

Final Report

Project title

Land mit KI - Land mit Zukunft? (*Country is making the future*)

Brief description

As part of a project workshop, students at BBS I Uelzen are actively participating in developing ways in which AI can improve living conditions in rural areas. The insights gained in the project enable decision-makers to realize sustainable deeds for tomorrow (#tatenfuermorgen).

Reporting Period:	01.09.2020 – 31.12.2020	
Project Number:	63.3027.8-003.00	Initial term: 01.09.2019 – 31.08.2020
		Term extension: 01.09.2020 – 31.12.2020
Contract number:	81247340	
Grant Recipient:	Berufsbildende Schulen I Scharnhorststraße 10 29525 Uelzen	
Implementing Institution(s):	Institut für Zukunftsstudien und Technologiebewertung GmbH Schopenhauerstr. 26 14129 Berlin	
Contact person of the ZE on site:	Stefan Nowatschin Tel: 0581/955-748 E-Mail: stefan.nowatschin@bbs1uelzen.de	
GIZ organizational unit: A300	GIZ Contracting Officer: Jan-Peter Schemmel	
	Phone: 030/405085-320	
Reporting date:	31.12.2020	

What is the issue?

In the project "Land mit KI-Land mit Zukunft?" the latest developments in artificial intelligence are made tangible for students of the Berufsbildenden Schulen I Uelzen and discussed in the context of the problems of the district as possible solutions: Telemedicine in the context of doctor shortages [SDG 3], individual eLearning offerings in the context of limited educational opportunities [SDG 4] and new mobility concepts in the context of poorly developed public transportation [SDG 9]. The students then work creatively on the extent to which AI technologies can promote the improvement of living conditions in rural communities [SDG 10]. The recommendations for action generated from these results are intended to show the path of sustainable development using the region as an example.

For this purpose, the following methodology is applied:

1. Opinion poll of the young people: Which deficits does the district have from their point of view? How do students feel about AI and what do they already know? This perspective is determined through questionnaires (N= 200) and discussions on site and compared with interviews of rural key actors (e.g., district administrator, education office; N= 10). The mix of qualitative and quantitative methodology provides a deep insight into the initial situation and potentials in the district.
2. Development of learning stations based on the survey: The learning stations are designed along the lines of the successful DigiHand project (cf. www.digi-hand.de). To this purpose, the topic of artificial intelligence is first introduced with the help of a media wall and illustrated with examples. The young people will then have the opportunity to learn about and try out various AI technologies in 4 learning stations, which will be thematically based on the results of the opinion poll. Promising topics for rural areas are:
 - a. Autonomous mobility: To and from the disco without risk? Given the long distances and poorly developed public transport in rural areas, owning a car has been particularly important to participate in social life up to now. Innovative mobility concepts (e.g., car sharing & autonomous driving) therefore offer particular potential for rural regions, for example in the form of an automated shuttle service.
 - b. Digital Infrastructure: Drone delivery services and spare parts from the 3D printer. Online retailing is already being used intensively today, especially by the younger population. In the future, will trying on clothes in virtual space, delivery of goods by drones and spare parts from the 3D printer be solutions to supply deficits?
 - c. Telemedicine: Lifesavers Smart Watch and Co? Medical care is often a problem in rural areas. But smart sensors in watches make it possible to detect impending heart attacks or strokes in advance, or to register a fall so that an ambulance can be called in good time.
 - d. E-learning: Private lessons by AI. Access to diverse educational opportunities are often difficult in rural areas, leaving the potential to qualify skilled workers untapped. Intelligent e-learning offers true equality of opportunity through spatial independence.
3. Implementation of the "KI project workshop" at the BBS I Uelzen: the project workshop is carried out with 2-3 school classes each for a 4-hour period. After the introduction to the topic, the students deal with one learning station each in small groups and reflect on its potential for the rural area. In the second block, the young people develop concrete

application examples and future scenarios for these technologies and design them visually (cf. social mapping). 500 students are expected to participate in the project workshops. Furthermore, the about 2000 students of the BBS I can also use the learning stations outside the workshops.

4. Evaluation of the survey and report generation: Essential results of the workshop will be handed over to regional key actors as concrete recommendations for action.

What are our goals?

One aim of the project "Land mit KI - Land mit Zukunft?" is to determine the push and possible pull factors of the district: In which areas do the inhabitants see current deficits and future challenges of rural life? (Push) Which AI offers potential to equalise living conditions and makes life in the countryside more attractive in the future, especially for young people? (Pull) Within the framework of the opinion survey by means of a questionnaire as well as discussions and interviews with relevant actors, the (push) factors that are perceived as disadvantageous by the rural population are to be identified first. A first interesting result is the extent to which the perspective of the youth target group regarding existing deficits of the district coincides with the view of the regional key actors. The findings of this initial survey will then be incorporated into the selection of topics and the conception of the learning stations "Artificial Intelligence for Rural Areas".

By actively using the learning stations and the guided reflection and creative discussion within the project workshop, the young people gain extensive knowledge about AI technologies. This enables them to assess their opportunities for improving rural living conditions as well as their risks and sustainability potential.

Potential (pull) factors can be derived from the positive future scenarios developed by the students for living in the countryside with artificial intelligence. On the one hand, the close dialogue with both students and decision-makers offers the opportunity to develop concrete recommendations for action, which - supported by the collected data - can meet the challenges of the district of Uelzen and make contributions to a sustainable transformation of the district.

On the other hand, this dialogue ensures that local ties are strengthened and the basis for a constant exchange within the community is created. An overarching goal of the pilot project is also to test the methodology, which addresses the specific circumstances of a region in order to be able to show a needs-based path into the digital future.

Who is our target group?

Adults (19 - 59 years), children/youth, regional actors. Our contribution to the Sustainable Development Goals (SDGs)



Connectivity and multiplier effect of the project

In addition to basic knowledge about various applications of artificial intelligence, the young people gain knowledge about its opportunities and risks with regard to a sustainable transformation of their rural region. They carry this knowledge into their family and circle of friends, but also into the training companies as well as the regional community.

In this way, the potentials of various AI systems can be made widely available, thus paving the way for sustainable digitalisation. In addition, the project workshop will be firmly integrated into the school concept of the BBS I Uelzen and will thus be used beyond the project period, reaching even larger numbers of participants. The future scenarios developed in the project workshop will also be presented in the form of a poster exhibition to which the local press as well as actors from education and politics will be invited. A project website and the press releases of potential venues in the district, which are also advertised with flyers and posters, are used for external communication. The support of the relevant local actors (e.g. district administrator, education office) has already been promised, which also ensures access to further educational institutions. In this way, we explicitly address the young generation that will carry the transformation of the region, but also the key actors who are now setting the course for a sustainable development of the region. The continuous and close cooperation throughout the project with the most important actors for social change ensures a strong regional anchoring in the target region.

The results can serve as a basis for developing roadmaps for subsequent projects in the district, as these outline the future visions of local young people in the age of digitalisation. Furthermore, the concept of the AI project workshop can serve as a blueprint for similar projects in other rural regions. The proposed methodology is able to capture the specific needs of the young citizens of different regions with their individual challenges and then to examine to what extent different AI technologies represent a sustainable solution approach. The institutional proximity of the project partner IZT to Berlin 21 and the regional network office RENN.mitte offers the opportunity to disseminate the project's findings.

Innovative character of the project

Although progress in the field of artificial intelligence is generating a lot of media interest, the approach of using artificial intelligence as a tool to equalise living conditions between urban and rural areas has not yet been a prominent topic in politics or academia. While some AI applications are already almost unimaginable for many, their importance and reach will continue to grow rapidly in the near future. Therefore, it seems reasonable or even necessary that students not only have basic knowledge in the field of digitalisation and artificial intelligence, but also question it with regard to their own reality of life and in the context of sustainable development.

The topic of AI is often discussed in science and the media in connection with terms such as Industry 4.0 and robotics, while concrete opportunities and risks of digitalisation for rural regions are comparatively little discussed. The differences in supply and IT infrastructure compared to urban regions not only create different needs for the rural population, but also require a holistic approach to regional transformation. By involving relevant local actors from politics and education, concrete and needs-oriented solutions can be developed for the district. The comprehensive consideration of the issue by an interdisciplinary team of teachers (politics, business studies, IT) and scientists (media, environment, futurology) ensures that the decisive push and pull factors of the region are identified.

Another key feature of the project is the participation of the young population in an important social transformation process. In this way, students who are not yet eligible to vote can communicate their problems and wishes and are given the opportunity to formulate their vision of a good life in rural areas. The very process of shaping a shared future in the county across generations has the potential to strengthen local ties and create the basis for a lively dialogue about regional transformation within the community.

Because the thesis that young people are the future seems to carry a lot of truth, especially in rural areas and in the context of sustainable digitalisation.

Details of the organisation

Name:	Berufsbildende Schulen I
Legal Status:	Institution of public law
Street, no:	Scharnhorststr. 10
Postcode, Place:	29525 Uelzen
Federal state:	Lower Saxony
Website:	www.bbs1uelzen.de

Brief description of the organisation

The Berufsbildende Schulen I Uelzen (BBS I) is a barrier-free regional centre of excellence for “Berufliche Bildung für nachhaltige Entwicklung“(BBNE) (*vocational education for sustainable development - VESD*). The guiding principles, organisational structure and school programme were aligned with the German Sustainability Code in 2015 and promote sustainable thinking and action among the approximately 2,000 students of industrial-technical and commercial professions. BBS I Uelzen has drawn up a BNE¹/BBNE - organisation and action plan. For the implementation of the action plan and the ESD/VESD projects listed in it, the students and teachers were provided with a guideline that reliably guarantees the planning, implementation, and evaluation of the ESD/VESD projects. BBS I Uelzen was awarded the following prizes for its work: Werkstatt N Prize of the German Council for Sustainable Development (2016) and awards from the BMBF and the German UNESCO Commission within the framework of the World Action Programme (2016 and 2018).

Proof of non-profit status

The applicant organisation is a legal entity under public law.

Details of contact persons and project partners

Authorised representative

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Potential project partners

IZT

Legal form: non-profit limited liability company
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¹ BNE (Bildung für Nachhaltige Entwicklung) = ESD (Education for Sustainable Development)

Financing details

Funding

Planned start of funding: April 2019

Duration of funding: 12 months

End of funding: April 2020

Planned budget input

Staff costs	30.500,00 EUR
Research, preparation/implementation/evaluation of questionnaires, discussion & interviews, conception and design of 5 learning stations, preparation/ implementation/ evaluation of project workshops, generation of recommendations for action for local actors, project management	
Fee services	0,00 EUR
Material costs	15 300,00 EUR
IT technology for learning stations (media wall, tablets, smart watches, sensors, AR glasses, 3D printers, drones, etc.), transport costs, printing of handouts/posters.	
Travel expenses	3 600,00 EUR
Rail travel and hotel accommodation for kick-off/ interviews/ discussions/ workshops on site	
Administrative expenses (1%)	494,00 EUR
Total costs	49 894,00 EUR

Further financing

No information.

Own contribution of the applicant organisation

The own contribution can only be estimated. It consists of material and personnel costs. The project supervision and management of BBS I Uelzen is carried out through non-remunerated additional work, as the persons involved are employed by the state. The use of the workshops, machines, and technology for the creation of the learning stations is also carried out in the BBS's own non-remunerated work.

The partner IZT uses premises, IT and internet, consumables and everything that is necessary to run an office for the project. The overhead usually applied to projects is approx. 80%, which also includes personnel costs for accounting, management, and secretary's office. In addition, overtime, e.g. due to business trips, is not compensated with time off on a mutually agreed basis between the company, works council and staff in small projects. All in all, the own contribution in relation to the personnel cost calculation is estimated at least at 35% (€ 10,000).

References

<p>Experience the digitalisation of the craft</p> <p>Topic: Digitalisation, Artificial Intelligence</p> <p>Duration: 01.01.2018 - 31.12.2018</p> <p>Budget: 74,859.54 EUR</p> <p>Funding Organisation: Federal Ministry of Education and Research</p>	<p>Wolfenbüttel County 4.0</p> <p>Topic: Sustainable digitalised services of general interest</p> <p>Duration: 23.08.2018 - 30.09.2019</p> <p>Budget: 277,129.30 EUR</p> <p>Funding Organisation: Federal Environment Agency</p> <p>Website: https://tinyurl.com/wolfenbuettel40</p>	<p>Lifelogging in discourse with young people</p> <p>Topic: digital self-measurement, youth dialogue</p> <p>Duration: 01.09.2017-28.02.2019</p> <p>Budget: 124,196.60 EUR</p> <p>Funding Organisation: Federal Ministry of Education and Research</p>
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Website: <https://www.digi-hand.de/>

Website:
<https://www.izt.de/projekte/view/projekt/logmyself>

<p>Implementation of the DNK (Workshop N project)</p> <p>Topic: Environmental school</p> <p>Duration: 2015/2016</p> <p>Budget: EUR</p> <p>Sponsor: German Council for Sustainable Development</p> <p>Website: http://www.bbs1-uelzen.de/BNE_Text.pdf</p>	<p>Place of learning with award for sustainable development</p> <p>Topic: Anchoring the GSC in the mission statement / school programme</p> <p>Duration: 2018/2019</p> <p>Budget: EUR</p> <p>Funding Organisation: German UNESCO Commission</p> <p>Website: https://tinyurl.com/BBS-Unesco-2018</p>
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Project Results

1. Project goal

1.1 Project goal at the start of the project

In the project "Land mit KI - Land mit Zukunft?" the developments of artificial intelligence and related digitalisation technologies are made tangible for students of the Berufsbildende Schulen I Uelzen (BBS I). The special focus is to discuss with the young inhabitants of the region possible solutions that use these new technologies to address problems in the district. One example is telemedicine in the context of the shortage of doctors in rural areas. Others are individual e-learning offers in the context of limited educational opportunities and new mobility concepts as an alternative to poorly developed public transport.

The students are involved as active idea generators and should creatively work out how AI technologies can promote the improvement of living conditions in rural communities. The recommendations for action generated from these results will be presented to local decision-makers and could thus point the way to sustainable development in the region.

1.2 Possibly update the project objective during implementation

Due to the onset of the COVID-19 pandemic in March, it was not possible to stick to the original project plan, which envisaged holding face-to-face workshops in May and June 2020. Instead, the project was realised within the framework of virtual lectures via the school's internal Microsoft Teams platform. The funds freed up by the adjustment for transport and travel costs as part of the IZT's fee-based services were used in accordance with the updated financing plan for the design of the virtual learning units and to compensate for the additional personnel costs incurred.

The primary objective did not change due to the adaptations of the project proposal. The virtual workshops and the presentation of their results to local stakeholders continued to pursue the original objectives of the project. In addition, the adapted project plan offered the opportunity to test a distance learning format in schools, which also fits ideally into the thematic content of the learning unit "Work & Education". Shedding light on the question of what differences students and teachers perceive between virtual and physical teaching formats is accordingly to be regarded as an additional objective.

1.3 Status of the implementation of the measures

Result	Evaluation ¹⁾	Status/ causes for deviation
Implementation of the lectures	B	Completed with a delay of about 1 month*
Implementation of the workshops	B	Completed with a delay of about 1 month*
Presentation of the results	A	Completed

* related to the planning within the framework of the contract amendment

1.4 Assessment of the achievement of objectives

With the implementation of a total of 10 events - each consisting of a lecture and a workshop part - as well as the presentation of the results to local actors from politics and education, the set goals were essentially achieved. Only the number of participants designated in the original planning could not be realised within the project duration. On the one hand, this was due to the applicable regulations around COVID-19, which is why an event with several school classes at the same time would not have been feasible at any time. At the same time, the planning and implementation of additional events during the project period as a corresponding compensation strategy was not possible, as the multi-layered adjustments to the project in particular had already largely exhausted the available resources.

However, since there are already firm plans for further use and development of the project contents within the framework of school operations, it is to be expected that the originally set target will be reached or even exceeded in the coming months and years.

¹⁾ Evaluation:

A = on schedule

B = delayed by... (specify months)

C = endangered

D = not possible

1.5 Status of the contribution

1.5.1 Services of the ZE (according to contract)

Target state	Actual state	Evaluation
Support of the workshops - Planning and scheduling classes - Preparing classrooms for digital workshops - Conducting on-site 20 workshops of 90 minutes each	All planned performances have been fulfilled	B (1 Month)
Presentation of results - Selection and invitation of the group of participants - Planning and implementation of the presentation of results - Exchange with the group of participants after the event	All planned performances have been fulfilled	A
Final reporting - Writing the BBS-content for the final report	All planned performances have been fulfilled	A
Project management - Correspondence with IZT	All planned performances have been fulfilled	A

1.5.2 Contributions of the partner [Institute for Futures Studies and Technology Assessment].

Target state	Actual State	Evaluation ¹⁾
Preparation of the workshops - Selection of suitable content for four identified thematic areas - Development of learning units and workshop ideas - Continuous adaptation of content for different target groups	All planned performances have been fulfilled	A

Target state	Actual State	Evaluation ¹⁾
Implementation of the workshops - Implementation of a total of 20 events (10 lectures & 10 workshops) - Evaluation of the workshop results	All planned performances have been fulfilled	B (1 Month)
Presentation of results - Preparation of the workshop results - Preparation and implementation of the final presentation	All planned performances have been fulfilled	A
Final reporting - Writing the IZT content for the final report	All planned performances have been fulfilled	A
Project management - Correspondence with BBS	All planned performances have been fulfilled	A
1.5. Third party contributions		
Target state	Actual state	Evaluation ¹⁾

of which pre-financed partner services
in €

2. Change in the concept and design of the project

2.1 Possible change of project design during implementation

The LamKI workshops were conducted virtually via the school's internal digital platform (Microsoft Teams) instead of physically with learning stations. In addition, the originally planned format of 4 school hours per class was deviated from, as this would have been difficult to integrate into the school routine, which was already disrupted by the pandemic. Thus, the implementation phase was divided into two 90-minute sessions, so that each class participated in two events, typically with a week between them.

In the first part, basic knowledge about artificial intelligence as well as the contents of the identified main topics (mobility, entertainment, health care, work & education) were conveyed with the help of an interactive lecture. In order to increase the engagement of the students during the lecture and to compensate for the lack of physical interaction, participatory tools (polls, quizzes) and interactive applications (AI apps) were used for the different topics in addition to PowerPoint slides. Using a QR code or a link, the students were able to connect to the interactive presentation with their own mobile device or a school computer and participate in the surveys as well as access the collected further content (articles, examples, videos, applications) with one click. The application (SlideLizard) also allowed anonymous questions to be asked, which were answered during the presentation or afterwards via Microsoft Teams, as well as collecting feedback, which was also anonymous. Appropriate equipment was purchased for the technical realisation of the virtual learning units. In particular, the audio equipment used (microphone, audio interface and headphones) to improve speech intelligibility during the transmissions as well as the streaming equipment (webcam, green screen, lighting) for the professional design of the video streams, which had to take place from the home office, should be mentioned here.

The second part of the work with the school classes was the workshops, in which the students worked in small groups on their main topics on concrete visions for the future of the district of Uelzen. A central role was played by an application (Marvel), which allows students to transform their own ideas into clickable prototypes for apps and websites without any programming knowledge. For this purpose, each group was provided by the IZT with an iPad set up for the workshop, a comic essay about artificial intelligence (AI, we need to talk) and a stylus pad to design the ideas by hand. The students were supervised and supported by their teacher and a student assistant hired for the project. For each topic, the students were given exemplary project ideas that could address the regional deficits identified in the survey.

2.2 Continuation after the end of funding (relevant for final reports)

The developed learning arrangement (workshops and AI learning stations) has been very well applied in lessons in different types of schools. In the coming school year, the learning format will be tested in other school types / classes of BBS I Uelzen so that implementation can be ensured in all school types.

The advancing technological development makes it necessary to continuously update the basic concept of the workshops and the AI learning stations, e.g. in a VESD innovation network "Digitalisation/ AI and Sustainability in the Classroom", which is yet to be founded. We therefore hope for follow-up funding and further support from our cooperation partner IZT for the further development of the project.

3. Analysis and evaluation of the project supported by the grant

The outbreak of the COVID-19 pandemic in spring caused great uncertainty regarding the implementation of the planned project. At that time, it seemed difficult to estimate whether or when the BBS I would start its regular school operations and when the corresponding events would be held. In addition, the BBS I in particular was of course confronted with numerous unforeseeable problems, the resolution of which required a great deal of resources. Especially for the LamKI project, the pandemic meant additional effort, since due to the unpredictability of the situation, "two-track" planning had to be used for a while in the implementation. In the end, the overall concept was adapted in essential points, which naturally resulted in further

personnel expenditure. At the same time, the effort for project management increased considerably, as the pandemic brought with it a significantly increased coordination effort and ultimately also a contract adjustment, for which the project documents had to be adapted.

Nevertheless, the original project plan and the associated project goals could be maintained in essential parts. The new learning format was presented a total of 10 times and has already been optimised several times. Although the number of participants and the physical interaction with digital technologies had to be reduced due to the pandemic, it was possible to test an innovative learning concept, which seems to be particularly relevant in the context of the discussions about digital teaching in times of Corona. By switching to a digital format - as opposed to physical learning stations, which are always associated with considerable transport costs - the scalability of the project is also increased enormously. With a view to increasingly digitalised teaching, we therefore consider the competence gain achieved through the project to be a valuable result that justifies the necessary additional work on the part of IZT and BBS I Uelzen.

From the perspective of the defined primary target group (the students of the BBS I Uelzen) the project can also be considered a success. In the voluntary feedback, the participants rated the LamKI events with an average of 4.43 out of 5 stars (N = 37) and expressed constructive criticism, which served to continuously optimise the content. The structure and content of the presentations changed slightly from time to time, for example, to meet the expressed need for more concrete examples. The consistently high level of interest in the topic of artificial intelligence and its implications, as well as the novel learning format, should be mentioned as particularly positive. This was expressed not only in the positive evaluations, but also in the questions asked by the students during and after the presentations. During the workshops, the majority of the students were also motivated to use what they had learned in creative impulses for innovative applications for their district. Overall, we believe that the project reached the target group and was able to motivate them according to the objective.

4. Need for action

4.1 Need for action by the ZE

The developed learning arrangement (workshops and AI learning stations) will be integrated into the school curricula in the school types and classes that participated in the LamKI project and will thus continue to be used in the coming school year on a mandatory basis.

The LamKI project is included in the school programme and in the "School Action Plan ESD/VESD". Furthermore, the learning arrangement will be placed on the school homepage and thus made accessible to other interested educational institutions in order to spread the content-related and methodological competences beyond BBS I Uelzen.

4.2 Need for action by the GIZ

The feedback from the primary target group during the surveys and the feedback from the events as well as the local stakeholders during the presentation of results clearly showed that there is a great need for learning opportunities at the interface between digitalisation and sustainability in the education sector. We also see an urgent need for action here, which GIZ could support through targeted promotional measures.