



# Cooperative education in Serbia: good practice examples

Implemented by:



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# Contents

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<b>Foreword</b>	<b>4</b>
<b>“We will get the companies involved”</b> Vocational Education Strategy	<b>6</b>
<b>An Education with Prospects for the Future</b> The Chance to Work and Earn an Income Motivates Young People	<b>10</b>
<b>Worthwhile Investment</b> In-company Training Pays off Quickly for Companies	<b>16</b>
<b>An Industrialized Country Needs Skilled Workers</b> State-of-the-Art technology can only be learned in Practice	<b>22</b>
<b>Facts and Figures</b> “Reform of Vocational Education and Training”	<b>28</b>

# Dear readers,

For years, the youth unemployment rate in Serbia has not fallen below 40%. Despite this, jobs in crafts and technical occupations generally remain vacant, since employers cannot find qualified workers. Many graduate students of secondary vocational schools fail to find employment because education is focused on theory, and less on the practical skills that are important for companies. Thus, many young people and their parents see three-year educational profiles as a dead end without any prospects.

To solve this situation, it is of key importance to intensify the cooperation between the educational system and economy, that is, between schools and companies. This cooperation is the core of the cooperative education model which is the focus of the project Reform of Vocational Education and Training in Serbia. On behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ), this project has been implemented since April 2013 by the *Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH* to support the Ministry of Education, Science and Technological Development of the Republic of Serbia in its reform efforts.

Education according to the cooperative model, based on elements of the dual system adapted to the situation in Serbia, enables young people to have an increased share and a better quality of practical training in companies. In-company learning has a new quality as training takes place on modern machines. Practical training in real working conditions, in addition to professional skills, enables students to also gain social skills through cooperation with senior colleagues. Mentors, who are specially trained to work with young people, take care of the students' progress. In school, students receive general knowledge, vocational theory and basic practical training. By combining knowledge gained in school with practical knowledge and skills they gain in companies, students receive proper training which allows them to respond to the needs of the economy and, thus, have better employment prospects upon graduation.

Experiences from the first two years of implementation encourage us to continue pursuing this path. In those schools offering the modernized profiles classrooms are again full of students who, until recently, did not even consider three-year profiles as a choice. For these young people and their parents, three-year technical

education no longer has a negative image. On the contrary, it opens doors to a bright professional future. Companies are also happy, because by taking part in training students they will get workers who are qualified to meet their needs.

Over the coming period, through the project Reform of Vocational Education and Training, the German Government will provide support to its Serbian partners to adjust the regulatory framework which should enable easier implementation of the cooperative model. The model should be standardized to flexibly and adequately respond to rapid changes in the labor market. In addition to the already modernized profiles locksmith-welder and electrician, and the newly developed industrial mechanic profile, it is planned to modernize additional profiles with good employment potential and to implement them according to this model.

On the following pages you can learn more about the experiences of the participants in this project so far and read what they have to say about the modernized profiles and training according to the cooperative education model.

Enjoy reading!



**Ann-Kathrin Hentschel**

Team leader

Reform of Vocational Education and Training



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# We will get the companies involved

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## VOCATIONAL EDUCATION STRATEGY

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*The Government of the Republic of Serbia is working on adapting vocational education to the needs of economy to a larger extent. Students should gain more practical experience already during school so that companies could hire them faster as qualified workers. What the strategy looks like exactly and what success the Government has achieved in it is explained in this interview with Mirjana Bojanić, Special Advisor to the Minister of Education, Science and Technological Development, and Mirjana Kovačević, Director of the Sector for Education of the Serbian Chamber of Commerce and Industry.*

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**Mrs. Bojanić, the new Strategy of Education Development was adopted in Serbia in 2012 and it should be implemented by 2020. What are the most important elements of this strategy?**

**Bojanić:** We started with vocational education reforms as far back as 2002. In all this, we modernized the curricula for 59 educational profiles since some of them were older than 20 years and did not reflect the

current needs of the world of work. Additionally, we increased the share of practical training in the curricula. It is implemented in school workshops and in companies, that is, in real working places. Depending on whether we're talking about the three-year or four-year vocational education, 35 and 45 percent of classes are general education, respectively, since young people enroll at high school after only eight years of elementary education, that is, when they are 14 years of age. The remaining classes cover theoretical and practical education and training relating to the profession.

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**What has changed additionally as of 2012?**

**Bojanić:** We found that we should significantly improve practical experience of our youth in order to prepare them for the labor market. We often hear companies complaining that graduate students take several months to familiarize with their job before they are ready to work on their own. This is why the focus of the Strategy is a more intense involvement of companies





in the education process. We must enable young people to learn directly in their future job position, which is where employers must take their part.

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**This was surely something new for employers. What was their approach to this challenge?**

**Bojanić:** In 2014 a working group was formed of the representatives from the Ministry of Education, Science and Technological Development, Chamber of Commerce and Industry, Center for Vocational and Adult Education, National Employment Service, Council for Vocational and Adult Education, Ministry of Labor, Employment, Veteran and Social Affairs and the Ministry of Economy. With the support of the German Government, a feasibility study was prepared for introduction of dual education in the education system in the Republic of Serbia. We are checking where additional regulations should be introduced, to supplement the existing ones.

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**You have already introduced the cooperative education model with elements of the dual system for three educational profiles. What does it look like exactly?**

**Bojanić:** Yes, industrial mechanic, electrician and locksmith-welder are our three profiles implemented to test the cooperative model. In the second and third grade, students spend several months in a company. Some companies give students a symbolic financial compensation, which for young people is a small wage. Schools and companies sign cooperation agreements for the in-company training, and in some cases, apart from this agreement, student or his/her parent or custodian enters into a training contract with the company. This provides a new quality of training, since young people can now learn directly in a company and as of the second grade they are constantly involved in the work routine for several months. We hope that in five years we'll be able to offer one third of the 59 educational profiles with modernized curricula in this way.

**Kovačević:** The school is also facing new challenges. You can enroll at a certain profile only if you have enough companies in the area offering places for practical training. Cooperation between schools and companies must be coordinated, the quality of training places must be appropriate. This is where we see our responsibility. The new law on chambers of commerce was adopted in December 2015. It envisages a single chamber system and mandatory membership in the Serbian Chamber of Commerce and Industry which opens new possibilities for the Chamber itself to get involved more actively, as employers' representative, in the support to organization of in-company training and final exams.

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**Talking about final exams, who will be conducting exams in the three-year profiles implemented according to the coop-**

**erative education model and who will be setting the standards?**

**Bojanić:** In final exams we are testing the learning outcomes, i.e. professional competences prescribed in the qualification standard and in line with the adopted grading methodology based on competences. The qualification standard is based on work description, i.e. professional competences determined by a group of experts for certain jobs from different companies. Under the guidance of the Center for Vocational and Adult Education, together with representatives from companies in which the practical training takes place and with international experts, teachers from schools where a certain profile is offered, develop standardized practical tasks that are used to test the students' competences at the end of secondary school. In the final exam candidates are evaluated by an ex-

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**“ The Chamber will continue its work on attracting employers and supporting companies to actively participate in education according to the cooperative model. “**

**Mirjana Kovačević,**  
director of the Sector for Education of the Serbian Chamber of Commerce and Industry:







“ The focus of the Strategy is a more intense involvement of companies in the education process. We must enable young people to learn directly in their future job position, which is where employers must take their part. “

**Mirjana Bojanić,**  
special advisor to the Minister of Education

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amination board which must include one company representative - a specialist for certain jobs.

**Kovačević:** Delegating members of the examination board who come from the industry will be one of the tasks of the Chamber of Commerce and Industry. In addition, based on the standards that will be set, the Chamber will assess whether a company fulfills all necessary criteria to participate in the training of students. The Chamber will also continue its work of attracting employers and supporting companies to actively participate in education according to the cooperative model.

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**You are already implementing three educational profiles with a major share of practical training. Does it affect the type of diploma?**

**Bojanić:** All students who graduate from a vocational school will receive a diploma. Students who graduate from profiles based on qualification standards will receive a supplement to their diploma with details of their practical experience and acquired competences. In this way, their diploma is clearly differentiated from the diploma in other profiles and each employer can then immediately see what competences and/or knowledge and skills the candidate has.

**Kovačević:** This is especially important for micro, small and medium enterprises which make up over 98 percent of our economy. We want to win them over for this new education model because it would also be beneficial for them if they can hire those candidates who can immediately be engaged.

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# An Education with Prospects for the Future

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## **THE CHANCE TO WORK AND EARN AN INCOME MOTIVATES YOUNG PEOPLE**

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Visitors move along marked paths through the production area, everything is spick-and-span and well ordered. At the same time, countless machines and assembly stations produce wiper blades, wiper arms and wiper systems. At Robert Bosch d.o.o. in Pećinci, over 1000 employees make products for the European market, and the company is growing rapidly. A year ago, there were only 400 employees, and Bosch plans to expand even further. The high-quality products for the automotive industry require technical know-how from the production employees. The automotive supplier in Pećinci is mainly looking for industrial mechanics, but according to Ruediger Tuettenberg, head of the technical department, there are none to be found on the Serbian labour market: "Here we hire people who come from very different fields. We need to train them for a few months at the beginning before they can perform their jobs independently. Usually, technical school graduates have never

worked on a machine, because their training is mostly theory-oriented." Therefore, the need for training new employees is high at Bosch. Every newcomer undergoes a training that lasts several months before he can work independently in the production. But without this investment in new employees, the company cannot meet its need for skilled workers.

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## **NEW EDUCATIONAL PROFILES**

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Together with the Ministry of Education, Science and Technological Development, experts of the German Development Cooperation and the Milenko Verkić Neša vocational school, Bosch has remedied the situation and jointly developed the new three-year educational profile - industrial mechanic. Jovanka Jovanovic, CEO of Bosch Serbia, explains: "The aspiring



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**Future industrial mechanics spend three months on practical training in Bosch factory in the second grade and two times three consecutive months in the third grade.**

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industrial mechanics students acquire both practical and technical skills in our factory. A mentor accompanies the students and, together with the skilled workers on the machines, teaches them specific know-how. At school, students learn the theoretical basics. They get their first practical experience in the school workshop, which we have equipped with the support of the German Government.” The new school workshop may also be used by students of other profiles, so that they too can get more hands-on experience.

With the support of the German Government, the Institute for Improvement of Education and partners from the industry developed the curriculum for the new educational profile. Experienced industrial mechanics and the director of the training program of a Bosch factory in Germany have defined which qualifications a trained industrial mechanic must possess. Together, the partners have developed a standard

of qualification and have established the curriculum based on it. This curriculum states that second-year students must have a three-month in-company training, while third-year students have a six-month one.

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## A FUTURE AT BOSCH

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Half of the students’ practical training period consists of machine maintenance, the other half is spent on production and quality control. According to Tuettenberg, this brings them right at the heart of things from the start: “The students immediately start working on the production lines under the guidance of skilled workers. Very quickly, we assign them concrete tasks that they must handle independently. Naturally, their mentor guides them and is always there to answer questions.” In order to be able to fulfill the requirements of his new role, mentor Marko Radović attended the

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“ So far, only boys had enrolled in the technical profiles. Since last year, however, girls also apply for the industrial mechanic profile. “

**Spomenka Rakić,**  
headmistress of the Milenko Verkić Neša  
technical school





training in pedagogy, didactics and methodology. Bosch has hired Radović as full-time employee. He already had a technical and educational background since he had previously worked as a machine programmer and teacher: “I have instructed the skilled workers on how they must deal with the students and how they should introduce them to new tasks. It all works very well, because they all enjoy teaching the kids something new.”

Bosch has offered a work contract to the ten students who successfully graduated from the profile in July 2016. Ten students from the second year and ten from the third year are on practical training at Bosch from September 2016. All students would very much like to start working for Bosch after graduating since it would mean having a stable job and a secure income. The demand for the new educational profile is high, even small companies in the area of Pećinci enquire about students at the vocational school and show their willingness to participate in the new education model. Ten students out of every new class have

a chance to build a future at Bosch. Interviews at the end of the first grade and positive assessments from teachers open the door to a position at the automotive supplier. Miloš Tatić is one of those young men who were offered a job at Bosch after graduating. Looking back on his training time in the Bosch factory, he says: “I liked it very much there: the cooperation with colleagues, the working atmosphere and the modern machines – it was just great fun.”

In turn, each student spends a certain amount of time in every position of the production chain. There, he repeats the tasks until he fully masters each of them. After that, students practice the tasks in which their mentor and the other skilled workers see a need for improvement. When they have acquired all basic knowledge and can apply it with confidence, then comes the reward: they may focus on the activities that interest them most; even if they are not part of the curriculum. Tatić remembers his training proudly: “I could already solve many problems alone and even produce some spare parts and insert





them in the machine myself. At the time, some colleagues had already asked when I'd come back, because I'd done so well."

Through the intensive in-company training, students learn much more than just the technical competences. The structure of an everyday work life, order, discipline and

punctuality are amongst the lessons learnt. Tuettenberg sums it up nicely: "Students share our corporate philosophy from the start. When they're done with their training, we have fully capable professionals who know what we expect of them – in every respect."

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## **"THEY HAVE SIMPLY LEARNED TO THINK FOR THEMSELVES."**

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The successful three-year industrial mechanic profile owes its success to the close cooperation between the school and the company. At the vocational school Milenko Verkić Neša, 200 students are completing three-year education in five different educational profiles. In the meantime, the industrial mechanic profile has become

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**Ruediger Tuettenberg,**  
head of the technical department at Bosch



highly popular since the word has spread of the exciting jobs at the collaborating companies. Besides Bosch, three more companies are cooperating with the school to take over the practical part of the training program. Headmistress Spomenka Rakić is particularly pleased about one development: "So far, only boys had enrolled in the technical profiles. Since last year, however, girls also apply for the industrial mechanic profile."

In the first grade, students already get acquainted with practical work in the school workshop. The work on lathes, milling or grinding machines provides first basic knowledge. Topics such as fire protection or occupational safety are also part of the curriculum. Teacher Brano Perisić praises the flexibility of the new curriculum: "If we get feedback from the companies that students need more theoretical knowledge, for example on pneumatics, then we can include it in our teaching at short notice. The students have changed so much since the beginning of the practical vocational training. Before, there was always someone who

skipped classes or came too late. But that belongs to the past, now they are highly motivated, they ask questions, they seek to discuss. They make us teachers change our teaching to make it more practice and activity-based. They have simply learned to think for themselves."

With the support of the German Government, the Institute for the Improvement of Education, the vocational school and the companies have jointly defined the Rulebook on the final exam for industrial mechanics. The examination includes a practical assignment that students must complete. An independent examination board of representatives from the school and the company then evaluates these assignments and the theoretical knowledge.

The high motivation of students is not only due to their involvement in the production. They all hope that if they perform well, they might be hired by Bosch. The prospect of a job and a promising future spurs the desire to learn.



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# Worthwhile Investment

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## IN-COMPANY TRAINING PAYS OFF QUICKLY FOR COMPANIES

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Focused on their task, Marko Ilišević and Juraj Kulik are busy with screwdrivers and pliers: they attach the relay and cable, study the wiring diagram and then turn to a new task. Dragan Bojić, the mentor, observes critically every action, marks it, and lets the two boys continue their work. Since September 2015, the two 16-year-olds and their 16 schoolmates come every week to the workshop of the company Energotehnika Južna Bačka d.o.o. in Novi Sad. They are all students in the modernized electrician profile at the vocational school Mihajlo Pupin in Novi Sad. With the support of the German Government, the vocational school and Energotehnika have set up the education of these students in a brand new way. From the second grade on, students do not only go to school, they also spend more and more time at the company's factory; two days a week in the second grade, and three in the third grade, with block lessons of two and three weeks respectively at the end of each grade. With shining eyes, Marko explains: "The theory at school is not so interesting, but the work here is great. What we learn here is totally exciting and we are allowed to do a lot by ourselves."

90 of the 250 employees work in the department of electrical engineering on a voltage range of 0.4 kV to 110 kV. Early in 2014, the Serbian company founded RSE Solutions GmbH, a joint venture with the R+S Group from Fulda, Germany. Since then, Energotehnika offers advanced training to Serbian electrical assemblers in Novi Sad, so that they can also work on the German labour market. The demand for skilled workers of the R+S Group is strong. More than 160 Serbian colleagues are already working in Germany, and more skilled workers will follow. This advanced training is recognized by Germany's Chamber of Crafts so that once they complete it, workers can directly start working on the construction sites of the R+S Group. After this experience, it was only a small step forward for Energotehnika and RSE Solutions to invest in the training of young people. Radica Eremić, manager of the RSE Centre for Vocational Training, explains: "So far, we had to train all new employees for a year before they could do their work completely independently. This also applies to qualified electricians or similar professions. About 30 years ago, the State abolished the dual

At Energotehnika Južna Bačka, around



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Students find practical training in the company very interesting. They especially like it because they are allowed to do a lot by themselves.

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components in vocational training. Since then, graduates have insufficient practical experience. Now, together with the local vocational school, we work on improving that!"

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## AT HOME IN THE COMPANY

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The advantage for the company is obvious. They take part in the training of young people and three years later, they can employ well prepared skilled-workers in their factory. Periods of occupational familiarization and adaptation are eliminated, because the young workers know the company for a long time and feel at home there. The average age of Energotehnika's employees is 40 years old. Since the company is expanding, young recruits are important to Eremić: "It is in our best interest to take in the students after their grad-



uation, because with them, we gain skilled-workers that are fully competent and functional right away. Since many of them learn German as a second foreign language, a few will certainly be going to the R+S Group in Germany." In the vocational school, RSE Solutions has set up a language lab for the electricians and provided the teaching materials for learning German.

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**“ In the school, we cannot reproduce technical progress and modern processes. We simply lack the means for it. Students only get this opportunity thanks to the company. “**

**Milan Vukobrat,**  
headmaster of the Mihajlo Pupin technical school







The responsibility for the practical training rests in the hands of the director of operations and the shift supervisors. They take care of the 18 students, who are separated into small groups of two or three. The production manager Marko Kasper gazes with satisfaction at the production line: “I expect the students to repeat the tasks independently after an intensive phase of guided practice with their mentor. I have no doubt that at the end of their training, all 18 students will be able to reliably execute all the tasks without supervision.” The atmosphere in the production line proves Kasper right. Focused faces, glances that go back and forth between wiring diagrams, cables, terminals and relays, a questioning glance from the students towards their mentor – gradually, the inner workings of the electric control cabinet takes form. Kasper explains: “Here, students learn everything that belongs to electrical assembly and installation. The experienced mentors explain very patiently and often praise the students. That motivates them.”

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## KEEPING THE GOAL IN MIND

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The old-timers also had to learn how to best pass on their knowledge to youngsters between 15 and 16 years old, while constantly motivating them not to give up. Eremić took part in an advanced training course developed by experts of the German Cooperation that has prepared him to be a mentor. Internally, Energotehnika has organized a training course for the shift supervisors so that now, they have a pool of well-prepared mentors available for the students. Students’ comments speak for themselves. Juraj grins: “When we do something right, Mr. Bojić praises us. If we are doing something wrong, he says nothing. We only have to look at him to know if we are on the wrong path.” Marko adds: “We always work on a certain task in teams of three with our mentor. That’s great, because then we can consult with

each other and together, we always find the right solution.”

The teaching goes on, the students enjoy the practical work very much; the 18 teenagers agree on that. Even though most of them would gladly do without the theory at school, they also know that it is necessary. Marko explains pragmatically: “We need this theoretical knowledge. If we would not know how to calculate re-



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**An additional incentive for the young trainees is the fact that they get a small financial remuneration from Energotehnika. It covers travel expenses, food and a little pocket money.**

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sistance or amperage, then we would have a problem. That’s why all of us also make efforts at school.”

None of the 18 students has ever brought bad grades home or was ever at risk to fail and retake a school year. The students have set themselves a goal and they want to achieve it. Before them lies a future at Energotehnika or even the chance to work abroad. At the company, they work on modern technologies with modern tools. This is by no means a given condition, confirms Milan Vukobrat, the headmaster of the Mihajlo Pupin vocational school: “In the school, we cannot reproduce technical progress and modern processes. We simply lack the means for it. Students only get this opportunity thanks to the company. That’s such a strong incentive that now, students from the four-year profiles want to switch to the three-year electrician profile. I also get requests from students from other schools who wish to transfer to us.”

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## A CONTRACT WITH GREAT IMPACT

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Vukobrat praises the concept of the new cooperative training in every respect. Because their children have not reached majority, parents must sign a training contract with the company, and this extra responsibility also makes them more involved. If there are any irregularities or complaints, these land at the parents’ door and they must bring their offspring back on track. If a student is constantly late or

absent without justification, if he does not keep his practical training journal in proper order or behaves incorrectly in the factory, he's out. "The contract between students' parents and the company appears to be a trifle, but it has a great impact. Parents pay greater attention and take more responsibility for their children's education. In this class, no one has ever been late or absent without a reason. That is a first!" exclaims Vukobrat, pleased with the positive progress of his protégés.

An additional incentive for the young people is the fact that they get a small financial remuneration from Energotehnika. It covers travel expenses, food and a little pocket money. Generally, the three-year profiles are rather unpopular with Serbian parents and their children. They have a bad reputation and are considered to be dead ends. But the electrician profile is an exception. Marko recalls: "My father read about the training in the newspaper and advised me to apply for it. I did not regret it."

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## DEDICATED PARTNER

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The cooperation between vocational school and company is very close. When the students work at the factory, the mentors exchange daily with the teacher responsible for the practical training, Bogdan Pavlović. After each learning unit, the mentors suggest grades for the practical work based on an internal test. Pavlović finds nothing objectionable about this process: "I always took over

the grades proposed by the mentors, because they were well-founded and justified. So far, all students show top marks in the practical training – they are simply doing good work at the factory." The partners Vukobrat and Eremić have not yet reached the end of their plans. In 2016, the whole electricians' class is to go to Fulda to visit the partner school Ferdinand Braun and have practical training at the R+S Group.

Headmaster Vukobrat definitely wants to introduce dual elements in more educational profiles: "After the first full run of the program, we will assess the cooperative education for electrician profile with experts of the German Cooperation and Serbian educational institutions. It is already obvious that the vocational theoretical part is still too short and that we can further optimize teaching. I hope that after the assessment, the legislation will also be improved so that we can expand this approach."

From the company's perspective, this approach can only be strongly recommended. Eremić explains: "For a company, it is much cheaper to accompany young people during their secondary education than to train adult workers. After two years of technical experience during training, the company has fully qualified workers. Also, during training, the remuneration is very low. If we hire adults who need to be trained for a year, they already receive a full salary over this period. Students evolve with our corporate philosophy and identify with Energotehnika. That is why I can only recommend the cooperative education model."

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# An Industrialized Country Needs Skilled Workers

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**STATE-OF-THE-ART TECHNOLOGY CAN  
ONLY BE LEARNED IN PRACTICE**

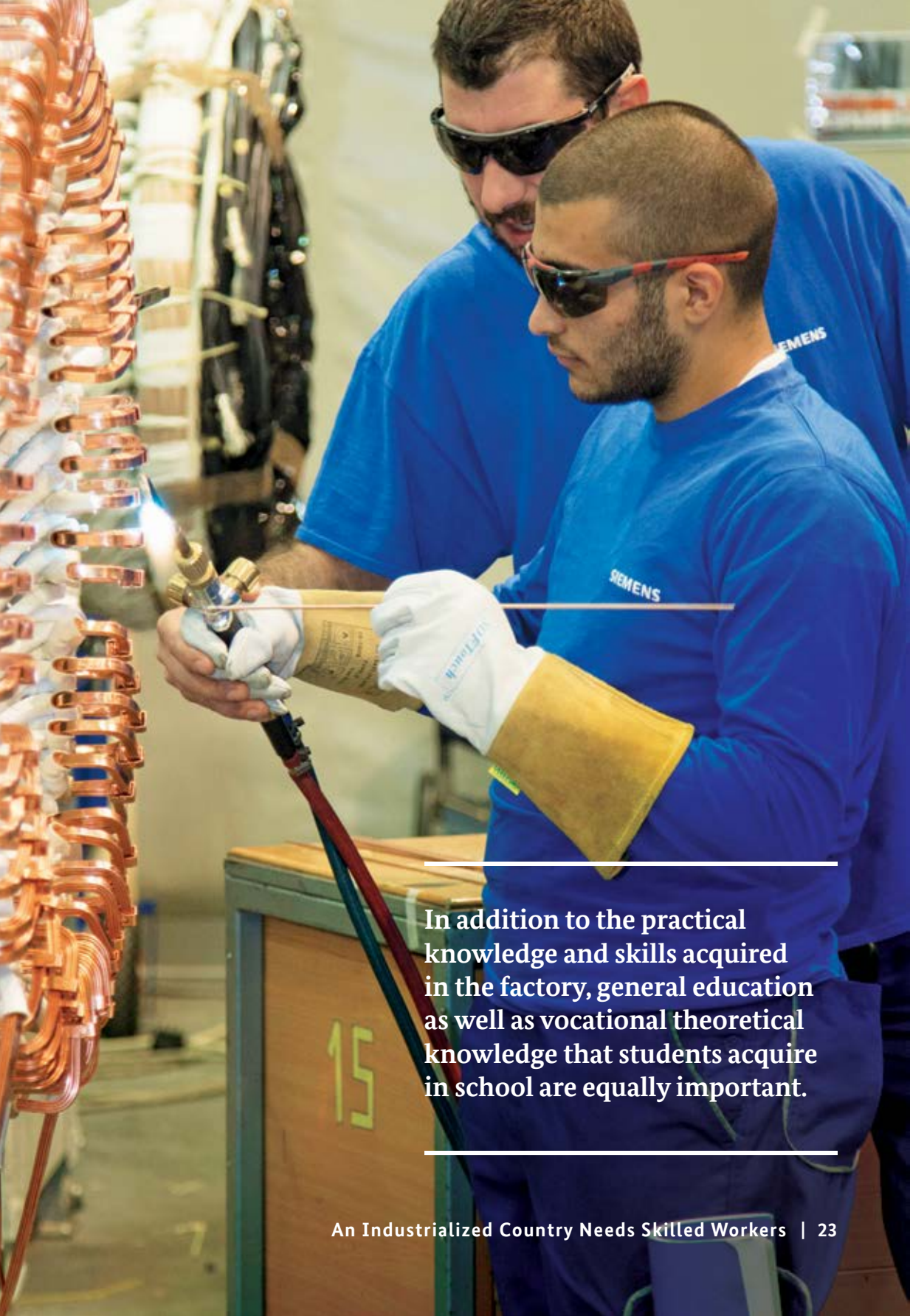
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The first look into the production area of the Siemens factory in Subotica seems almost futuristic. Gigantic generator systems for wind turbines take shape under the hands of the approximately 1900-strong workforce. If they look closer, visitors can notice eight teenagers working amongst older workers in the production line. They observe with great attention the various steps of a task and then perform it themselves. 16-year-old Marko Ivković Ivandekić doesn't hide his enthusiasm: "We work only with colleagues who really know their job. They explain really well and the day goes by very quickly at Siemens."

Marko is one of eight students of the locksmith-welder profile on practical training at Siemens. The boys are now third grade and go three times a week to the factory for practical training. Siemens expands rapidly, so it is not surprising that the company is looking for skilled workers.

Siemens was immediately convinced of the cooperative education model's effectiveness in the training of locksmith-welders. The curriculum was developed with the support of the German Government and adopted by the Serbian Ministry of Education, Science and Technological Development. For Desa Ćuk, head of HR at Siemens, it was only a small step to coordinate the training program with the work in the factory: "Based on the requirements of our production facilities in Subotica, we were looking for a model that would enable us to invest long-term in the training of young people so that they would become skilled workers fit for our modern production process. We are working on this model and are convinced that with the locksmith-welder profile, we will achieve our goal." Together with the shift supervisors, training manager Milica Bojović has defined which processes of Siemens would become part of the practical training





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In addition to the practical knowledge and skills acquired in the factory, general education as well as vocational theoretical knowledge that students acquire in school are equally important.

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“ We hope that we can introduce more and more educational profiles according to the cooperative model. Then, the industry can employ fully capable skilled workers fresh off the school benches. ”

**Janoš Erdedi,**  
practical training teacher at the Ivan Sarić  
technical school



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plan. The mentor training organized by experts of the German Development Cooperation has prepared the young woman well for her new job: “I work in quality management and know every process in the company. During the training, I learned how we should interact with the students: give them clear guidelines, insist on punctuality and order and so on.”

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## TALENTED YOUNG PEOPLE

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The four companies – which cooperate with the Ivan Sarić technical school in Subotica for the practical part of the training – have prepared well for the implementation of the cooperative education model. At the end of the first grade, the students of the locksmith-welder profile already had a trial practical training in factories. Based

on this experience, they could specify their preferred company. The selection process was completed by interviewing each student. Desa Ćuk explains: “Aside from school grades, most important for us was the talent and commitment shown by students here in the factory.”

Students from the second and third years of training get to know all the steps of the production process. The mentors at Siemens are well satisfied with the progress of the students. They understand their tasks quickly and integrate easily into the company’s operational processes. Even those who get poor grades at school almost always get excellent test results in the company. Nevertheless, the theoretical and general education is also important for Bojović: “It’s very important that students acquire general and theoretical knowledge as well as practical skills. That is why their performance at school must

also be satisfying.” The students have long since understood that. After the first year of exclusively school-based learning, they now really have to put their shoulder to the wheel to achieve good grades at school as well as in practical training.

Prospects for the future motivate the boys. The training companies need skilled workers, so if they complete their training successfully, those young men have a chance for a secure job there. They can continue to evolve by completing a training to become welding instructors and get their welding certification from the International Welding Association. In the Siemens factory, there is a welding training center where the third-year students spend two intensive weeks refining their craft. That is Marko’s ultimate goal: “I absolutely want to get the welding certification, because as a certified welder, I can earn a lot of money. When



I heard of this program at the professional orientation fair in primary school, I spoke with my parents about it, and I immediately applied for this profile.” His friend Nemanja Šmigić adds: “Siemens was our first choice, because here, we can learn to do really demanding welding work, not only simple common things.”



“ Through the recruitment and employment of young people who have acquired practical experience during their school years, we save the time we would otherwise have needed for additional training. “

Desa Ćuk,  
head of HR at Siemens

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## CUSTOMIZED TRAINING CONCEPT

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Good contact with the parents is important for the companies. They have invited students and parents to a tour of the factory, and signed training contracts with the latter, because students are still underage. The investment in the training program is not very high, since the companies need a training program for all the other employees anyway. On average, the integration of new colleagues from various technical branches takes about a year. They must also start by learning the practical tasks and becoming more familiar with the company itself. For the companies, the training program for young people is also a test run for their career changers' training program. If teenagers are fully competent professionals at the end of their training, the concept can also be used in the further training of adults. "Through this program, we have optimized certain processes in our company," rejoices Čuk. "Through the recruitment and employment of young people who have acquired practical experience during their school years, we save the time we would otherwise have needed for additional training and thus improve our production process. At the same time, practical in-company training allows young people to gain technical knowledge and experiences which the labor market perceives as deficient."

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## HIGH DEMAND

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The Ivan Sarić vocational school in Subotica already has three generations of students in the locksmith-welder profile educated according to the cooperative model. Aside from Siemens, the practical training for these students also takes place in companies Continental, Tatravagonka Bratstvo d.o.o. and Grgo Bravar d.o.o. In addition, the school introduced the industrial mechanic profile in 2015 according to the same model. Teacher Erdedi Janoš is responsible for the students' practical training and is in close contact with the companies: "We have implemented the contents of the curriculum for the locksmith-welder profile together with the companies. Welding technologies evolve so quickly, we could not reproduce that in school. In the companies, the kids have the chance to be trained on the latest technologies."

Each student must keep a practical training journal explaining the tasks he has accomplished and describing the learning units he has completed in the factory. At school, Janoš often interrogates the students and lets them explain to him the tasks and products they are working on. Thus he recognizes whether students can actually apply the theoretical content to their practical activities.

The cooperative education model is rapidly gaining popularity. More and more parents, students and even companies are interested in it. Although parents and students generally dislike the other



„ During mentor training, I learned how we should interact with the students: give them clear guidelines, insist on punctuality and order and so on. “

**Milica Bojović,**  
training manager at Siemens

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existing three-year educational profiles, they see real prospects for the future in the new model. “Now, the interest in the cooperative model is so great that each class counts 25 to 30 students. Companies even contact us to participate in this project,” enthuses Janoš. While the school has trouble finding places for practical training for students in other profiles, it is absolutely no problem for the lock-

smith-welder students. And it is the same for the new industrial mechanic profile; enough places in companies are already available. With these experiences, Janoš foresees a bright future: “We hope that we can introduce more and more educational profiles according to the cooperative model. Then, the industry can employ fully capable skilled workers fresh off the school benches.”



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# “Reform of Vocational Education and Training” project

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## FACTS AND FIGURES

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### Cooperative education model,

with elements of dual training adjusted to conditions in Serbia, has been developed

### locksmith-welder and electrician,

have been modernized and are implemented according to the cooperative education model

### industrial mechanic,

has been newly developed and is implemented according to the cooperative education model

These profiles were designed to develop broader occupational competence of students and

### increase the proportion of practical learning phases,

particularly in companies.



**15**

secondary vocational schools in Serbia are involved in the project –

8 schools offer locksmith-welder profile,

5 industrial mechanic

and 3 electrician profile<sup>1</sup>

more than

**50  
companies**

support these

**15 schools**

in implementation of cooperative education

**Approximately  
800 students**

are currently being educated in these profiles

**3**

public-private partnership agreements were signed with the aim of defining the cooperation between the signatory parties on their joint assignment - providing the local economy with the

**adequate  
qualified staff**

and enabling young people to find employment faster

**Company Robert Bosch Serbia  
employed all 10 graduates**

who attended practical training in its factory during their secondary education and who passed the final exam in the industrial mechanic profile in 2016

<sup>1</sup> Ivan Sarić technical school in Subotica offers locksmith-welder and industrial mechanic profiles



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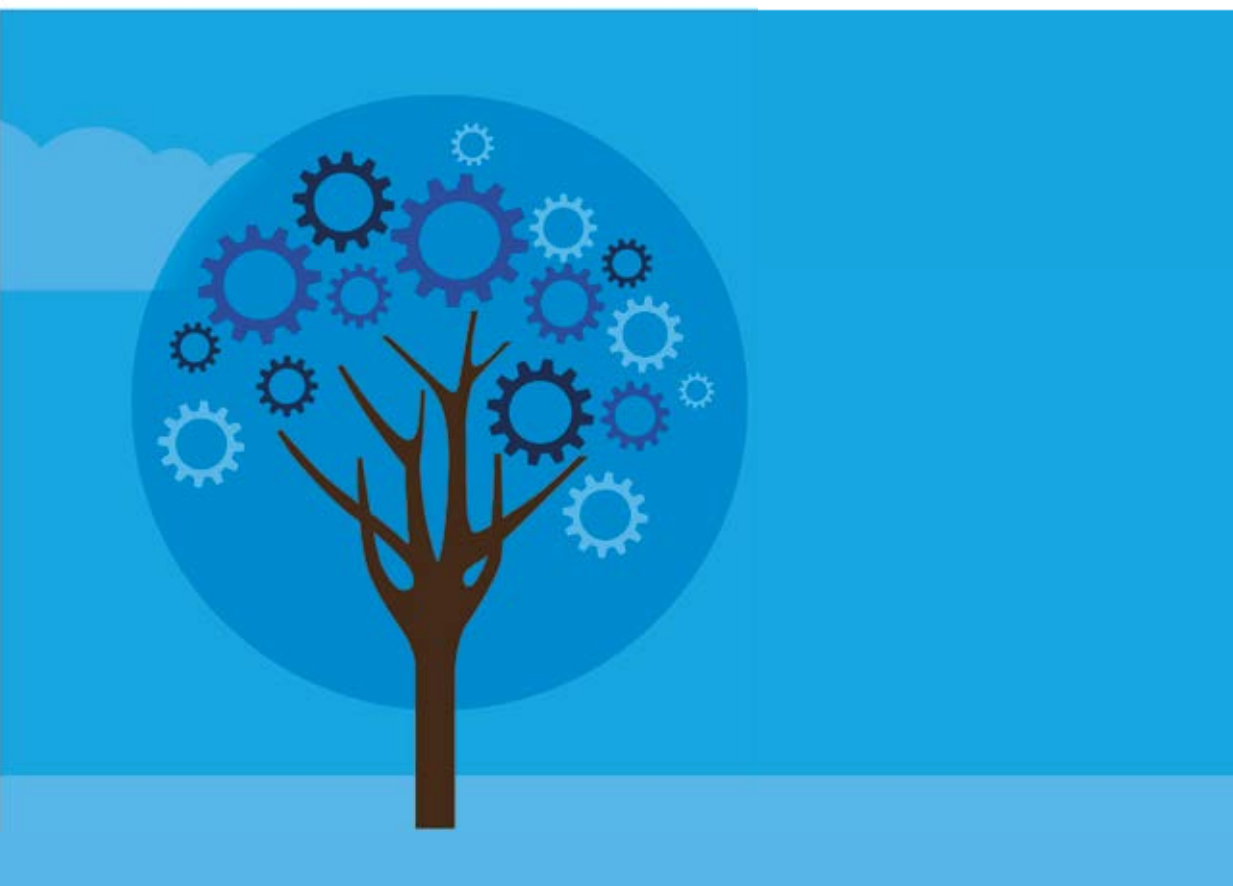
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