

# Roundtable News

## Career & Technical Education in Europe



*Roundtable meets at German Ministry of Education with Dr. Kornelia Haugg (center, cream jacket) and Dr. Kristen Schmal (blue jacket) to discuss vocational education and apprenticeship programs in Germany*

Fully 50% of German secondary school graduates complete their studies in dual Vocational Education Training (VET) programs in which they spend as much time in paid apprenticeships at local companies as they do in classrooms. Just 2% of American students are enrolled in a vocational school.

German authorities tell us that 1.4 million young people participate in the VET program. There are about 500,000

apprentices in the United States, to match the German rate, we'd need about five million.

VET programs in Germany, designed to integrate young people into the labor market and ensure a supply of skilled professionals, supports a remarkable array of 330 approved training occupations involving some 450,000 firms offering *paid* apprenticeships.

The Czech Republic, if anything, emphasizes vocational training even

more intensively, although it does not focus on the dual system.

In a whirlwind tour through Prague and four cities and three states (länder) in Germany, the Roundtable looked into these issues during meetings with the German Ministry of Education, corporate apprenticeship programs, and factory tours. A more detailed day-by-day account of what we saw and heard is available on this blog: [roundtableabroad.org](http://roundtableabroad.org).

THE GERMAN MINISTRY OF EDUCATION

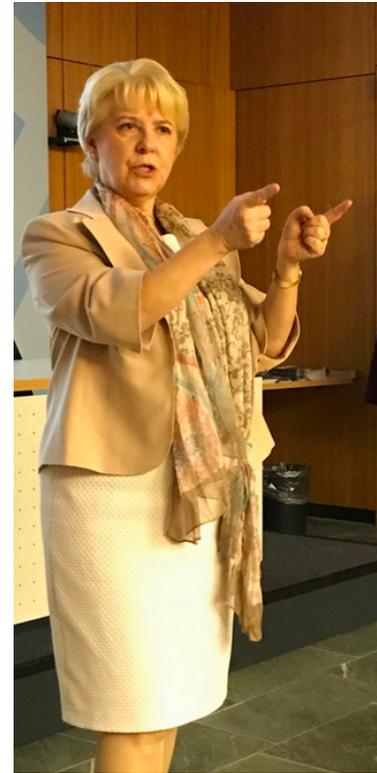
Getting a grip on the German primary and secondary school system can be a challenge for English speakers, but, to oversimplify: After primary school, the system offers *Hauptschules* (up to 10th grade) preparing the less academically gifted for vocational programs; *Realschules*, also until 10th grade, designed for students who will enter apprenticeships; and *Gymnasia*, until Grade 12 or 13, which prepare students for higher education. It’s a tracking system.

In a dazzling presentation, Kornelia Haugg of the German Ministry of Education, stressed that with the exception of vocational education, schooling in Germany is the responsibility of 16 *länder* (states), while the ministry oversees the dual VET system. She told us that 52% of students enter VET programs, with 90% graduating. There are currently about 1.32 million apprentices across Germany in some 326 recognized occupations, each them receiving an income of roughly \$1,000 per month.

More than 5% of all employees, she emphasized, are apprentices, who, in addition to their stipends receive all company benefits. The program promises high employment security, with some 90% of VET graduates finding work in their fields, often in the companies in which they apprenticed. About 70% of students’ time is spent apprenticing on the job, with about 30% spent in the classroom. School time is spent on traditional subjects such as languages, history, and how democracy works. The motivation for students is that they can earn money while earning a work qualification; for employers, the program promises productive employees while meeting the employers “social responsibility to offer training.” For the government, the incentive to support the system lies in promises of economic growth and the opportunity for citizens to achieve their full potential.

The engine driving this system, we were informed, is a partnership between corporations and unions. Businesses understand that loyal and well -trained employees save training costs.

One drawback; Only about 20% of firms participate in the program and recent changes in university admission requirements have encouraged young people and their families to concentrate more on gaining university admission. The starting point of the apprenticeship, Haugg told us, is a work contract, specifying the obligations and expectations of the



*Kornelia Haugg*

apprentice and the employer. The end point is a final exam developed by regional chambers of commerce with boards made up of teachers, employers, and employees. The exam produces a certificate of employment in specific fields, issued by the regional chamber, and nationally recognized by the government.

Haugg noted that about 60% of apprentices nationally are male and that students are introduced to the world of work as early as age 13, when they are exposed to various occupations for short periods of time. About 25% of starters cancel their contract for various reasons (e.g., disagreements with a boss).

Many of these sign new contracts, but it seems that about 15% abandon the apprenticeship entirely.

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THE CZECH SYSTEM (CZECHIA)



Unfortunately, we arrived in Czechia on May 8, a national holiday celebrating the end of World War II. Schools and government offices were closed. We used the day to tour this magnificent city. The Czech Embassy in Washington, D.C. provided the information below.

The Czech education system is based on a long tradition beginning in 1774, when school attendance became compulsory. The current literacy rate in the country is above 99%. The system is under the direction of

**Above:** Beautiful Prague @ Vitava River

the Ministry of Education, Youth, and Sports, which oversees curricula for all areas of study.

Czech **elementary education** takes nine years, usually from the ages of 6 to 15 and it is divided into two stages: a primary and lower secondary stage, where the primary stage encompasses grades 1-5, while the lower secondary stage is grades 6-9.

**Upper secondary education** can be either general or vocational. It is generally four years in length (grades 10-13) and is not considered mandatory. At this level, vocational education is much more common than general secondary education. Students who graduate with a vocational certificate often do not continue in the classical education system, and instead pursue a career

in their chosen area of study right away.

**Secondary vocational education** in the Czech Republic is provided by secondary technical schools (SOŠ), secondary vocational schools (SOU) and conservatories. The distinction between the technical and vocational schools is difficult to grasp. They both prepare students for work; the former offer opportunities to continue to “tertiary education” or universities; the latter is more oriented around blue collar work.

The conservatories are interesting. They explicitly encourage the performing arts and are designed to prepare graduates for teaching and performing in the fields of music, dance, voice, and drama. The training is rigorous, taking up to six years.

A BIRD’S EYE VIEW OF NATIONAL DIFFERENCES

	Germany	Czech Republic	United States
			
Size:	138,000 square miles	30,450 square miles	3.8 million square miles
# of students	9.6 million (2017)	1.3 million (2016)	50.4 million (2015)
GDP (US \$)	\$3.677 trillion (2017)	\$215.725 billion-2017	\$19.390 trillion (2017)
Diversity (Total population)	German – 81% Other European – 12% Asian & Other – 7%	Czech – 64% Unspecified – 25% Moravian, Slovak, Ukrainian – 7.5%	White – 77% Black – 13% Asian – 6% Other - 3% (18% Hispanic ethnicity)
Per Capita GDP	\$54,983	\$24,938	\$62,518
Secondary students in CTE	40% (OECD, 2016)	73% (OECD, 2016)	2% in <del>voc ed</del> schools (U.S. Dept of Education)
Children in homes below 50% median income	12% (Est. OECD, 2018)	10% (Est. OECD, 2018)	33% (Est. UNICEF, 2018)

ROLE OF GERMAN CHAMBERS

Jorg Engelmann (director of vocational education projects and international vocational education programs for the Chamber of Commerce and Industry for Munich and Upper Bavaria—CCI) confirmed much of what we had heard from Kornelia Haugg.

If the Siemens and Volkswagens of the German industrial landscape manage their own apprenticeship programs, the CCIs offer small- and medium-sized companies an opportunity to gain the benefits of the dual VET system. The Munich CCI is made up of 390,000 companies, and it maintains an academy for vocational training for smaller companies. About 50% of secondary students in Munich leave school with a VET certification in 327 different occupations, said Engelmann. They break out as follows: Industry and commerce: 60%; handicrafts: 27%; Agriculture: 3%; Public Service: 2%; and “liberal professions”: 8%

By law, membership in the CCI is compulsory for all companies. “Our task,” he said, “is to represent all firms, large and small, with one vote apiece.” The CCI system in

Germany is comprehensive, with 79 CCIs across the nation and 130 offices in 90 foreign countries.

Engelmann noted: “The CCI considers itself to be a ‘social partner’ with public agencies. We are linked with companies—and our partner, the school, is linked to the German ministry.” A particular obligation of the business community, he said, resides in the obligation to transmit the “decent values” of “honorable” business leaders. (to p. 6)



Jorg Engelmann briefs Roundtable

SIEMENS APPRENTICESHIPS

The Roundtable began its exploration of CTE in Germany with a much-anticipated visit to Siemens Berlin headquarters, an opportunity to see the apprenticeship program of this global tech giant up close. We were following closely behind Ivanka Trump, senior advisor to the president of the United States, and Angela Merkel, Chancellor of Germany.

Siemens has an impressive commitment to training the next generation of its employees. Ornella Turgetto, responsible for Siemens training worldwide, described how the company invests €182 million (euro) a year in Germany, and €234 million globally. It is among the largest providers of professional education for high school graduates in the world.

Turgetto and Lauren von Steuben (Learning and Education Division)

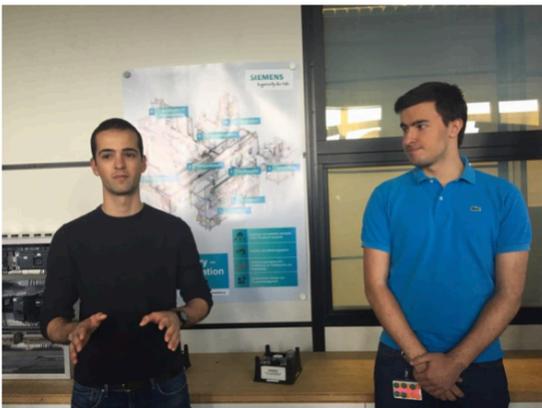
laid out the company’s philosophy of technical training, which is guided by the German concept of “handlungskompetenz.” Loosely translated, the word means the ability to transfer what you’ve learned from one system to a new technical system; for instance, once you’ve learned how to program features of an automobile assembly line, you should be able to transfer those skills and knowledge to programming a factory bottling soft drinks, milk, or beer.

Students split their time in the classroom and on the machines, learning in a hands-on atmosphere before taking their apprenticeship to the factory. Apprentices are paid throughout their three year apprenticeship. After graduation, they are under contract to work for Siemens for a period of 2-3 years.



Ornella Turgetto

Siemens sees its vocational education system as resting on three pillars: theory – classroom training in regular vocational education schools; training (at Siemens itself); and on-the-job training. It typically works with students who have spent 10 years in school, at the age of 15 or 16, and offers this tri-partite program in which apprentices spend perhaps (to. p.6)



**Clockwise from top left:**

**Optical lens grinding studio:** BSZ Bau und Technik, Dresden

**Brandenburg Gate,** Berlin (1788)

**Event management studio,** School for Media Studies, Munich

**St. Vitus Cathedral,** Prague (1344)

**Siemens apprentices** describe model bottling plant (Berlin)

**High school lab,** Martin Behaim Gymnasium, Nuremberg

**Center: Grieving mother embraces dead son** she sent off to war in 1914 (Berlin)

ROLE OF CHAMBER (CONT'D)

Responsibilities are divided as follows: companies provide work experience, develop necessary skills, and encourage character development. The vocational school offers general education, theory, and an award of achievement.

As with other presentations, Engelmann emphasized that there are numerous opportunities for students as they progress through postsecondary education to revisit earlier decisions and move from apprenticeship training to universities or vice versa.

A National Qualifications Framework of nine steps defines the efforts of the CCI around vocational training and apprenticeship, noted Engelmann. Levels 1-7 involve VET efforts; those at level 8 and above are headed toward university teaching.

Strikingly, students themselves are supposed to find the company that wants to be part of their training.

SIEMENS (CONT'D)

three days in training at Siemens and two days back at their vocational school studying typical high school subjects.

Siemens focuses on advanced technical skills, soft skills, digitalization, “adaptive expertise” (handlungskompetenz), and fundamental technical know-how. Its programs concentrate on information technology (cloud computing, data bases, information security and the like), mechatronics (embedded systems, development of software and applications) and engineering. It trains 10,900 apprenticeships globally, with most of them in Germany.

The Berlin training center is one of 20 in Germany and it annually trains about 950 apprentices. Of nearly 350 recognized occupations in Germany, Siemens trains in 10 technical and business professions. Chambers of Commerce throughout Germany offer some 500,000 apprenticeship opportunities for small- and medium-sized corporations, partnering with nearly 450,000 companies.

The companies know which schools are capable of providing the theoretical knowledge. It appears that (typically around 8th or 9th grade) schools offered students brief internship opportunities with a variety of companies — and students, parents, and school officials use the relationships formed during these internships to identify potential apprenticeship opportunities.

The CCI helps out in this process by providing three-week summer camps for weaker students finishing Grade 10, supporting partnerships between schools and companies, funding the “House of Little Explorers” to introduce elementary school students to STEM subjects, and funding “Vocational Training Scouts” to bring apprentices currently in training back to their schools to encourage younger students.

An important consideration, concluded Engelmann, is that if companies want to be responsible for training (and they do) they have to invest money in the system. This seems to be a given in Germany—a real partnership exists when both school and company contribute to the outcome.



*Siemens apprentice explains digitized model bottling plant*



*Siemens Laura von Steuben describes mechatronics & “handlungskompetenz”*

A SCHOOL FOR MEDIA PROFESSIONALS

If the extra sauces added to the fine presentations we received from Kornelia Haugg and Jorg Engelmann were drama and data, respectively, Christian Baumann, principal of a Munich technical school, brought charm to his enthusiastic discussion of his school.



*Christian Baumann briefs Roundtable*

Munich, said Baumann, is an ancient city, founded in 1158 and the city in which vocational education was invented. In 1900 George Kerschensteiner founded the first vocational program in the world. All told, 40,000 students are in the Munich VET system, with another 10,000 students in further education, all served by 2,600 full time teachers.

Baumann’s school is in the media business. It enrolls about 1,200 students with 41 teachers offering programs to

prepare assistants in marketing and communication, audiovisual materials, digital and print media, media and information services, booksellers, and specialists in event management. It is one of five schools on the site, enrolling in toto some 5,500 students. The others include schools focused on office management, the retail sector, information technology (the largest with 2,000 students), and tax accountancy.

Elsewhere in Bavaria, he noted, the state pays for personnel costs and the municipality covers costs for buildings. In Munich, however, the state overall covers 60% of costs, while the city contributes 40%. What is unusual is that Munich is contributing €100 million toward personnel costs annually, a contribution that greatly impresses the business community and encourages commitment from the corporate world.

In developing apprenticeship programs, he said, the school partners with publishers of books, music, and magazines; media hosts, including television studios and online enterprises;

bookstores; advertising companies; libraries; archives, and event technology specialists.

The apprenticeships follow the model described earlier — a two-to three-year experience in which 60 days a year are spent in school, with a program emphasizing professional subjects, and a core curriculum, amplified with nine “elective” courses.

A highlight of the morning was an opportunity to meet and interact with ten students, aged 20-22 years of age. With remarkable composure, these young people impressed the Roundtable with their poise and ability to describe in polished English their work and their hopes and dreams.



*Noel Schmidt, Virginia, MN (r) presents Roundtable gifts to Engelmann and Baumann*

THE GYMNASIUM FOR ACADEMIC HIGH FLYERS

The Martin Behaim Gymnasium in Nuremberg is located in the state of Bavaria, which enjoys a reputation for the most demanding university-admission examination, the *abitur*. Asked about selectivity, assistant principal Christoph Wagner explained that the school is not permitted to select but must accept any student in the top 33% of students finishing their elementary schooling at Grade Four. The school specializes in what we would think of as STEM education — mathematics, chemistry, physics, and information technology.

The school enrolls about 830 students, with plans for a new building and expansion of enrollment by 50% in the

next five years.

Just about all students in Germany learn English, plus another language. In Grade 7 at this school, students decide whether to focus on science and mathematics or on languages — where they begin to learn a third language. That is to say, they learn a third foreign language.

Then it was off to visit two classrooms — a sixth-grade class in mathematics and a tenth-grade class in chemistry. In the sixth-grade class, the students collaborated to complete worksheets on fractions, with varying levels of diligence and focus, while the teacher checked in with several to coach and praise them. (to p. 8)

VOLKSWAGEN AND FACTORIES OF THE FUTURE

Imagine the dirty, greasy factory of today and put it out of your mind. The factory of the future is spotless. More a showpiece than a factory, the VW Transparent Factory in Dresden has a daily production of 72 e-Golfs or Eagles, an all-electric version of VW Golph.

Automobiles move along the assembly line at a barely perceptible pace while mechanics and engineers put the cars together.

We were introduced to SEDRIC, a driverless Uber-like automobile that will arrive on demand and deliver passengers to the destination of their choosing. This “Level 5” electric automobile (completely driverless) will be in production within the next 10 years, we were told.

The Eagle is produced on an assembly line in which an oval moving floor nearly a mile in circumference accommodates the electrical power-train accompanied by an overhead suspension system that transports the chassis around before “marriage” with the power-train.

We were told it takes five hours to put together one of these automobiles. Essentially each is built by hand with the



*Volkswagen Transparent Factory, Dresden*

assistance of several precision robots. To minimize ergonomic strain on mechanics, each moves from station to station every 12 minutes. (to p. 9)

THE GYMNASIUM (CONT'D)



*Assistant Principal Christoph Wagner*



*Gloria Davis (Decatur, IL) checks 6th-grade math*

There were only 7 or 8 girls in a class of 25, a proportion that was reflected in the school’s overall enrollment and that the assistant headmaster ascribed to girls having less interest in science and math.

Another group visited a tenth-grade chemistry class, where the instructor offered students a relatively brief lecture on chemical reactions. The curriculum called for his lecture to be followed by a hands-on test of the theory in a small lab, followed by presentation and discussion of the chemical structure of the two elements interacting.

Attached to the class of about 24 students was a small laboratory at which half of the students could work at a time, with small portable bunsen burners, which might be safer than the bunsen burners Americans remember.

Then it was back to the briefing room, where Christopher Wagner was joined by principal Gabriel Kuehn (and physics teachers Donath Wolfgang and Dremel Wolfgang) to respond to our more general questions. At the conclusion of the visit, Susan Enfield (Highline, Washington) put her excellent public presentations skills on display by providing Herr Wagner and Frau Kuehn with gift bags, including school “swag” and memorial clocks from the Roundtable.

A SCHOOL FOR CONSTRUCTION TRADES

BSZ Bau und Technik is a vocational school specializing in construction trades. Dresden, a city in the state of Saxony, was in East Germany following World War II. It had been destroyed in 1945 in several savage nights of carpet bombing by British and American bombers. The school was the first to be opened in Dresden following World War II and remains an example of East German architecture, complete with Soviet-style images of adults shepherding students into the future.

Assistant Principal Steffen Palowsky asked his charming daughter Analiese to translate for him. The two of them described a very complex system. Students arrive at the school after ten years of schooling. Its teaching staff of 59, along with three social workers, serve 1,050 students. Students typically spend a couple of weeks with an employer followed by a couple of weeks in school.

The school is an “umbrella” school, housing several different programs within its walls. The first, the Fachoberschule aims to prepare students for entry into applied science universities. Its curriculum emphasizes German, another language, mathematics, applied physics, chemistry, information technology, ethics, and gym. The second, Berufsschule offers a dual VET system to develop skills in brickworking, steelworking, and working with concrete. Students work for four weeks, before spending two weeks in school. The regional CCI is responsible for the test that provides a certificate to these students. (to. p. 10)



*Steffen & Analiese Palowsky*

VOLKSWAGEN (CONT'D)

**The Rise of the Robots.** It is an impressive sight to watch robots at work. One emerges from the floor to perform the “marriage” of the chassis and power train with several dozen industrial-size screws. Another attaches wheels with a series of motions eerily similar to the dinosaurs in “Jurassic Park.” A third installs dashboards, taking that heavy task off human shoulders. And a fourth measures angles and fit with several hundred cameras when attaching front windows.

This futuristic plant employs 25 apprentices. Their final consists of assembling the car — then dismantling it so successors can repeat the task!



*Above: (l to re) Noel Schmidt (MN), Susan Enfield (WA) and Joel Hanson (TX) visit VW Factory*

*Left: SEDRIC: VW’s all-electric, driverless UBER of the future will arrive on demand.*



## A SCHOOL FOR CONSTRUCTION TRADES (CONT'D)

The third, the Fachschule is aimed at students ranging in age from 25 to 50 and helps develop building site foremen, draftsmen, and people capable of starting their own companies. Finally, the Druk und Medientechnik is yet another dual VET system aimed at developing talents in art, printing, photography, and media design.

Palowsky is responsible for helping lead a school with difficult scheduling challenges in which some students are in the school every week, some are in school every other week, and some are in school only once every six weeks! A scheduling nightmare.

The school aims to produce a variety of well-trained employees, for the most part working within the Dual VET system. It produces construction workers, steel workers, specialists in working with concrete, foremen and people equipped to start their own small businesses, as well as opticians, lens grinders, and media specialists in art, photography, printing, and media design.

Pawlosky moved quickly from presentation to leading the Roundtable to the heart of his school — specialized classrooms offering instruction in bricklaying, wall building, photography, optical testing and lens grinding, and, his pride and joy, a large, new four-color printing press.

Finally, we stumbled on some lively graphic arts students eating their lunch. They were happy to discuss their program, the challenge of living on 600 to 800 euros a month, and their hopes for work in the future.



*Graphic arts students describe their program*

## REFLECTIONS

In our final evening, we discussed the experiences of the week. There was a lot to sort through. We had visited three different schools in two different (länder), Saxony and Bavaria.. We had visited VET schools specializing in construction trades and media and a gymnasium serving high-achieving students. And we had received extensive briefings on vocational education and apprenticeship from the German Ministry of Education, large firms (Siemens), and the Bavarian Chamber of Commerce and Industry.



*Siemens Apprentices study CNC (Computer Numerically Controlled) equipment*

Beyond these experiences we had a lot of information to chew over. What to make of the fact that about two percent of American secondary school students attend vocational schools, compared to 50% of German students graduating from VET programs? Can we make use of Siemens' concept of "handlungskompetenz"—the ability to transfer what you've learned from one system to another? What about the reality that the Dresden school offers mid-career training on flexible schedules to adults as old as 50?

The tracking of students troubled a lot of our members, despite what we were told is a lot of flexibility in the system. The committed involvement of the business community and its willingness to pay significant amounts to apprentices

impressed all. The emphasis on individual development and passing on the attributes of "decent" and principled business leaders resonated well with many. This latter point was underscored by the quote from Israeli psychiatrist Haim Ginott, a death-camp survivor. Ginott had witnessed appalling atrocities by well-educated (*to p. 11*)



*The cynical motto at the entry to the Dachau concentration camp: "Work will set you free"*

engineers, physicians, nurses, and school and college graduates. He urged educators to focus on making their students more humane.

Against that backdrop, we focused on a vision of schooling in the United States, coupled with several conclusions about what aspects of the German system might apply in the United States and how we might move forward to encourage stronger CTE programs and partnerships with the business community.

**A Vision.** We concluded that three principles could stand as goals for American education as we move forward:

- Modify the role of teachers and increase respect for teachers.
- Change the culture of Career and Technical Education (CTE) so that it becomes a desirable goal in itself.
- Encourage the business community to organize itself in different ways around schools.

With respect to each of these points, it does seem that respect for teachers among American parents is higher than it is among many leaders of the conventional wisdom. That certainly seems true if the most recent PDK Poll of Public Perceptions of Public Schools is any guide. The troubling aspect of the latest PDK polls is that although the public respects teachers, parents report they do not want to encourage their children to enter the profession. The well-being of our schools and our society requires reversing that trend.

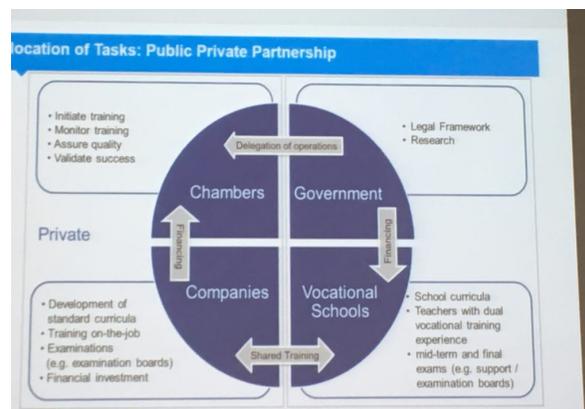
Recent evidence suggests that new entrants into CTE programs are markedly different from traditional vocational education students. They are interested in careers in engineering and medicine, not manufacturing or agriculture; they have higher GPAs and test scores; their parents are more likely to be college graduates; and students are more likely to both like school and plan on attending college.

Finally, no analog exists in the United States to the German legal framework undergirding the VET program and the commitment of corporations to apprenticeships. The German legal structure does more than merely encourage corporate collaboration with schools, it practically requires it. If we are to encourage collaboration it might better be done through local organizations such as the Lions or Rotary.

**Conclusions.** Within that vision we thought three “big things” needed to be accomplished:

- Develop partnerships with local businesses to do high-quality internships. That might happen in the last quarter of the senior year, but we also need to find ways for sophomores and juniors to gain a real concept of how to approach different careers.
- Focus on developing more practice in the classroom so that every class in every subject (at least in middle and secondary schools) offers an opportunity to apply the theory students are learning.
- Get serious about the individual development of students so as to help young people maximize their potential, improve their social skills, and develop, in Ginott’s terms as human beings committed to democratic institutions.

With regard to these conclusions, we felt strongly that a distinct American approach to local businesses is required, that there is no reason not to include practice in American classrooms, and that issues of individual development need to be approached in a culturally sensitive manner. *(to p. 12)*



*Germany: businesses, schools, & government cooperating in in interests of students, markets, & economy*

**Commentary.** The implications of the vision and our conclusions for school leaders were fairly clear. They need to take leadership to re-mobilize the business community, itself perhaps disillusioned by the lack of progress on standards-based reform. School board governance needs attention so that board members worry less about lunch menus and more about interacting with the business community and local community agencies.

Everyone involved in the school enterprise, it was noted, needs to be prepared to give something up. Win-win solutions on behalf of students cannot be developed if each of the stakeholders won't budge from traditional postures and inherited positions.

Alongside the conviction that U.S. chambers do not have the capacity to do what the chambers in Germany do was a very strong sense that we are doing some things right. We should not throw the baby out with the bathwater. High-tech skills centers, vocational offerings in regional agencies such as New York's BOCES, and partnerships with community colleges are all promising avenues to explore and expand. With 40% of recent college graduates under-employed and many struggling with high levels of student debt, it is not acceptable that just two percent of American high school students are in vocational education. Our national discussion encouraging everyone to aim for a four-year college has gone badly off track. In turning the ocean liner of American public education around, the first step should be to strengthen what is already in place.

Community colleges are key partners in all of this. We need to break down the silos between K-12 and community colleges.



*Classroom study on site for Siemens apprentices*

## Contact

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### Upcoming events in 2019:

Education and Creativity

RAND Corporation

Santa Monica, California

October 4-6, 2019

Sir Kenneth Robinson, Keynote Speaker



*Sir Kenneth Robinson*

Perhaps the best summary of all of these issues can be found in quotes from John Gardner, former Secretary of the U.S. Department of Health, Education, and Welfare and founder of Common Cause. In his book "On Leadership," Gardner said that "Excellence consists of doing ordinary things extremely well." And he added:

"The society which scorns excellence in plumbing as a humble activity and tolerates shoddiness in philosophy because it is an exalted activity will have neither good plumbing nor good philosophy: neither its pipes nor its theories will hold water."

In fact, the pipes in American cities are leaking large amounts of water these days. And with recent college graduates under-employed and drowning in debt, the theory that everyone should go to a four-year college doesn't seem to be holding water either. It is time policymakers noticed.