

# **The German Dual Educational System: Evolving Needs for a Skilled Workforce**

*Jenna Petrosky*



## **Introduction**

Despite the heavy destruction that it experienced during World War II, Germany has emerged as the European industrial leader. Germany is the world's third-largest producer of automobiles, following Japan and the United States; and its mechanical engineering and chemical industries are also among the world leaders. (Kappler and Grevel, pp. 265-67) Many factors have been credited for the success of German industry, but the underlying force in Germany's success may rest in the quality and reliability of its output produced.

The essence of the quality that German products exhibit can in many ways be attributed to the skill level of its industrial workers. Their high skill levels are a direct result of the country's apprenticeship training programs, more commonly referred to as the dual educational system. In 1992 over 500,000 youths participated in the system, whereas in 1994 the U.S. offered only 1,700 apprenticeships of a similar type. (Von Brachel, p. 36) The dual educational system's success has made it the paradigm for nearly all industrial nations.

The benefits of the system to the overall economic success of the country are considerable. But if there are no laws requiring Germans to attain apprenticeship certificates, why are 75 percent of those between the ages of 15 and 25 undergoing apprentice training, accepting stipends of only \$400 a month for their work? If no companies are forced to have an apprentice system, why do over 500,000 firms (including nearly all of the large and medium-sized companies) make large investments in vocational training programs?

This article first examines the structure of the highly successful dual educational system, and then discusses the associated costs and who bears their burden. It explains why German workers and companies voluntarily participate in apprenticeship programs. The article then introduces the reader to the steps involved in the transformation of the former East Germany's vocational training programs. Finally, it concludes by providing insights into some changes in the global economy and the implications that these changes may have on the German dual system of education.

## **Defining the Dual System of Education**

German students are separated into different tracks at age 10, when their parents place them into one of three levels of secondary education: Hauptschule, Realschule, and Gymnasia. The lowest level, Hauptschule, is designed for students who plan to begin apprenticeship programs starting at age 16.

Similarly, the Realschule focuses attention on providing students with the skills necessary for an apprenticeship, though it provides slightly more advanced academic theory than the Hauptschule. Students who plan to attend universities generally attend Gymnasias, the highest level of the secondary educational system. Upon graduating from Gymnasias, students receive a university entry certificate, known as an Abitur.

In 1989, 75 percent of young Germans between the ages of 15 and 25 underwent initial training as apprentices. While participation has traditionally remained this high since the Vocational Training Act of 1969, the most recent trend has seen an increase in the percentage of apprentices who had an Abitur. Currently, 20 percent of Abitur recipients serve as apprentices following their pursuit of higher education to enhance their job opportunities in industry. (Uthmann, p. 5) Of all apprentices in 1989, 14 percent had an Abitur, 32 percent had graduated from a Realschule, while 35 percent were products of a Hauptschule. (Soskice, "Reconciling ..... p. 26) At all levels, though, there is a strong incentive for high school students to do well in competition for the best apprenticeships. As a result, German students who do not continue into higher education generally gain more knowledge through high school classes than do students from the United States and the United Kingdom who do not plan on attending college. (Soskice, "Reconciling ..... p. 30)

Apprentices usually begin training between the ages of 16 and 19, and the training periods generally last three to four years. The apprenticeship is actually a legal contract between the employer and the apprentice, with the first three months serving as a probationary period. Because of rigid laws established by labor organizations, however, it is difficult for the company to terminate apprenticeship agreements even during the first three months. The two major sectors providing apprentice programs include the Industrial/Commercial sector, which accounted for one-half of the apprentices trained in 1989, and the Handwerk sector (or the craft/artisinal sector), which trained 34.3 percent of all apprentices that year. Other apprentices can be found in the agriculture and civil service sectors, and some work on "free projects," which are not associated with any of the traditional sectors. (Soskice, "Reconciling pp. 26, 28)

The German apprenticeship system is commonly referred to as "the dual system of education" as it combines on-the-job training with theory taught in public schools one or two days per week. Larger companies typically possess their own in-company training shops, but smaller companies provide practical training in group training centers shared by several companies. Companies that provide training programs employ 70 percent of Germany's entire workforce. (Soskice, "Reconciling p. 28)

Legal requirements govern the material that is taught to students in public schools. Following the prescribed length of the apprenticeship, students are given standardized external exams that test theoretical and practical knowledge. If a student passes the exam (as about 90 percent do), he/she is given a skilled worker's certificate. This certificate is nearly essential for a worker to obtain full-time employment; between 1985 and 1989, only about one-quarter of West Germany's workforce did not have any vocational qualifications. (Lange, "Training for Europe p. 5)

This highly successful dual system relies on the support of many organizations outside of the private companies. Employer associations, on both sectoral and local levels, play a major role in developing new apprenticeships, in modifying existing ones, and in advising the larger companies offering apprenticeships. The Industrial/Commercial and Handwerk chambers organize the local apprenticeship systems, approve and monitor company training, and administer the exam system. Other support is given by: industrial unions, which generally support the goals of the sectoral associations and chambers; the regional governments, which are responsible for vocational schools and coordinate curriculum development; and the federal government, which determines the framework for legislation and training and also conducts research to evaluate the system. (Soskice, "Reconciling ..... p. 28)

## Costs and Benefits to Apprentices and Companies

The costs of the dual educational system are shared by regional governments, private companies, and the apprentices themselves. The government pays for the costs of the public education side of training, which amounts to about one percent of the country's gross domestic product (Clark, p. 911), while the companies pay for all of the costs associated with the on-the-job training. In 1992 these three-to-four-year training programs cost private firms an average of DM 28,080 (or \$18,000) per apprentice. (Clark, p. 917)

The apprentice can also take credit for bearing some costs of the dual educational system. On the average, an apprentice earns only one-third of the wages of a regular worker. For instance, in 1985 an auto repair apprentice earned monthly wages of DM 400, DM 442, and DM 477 in each of the first three years of the apprenticeship. An untrained worker, however, earned DM 1,728, and an individual with a skilled worker's certificate earned DM 2,446 per month. In addition to accepting lower wages, apprentices also invest much time and energy into their pre-apprentice studies. Because of the high competition for the most reputable apprenticeships, secondary students are highly motivated to succeed with their schoolwork. Of course, the resulting strong educational backgrounds help to control the costs of successful training programs, as students are better prepared for learning what it takes to enter the work environment. (Soskice, "Reconciling ..... p. 41)

Given the sacrifices that apprentices must make, why do companies and young Germans choose to participate in the dual educational system? First, the combination of internal labor markets and the strength of the labor movement is essential to the success of the apprenticeship system. Nearly half of Germany's workers are represented by labor unions, which strengthens the ability of the workers to retain jobs within their respective companies. This makes it difficult for a German to find a job opening in a labor market in which he/she does not already participate. An apprenticeship, on the other hand, represents a normal point of entry into the internal labor market; thus it is much more difficult for one to find a job without having completed an apprenticeship. (Soskice, "Reconciling ..... p. 31)

There are also reasons why employers participate in apprentice training. In Germany wage agreements for most industries are negotiated by employer representatives and trade unions. (Terry, p. 161) Because of this wage bargaining system, it is difficult for companies to use wages to lure post-apprentices away from the companies where they were trained. In fact, post-apprentices available for hiring are often viewed unfavorably. First, it is possible that the firms that trained the workers did not want to retain them as employees, which implies that the workers were not valuable to the organizations. Secondly, it is possible that the workers themselves chose not to continue employment with the companies that provided training, which in the German system might indicate a lack of worker loyalty. Thus, it is ultimately safer for companies to fill their skill vacancies through internal training rather than by competing in the external labor market. (Soskice, "Reconciling ..... pp. 34-37)

Another factor responsible for the large number of willing participants in the apprenticeship system involves the positive employer-employee relationships that many attribute to training. Employees often feel a sense of obligation to the company that invested so much into their training, and accordingly plan to remain at the company for a long time. For instance, in 1991 18.9 percent of all German male employees had a tenure of over ten years at their present jobs compared to 12.2 percent in the U.S.; 28.8 percent had a tenure of ten to twenty years, compared to 19.2 percent in the U.S.; and 19.8 percent of male Germans had a tenure of over twenty years versus only 13.7 percent in the U.S. (Soskice, "Reconciling ..... p. 31) Such long-term commitments can be viewed as beneficial to both the employee and the employer.

These long-term relationships not only maximize worker value-added time (that is, after the workers have already "come up the learning curve"), but they also represent another reason that the dual educational system is successful. Employers generally retain approximately one-half of their apprentices as employees; furthermore, as stated earlier, once an employee commits to a job, he/she generally stays there for significant periods of time. Thus, companies work hard to attract the best apprentices, hoping that many of them will remain as employees. To attract apprentices with the highest potential, companies strive to create reputable training programs. As a result, on-the-job training programs almost always exceed the minimum standards set by employer associations.

The high cost of German labor is another force driving companies to participate in apprenticeship programs. For every dollar of direct wages paid to employees, companies pay an additional 84 cents in secondary costs for such benefits as social security, unemployment and health insurance, vacation pay, and company pension plans. The average German work-week is only about 37.5 hours, and workers generally exhibit high absenteeism rates. In the United States, it is normal for about four percent of the workforce to be absent on a given day. In contrast, German companies experience average absenteeism rates of ten percent among their blue collar workers, with these workers receiving full pay for up to six weeks' worth of sick days per year. (Neubauer) Given such high comparative labor costs, it would be difficult for Germany to compete in international markets based only on the relative cost of inputs. Therefore, companies must focus on producing high quality products and on maximizing the efficiency of the labor force. These two goals are probably most easily met by investing in worker training programs.

Finally, the structure of German financial institutions encourages companies to participate in apprentice training programs. Banks are significant shareholders in most major companies, with a representative of the bank sitting on each company's supervisory board. Thus, banks can play a part in the company's strategic decisions, and in general will provide it with a long-term financial perspective. Also, because of their investment interests, banks will monitor the companies to ensure that they operate efficiently and do not regularly participate in high-risk activities. Additionally, because takeovers require approval from 75 percent of all stockholders, banks are capable of blocking hostile takeover attempts, adding security to the firm's operations. (Soskice and Schettkat, p. 107) Banks play a major role in allowing the companies to do what is best for them in the long run, thus making it feasible for companies to invest in educating the workforce. This ultimately pays off in the form of higher quality output.

## **The Effects of Reunification**

Like every other aspect of German life, the dual educational system has been affected, both directly and indirectly, by the events of July 1, 1990. Reunification of the two formerly separate countries meant integrating the two labor forces, which differed significantly in many ways, including the methods by which their people were trained. In the former GDR, all young people were required to undergo some sort of training. As a result, training programs were not as rigorous as they were in West Germany. On average, East German apprentice programs lasted only two years following secondary education, compared to three or four years in West Germany. And, while West German apprentices spent one or two days a week in schools, East Germans were trained in schools two-thirds of the time. Practical training in the West was conducted by master trainers within the firms, but in the East graduates from specialist colleges conducted practical training. Furthermore, East German students did not receive the same breadth of instruction as in the West. This was so mainly because of the East's hierarchical four-tier training system, which consisted of the following levels: vocational training for those simultaneously studying for an Abitur; skilled worker training for those graduating from the tenth grade of comprehensive school; training for those who completed the eighth grade; and partial training for those who completed fewer than eight years of schooling. This system placed people into training programs through central economic planning, using criteria such as personal aptitude and national

economic needs. In practice, however, the system failed to properly allocate people into appropriate industrial sectors, resulting in the necessity for considerable amounts of worker retraining. (Uthmann, p. 6)

One of the immediate differences that needed to be resolved following reunification was the variance in curricula between the two countries. In the GDR, for instance, there existed no training in commercial occupations since market-oriented commercial training was insignificant in the centrally planned economy. Additionally, because the East German system had been monitored entirely by the state, it was necessary to establish partnerships among trade unions, work counselors, and company departments for vocational training. East Germany also lacked a system of control and an authority to provide advice for in-firm training, and there was no formalized exam structure to assess the theoretical schooling. Another contrast between the two formerly distinct countries was that industrial vocational colleges were not spread out all over the former GDR, but rather were concentrated in socialist industrial "combines." Once these combines were broken up, there was a need to restructure the system of educational training centers. In response to this need, a large scale program to set up "supra-firm" training centers in eastern Germany has begun. These centers will be used to offer courses and assist in exam preparation; they will also be used to provide further training. Another related problem has been the shortage of teachers and training personnel in the commercial sector in today's eastern Germany. In the former East Germany, those working in political and administrative areas spent much of their time studying Marxism and Leninism; these studies are now useless in the new capitalist economy. (Uthmann, p. 6)

In West Germany, industry has dominated the apprentice system with the state playing only a small role. However, with industries in eastern Germany still struggling, the government must continue to provide financial support to this part of the country. High unemployment in the East has necessitated additional training and retraining programs; in 1991, 892,000 eastern Germans sought some sort of further education or retraining. (Lange, "Waking up to Reality," p. 21)

One of the more fundamental areas of change, however, is somewhat more abstract. It involves the psychological effects of the former GDR's socialist rule. Prior to 1990, teachers of theoretical material had little choice or initiative in developing the classes that they taught. Not only were teaching methodologies forced upon them, but they were not allowed even to choose the textbooks that they used in the classroom. With such restrictions on instructors, how were students supposed to learn about taking initiative? Undoubtedly, independent thinking is crucial to the development of a skilled workforce, and it will take time for eastern Germans to develop such thinking skills. (Uthmann, p. 9) Socialism failed partially because its hierarchical structures led to a lack of exchange of information. People generally believed that it was better to keep information to themselves to enhance their own dominance under socialism. In a manufacturing setting, such beliefs translate into a lack of productivity. (Uthmann, p. 11)

## **Implications of a Federal Europe for the Dual Educational System**

The birth and growth of the European Union stands as a symbol of the evolving global marketplace. The 12 member states, including Germany, France, and Great Britain, have all united based on the principles of consensus and solidarity. Among the goals of the European Union are a unified currency by the end of the decade and a common foreign policy throughout member states. (Unger)

The realization of a single European market will accelerate developments in labor training systems. A unified Europe will undoubtedly lead to an increase in the exchanges of labor between countries. As a result, European employers will need to be better informed about the differing structures in each country used to establish vocational qualifications. (Uthmann, p. 5) The European Commission, in conjunction with the Federal Institute for Vocational Education and Training, has created Equivalencies of

Qualification Certifications to improve the comparability of each country's worker training. For instance, these certifications would provide a means for comparing a worker who passed Germany's vocational qualifications to someone who completed a general education in France. (Uthmann, p. 12)

Complete harmony between the vocational education and training systems is, however, neither possible nor desirable. The existing differences between the countries' systems prevent such harmony, and a complete integration of the current systems would only destroy the cultural variety within Europe. The impact of a unified Europe, then, should be an opening up of the systems to permit cross-frontier exchanges of people and information. (Uthmann, p. 12) But there are three dimensions of training systems that could potentially be standardized throughout the European Union countries: the school- and workplace-relatedness of vocational training, the standardization of training, and the classification of skilled and unskilled workers.

The percentage of training that occurs in workplaces and in schools currently differs throughout Europe. In France, all vocational training is performed in classrooms; in the United Kingdom and in Italy, training is performed entirely in the workplace. Thus, the German dual educational system lies in the middle of these two extremes, and (to some, at least) seems to offer an optimal mix of theory and practice. (Von Brachel, p. 173)

Another difference among the vocational training systems is the extent to which vocational training conforms to the same standards, which often determines the importance of training certificates in obtaining jobs. Germany's skilled worker certificate represents the culmination of the system's highly standardized theoretical and practical training. In contrast, vocational training in Italy and the United Kingdom is completely unregulated, with training taking place without any standardized guidelines regarding instructors or curricula. While it is desirable for apprentices to earn certificates necessary for employment to motivate people to enter training programs, this requirement necessitates high standardization within the training system. And standardizing the system throughout Europe is not only impossible, as mentioned before, but could also lead to a lack of structural flexibility, as employees could be restricted to narrow occupational fields. Therefore, the optimal level of standardization probably lies between that of Germany and those of Italy and the United Kingdom. Regardless, some of the underlying principles of the German dual system should permeate into a European vocational training policy. For instance, the system should not be governed solely by the state, but rather industry personnel should also play a role in defining and monitoring the training system. Likewise, completion of training programs should be highly regarded by employers, which could be accomplished through the inclusion of industry personnel in the training system. (Blossfeld, pp. 174-75)

Finally, vocational training programs should differentiate among unskilled, semi-skilled, and skilled (or occupationally trained) workers. In Italy and in the United Kingdom, no classifications separate unskilled and skilled workers during on-the-job training. Career opportunities for the trained depend on the quality of the training program in which the trainee participated, with the best opportunities being available for a person exiting a "respected" program. Germany's dual system lies on the opposite end of the spectrum, as there is a clear distinction between job opportunities for skilled and those for unskilled workers. Between these two extremes, France's vocational training system distinguishes skilled and semi-skilled workers from unskilled workers; however, these titles have little effect on a person's ability to obtain a job. Thus the German dual system encourages worker participation as its labor classification system represents a direct link between skill levels and occupational rewards. (Blossfeld, pp. 176-77)

With the strengthening of the European Union, such differences among the various countries' training programs will undoubtedly decrease. When analyzing the differences, however, many consider the German dual system to be closest to the ideal training system. So, while the German system may begin to pick up some of the various characteristics of other European training programs, it is doubtful that the

system will change to the extent that it will no longer be recognizable as the traditional German dual system.

## **The Agile Age**

Still, not everyone believes that the German system is ideal. At least one author predicts that worker training, such as that provided by the dual educational system, will eventually become obsolete. As David Audretsch states, "With the reliance upon mass production, unskilled labor can be substituted for skilled labor." (p. 19) However, according to a report published by Lehigh University's Iacocca Institute (Goldman and Preiss), a new manufacturing system is emerging. This system, called "agile manufacturing," entails both new manufacturing processes and new organizational structures. Many industry and political leaders now believe that agile manufacturing may soon displace mass production as the dominant means of manufacturing.

"Agility" is defined as "the ability to profit from rapidly changing, continually fragmenting, global markets for individualizable, customer value-based products and services." ("Agility Overview," p. 1) The four principles of agility include: enriching the customer, cooperating to enhance competition, organizing to master change and uncertainty, and leveraging the impact of people and information. The many benefits of agile organizations represent the reasons why agility may well continue to increase in importance. As stated in "Agility Overview," agile competition requires producing niche-market products that are:

- \* Highly variable and individualized
- \* Open-ended (can be upgraded or incorporated with additional information or services)
- \* Expected to have a short market life
- \* Produced to order
- \* High on information content
- \* Characterized by continuing relationship sales
- \* Priced by customer perceived value ("Agility Overview," p. 1)

Essentially, an agile organization can successfully respond to rapid and uncertain marketplace changes, and effective response to such changes is necessary for survival in today's continually changing global marketplace. The scope of agile manufacturing extends far beyond the methods that a company uses to produce its products and services. It also entails new philosophies at all levels of the organization. At the marketing level, for instance, agility demands that marketers be able to design customer-enriching combinations of products and services (that is, products and services that satisfy individual customer needs). At the design level, integration of supplier relations, production processes, customer relations, and business processes is required. Management must shift from a command-and-control philosophy to a style of leadership, motivation, support and trust. What is most significant in reference to the German dual system, however, is the necessary change at the worker skill level, as agility requires the emergence of a knowledgeable, skilled, and innovative total work force. (Goldman, Nagel, and Preiss, pp. xvi-xvii)

In an agile environment, companies will be successful if they provide customer-enriching services and products. Companies can only be successful at this if their workers have strong general and technical education, such as that which the German dual system of education provides. For a company to be agile, its workforce must be agile, too. That is, workers must be able to change jobs and add new skills as necessary to satisfy customer demands. Additionally, workers must be familiar with their company's services and products. (Goldman, Nagel and Preiss, pp. 333-34) Because German workers are trained on-site in their companies, training invariably includes general knowledge of company operations and products; in many cases, apprentices spend time producing many of the company's actual products to

learn different production techniques.

Another implication of the agile age is that, for a company to remain competitive, worker training and education must be responsive to the changing needs of the market. (Goldman, Nagel, and Preiss, p. 112) The German system naturally adjusts to such changes in terms of initial apprentice training; companies determine training requirements based on the supply and demand for training vacancies, resulting in a quick response to the needs of the business and the labor market. (Von Brachel, p. 34) Although the content of training programs adapts to changing market needs, it is still necessary for companies to provide continuous education and training to its employees even after they have completed their apprenticeships. While workers receive some training once they become full-time employees, agility necessitates an extension of the dual educational system throughout a worker's career.

## Conclusion

The success of the German dual educational system has understandably attracted much attention from many other industrial nations. Many have spoken of installing such a system in the United States, though several obstacles are often cited. For example, businesses in the United States cannot concentrate on long-term goals as easily as in Germany because U.S. companies must compete for stockholder investments. In Germany much funding comes from banks. Secondly, Germany has a more powerful union movement than the United States, with 46 percent of the German workforce represented by labor unions. In the U.S., workforce unionization varies significantly by state, ranging from 3.8 percent in South Carolina to 28.9 percent in New York. ("Labor Base ..... pp. 2-3) Finally, many believe that apprentice programs similar to Germany's dual system would not work because of a difference in employer attitudes in the two countries. More specifically, it is believed that German executives, unlike those in the United States, have a greater sense of civic responsibility that extends beyond the desire to maximize profits. (Clark, p. 917) In reality, it is unlikely that an exact replica of the German dual system could be installed anywhere outside of Germany. Regardless, other countries could improve the quality of their labor by examining this highly successful system.

Meanwhile, the system faces several challenges within its own borders. The unfolding of the European Union will undoubtedly test and influence the dual educational system. The evolution of the concept of agility, while reinforcing the necessity of a skilled workforce, increases the requirements of the current educational structure. Nonetheless, it is highly unlikely that the dual educational system as it is known today will diminish in importance. While the immediate future may lead to some changes, Germany will fight to keep its system intact. As Wolfgang Zapf explains, "There is much tradition in the apprenticeship system. The government will not easily turn away from these programs." Given the success of the system as measured by international product standards, German companies will not allow the government to lose sight of the apprenticeship system either.

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