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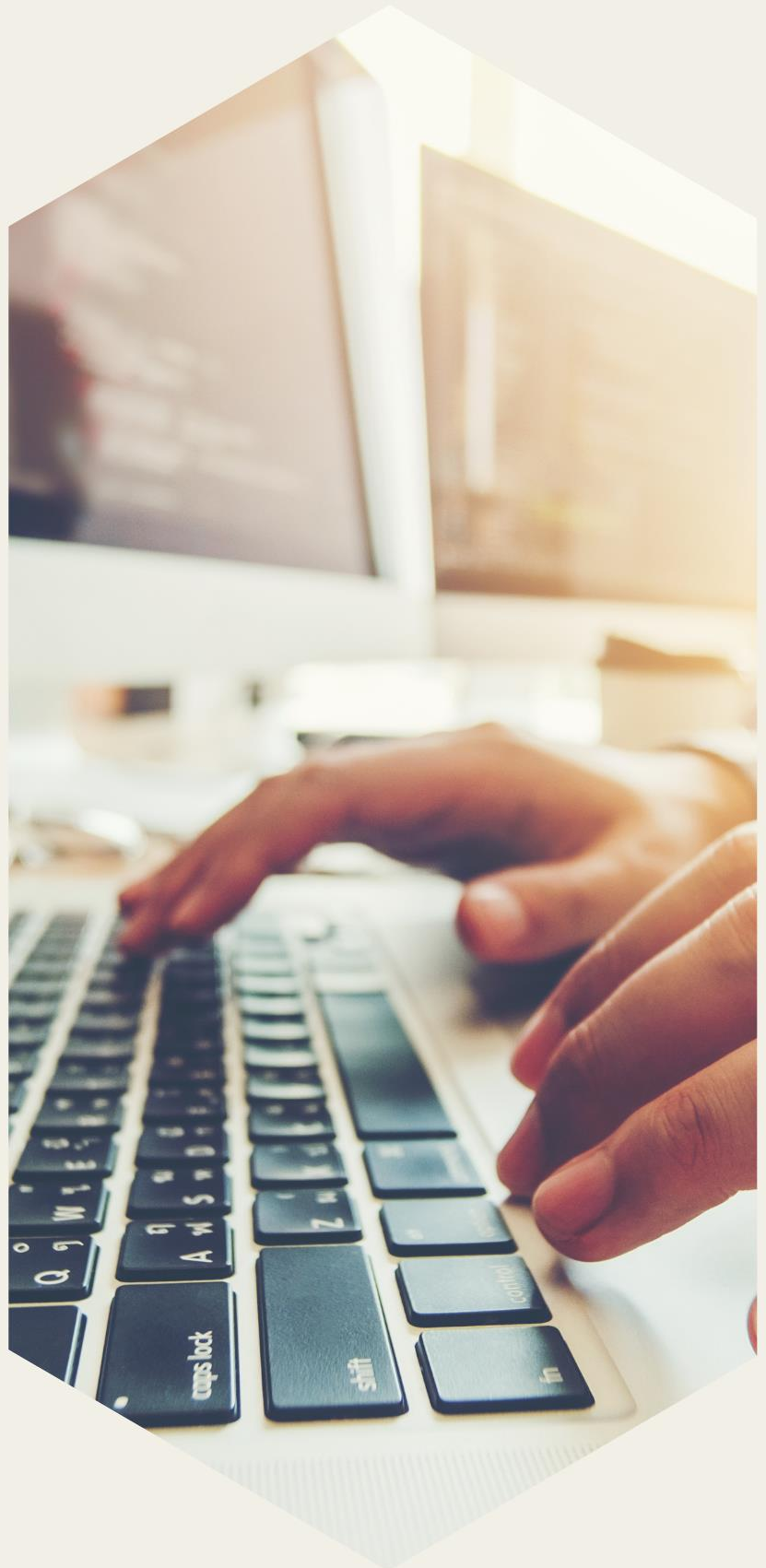
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Table of contents

CodeDoor 2015-2021: From one user to several thousands.....	5
I: How CodeDoor started.....	5
II: “Ankommer” Programme.....	7
III: “Code1000” (B to C Modell)	8
Building the core team	9
Creating the “Code1000” project	11
Opening of eight site.....	11
“Code1000”-System.....	12
Sourcing participants.....	12
Participant Selection	13
Coding Boot Camp.....	13
Main Course.....	15
Job Placement and Tutoring	15
Challenges.....	17
Solution.....	18
Biggest challenges for the CodeDoor core team	18
IV: CodeDoor Platform (B to B Modell).....	19
How it works	19
Challenges.....	19
Solution.....	20
Testphase.....	20
New role	21
Biggest challenges for the CodeDoor core team	22
V: CodeDoor as an infrastructure	23
Platform	24
Duration	24
Subjects	25

Certificates	25
Job readiness.....	25
NGOs.....	26
Identifying partner NGOs	26
Sourcing and selecting participants.....	26
Onboarding an organisation	26
Onboarding learners through an organisation	27
(Alumni-)Tutors.....	27
Biggest challenges for the CodeDoor core team	28
VI: Summary	30
VII: Next Steps	31

CodeDoor 2015-2021: From one user to several thousands

I: How CodeDoor started

In 2015, one of the largest first admission facilities for new arrivals in Germany was built in the German city of Giessen. Tens of thousands of people hoping for a new start in Europe were waiting here to begin their new lives in a foreign country.

Karan Dehghani lives in Giessen. When he became aware of the situation, he started to reflect on the difficulty for young people in particular to pursue their studies and education in a new country. Obviously, there would be all the legal and administrative barriers to migrants and refugees. But there was also the wider issue of integration into the new educational system. Emerging from a serious illness and ready to get his life back on track, Karan originally planned to launch a technology start-up with a totally different idea. While thinking about it, the Hamming question occurred to him: Mathematician Richard Hamming was known to approach experts from other fields and ask “what are the important problems in your field, and why aren’t you working on them?”. The problem of thousands of young people without access to education seemed to be the largest problem in Karan's field of work. He had no choice but to work on it.

Karan's first idea was to teach refugees what they would need most, using the resources available on the Internet. He wanted to distribute iPads and connect learners with educational resources online. In order to do so, he approached Melissa Flemmig, then UN spokesperson on refugee issues. (Today, she is the United Nations Undersecretary General for Global Communications.) She responded and encouraged him to publish his project on a project website, where people could vote on projects to be supported. At the time, the UN was in charge of the immediate management of millions of refugees.

Karan also talked to local authorities about initiating a pilot programme. They invited him to a meeting during which local representatives met to discuss the massive influx of refugees in Giessen. Karan had an opportunity to present his proposal. However, it became clear that, like the UN, local authorities were engaged in providing the measures most needed to provide shelter, food and medical services. So in order to solve the matter of education, Karan had to start a pilot project on his own.

To focus on one function only, he decided to only teach how to code via Internet courses, such as CodeCademy. Now all that was needed was a company that was looking for a developer. A friend of Karan's is CEO of "SwissCommerce Germany", and had been looking for a PHP developer for a while. They agreed on a pilot project where the company would provide a desk, Internet connection and friendly colleagues. In July 2015 a local NGO introduced one refugee to the project and he started working and learning at the same time. That was the beginning of CodeDoor.

Around that time, Karan applied for a nationwide contest called "Startsocial". He was hoping to receive some support through the contest to increase the number of refugees he could teach via existing internet learning resources, such as Khan Academy. However, a few weeks after applying, Karan received ten written pages. It was feedback by the Jurors: Each Juror who was writing to him explained why teaching refugees how to learn how to code will never work.

Instead of giving up, Karan posted his idea on Hacker News. An experienced developer working in Berlin responded and joined the project. He managed to get a lot of his friends and colleagues to join as well. Soon classes took place in Berlin (in offices of tech companies and Beuth University of Applied Sciences) and Frankfurt.

By the end of 2015 the first refugee who Karan and the SwissCommerce supported, finished the program. Today, he works for the German Employment Agency and advises people with refugee backgrounds.

When Karan met the EMA regional manager of Udacity, a coding school in Silicon Valley, he asked Udacity if they could provide three or five scholarships. Two days later,

his contact replied with a message from Sebastian Thrun that they are willing to provide 1,000 scholarships for CodeDoor's program. This was incredibly generous. The key question now was how to distribute the scholarships fast enough. It meant that the program needed to scale. Farid Bidardel, who was then working for the "Social Impact Lab" suggested using the Impact labs which were distributed across Germany to run the coding schools nationwide. This of course, could not have been done alone. Farid first joined as a board member and then as a Co-Founder.

II: "Ankommer" Programme

The so-called "Ankommer. Perspektive Deutschland" funding programme was set up by a foundation and took place in "Social Impact Lab". Its focus was the development and implementation of innovative models that could be transferred throughout Germany and make a sustainable contribution to ensuring that refugees in Germany can participate in society and the economy, for example through access to education and the creation of training and jobs. CodeDoor applied and became one of the first spots. Being part of "Ankommer", CodeDoor was provided with the necessary infrastructure to be able to hold weekly classes in the city of Frankfurt. The hardware was collected through donations, and the classes were led and supervised by volunteer tutors. The learners were given tasks to work on individually or as a team. Once they had reached a certain level, the CodeDoor team (founders and tutors) looked for a suitable job where they were further qualified and helped them with applications and interview-preparations. In the first months of this "on the job training", the tutors continued to be in intensive exchange with the learners and also supported them with small tasks.

The experience with this approach was again very positive; a large number of the participants qualified this way were taken on by the companies. The success of this model was largely due to the good networking of the founders and tutors in the IT scene. In addition, CodeDoor received permission from the Frankfurt Chamber of Commerce to administer parts of the examination that trainees for IT jobs have to take. This enabled

our learners to either receive shorter training periods in companies or at least to be employed directly, thus increasing their attractiveness for the economy.

At the end of the programme, CodeDoor was publicly honoured by Sigmar Gabriel, then Federal Minister for Economic Affairs and Energy: "It will take time until the many people who came to Germany last year find a new future with us. Above all, we must offer them educational and employment prospects. (...) This is exactly what we need if we also want to quickly give refugees a professional perspective in our country."



In the picture, Karan Dehghani is standing to the right of the Minister.

III: “Code1000” (B to C Modell)

The demand for the classes grew steadily and due to the high demand, more tutors started to build small local infrastructures in other cities. Karan and Farid, the two founders, defined that the core task of CodeDoor was to qualify people as IT professionals who are currently underrepresented in the IT and software labour market – for example people without a higher education. With this vision, they approached sponsors to build up a nationwide team with the help of foundations and fundings.

In order to make their vision come true, Karan and Farid first had to enlarge the CodeDoor organisation itself:

Building the core team

The founders, who until then had been working for CodeDoor on a voluntary basis and in their spare time, decided to join CodeDoor full-time.



Karan Dehghani

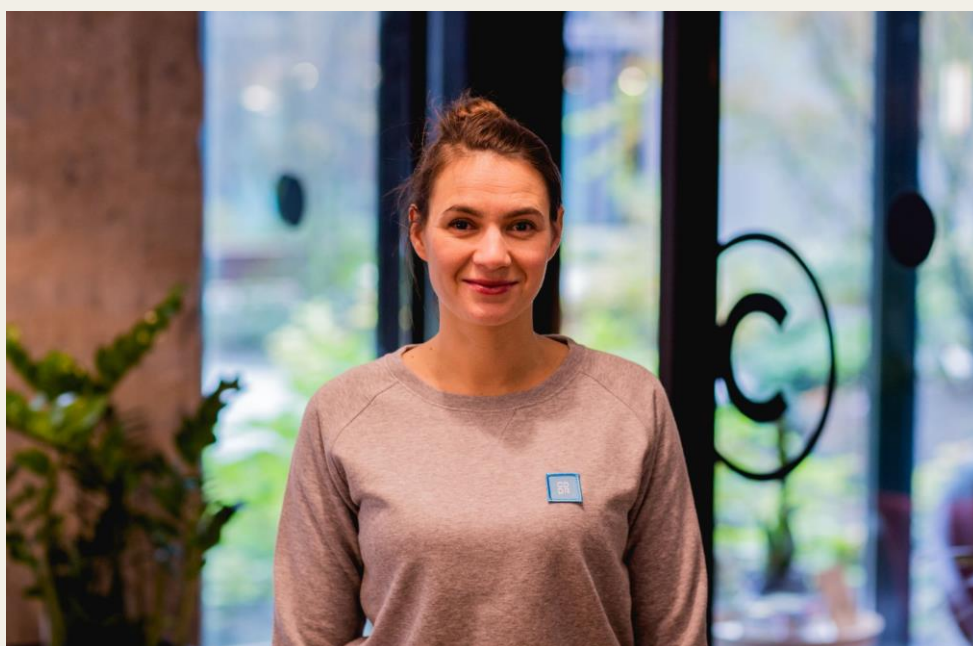


Farid Bidardel

The first two people they hired in August 2018 were Tobias Lang, former CTO of SwissCommerce, the company who took in the very first learner, and Nora Schimang, who had managed “Ankommer” at “Social Impact Lab”.



Tobias Lang



Nora Schimang

Creating the “Code1000” project

After the first successful round of fundraising, CodeDoor launched the “Code1000” project: 1,000 young adults and youth were to be qualified as developers and placed in the labour market over the next two years. The target group consisted mainly of people disadvantaged in the labour market, e.g. refugees, migrants and young people from educationally disadvantaged households. A special focus was on inspiring and qualifying girls and women for this occupational sector (at least 50% women in the courses). Many of the participants came through partner organisations such as the Red Cross and other welfare organisations.

Opening of eight site

We were able to install regional coordinators in eight different regions in Germany. These colleagues maintained contacts with the business community on the one hand and with the learners on the other, took over the volunteer management and cooperated individually with the local social institutions and NGOs.



CodeDoor team 2018

The new CodeDoor team strengthened the classes in Giessen, Frankfurt, Munich, Berlin, and Hamburg, and started new classes in Stuttgart, Mannheim, and Jena, as well

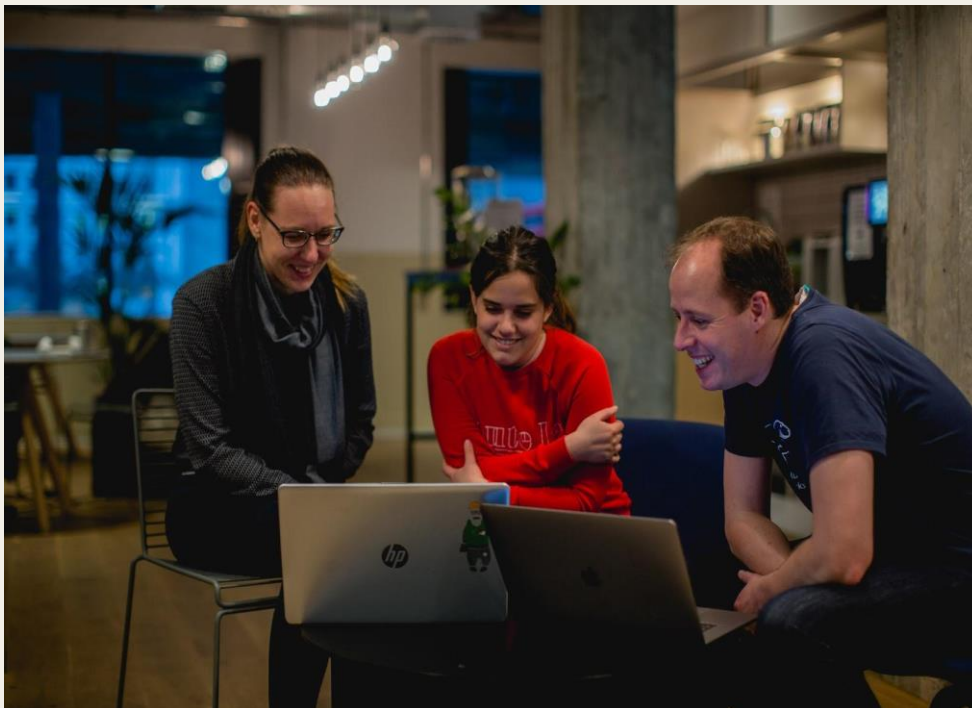
as an online track for remote students. Our objective was to achieve and maintain a rate where at least 85% of our graduates secured a job/traineeship or paid internship in the growing technology sector. As women are notably underrepresented in this field, we have set a goal to have at least 45% of our participants in the second year of “Code1000” be female participants.

“Code1000”-System

The process was divided into three phases: coding boot camp (introduction), specialization (main course), and final project and placement, with graduates placed in well-paid positions upon completion. Adding in the time for application, interviews, and job placement, the entire process took around 12 months.

Sourcing participants

- Applicants reached out to CodeDoor through our partner network. They must have basic computer knowledge, interest in technology and basic English. Applicants were directed to our website to start a very basic registration process.



CodeDoor learner (in the middle) with tutors

Participant Selection

- After registration, they received a standard email regarding the first steps.
- Here it was already visible how motivated the applicants really were: Did they schedule a meeting with a CodeDoor staff member as asked in the email? Some received our first email and we never heard from them again. But those who actually read the text and contacted us, we got to know.
- Each applicant met in person with our regional coordinators to discuss their individual journeys, intrinsic motivation, why they need support from us, and must go through a short assessment (the ability to think logically was tested - the base to pass the coding intelligence testing in the next phase). In this interview and assessment, the coordinator also identified the background of the applicant and their eligibility to receive support from CodeDoor (e.g. refugee status, low income, motivation, etc.). The regional coordinator then decided with our student success manager about the potential support the applicant will get through CodeDoor.
- 60% of applicants successfully entered our program.

Coding Boot Camp

- Participants took part in a preparatory course (boot camp) for exactly six weeks, including the coding challenge at the end of it. An average learner who came with little IT skills could manage the preparation and the Coding Challenge easily in under six weeks. But since we were aware of the sometimes-difficult life situations, we decided to give the new students a sufficient amount of time.
- Depending on their prior knowledge, the learners could also crack the Coding Challenge immediately, without further preparation.
- During this phase, participants got to know basic coding knowledge and tested out which area is best suited for them. The students got access (online and weekly meetups) to our community of fellow students and experienced tutors.
 - The boot camp initially consisted of an app teaching the basics of coding. The background to this choice was the lack of laptops available to many participants. However, already in the first weeks it turned out that an app

could not be a real preparation for IT skills training. In order to avoid further disappointment of the participants and not to waste their time and energy, we instead organised additional laptop donations or gave learners the opportunity to work on the first steps in our office on devices provided by Apple.

- We built our own courses on Google Class, containing pre-curated open source learning units, quizzes and so on. The classes were divided into three areas: Front End, Full stack or Data / Machine Learning. If someone came with no prior knowledge or more specific ideas, we usually recommended starting with Front End to get a first feel for the subject matter.
- Finally, the newcomers had to complete our "CodeDoor Coding Challenge" in one of the three areas. These challenges tested the students' ability to learn, how to solve problems, their commitment, and coachability. The end result shows their potential coding intelligence. Nearly everyone who finished the Coding Challenge also passed it and we had the first inside of someone's strengths and weaknesses.
- The boot camp with the challenge was very intense for the participants but helped them to quickly figure out whether they wanted to spend more time coding or move on to another subject.



CodeDoor learners with tutor

Main Course

- For the next eight to ten months, the learners were trained on a specific coding language/topic and worked on individual and group projects to enrich their portfolio. The courses were made up of a combination of online modules (from our partners such as Udacity, Cisco, Apple, IBM, Intel where they received highly recognised certificates), recorded sessions taught by teachers, weekly meet-ups and 1:1 live sessions with the option to clarify possible questions. Our tutors (a mix of staff, paid tutors, and volunteers) accompanied our students while they worked in a study environment that simulates a working environment (group projects, agile development).
- The participants also had access to our career services, delivered by professional coaches who helped them develop soft skills. The CodeDoor team also arranged and facilitated weekly “ask me anything” sessions online, where experts from different fields answered questions on specific career paths (e.g. we invited a lead female data engineer from a big company to explain the differences between engineering and analysis in data.). Additionally, with the support of volunteers (e.g. from partner companies and HR specialists), our students got ready for job interviews and updated their resumes and LinkedIn profiles.

Job Placement and Tutoring

- During the time of their CodeDoor training, we helped participants search for vacancies, prepare for interviews and get placements. We regularly organized Demo Days for our participants to present their projects to potentially hiring companies from our network. These were companies we already knew and were aware that they proactively consider our candidates before and after graduation. We had (and still have) large companies such as Check24, Capgemini, Google, and Accenture, as well as small businesses and start-ups in our network.
- The learners got matched with a company by the CodeDoor team and received tailored training that matched their hiring needs. The company provided office

space, access to the internet, and a go-to person within the company who supported the trainee/new hire. They were accompanied throughout by experienced CodeDoor developers (1:1 tutoring) and still took part in weekly meetings.

- At the end of the qualification, the participants graduated with certificates of the specific course on which they trained. In most cases the company took them on as apprentices or employees. If not, CodeDoor supported them in their further search for a company.

Success story: Alara

Alara came to Germany from Lithuania. She left a difficult childhood and upbringing behind to improve her life. Alara needed a chance for education, professional independence and a self-determined life. Through a meet-up, she came into contact with CodeDoor and learned the basics of coding. We helped her to an internship in a start-up company – but she still lacked a lot of knowledge. So while interning, she continued to learn with CodeDoor and qualified as a Full Stack Developer - with success! She was taken over by the start-up company and worked there for a year. Since she liked the other learners and tutors, Alara still joined CodeDoor events, such as a hackathon with the international IT-company, that one of our tutors organised. She immediately clicked with the company's staff and when she was ready for a new challenge, she found her second job as a programmer with them. Ever since that, she is climbing up the career ladder, while she is organizing meet-ups to encourage other women to start coding.

Our project "Code 1000" was extremely successful: The qualification of 1000 developers by CodeDoor was completed even faster than planned.



CodeDoor learners

Challenges

During the last months of “Code1000”, the core team (consisting of the two founders Karan Dehghani and Farid Bidardel – now chairmen, CTO Tobias Lang and CEO Nora Schimang) discussed the future direction of CodeDoor. We carried out the "Code1000" project with a high degree of personal commitment, which we could not continue to expand after the end of the project in view of the ever-increasing number of users. It was clear to us that we had to and wanted to scale in order to be able to meet the many requests, but at the same time we did not want to expand the team any further. There were two reasons for this:

1. We did not want to inflate the CodeDoor non-profit association into a huge and very costly machine.
2. Secondly, the core team felt the need to continue to work on the substance of CodeDoor, which was the learners themselves, instead of retreating to an administrative or staff management role.

Solution

We started looking for alternative solutions:

- We observed the needs of our learners, we looked at what factors distinguish the successful from the less successful and we consulted intensively with dropouts.
- We also talked to over 30 different non profit coding initiatives across Europe (focus in Germany) and over 90% had no software developers in their own team. Most were completely dependent on their volunteers. This caused a huge discrepancy between the courses though, since it was very difficult for them to maintain a common standard. Additionally, they could not scale their efforts - their work was always limited because it was so intense on "human capital".

Thanks to the technical and pedagogical know-how within the team, CodeDoor was able to draft and develop a first version of our CodeDoor platform: a learning software for our participants.

Biggest challenges for the CodeDoor core team

We had determined not to grow in size any further, not to lose sight of our core mission and not to accumulate gigantic monthly fixed costs. On the one hand, we succeeded: we did not need more staff and remained with our core topic. On the other hand, the whole organisation realised very quickly that we needed changes in the team: If we previously had staff at different locations who supported, supervised and knew individual learners, these tasks now no longer existed. At the same time, IT development became more and more the focus of our work. Little by little, our team therefore changed. With the departure of the location managers, however, we also partly lost the contacts to companies and NGOs that were attached to the individuals. For the core team, it meant a lot of work to re-establish these contacts or to make new ones.

IV: CodeDoor Platform (B to B Modell)

How it works

To scale and grow our outreach across Europe and enhance the number of students benefiting from our approach, we created a web platform to optimize and automate certain parts of the selection, training, and placements. Students were able to do the boot camp and coding challenge, as well as the main course on our web platform.

It is important to note that we did not (and still don't) create our own coding content; our platform curates existing content to the needs of our target group and helps students become more successful in learning coding than without using our platform.

The platform tracks the students' progress so that we can always help and step-in with extra support when necessary.

Companies or (social) start-ups have the possibility to post real-life projects on our platform for the learners to work with. Therefore the platform offers the possibility to reach out to under-served talent and potential employees who are still in training in order to help them learn exactly what a company is looking for and to give them an advantage in accessing the job market.

Challenges

Having developed an e-learning system, we were faced with a new challenge: one of CodeDoor's core competences has always been the detailed knowledge about the programme participants, about their personal stories and knowledge - this was a crucial complement to e-learning and certainly one of the reasons for the success of our work. How could we maintain this important component? Who could maintain the intensive personal contact with the learners that we could no longer offer on a large scale?

Solution

Since the majority of our learners had always come to us through partner organisations, we decided to use this for our own benefit. We built the platform so that each organisation could take over the social parts of the qualification that we had previously covered. This turned out to be a sensible concept in several respects:

- In most cases, the participants had already built up a relationship of trust with the staff of the partner organisations and could continue to be supervised by them.
- The learners could stay in the familiar premises of the organisations. This meant that on the one hand there was no cost factor for the participants (tickets to our office), and on the other hand they did not have to get used to a new, possibly intimidating environment.
- Organisations could adapt the programme and especially the meetings to the needs of their respective target group.

The core aspect of our platform was and is that it also enables organisations to teach programming to their beneficiaries where no team member has expertise. Research tasks and projects as well as being supported by IT-professionals as tutors, help learners to learn how to learn.

CodeDoor's learnings and expertise enables us to help other organisations to scale and increase other NGOs reach to underserved populations and not be limited to their staff and funding.

The organisations are the link between the learners and the platform, and scaling is almost infinite.

Testphase

We started with test users (a youth centre and an organisation supporting job seekers with difficult educational histories) and received valuable suggestions for improvement from the organisations and their beneficiaries:

- For example, we received feedback from the organisations that they would like to have accurate information about their students, which they in turn could adopt for reporting purposes. So we built in an overview for the administrators of the NGOs, where they can find out about the user structure (age, gender), individual progress, etc.
- The learners wanted to be able to see which element they last worked on, so that they could continue at exactly the same point.

Thanks to the developers in our team, we were able to implement these immediately as well. In this way, we have been constantly improving the platform since its inception. User feedback is our main innovation driver and we are constantly working on further improvements and facilitations for our learners.

New role

After the successful pilot phase, it was clear to us that we had found the CodeDoor model of the future: We realised that building a trusting personal relationship with our learners is a particularly valuable but also a resource-intensive factor, which in most cases has already been achieved by the social workers in the organisations they work with. Based on this important insight, we have changed our structure so that the learners form their learning groups and receive close supervision within their already existing institutions. We reduce our support to the professional level as well as to the offers from our network and job search. This change is very well accepted and welcomed by both the organisation's staff and the learners.

As soon as we had found suitable local partners, we withdrew from practical activities as a programme provider. This way, we increasingly took on the role of infrastructure provider for the organisations.

Our focus is now less on maintaining relations with the participants and more on the professional support of the organisations and the further development of the platform.

Biggest challenges for the CodeDoor core team

We have "outsourced" the social part of our work, the selection, the meetings, the supervision of the learners to our NGO partners. But not all organisations support their learners with the same enthusiasm (especially during the pandemic). Every organisation is different and within each organisation the staff also differ from each other.

In particular, we find the following challenges among NGO staff:

- They are overwhelmed with the use of our platform due to a lack of digital literacy or due to missing access to hardware.
- The NGO management tells the staff to use the CodeDoor system but they do not understand how it works and fail to let us know.
- The staff come from different divisions and they don't exchange enough information about their learners to put them together in suitable teams.
- Too few participants come from one organisation to carry out meaningful projects and meetings.

For us, these challenges mean on the one hand that we have to spend even more time onboarding, supporting and working with individual NGOs (we do this mainly with larger organisations). On the other hand, there are NGOs that would like to use the CodeDoor system but cannot because of one or many of the factors mentioned above. To solve that problem, we are currently working on a comprehensive UX makeover for the NGO part of the CodeDoor platform so that it becomes even more intuitive and easy to use. We are also planning to include the possibility to mix learners from different NGOs on one project so that they can work together gaining specific skills.

V: CodeDoor as an infrastructure

It is CodeDoor's goal to scale the support to NGOs and other charitable organisations that either already offer IT-training (such as refugee coding courses) or are working towards implementing such a solution into their curriculum.

In order to do so, CodeDoor has created a software driven platform that empowers beneficiaries to learn coding in a network of NGOs, companies, individual developers and aspiring coders. This platform, with its intelligent tutoring system, is mainly used by educational NGOs and charitable organizations to train their beneficiaries. CodeDoor's goal is to support the integration of individuals of marginalized backgrounds by empowering them with employable and in-demand coding skills. Through the platform, CodeDoor provides advanced coding training, group learning environments and access to expert support.

From the very first steps till 2021 CodeDoor has qualified 3000 people.



CodeDoor learner

Platform

The focus of the platform is guiding learners to learn how to act like a real programmer from day one. They build projects that get more complex with each step. Thus, we don't focus on coding syntax per se (which can be quickly outdated in the short-lived software and IT world), but on understanding concepts, adopting certain ways of thinking and problem-solving strategies. In short, the platform conveys the mindset of successful software developers. The platform gives the learner direct feedback on their learnings and supports team-work. With the support of tutors, they build a portfolio of individual projects that can be reflected on their profile.

The platform is designed so that someone with very limited digital skills can slowly build their knowledge, step by step. At the same time more advanced students can skip the step by step learning and dive deeper. Every project the learners work on contains topics. And every topic is divided into smaller concepts and every concept into the smallest elements. This way no one gets lost. We also leave it up to the student to decide what sources they want to use, which way of studying fits them better. It could be a video course or a website explaining concepts in text-form. Of course, we do give suggestions but it is the student that learns to decide what path they would like to take. We are here to facilitate their learning. As a coder, this understanding is crucial and will define their success. And they will do that by building projects from day one.

The platform can be used in English, French, Spanish, Japanese and German.

Duration

This process can take up to 12 months (most participants need at least 1500 hours of programming), but once the learners have started to build a portfolio of projects they will become more attractive for possible employers. If the student is no longer receiving support from the partner organisation, they can continue to work on our platform until they have successfully found a job (or even after, if they need to improve their skills to keep the job).

Subjects

The platform is project-based. Each project contains pre-approved topics, the participant needs to understand in order to work on the project itself.

- For now, learners can choose projects that contain topics from Web-Fundamentals, Innovation, Full-Stack, Front-End and Data-Analysis.
- For beginners, we recommend our introduction project “Welcome to Coding Land”: In this introduction, they learn about the importance of thinking like a developer in a technology-driven environment. This path covers the basics of problem-solving and how logic is the foundation for thinking like a developer. Beginners get familiar with key Internet concepts and technologies, learn how websites are structured and built, and get an opportunity to try out their new skills in HTML, CSS and JavaScript.
- Learners who specifically want to train an innovation mindset should start with the “Innovation Camp”: It will give them a solid overview of how to run innovation projects successfully and features a number of concepts on innovation.

Certificates

When a project is ready and all related topics have successfully been worked on, the learners upload a video of themselves, explaining the project. This way, they show how deeply they understood their own work.

Once a learner has completed a certain number of projects and therefore solved every concept that comes with it, she or he qualifies for a certificate.

Job readiness

If a learner takes on a real-life project, posted by a company or (social) start-up, they essentially can learn exactly what a company is looking for and thus gain an advantage when accessing the labour market.

CodeDoor does not aim to replace or compete with existing recruitment platforms, but rather complement them.

NGOs

Identifying partner NGOs

At first it is important to identify and partner with organisations that work with our target group and are looking to either implement our platform into their current curriculum or start this kind of training for the first time.

Sourcing and selecting participants

The selection of the participants is done by the pre-approved organisations under the CodeDoor selection criteria. The students who are joining our platform through the organisations match the criteria that are aligned with CodeDoor's criteria, such as underserved, unemployed or disadvantaged youth.

With the help of our platform and the extended offer for beginners, we can also reach people who have not yet started programming (or have not yet dared to leave their accommodation in their new country).

Onboarding an organisation

The workload we put in an organisation differs depending on their experience, previous focus and needs. If the non-profit has a focus on digital education, the staff is normally able to use our platform, work with projects and support their students with very little support from our side. If – on the other hand – an organisation is completely new to the subject of digitalisation, the intensity of the support we provide is naturally much higher - especially in the onboarding process and then later for the job matching.

The process of onboarding an organisation would look like this:

- Understanding the needs of the organisation / getting to know each other
- Onboarding on the platform (usually multiple admins per organization)
- Initial support with creating/finding one or several suitable project(s)
- Assisting the first participants to be onboarded on the platform

- Ongoing support meetings with staff members who have technical questions
- Ongoing support for projects, certificates etc.
- If needed support through our network of tutors to assist with the learning
- If needed, support the organisation with suitable job matching

Onboarding learners through an organisation

Once the NGO is successfully onboarded, the staff can start inviting their students to join the platform.

- **Projects:** The organisation can either create their own project using our pre-approved and developed topics or work with one of the projects that we provide (like a modular system). These are constantly updated by us and our tutors, to make sure the topics are up to date.
- **Teams:** We advise the NGO to create teams, so that the learners have peer-to-peer-learning.
- Once the participants are onboarded and started studying, their progress can be monitored and additional support can be supplemented at any time, e.g. by extra tutoring. This allows the organisations to understand where the learner has difficulties, even if they don't have an expert in their team. They know exactly what smallest element or concept the person is working on and has difficulties understanding. If needed the admins can also request specific help from CodeDoor.
- CodeDoor continues to support and accompany the organisation's staff.

As soon as the first students of an organisation join our platform, they will be able to start working in a team and on a project suitable or even designed for them.

(Alumni-)Tutors

Tutors are a highly valuable addition to the platform and essential for working with CodeDoors infrastructure. In our experience, the tutors come from the NGOs itself (staff

members or volunteers within the organisation), through corporate volunteering or simply because they are looking for an opportunity to share their skills.

As soon as learners form a team and decide on a subject they want to learn, the NGO (if there is not enough knowledge within the NGO team, CodeDoor jumps in) pairs them with a suitable tutor. If it is a good match, a tutor might support a team through 8-10 months training, individual and group projects to build a portfolio. The learners should have easy access to their tutors and regular weekly tutor meetings. The relationship between learner and tutor should be built up in the same way as that between a junior and a senior developer, thus preparing the participants for their later everyday work: The senior helps the junior to find solutions and stay focused.

Many CodeDoor Alumni want to “give back” by becoming tutors themselves or helping other learners by offering internships once they are steady in their IT jobs. In this way, there are always enough motivated tutors available for the new learners, who have often made their professional way out of similar living conditions.

Volunteers without specific coding skills support either as tutors (innovation camp) or with specific skills-based workshops (CV-writing, soft skills...).

Biggest challenges for the CodeDoor core team

Over the last year as a learning infrastructure, we realised that we would not want to continue to treat our different types of NGO partners the same way or let them use the same platform design.

In general, we are working with two types of organisations:

- On the one hand, organisations, educational institutions and initiatives whose core task is the digitalisation and IT qualification of their participants. This means that they usually already have a curriculum, their own content, IT-affine employees, etc. This group uses our platform to simplify and scale their work. They let their learners build projects via our platform, give them learning areas as homework, etc. This type of organisation uses our platform very independently.

- On the other hand, there are organisations that generally want digitalisation for their participants to improve their chances in the labour market without having a specific idea of the content. In most of these organisations, there is no employee who has advanced IT skills of any kind. (It happens that these organisations cannot even conduct video calls and we have to find correspondingly elaborate ways to enable the onboarding of employees.) Among these "non-digital" organisations, we must once again distinguish between two types: Those who want to be informed about every step of their learners and those who want to know as little as possible and only want to see the result at the end.

That said, we decided that we want to make our platform more flexible in order to meet each type of organisation in the right place. With our current redesign of the platform, we are building in new features that allow each organisation to decide what information they want to receive about their beneficiaries. For example, do they want to be actively informed about progress, completed projects, etc., or would they rather just see if the participant is still active and on schedule? With the new iteration, there will be more possibilities for NGOs to use the platform in a customised way.

Another challenge is that - especially for non-digital NGOs - we usually do the onboarding of the NGOs participants ourselves. Depending on the size of the organisation, this can be a very time-consuming process. So we will increasingly use IT solutions here to further detach the onboarding from our CodeDoor staff.

VI: Summary

CodeDoor started as a private initiative with one person, supported by two people with big ideas in 2015. Over the last years, it has evolved from a learning provider for IT skills to an infrastructure that can support all non-profit organisations and educational institutions in their work and scaling.

Multilingual, user-oriented and independent of specific sources, the CodeDoor infrastructure can be adapted by organisations worldwide to the needs of their learners. The software solution enables a customised learning experience and can be handled by employees of organisations even if they do not have IT skills themselves.

Currently, students from 15 countries work with the platform - more than 2000 people at the same time. The CodeDoor infrastructure helps users learn to learn - because once you have learned how to learn, the world is open to you. This way, learners can become excellent programmers in under one year, while closing the gap between qualification and career entry. The platform is a project-based, AI-supported learning tool that enables its users to learn to think like coders through methodology, transfer skills and understanding of problems.

VII: Next Steps

Of course, the CodeDoor journey doesn't end here! We are currently revising the UX and design of the platform - both have been somewhat neglected in many places due to rapid development. In addition, we are constantly learning new things about our NGO partners and their learners, which we then translate into new features on the platform. We are constantly improving our AI and expanding the number of available projects. In the coming months, we are also planning to introduce extended administration tools for NGOs, special access for tutors, the implementation or integration of more advanced communication tools and much more.

However, we are still a non-profit association and therefore depend on fundings on the one hand, and on NGOs and educational institutions on the other hand, who pay for the use of our platform by their participants.