



Hợp tác Đức
DEUTSCHE ZUSAMMENARBEIT

Implemented by
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH



E-LEARNING ROOM MODEL





I. CONTEXT

Since 2020, GIZ has supported the establishment, operation and exploitation of 11 e-learning rooms for 11 partner TVET colleges in Vietnam. Apart from digital equipment and educational software supported by GIZ, partner TVET colleges provided co-contributions such as facilities, rooms, equipment and human resources to manage and operate e-learning rooms. The proposed e-learning room model below is based on on-site implementation and international experience, and more importantly derived from the needs and practical requirements of implementation at 11 TVET colleges.

II. FUNCTIONS OF E-LEARNING STUDIOS

- Develop digital learning resources and online training courses toward the contribution to shared digital learning resources in the TVET system.
- Support the development of communication products and organize admission communication activities, contributing to enhancing the brand and image of the TVET colleges, and more broadly, the TVET sector.
- Research and pilot innovative ideas on the applications of digital technologies for developing, organizing and managing teaching and learning activities in the context of digital transformation.
- Organize training activities that foster digital competencies and e-pedagogies for staff, teachers and learners.
- Implement technology transfers in teaching and learning and sharing of experience and information among TVET institutes in the TVET system.



III. LESSON LEARNT

Comprehensive and holistic approach

It is critically important to consider a comprehensive and holistic approach when implementing digital transformation activities in TVET in general, and developing and operating e-learning rooms in particular. Let's take the example that College A has invested in modern equipment and facilities for a e-learning room. However, the College: 1) has neither focused on improving the digital competencies of teachers nor assigned technical staff to operate the e-learning room; 2) has not yet developed short-term and long-term master plans and aligned goals of the e-learning room with the College's strategic goals (e.g. meeting the criteria of 30% of modules/subjects delivered online to become a high-quality TVET college in Vietnam); 3) has not yet issued guidelines on online teaching and learning activities, incentive system for teachers to develop digital learning materials; 4) has not developed e-pedagogies relevant to the use of digital learning materials... This raises the question: Can the College A indeed achieve effective, relevant, and sustainable objectives for the implementation of its e-learning room?

Community of Practice (CoP)

The establishment of CoPs for technical staff and core teachers involved in developing digital learning materials - both within individual colleges and across regional and national networks - can greatly enhance the sharing of hand-on experience, lessons learnt, innovative ideas, new technologies, even challenges and practical solutions. CoPs contributes to the improvement of human capacity in developing digital learning materials, managing and operating e-learning rooms, and sharing digital learning resources that optimize resources and promote ownership.

Fire and explosion safety

GIZ strongly recommends that TVET colleges pay close attention to several key safety aspects, given that e-learning rooms often contain equipment and materials with a high risk of fire or explosion. The electrical systems of e-learning rooms are normally surrounded by flammable materials such as sound-absorbing foam and flexible cables. To ensure safety, e-learning rooms must comply with Vietnamese electrical standards, including proper grounding, standardized power input and distribution systems, and the installation of electrical cabinets or emergency shut-off switches. Furthermore, these rooms must be equipped with fire safety systems required by regulations such as fire extinguishers, instructional signage, emergency exits/stairways, and fire alarms.

Additional considerations

Investments in infrastructure, strategic planning, and defining goals of the e-learning room shall not bring the desired outcomes if the college lacks a concrete implementation plan and a robust system for regular monitoring and evaluation on a monthly, quarterly, and annually basis (i.e., implementation monitoring system). Furthermore, in alignment with the growing trend toward integrating greening, digitalization, and inclusion in TVET, colleges should also consider an effective and sustainable use of energies and inclusive accessibility to digital learning materials and online courses for disadvantaged groups.



4. THE DESIGN OF E-LEARNING ROOMS

In practice, TVET colleges design, organize, and operate e-learning rooms based on either the single e-learning room model, or the dual e-learning room model. Below are real-life examples of both models implemented at partner TVET colleges of GIZ

4.1. Single e-learning room model

The single e-learning room model integrates equipment setup, recording, live streaming, training delivery, and technical control within a single shared space. One of the main reasons institutions adopt this model is due to limited space and equipment availability. However, this model presents certain drawbacks when simultaneously conducting both online and in-person training sessions. These include restricted space for learners, increased noise levels, and distractions during lecture recordings.









4.2. Dual e-learning room model

The dual e-learning room model consists of two separate spaces: a studio and a dedicated technical control room. This model is more widely adopted and considered ideal, as it addresses the limitations of the single-room model and ensures a higher level of professionalism.









QR Code

Scan the QR code:
3D simulation of e-learning studio model

5. LIST OF EQUIPMENT, SOFTWARE AND TECHNICAL SPECIFICATIONS OF E-LEARNING STUDIOS

Priority levels: 1 = mandatory; 2 = should have; 3 = recommend to have



1. E-learning room/studio space

Technical configurations

- Standard studio area: 50–80m²
- Standard technical room: 08–12m²

Priority levels: 1

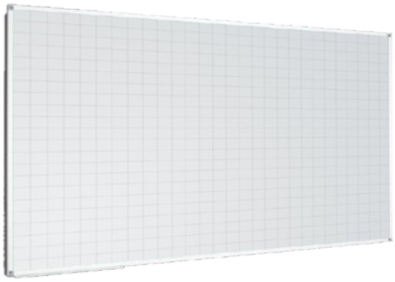
2. Tables and chairs (minimum)

Technical configurations

- Tables and chairs for teachers
- Tables and chairs for students
- Tables and chairs for editors and technical staff of control room

Priority levels: 1





3. White mica board and markers

Technical configurations

• 01 mica board: 1.2m x 0.8m

Priority levels: 1

4. Sound card

Technical configurations

- Model: US-4x4
- Sampling frequency: 44.1k/48k/8 8.2k/96kHz
- Quantization bit rate: 16/24bit
- Analog audio inputs: MIC IN IN 1-2 IN 1-4

Priority levels: 1



- Connector: XLR-3-31 (1: GND, 2: HOT, 3: COLD), BALANCED
- Input impedance: 2.2k ohms

5. On-desk microphone stand



Technical configurations

- Material: alloy, high-quality plastic
- Supports 2 microphones
- Height: 30–50 cm
- Base: round, ~400 grams
- Arm lengths: 47 cm & 19 cm

Priority levels: 2



6. Sound-test speaker

Technical configurations

- 3-inch woofer / 0.5-inch tweeter
- RCA stereo jacks & 1/8” (3.5mm) stereo input
- Volume control, power switch / LED
- AC adapter (TASCAM PSP1524E)

Priority levels: 1

---

7. Microphone signal wire



Technical configurations

- Brand: GA203
- Structure: (20 × 0.12) × 2 + 96 × 0.12 (edge) + PVC conductive
- Outer Diameter: 6.8mm

Priority levels: 1

8. Jack canon

Technical configurations

- Quantity: 2 pcs
- Type: Balanced mic cable, XLR male to female
- Length: 50 cm
- Neutrik metal connectors

Priority levels: 1



9. Soundproof floor

Technical configurations

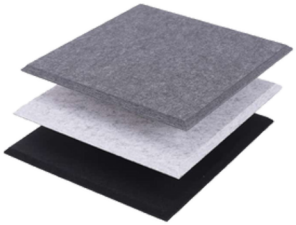
- **Aluminum-coated PE–OPP foam:** The PE layer is foam-blown and laminated with an OPP (aluminum) film that has been treated for oxidation resistance. It serves as thermal insulation, soundproofing, and moisture protection. It is non-toxic to the environment, safe for users, and helps prevent the growth of mold and bacteria.





- **Soundproof wall panels**
  - Material: Polystyrene (XPS foam)
  - Thickness: 25–100mm
  - Area: 150m corresponding with the area of the e-learning room

- **Sound absorbing stickers**
  - Material: Polyester fiber
  - Thickness: 9mm
  - Area: 70m corresponding with the area of the e-learning room



Priority levels: 2

10. Set of professional shooting room toolkits (8 lightbulbs 2640W)



Technical configurations

- 6-bulb Kino Lamp: 8 pcs
- L2900 Lamp Stand: 2 pcs
- Lamp Pull Handle: 6 pcs
- 4m Wire Bar: 2 pcs
- 3m Wire Bar: 3 pcs
- Double Wheels: 6 pcs
- Single Wheels: 12 pcs
- Iron Base: 6 pcs

Priority levels: 1

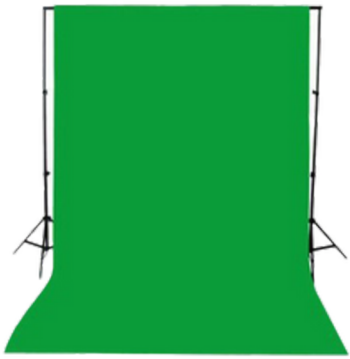
---

11. Studio backdrop

Technical configurations

- Color: Green
- Size: 40m²

Priority levels: 1





12. Anti-vibration handle for video recording devices

Technical configurations

- Compact 3-axis handheld, underslung mode
- Rotate range: Yaw 360°, Pitch 314°, Roll 314°
- Intelligent autotune
- Focus & zoom control wheel
- Rechargeable batteries

Priority levels: 2



13. Handy camcorder

Technical configurations

- Sensor: 1.0 type CMOS, 20MP total / 14.2MP effective
- Video: UHD 4K 30p, HD 120 fps
- 12x optical zoom, 62mm filter
- Built-in stereo microphone
- Iris: F2.8–F4.5, auto/manual
- Dual SD card slots

Priority levels: 1

---

14. SD Card for handy camcorder

Technical configurations

• Storage: minimum 128GB

• Read: 170MB/s, Write: 90MB/s

Priority levels: 1





15. Video tripod

Technical configurations

• Leg sections: 3

• Max. height: 1515mm

• Material: Aluminum alloy

• Load capacity: 5kg

• Hydraulic head with level

Priority levels: 1

16. Digital AF/AE single-lens camera with built-in flash

Technical configurations

- CMOS sensor: 26.2MP, full frame
- Image size: up to 6240x4160
- Autofocus: 45 points, live view
- Video: MP4, 1920x1080 @ 24–60fps
- Memory: SDHC, SDXC
- LCD monitor: 3” TFT
- ISO: 100–40000



Priority levels: 1



17. Camera lens

Technical configurations

- EF 24–105mm F/4L IS USM
- Closest focusing: 0.45m
- 10-blade circular aperture
- Filter size: 77mm

Priority levels: 1

---

18. Conference camera

Technical configurations

- Full HD 1080p (1920x1080)
- Field of view: 78° diagonal, 70° horizontal, 43° vertical
- HD Zoom: 1.2x
- Built-in speakerphone with echo and noise cancellation
- Omnidirectional mic, 2.4m range



Priority levels: 2

19. Tivi, or smart board

Priority level: 2

Tivi



- Size: 65-inch LED screen Internet connectivity
- Resolution: 4K
- Ports: At least HDMI ports



Smart board

- Technology: TFT LCD Module with DLED Backlight
- Display area: minimum 1895.04 (H) x 1065.96 (V) (diagonal 85.6)
- Accessories: 1. Power cable (3 meters) x 4; 2. Remote control; 3. USB cable (5 meters); 4. AV cable; 5. Touch pen x 2; 6. Quick start guide; 7. Adapter RS232; 8. Clamp x 5; 9. Plate; 10. Screw x 8; 11. HDMI cable
- Response time: minimum 8 ms
- Backlight life: minimum 30,000 hours (minimum)
- Aspect ratio: 16: 9
- USB: 1. Type A: USB 2.0 minimum x 4 (including 2 USB int ports) USB 3.0 minimum x2 (including 1 USB int port); 2. Type B: x2, for touch. Touch point: minimum 20 touch points, write 10 points
- Screen size (in.): 86 "
- Resolution: minimum UHD 3840x2160 (Pixels)
- Contrast ratio: 1200: 1
- Viewing angle: minimum H = 178, V = 178 typ.
- Brightness: 350 nits (typ.) 300 nits (min.)
- Speaker: Minimum 10W x 2 15W x 1
- Connectivity: 1. HDMI INPUT: 2.0 x3 (3840x2160 @ 60Hz) RGB / VGA: x1 Audio: x1 (Internal PC Audio) CVBS: x1 RS232: x1 OPS: x1 PC Slot (exclusive); 2. HDMI OUTPUT: x1 Audio x1 (Headphone out) SPDIF: 1 (optical) RS232: x1 LAN RJ45: x1

20. Laptop

Technical configurations

- CPU: min core i5 (2.4GHz, 8MB) or comparable AMD processors
- Screen: 15.6" FHD (1920 x 1080), non-touch
- RAM: 8GB DDR4
- Graphic: min. 4GB GDDR5
- Storage: min. 512GB SSD M.2
- NVMe
- Battery: min. 3 cell 51 Wh
- Carry bag & wireless mouse

Priority levels: 1



21. Desktop computer (for filming production)



Technical configurations

- CPU INTEL® CORE™ I7 (3,8 GHz, 16M CACHE) or comparable AMD processors
- Mainboard: Gigabit ethernet port
- Supported NVME
- RAM 2X16GB DDR4 BUS 3000
- 8GB graphic card (GDDR 6)
- SSD M.2 250G
- SSD 1 TB
- Power supply 750W
- Mouse, keyboard, USB connected

Priority levels: 1

22. Desktop computer monitor

Technical configurations

- Size: min. 27"
- Resolution: Full HD 1080p, SuperClear ISP
- Blue light filter & anti-flicker
- Connection: HDMI, DisplayPort, VGA
- Ultra-thin border design and metal triangle brackets

Priority levels: 2





23. Computer software

Technical configurations

• Operating System: Windows 10 Pro 64-bit OEI

Priority levels: 1

---

24. External SSD

Technical configurations

• Capacity: 2TB

• Size: 2.5”

• Connection: USB 3.0

Priority levels: 2





25. HDMI to HDMI cable

Technical configurations

• Length: 5 meters

Priority levels: 2

---

26. Reference headphone

Technical configurations

• Sensitivity: 94dB/mW

• Impedance: 45Ω

• Frequency response: 10Hz – 26kHz

Priority levels: 1



27. USB computer headset

Technical configurations

- USB-A compatible, works with MacOS and Windows
- USB plug-and-play, digital stereo sound & noise cancelling mic
- Cable length 1.8m; 20 Ohms input impedance, headphone sensitivity (115dB +/-3), microphone sensitivity (-42dBV/Pa +/-3)

Priority levels: 1





28. Document camera

Technical configurations

- Sensor: CMOS 1/2.7 inch
- Effective Pixels: ≥ 2MP (1920x1080)
- Frame rate: ≥ 30 fps
- Zoom: ≥ 10X digital, ≥ 12X optical
- Focus: Auto
- Output: HDMI x1, USB, VGA x1

Priority levels: 3

29. Microphone (oriented – on desk)

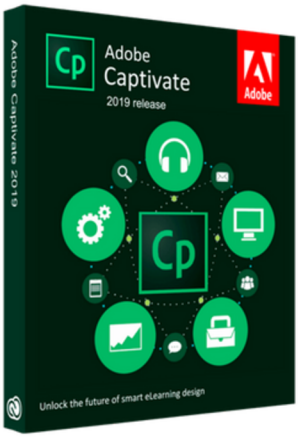
Technical configurations

- Frequency response: 30Hz–20kHz
- Sensitivity: -33dB ±2dB
- S/N Ratio: ≥ 80dB
- Power: 1.5V battery or 48V phantom
- Length: ≥ 38cm
- Output: 3-pin XLR

Priority levels: 1

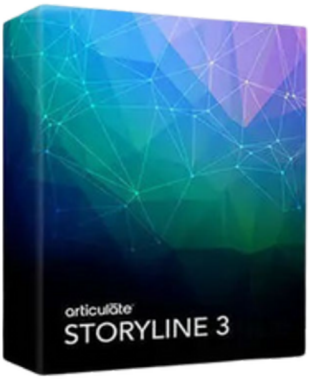


30. Software for developing digital learning materials



Adobe Captivate

- Version 2019, perpetual and educational license
- Virtual reality technology,
- Interactive video: learning through playing
- Responsive eLearning
- Transform powerpoint-based learning to - Mobile learning: Create excitements for learners
- Advanced edtech in e-learning
- Immersive learning with VR experiences



Articulate Storyline 3 software

- Version 3, perpetual and educational license
- Supporting functions for designing e-teaching lessons (authoring)
- Create Animations
- Create interactions with slides
- Support media & simulations
- Support the design of tests and assessments
- Present contents (Player)
- Support publishing teaching lessons
- Accessibility

Priority levels: 3

31. Multi-function device: print – copy – scan

Technical configurations



- Minimum technical specifications:
  Copy
  Memory: System Memory: 4 GB
  Scanning Resolution: 600 x 600 dpi
  Original Paper Size: A3, A4, A5
  Output Paper Size: A3, A4, A5
  Copying speed: 35 ppm
- Print
  Type: Black & white
  Priting speed: 35ppm
  Resolution: 1200 x 1200 dpi, 600 x 600 dpi
  Connection port: Ethernet, USB
- Scan
  Type: Color scan
  Speed: 55ppm
  Resolution: 600 x 600 dpi
  Connection port: Ethernet, USB
  Scan Destinations: Scan to Folder, PC/Server, email, USB

Priority levels: 2



- 2 configurable auxiliary bus
- 2 stereo sound inputs
- Stereo Mix output
- GB30 Mic

Priority levels: 2

32. Mixer

Technical configurations

- Input power: 220v/50-60Hz
- 8 +2 channel frame sizes
- Built-in 24-bit Lexicon digital effects processor
- Tap Tempo and FX setting store function
- 1 FX send on each channel
- 100Hz HPF
- 3-band EQ with a swept mid-on mono inputs
- 3-band EQ on stereo inputs

33. Lapel microphone



Technical configurations

- Sennheiser XSW 1-ME2 Lavalier Wireless Microphone System
- Wideband FM modulation
- Frequency range A: 548 to 572 MHz
- Switching bandwidth Up to 24 MHz
- Signal-to-noise ratio ≥ 103 dB Total harmonic distortion ≤ 0.9%
- Temperature range operating: 32 to 104 °F (0 to +40 °C)
- Storage -4 to 158 °F (-20 to 70 °C)
- 2.4 GHz transmitter synchronization, low power OQPSK

Priority levels: 2



34. VMix software license

Technical configurations

• Version Pro 4K

Priority levels: 1