



USING AUGMENTED AND VIRTUAL REALITY IN TVET

# VR Training Modules to support the Indonesian TVET System Reform

Submitted by  
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

BIBB International Roadshow DIGITAL MEDIA IN TVET

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Bridging Innovation and  
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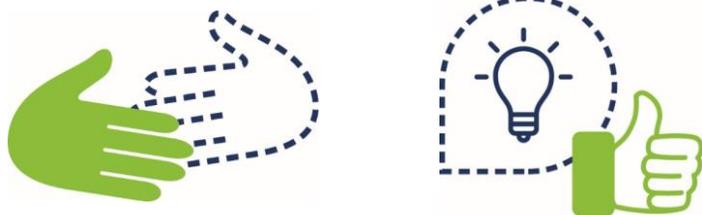
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## Abstract

The presented initiative is a pilot program supporting Indonesia - as a global partner country of Germany - to reform its TVET system. In line with the Indonesian tourism strategy, the Indonesian-German cooperation jointly developed this VR training pilot program to support the training of hospitality staff in Indonesia.

The VR training modules have been designed for different learning scenarios in the field of customer relations and food and beverage service and aim to develop learners' social skills and professional competencies in the sector. The learning contents are aligned to the respective Indonesian Competency Standards (SKKNI).



## Basic Information

- **Purpose of immersive technology use in TVET:**
  - Acquisition of social competencies
  - Acquisition of professional competencies
- **Sector:** Tourism and hospitality
- **Course / subject area:** Customer relations, Food and beverage
- **Type of training:** Formal training at upper secondary level; Non-formal training (optional)
- **Partners for XR development:**
  - Studio2B (Germany)
  - INVR Space (Germany)
  - Shinta VR (Indonesia)
- **Start date:** 2019 (until present)

## Educational Concept

### Learning contents & outcomes

The VR training modules have been designed for **different learning scenarios** in the tourism and hospitality sector:

- Two modules focus on typical situations in **customer relations**, e.g. in the front desk service and food service.
- Four modules focus on **practical competencies** in the field of **food and beverage services**, e.g. preparation of food, food hygiene and safety, general hygiene and COVID-19 protocols

The learning contents adhere to **Indonesian Competency Standards (SKKNI)**.

The VR training modules help to achieve the following **learning goals**:

- Promoting students' **soft skills** for their communication and interaction with customers
- Providing students with **practical competencies** which they can apply in the real working environment

### Educational setting

The main **target group** are students of secondary vocational schools (SMK) in Indonesia that use VR during **class-based training**. Private training providers or employers can also use the VR training modules for in-house trainings:

- While the application is designed for **self-directed learning** and virtual training takes place individually, the training subject is discussed in class, with teachers acting as **training facilitators**.
- A **game-based learning approach** is applied in the VR modules that visualize typical situations in customer relations. Learners can choose between various responses and receive immediate feedback from their virtual counterparts and a supervisor (**virtual assistant**), thus learning how to handle certain tasks appropriately.
- The VR learning modules related to food and beverage service use a **flipped classroom approach**. Learners first gain practical insights about the necessary work steps in VR, and subsequently apply and train practical competencies in class.

## Technical Setup

### Hardware

- Standalone VR Headset (Oculus Quest & Quest 2)
- Controller

### Motion tracking

- While the equipment is capable of tracking all movements in the virtual space<sup>1</sup>, the presented VR training application **does not require the user to move**, i.e. learners can participate in virtual training either standing or sitting.
- In the training modules that use **360° videos** (see illustrations on the right) the application tracks **rotational movements** of users, e.g. looking and turning left and right, rotating the head up/down.
- Other training modules use **3D animations**, in which **users can move in the virtual space**.
- **Interaction with objects** takes place by pointing the controller on the object.

1) The long-term use of the VR equipment has been a decisive factor for the procurement of hardware in the context of Indonesian-German cooperation to ensure the best possible flexibility for the design of future VR applications.



## Benefits of Use in TVET

### **VR-based training enables training of typical work situations**

TVET offers in Indonesia are mainly classroom-based. Against this background, VR-based training offers the opportunity to experience and train typical work situations, in particular the interaction with customers. Virtual training thus offers students insights into their future field of employment and helps to improve knowledge and competencies that they can apply later, e.g. during work placements and/or in the context of employment.

### **Digital technologies support state-of-the art training**

VR-based training offers support the Indonesian government in the reform of its TVET system. The training modules were developed in line with the Indonesian tourism strategy to provide large scale state-of-the-art training for hospitality staff.

### **Modern equipment allows flexible use**

The standalone headset deployed in the program (see technical setup) enables the flexible use of VR, even without a fast internet connection and powerful PC.

## Lessons Learned

### **Legal implications of XR technology use must be reviewed carefully to avoid pitfalls**

Besides choosing suitable hardware on the basis of the requirements and learning objectives to be achieved, it is also important to carefully review the terms and conditions of hard- and software. For instance, additional fees might occur e.g. because extra devices or third-party applications should be used. In addition, privacy policies by the provider should be reviewed carefully to ensure that these comply with the rules and regulations to which education and training providers are bound.

### **The sustainable implementation of VR-based training requires considerable administrative efforts and local capacities**

Facilitating technology transfer in the context of international cooperation requires careful planning of processes and identification of potential bottlenecks. e.g. regarding the procurement and handover of technology to local partners. In addition, local capacities e.g. in XR development and pedagogical expertise are necessary to ensure the scaling up of technology-enhanced approaches in education and training.



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The Bridging Innovation and Learning in TVET (BILT) project provides TVET stakeholders with a platform for exchange and supports them to address current challenges in TVET systems, which arise due to technological, social, environmental, and workplace changes. Within BILT, the overarching theme is New Qualifications and Competencies in TVET, which is supported by four focus themes in the context of TVET:

- Digitalization
- Greening
- Entrepreneurship
- Migration

Through regular knowledge exchange, thematic project activities, and expert working groups BILT leverages the existing mechanism of the UNEVOC Network to offer opportunities for collaboration and peer learning in

Europe, Africa, and Asia and the Pacific. The project complements national developments to explore and support innovative, market-oriented and attractive modes of learning and cooperation in TVET.

The results of ongoing activities are accessible on BILT's web page.

The BILT project is carried out in collaboration with UNEVOC Network members, coordinated by UNESCO-UNEVOC with support of the German Federal Institute for Vocational Education and Training (BIBB), and sponsored by the German Federal Ministry of Education and Research (BMBF).

For more information, please visit

[www.unevoc.unesco.org/bilt](http://www.unevoc.unesco.org/bilt)

or contact us at [unevoc.bilt@unesco.org](mailto:unevoc.bilt@unesco.org)

## BIBB International Roadshow Digital Media in TVET

Initiated by the Federal Institute for Vocational Education and Training in Germany (BIBB), the Roadshow aims to show the potential of digital applications and technologies for teaching and learning in Technical Vocational Education and Training to make learning more flexible and enhance the quality and attractiveness of TVET.

The format builds on the German Roadshow 'Digital Media in TVET', which has been successfully implemented and conducted by the Federal Ministry of Education and Research in Germany (BMBF) in cooperation with BIBB since 2016.

More information:

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As a service provider in the field of international cooperation for sustainable development and international education work, GIZ is dedicated to shaping a future worth living around the world. GIZ has over 50 years of experience in a wide variety of areas, including economic development and employment promotion, energy and the environment, and peace and security.

The diverse expertise of GIZ as a federal enterprise is in demand around the globe – from the German Government, European Union institutions, the United Nations, the private sector, and governments of other countries. GIZ works with businesses, civil society actors and research institutions, fostering successful interaction between development policy and other policy fields and areas of activity.

GIZ's main commissioning party is the German Federal Ministry for Economic Cooperation and Development (BMZ).

## Contact & Further References

### Contact

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### Further references

- Demo video: [Food and Beverage Service](#)
- Website GIZ: <https://www.giz.de>



### Partners for XR Development:

- Studio2B: <https://www.studio2b.de>
- INVR Space: [INVR.SPACE GmbH](#)
- Shinta VR: <https://shintavr.com>

