roles.
- Collaborate with industry partners to ensure training programs meet current market demands.

#### Develop Integrated Training Programs:

- Create specialized training modules that combine academic learning with practical applications.
- Partner with industry experts to co-develop curricula that include real-world scenarios.
- Implement co-teaching models where educators and industry professionals jointly deliver training.

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