

Report to NTTI visit from April 22 until May 5, 2022

“Promotion of Youth Employment and Vocational Training in Kenya”



1. Summary

From April 22 until May 5, 2022 the Nairobi Technical Training Institute NTTI visited our TVET College BSZ I Schwandorf. The objective of our partnership is: “Kenyan staff in vocational and education training (VET) is strengthened in their capacity to implement cooperative VET.” through the GIZ programme „Promotion of Youth Employment and Vocational Training in Kenya - School Partnerships of Kenyan and German Vocational Schools“. Our long-term school partnership with the Nairobi Technical Training Institute (NTTI) in the field of automotive mechatronics focus on “dual training system”, “modern automotive technology” “school organization and administration”, “school management”, “training of trainers (ToT)” and “cooperation with dual partners”.

The capacity building measure of this partnership enables the Kenyan College Nairobi Technical Training Institute and their management and teachings staff, to design cooperative training programs, adapting the local/regional/national situation in Nairobi/Kenya with their industry training partners.

During the first two days of their visit, NTTI participated at Bamberg TVET College in cooperation with Bamberg University how cooperative training works in Germany and what are the roles of the two learning locations, the private sector and the TVET College. During the following 12 days, we provided guidance and training for management and teaching staff of NTTI focussing on the presentation and organizational implementation of dual vocational training in Germany. All involved bodies, TVET College, companies, chambers, Federal Institute for Vocational Training (BIBB), ISB, vocational school, society (parents, trainees) have been presented, showing their roles in conducting dual training. The capacity building for the NTTI delegation provided information on:

- How cooperative training with TVET College and companies is organized in Germany based on German rules and regulations
- Vocational school teacher training and further training in Bavaria
- Visits to companies such as mechanical automotive repair shops, BMW production company
- Presentation of the "Bayern-Lab", specialist for IT networking
- School organization and -management, focusing on Quality management at vocational schools in Bavaria (QmBS)
- Creation of vocational training standards and curricula in Germany / Bavaria (BIBB / ISB)
- Methodical teaching at our BSZ (project teaching)
- New technical developments in automotive such as "electro mobility"
- Further training for teachers in Bavaria at our BSZ in mechatronics in cooperation with the State Academy for Teacher Training in Bavaria
- Cooperation with chambers in the skilled worker assessments
- Regulations on the journeyman's / final assessment
- The role of inter-company apprenticeship training, e.g. BMW company training center
- Presentation of the workshops for practical training and further education for industrial mechatronics engineers, motor vehicle mechatronics engineers and agricultural machinery mechatronics engineers.

It was important for the teaching staff to get technical inputs as well as to gain methodical competence how to train and to teach in automotive cooperative learning content. Benchmarking resources and qualifications in terms of systemic and methodical approach, in terms of technical equipment at our TVET College and partnering companies played a vital role. We provided guidance in determining technical, methodical and organizational gaps and possible ways forward. Both sides gained insights on how TVET works, in Kenya and in Germany.

2. Schedule

NTTI/Kenya Study Tour - Program

Date: 22.04.22 - 05.05.2022 (16 days)

Persons: 12 participants from NTTI

Address Hotel: „Roter Hahn; Rote Hahnengasse 10; 93047 Regensburg ; Tel: +49 941 5 95 09-0

Friday, 22.04.2022 - Arrival in Bamberg		Bamberg BSZ Bamberg
5:40	Arrival Frankfurt	
6:37	Departure by train to Bamberg (both groups)	
9:16	Arrival in Bamberg, Group KIST + Group NTTI	
	Leave your suitcases at the Hotel IBIS at the station	
11:00	Welcome at SBSZ-Bamberg with short guided tour	
13:00	lunch break	
14:00	Uni Bamberg - Dual Training System, Group KIST + Group NTTI	
17:00	Room check-in Hotel IBIS	
18:00	Dinner together, optional	
Saturday, 23.04.2022 - University of Bamberg		Bamberg University of Bamberg
10:00	Welcome at SBSZ-Bamberg with short guided tour	
12:00	lunch break	
13:00	Uni Bamberg - School Management, Teacher Training	
17:00	City tour organised by UNI in English	
19:00	dinner together	
Sunday, 24.04.2022 - Arrival in Regensburg		Regensburg
09:00	Departure group NTTI to Regensburg	
Approx. 11:30	Arrival Regensburg main station	Heiland / Most / Krafczyk
	Occupancy Hotel "Roter Hahn" Old Town Regensburg with taxis	
	lunch break	
15:00 - 16:30	City tour(s) - hotel pick-up (duration approx. 1.5h)	
approx. 17:00	Joint Dinner - Gasthof Kneitinger	

Monday, 25.04.2022 - The BSZ Schwandorf		Schwandorf BSZ Schwandorf I
08:30	pickup Hotel Roter Hahn	
09:00 - 11:00	Welcome to BSZ I Schwandorf Guided Tour	Most / Schlütsmeier
11:10- 12:40	Class visits WAK10 A	Krafczyk
12:40 - 13:40	lunch break	
13:40 – 14:45	digital tools in the classroom (digital boards, Visualizer, I-Pad, Kahoot, teams ...)	Krafczyk
approx. 14:45	Transfer by minibus to Regensburg to the hotel	
18:00	joint dinner	
Tuesday, 26.04.2022 - school training motor vehicle		Nabburg BSZ Schwandorf I
08:30	pickup Hotel Roter Hahn	
09:00 - 12:00	Group of teachers: Classroom visits Competency-based teaching - subject theory	
	Group Admin: Pedagogical Networks / Digitalization LucasNülle	Heiland / Milbrodt / Erben
12:00 - 13:00	lunch break	
13:00 - 15:00	Group Teachers: Classroom Visits Competence-oriented teaching - practical teaching	Heiland / Milbrodt
	Admin Group: Budgeting and Finance	Pampouchidis
from approx. 15:30	Walk through open-air museum Perschen with beer garden and joint dinner and transfer back to Regensburg.	Heiland / Krafczyk
Wednesday, 27.04.2022 - E-Mobility		Regensburg Vocational school Regensburg 1 - KFZ
08:30	pickup Hotel Roter Hahn	
09:00 - 09:10	Welcome by H. Schmidbauer at Berufsschule 1 in Regensburg	Most / Pampouchidis
09:10 - 10:00	Tour of the premises of the motor vehicle department	
10:00 - 10:20	Coffee break	
10:20 - 12:00	Presentation of education topic HV theory/practice in the different grades Unlock teaching sequence incl. Q&A session	
12:00 - 12:45	lunch break	
12:45 - 13:45	Practical exercises / Unlock HV	
13:45 - 14:45	Presentation of the dual system	Most
14:45 - 15:00	coffee break	
15:00 - 15:30	Final discussion	
18:00	Joint Dinner	Most

Thursday, 28.04.2022 - Center of Excellence (Arrival Ms Schmitz and Ms Schott)		Nabburg BSZ Schwandorf I
08:30	pickup Hotel Roter Hahn	
09:15 - 10:15	Automobile workshop tour Driving dynamics / ESI with coffee break	Heiland / Sauer
10:15 – 10:45	transfer to Schwandorf	
10:45 - 11:30	Tour of the electrical engineering/mechatronics departments	Pampouchidis
11:45 – 12:45	Lunch break in Schwandorf	
13:00 - 15:00	moderated Workshop "Excellence Centre	Krafczyk /Project team
from approx. 15:00	transfer back to Regensburg	
18:00	Joint Dinner	Most
Friday, 29.04.2022 Training in the automotive industry		Regensburg BMW
08:30	pickup Hotel Roter Hahn	
09:00 - 11:00	Tour of the BMW Neutraubling training centre (H. Menzel)	Most / Pampouchidis
12:00 - 13:00	Possibility of a midday snack	
from approx. 13:00 - 15:00	Museum „Haus der bayerischen Geschichte“	
18:00	Joint Dinner	Most
Saturday, 30.04.2022		Regensburg
09:00	Danube boat trip to Valhalla	Krafczyk / Heiland
12:00	Eating in the Wurschkuchl	
from 13:00	Visit Arcaden	
18:00	joint dinner	Most
Sunday, 01.05.2022		Munich
08:30	Departure by bus to Munich	
approx. 09:45	Arrival BMW World Munich	Erben / Pampouchidis
10:00 - 10:40	Guided tour (en) BMW Welt	
approx. 11:30	transfer to the center of munich	
13:00 - 15:00	visit Hofbräuhaus with joint dinner	
approx. 15:00	transfer back to Regensburg	
18:00	joint dinner	Most
Monday, 02.05.2022 - Quality Management and Chamber		Schwandorf BSZ Schwandorf I
08:30	pickup Hotel Roter Hahn	

09:00 - 11:00	Quality Management at Vocational Schools - QmBS	Krafczyk
11:00 - 13:00	Transfer to Regensburg HWK followed by lunch break	Canteen HWK
13:00 - 15:30	Welcome Presentation of ÜLU (part of in-company training in the dual system, RLP, organisation, procedure ...) Presentation of ÜLU-KFZ (focal points according to RLP, courses held) Guided tour of the vehicle workshops + through the BTZ	Most / Pampouchidis
18:00	joint dinner	Most
Tuesday, 03.05.2022 - Automotive workshops and dual education		Schwandorf Car dealer Maschek
08:30	pickup Hotel Roter Hahn	
09:00 - 09:45	Transfer to Schwandorf (Maschek car dealership)	
10:00 - 11:00	A modern car company incl. tour and company structure	Holten / Krafczyk
11:30 - 12:30	Dual education and further training	
12:30 - 14:00	Lunch break	Cafeteria BSZ SAD
14:00 - 15:00	E-mobility platform concept and challenges	
from approx. 15:30	Visit Lakeland and Wooden Sphere with joint dinner	Holten / Krafczyk
approx. 17:00	Transfer back to Regensburg	
Wednesday, 04.05.2022 - Conclusion		Regensburg - Government of the Upper Palatinate
08:30	pickup Hotel Roter Hahn	
09:00 - 11:45	Transfer workshop VET Kenya - Germany	Core team (JM, TK, TH, PP)
12:00 - 13:00	lunch break	Regierung der Oberpfalz
13:00 - 15:00	final discussion / next steps	Core team (JM, TK, TH, PP)
from 15:30	free disposal	
17:00	joint dinner	Core team
Thursday, 05.05.2022		
04:30	Departure from Regensburg station	transfer with taxis
09:20	Arrival Frankfurt Airport	
11:10	Departure to Nairobi	
20:20	Arrival in Nairobi	

3. Detailed reports to visit

Welcome meeting at Regensburg (Sunday, 24.04.2022)

Picking up the delegation at Regensburg main station. Subsequent transfer to the Hotel "Roter Hahn" in the pedestrian zone. In the afternoon a city tour in Regensburg was conducted. During a joint dinner discussion of the program for the coming days followed.

General pedagogy, school and quality management, medium-sized automotive company (Monday, 25.04.2022)

After the welcome at the school by the principal and the district administrator, the visitors from Kenya were introduced to the renovated school building in Schwandorf. The colleagues were thus able to gain a first orientation in the building and get an impression of the daily routine and the equipment at a vocational school.

This part was concluded by a class visit with trainees in the vocational field of automotive salespersons. The theoretical lessons on the subject of "Bearing types" took place in one of the modern classrooms and with the use of a variety of digital tools. After the lunch break, a workshop was held to reflect on the lessons, answer questions and briefly explain and present the digital tools.

In particular, the following aspects were discussed and deepened:

- Class climate and interactions between teacher and students.
- Teaching situation in the class and in general (presence of students, presence of teachers, equipment of the classroom, class size)
- Technical requirements in a modern classroom, especially WLAN, beamer or digital board, laptop.
- Webuntis as a digital class book for documenting attendance as well as topics of the lesson.
- MS Onenote as a tool for digital and multimedia lesson preparation.
- Youtube, LearningApps and Kahoot as free tools in the classroom.

Based on the experiences from the preparatory visit, the apps used and the lesson setting could be designed in such a way that it is basically also feasible at NTTI. In the follow-up, many of the participants expressed interest in training in Learning Apps and WebUntis.

Visiting school campus in Nabburg and school lessons in Automotive (26.04.2022)

After being welcomed at the Nabburg branch by Ms. Pimmer, the school and workshops were inspected. This was followed by a lesson on ignition and starters. The focus here was on project-oriented theory lessons. Mr. Sauer presented an everyday problem. A car won't start. The students had to work out a solution to the problem with the help of digital materials and present it. Over lunch, this unit was reflected upon and discussed afterwards.

In the afternoon, a practical project lesson on this topic took place in the new workshop. Exactly the problem from the morning at the school's BMWs was recreated and the students had to implement their solutions and then reflect on them.



Afterwards we visited the "BayernLab" in Nabburg. Here the latest technology in artificial intelligence and digital technology was presented to the participants.

In the evening, a debriefing of the contents of the day took place over a joint dinner.

Visit of the Vocational School 1 in Regensburg (27.04.2022)

After the principal - Mr. OStD Schmidbauer Josef - welcomed us at the Vocational School 1 in Regensburg, a tour through the premises of the automotive department was carried out with the delegation. There were different specialized teaching rooms presented, including the body of a towing vehicle with the corresponding components, which in turn were connected to each other via hydraulic and electrical connections; a corresponding trailer with the same technology was also presented. Based on the many questions asked, it was clear that the Kenyan delegation was very interested - "Technology that Inspires".



Special attention was also paid to the topic of "Electrification in Vehicles". Various BMW AG vehicles (BMW i3, hybrid vehicles, etc.) were presented and the advantages and disadvantages of an electrified vehicle were discussed. Subsequently, the topic "HV training for trainers" was presented by Mr. Behnke (multiplier for automotive technology) and then a teaching sequence "unlocking" was carried out with all participants. Learning platforms (especially for automotive mechatronics) were also discussed in detail and the contents were demonstrated.

Visit to the new car workshop at the Nabburg branch (28.04.2022)

During the tour of the new workshop, the new technical equipment for measuring and diagnostics technology was presented. First, there was an introduction to the driving dynamics. A large number of faults in a car can be determined here. Different wheel speeds can be simulated, which would reflect the pressure loss in a tire. The support systems such as "ASR" and "ESP" can also be diagnosed.

Then it was off to the "track setting station", which uses the latest laser technology to ensure that an automobile is precisely measured. The participants were amazed at how quickly the system was measured and installed.

Finally, the various diagnostic devices and their software solutions were presented. The different systems and the large cost differences were pointed out here.



Afterwards we went back to Schwandorf to visit the electrical department at the BSZ and to discuss the Centre of Excellence approach at BSZ I and at NTTI.

In the course of the "Center of Excellence" program, the mechatronics/electrical engineering department at the Schwandorf Vocational School Center was presented. The equipment of the iFU's (integrated specialized teaching rooms) and the classrooms was shown - this is innovative and modern equipment to be able to meet the needs of the training companies as a dual partner. Subsequently, the concept of a highly modern production was demonstrated at the CP-Festo production line (Industry 4.0). Here, the production of a workpiece is demonstrated, so students can deepen their knowledge on this system. There is also an error tracking (relation to reality) possible which simulates the reality in a modern production.

Visit to the BMW AG training center in Regensburg (29.04.2022)

After Mr. Menzel (head of training at BMW AG Regensburg) welcomed the Kenyan delegation, they were given a tour of the training center. Various stations were demonstrated, from basic training to the simulation of processes. Particular attention was paid to digitalization in training. Among other things, digital (simulated) welding should be emphasized, which was presented in practice. Digital "welding" demonstrates the advantages in advance through virtual test runs and supports the user in developing suitable strategies. So, conclusions can be drawn about the property of the weld seam and, in particular, its strength can be checked. This provides the user with valuable information for detecting welding defects such as hot cracks in the simulation and avoiding them in practice.

Furthermore, the topic of digital learning was presented. BMW AG has a high standard on Blended Learning and Virtual Learning. There was also a wide variety of platforms presented.

Monday, 02.05.2022 - Quality Management

In the area of school management, three topics were discussed in greater depth that had already become apparent during the preparatory visit. In addition to the topics of class and teacher requirement planning, the documentation of lessons and continuous school development within the framework of quality management at vocational schools were also on the agenda.



The teacher requirement planning, in which the personnel requirements are determined on the basis of the curriculum and the planned classes, was accompanied by many detailed questions. It became clear that the planning tool cannot be transferred 1:1, but that the school colleagues see a need. In the second block, we presented how our lesson planning and the digital class diary derived from it are created. The interest was not only in the procedure and the processes, but also in the software package UNTIS and WebUntis, which is used at our school. The questions and the discussion, especially from the teachers involved in timetabling, showed that there is also great interest in this area. The final evaluation showed a clear interest in the area of timetabling, and documentation of attendance. The integrative approach, including the possibility of recording class data via mobile phone, has aroused interest.

Visit to the Chamber of Crafts in Regensburg (02.05.2022)

The dual partners are important for dual training - this includes not only the vocational school and the company, but of course also the chambers. That's why we visited with the delegation the

Chamber of Crafts in Regensburg. There we were welcomed by the divisional manager Mr. Reif Wolfgang who presented all of the departments and a guided tour was done. Great interest was shown in the examination system for electromobility, which was also explained by using examples of the motor vehicle department. The system of inter-company apprenticeship training was also demonstrated in terms of organization and procedure, which can be seen as a supplement to practical training in the company. The guests were particularly impressed by the degree of digitization in the skilled trades. After a lively round of questions on various topics, the delegation ended its visit to Regensburg 's Chamber of Crafts and will take new ideas back to Kenya.

Visit to dual training partner in automotive (03.05.2022)

The plant tour at "Mascheck Automobile" offered the participants exciting insights into the operational structure of a modern brand company. The presentation of the company and the training activities was rounded off by an intensive exchange, with the managing director Mr. Dull, about the importance of vocational training for medium-sized companies in Germany and the situation in Kenya. The afternoon was dedicated to e-mobility, with practical examples from the VW Group explaining and showing the structure and components of electric vehicles. The technical components were examined with great interest and questions were clarified. In the final evaluation, the results of the day became very clear, especially in the desire to learn more about e-mobility. A key finding from the discussion can probably also be noted that the attitude and commitment of companies to vocational training is a key success factor that still needs to be worked on in Kenya. Participants also noted that medium-sized company structures are a rarity in Kenya. In order to promote ideas and suggestions for the transfer, it would be useful to also look at small and micro enterprises, if necessary within the framework of the following programs.

Workshop at regional government (Regierung der Oberpfalz), Wednesday, 04.05.2022

After presentation of the automotive multiplier system in Germany/Bavaria, a feedback discussion with the participants was conducted.

Possible topics that arise from the presented programs in connection with the final feedback:

- Student-active teaching with the help of digital media and apps - Workshop for developing and testing lessons.
- In-service training in LearningApps, Kahoot, Padlet, Feedbackr, or similar tools in the classroom.
- In-service training in UNTIS and Webuntis on lesson plan creation and class diary.
- Issues:
- How to create a test environment for the NTTI.
- Is there a possibility of licensing for the NTTI?
- Quality management between standardization and development - setting up and implementing a continuous improvement process at the NTTI (basic workshop).



We are pleased that high qualified teachers from our college and partnering college are committed to participate also in future sessions. They are qualified and highly motivated to continue a sustainable, successful school partnership with the Nairobi Technical Training Institute.

Automotive	Studienrat Werner Sauer, Teacher KfZ Technik
Automotive Assessment	Fachlehrer Thomas Heiland, KfZ Meister
TVET Admin Expert	Studiendirektor Thomas Schlütsmeier, Stellvertretender Schulleiter
Information Technology	Studiendirektor Armin Erben, Systembeauftragter
Dual Training	Oberstudiendirektor Dr. Josef Most, Schulleiter
School Management	Studiendirektor Tobias Krafczyk, Mitglied Schulleitung, Studiendirektor Alois Meyer, Mitglied Schulleitung
Mechatronics	Studiendirektor Pavlos Pampouchidis, Fachbetreuer Mechatronik

We look forward to continuing working with Nairobi Technical Training Institute, supported by the German Development Cooperation GIZ.

Schwandorf, May 17, 2022

Dr. Josef Most, Oberstudiendirektor, TVET College Dean

