BlendED

Deliverable D3.1, WP3 – Implementation

Hybrid-Problem Based Learning cells

H-PBL Cells procurement, installation and use

Co-funded by the European Union

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1 Introduction

This report describes the Hybrid-Problem Based Learning (H-PBL) cells installed at the African partner universities. An H-PBL Cell is a laboratory classroom equipped for teamwork in hybrid mode, i.e., where students and teachers can work in hybrid environments with some participants attending in person and other attending online at a distance. These cells are instrumental for students to work with their team mates on their ABC BlendEd assignments and are expected to be available not only for ABC BlendEd activities but to promote other educational and reseaech activities to be held in hybrid modalities.

Besides the introduction, this report contains six sections, one for each one of the african universities in the partnership: Soroti University, Federal Technical University Minna, Makerere University, Zambeze University, University of Nigeria Nsukka, and Eduardo Mondlane University.

The budget available for each partner to acquire and install the H-PBL Cell, 8.000€, might be not enough for all the equipment that s expected to be acquired: video collaboration system, microphone, logitech rally bar, computer, ups, smart board, smart tv, big screen. The following priorities was agreed: first the Logitech, then the laptop (and ups if needed), then the smartboard (change to smart tv if no enough money and lastly to big screen).

Each partner describes in this report:

- the specifications of the acquired equipment, justifying any changes from the agreed – immersive connection, video collaboration system, microphone, logitech rally bar, smart board, computer,
- the procurement and acquisition procedures, explaining how the acquired equipment was selected,
- describe the facilities allocated to the H-PBL Cell and the installation,
- add photos of the equipment installed in the classroom assigned to it and detail any special issues linked to internet connection, security, power supply, etc,
- how is it being used in the scope of BlendEd and other; how can students, teachers and staff use it for regular BlendEd or other meetings in hybrid modalities.

2 Soroti University, Uganda

The following were recommended as Hybrid classroom equipment: immersive connection, video collaboration system, microphone, Logitech rally bar, smart board, computer. Due to budget constraints, the order of priority discussed was listed below.

Hybrid classroom equipment

1. video collaboration system, microphone, Logitech rally bar,
2. computer, ups
3. smart board, smart tv, big screen

In summary, first the Logitech, then the laptop (and ups if needed), then the smartboard (change to smart tv if not enough money and lastly to big screen).

2.1 Acquired equipment

Here below were the specifications sent to the supplier. The supplier attached costs based on the specifications.

All changes made related to the plan (Hybrid classroom equipment (immersive connection, video collaboration system, microphone, Logitech rally bar, smart board, computer) were justified by the quotations by the suppliers. Below are the specifications made for the Hybrid Classroom equipment.

1. Video Conferencing System

Component	**Specification**
Camera	
Resolution	Full HD 1080p (1920 x 1080)
Field of View	90° diagonal, 82.1° horizontal, 52.2° vertical
Zoom	10x lossless HD zoom
Pan/Tilt	260° pan, 130° tilt
Autofocus	Yes
Far-End Control	Yes (for compatible systems)
Speakerphone	
Full-Duplex	Yes
Microphones	4 omnidirectional microphones
Pickup Range	Up to 6 meters (20 feet)
Frequency Response	100Hz – 11kHz
Sensitivity	-28dB +/-3dB
Distortion	<5% from 200Hz
Noise Reduction	Advanced noise and echo cancellation
Expansion Mics	
Microphone Type	Omnidirectional
Pickup Range	Extends coverage up to 8.5 meters (28 feet) with additional mics
Connectivity	Connected via standard RJ-9 cable
Cable Length	2.4 meters (7.8 feet)
Remote Control	
Type	RF remote control
Functions	Camera pan/tilt/zoom, speakerphone volume, call answer/end, mute
Connectivity	
USB	USB 2.0, compatible with USB 3.0
Bluetooth	Yes (for speakerphone)

NFC	Yes (for easy Bluetooth pairing)
Power Supply	AC power adapter (100-240V)
Compatibility	
Operating Systems	Windows 7, 8.1, 10, macOS 10.10 or higher
Conference Software	Compatible with Skype for Business, Zoom, BlueJeans, Cisco WebEx, and most other platforms
Dimensions	
Camera	130 x 170 x 138 mm
Speakerphone	240 x 65 x 240 mm
Hub	94 x 34 x 74 mm
Expansion Mics	83 x 83 x 21 mm
Weight	
Camera	585g
Speakerphone	1223g
Hub	83g
Expansion Mics	230g (each)
Included Accessories	Remote control, power adapter, wall/table mount, USB cables, and 5m (16.4 ft) long camera extension cable

2. Laptop

- Apple M3 Pro chip with 12-core CPU, 18-core GPU, 16-core Neural Engine
- 36GB unified memory
- 1TB SSD storage
- 14-inch Liquid Retina XDR display[2]
- 96W USB-C Power Adapter
- Three Thunderbolt 4 ports, HDMI port, SDXC card slot, headphone jack, MagSafe 3 port
- Backlit Magic Keyboard with Touch ID - US English

3. Router

Feature	**Specification**
Wi-Fi Technology	
Standard	Wi-Fi 7 (802.11be)
Bands	Tri-band (2.4GHz, 5GHz, 6GHz)
Speeds	Up to 12 Gbps combined
Channel Width	320 MHz
Features	MU-MIMO, OFDMA

Performance	
Processor	Quad-core 1.8GHz+
RAM	1 GB+
Range	Covers large homes (up to 2,500+ sq. ft.)
Ports	
Ethernet	1 x 10G WAN, 4 x 1G/2.5G/10G LAN
USB	1 or 2 x USB 3.0
Aggregation	WAN & LAN aggregation supported
Security	
Wi-Fi Security	WPA3
Guest Network	Yes
VPN	OpenVPN support
Parental Controls	Advanced filtering

4. Smart TV

Feature	**Specification**
Display	
Size	75 inches
Resolution	4K UHD (3840 x 2160)
HDR	HDR10+, HLG
Smart Features	
Apps	Netflix, Prime Video, YouTube, etc.
Voice Assistants	Alexa, Google Assistant, Bixby
Audio	
Speakers	20W+
Features	Dolby Digital Plus
Connectivity	
HDMI	3-4 ports
USB	2 ports
Wi-Fi & Bluetooth	Yes
Design	
Bezel	Slim

Mounting	VESA-compatible
Extra	
Game Mode	Low input lag
Screen Mirroring	Yes

5. Mount

Feature	**Specification**
Compatibility	
Screen Size	32 to 75 inches
VESA Mounting	Supports VESA patterns from 200x200mm to 600x400mm
Build and Design	
Material	Heavy-duty steel or aluminium
Height Adjustment	Adjustable height for optimal viewing
Mount Type	Tiltable or fixed
Mobility	
Wheels	Lockable caster wheels for easy mobility

6. UPS

Feature	**Specification**
Power Capacity	2200VA / 1980W
Input	
Voltage	230V
Frequency	50/60Hz auto-sensing
Connection	IEC C14 or C20
Output	
Voltage	230V
Frequency	50/60Hz
Outlets	8 x IEC C13, 1 x IEC C19
Waveform	Stepped sinewave
Battery	
Type	Sealed lead-acid

Hot-swappable	Yes
Management	
LED Indicators	Status, load, battery level
Alarms	Audible for status and faults
Ports	USB, RS-232
Software	PowerChute Business Edition
Protection	
Surge Protection	Yes
Overload Protection	Circuit breaker

7. Extension Cable

Feature	**Specification**
Length	Varies: Typically 6 to 15 feet (1.8 to 4.5 meters)
Connectors	
Plug	NEMA 5-15P (standard U.S. plug)
Receptacle	NEMA 5-15R (standard U.S. socket)
Gauge	Wire: 14 AWG or 16 AWG
Amperage	Capacity: Up to 15A
Voltage	Rating: 125V AC
Construction	
Material	Heavy-duty PVC insulation
Color	Black or white
Use	Powering computers, peripherals, and other electronics

The purchase of the video conferencing system was carried out following the Soroti University Procurement guidelines. The supplier and costs have been comprehensively discussed under section 3 (Procurement).

2.2 Procurement

The procurement process was guided by the Soroti University Procurement office. The process of procuring the H-PBL equipment followed the schedule as below.

Table 3.1: Procurement schedule (subject to changes).

Activity	**Date**
a. Issue of request for quotation	19th September 2024
b. Bid Closing date	27th September 2024
c. Evaluation process	4th October 2024

d. Display and communication of best evaluated bidder notice	After contracts committee approval
e. Contract signature	At expiry of Best Bidder Notice Period

On Thursday September 19, 2024, call was made via email to pre-qualified suppliers of ICT equipment at Soroti university. The following companies were invited to respond to **Request for Quotations for Supply of Video Conferencing Equipment under ABC BlendEd Project Under Procurement Reference Number – SUN/SUPLS/24-25/00062.** These were:

1. Sesom (U) Ltd
2. MFI Document Solutions Ltd
3. Kazinga Channel Office World Ltd
4. Midworld Entreprise
5. Mercury Computers Ltd
6. Access IT Ltd
7. Dsn Technologies SMC Ltd
8. Tekiman Investments Ltd
9. Uplink Investments Ltd.

Of these nine companies, the following responded, and bidding closed **on 27th September 2024**.

Table 3.2: List of companies who bidded and their quoted prices.

S/N	Company	Quoted Price as read out (UGX) VAT Inclusive
1	MFI Document Solutions Ltd	60,577,997
2	Mercury Computers Ltd	39,458,303
3	Uplink Investments Ltd	29,913,000
4	Access IT Ltd	36,493,270

The bid evaluation team consisted of the following members who are also staff of Soroti University.

Table 3.3: The constitution of the bid evaluation team.

S/N	Name	Title and Department	Position on Evaluation Committee
1	Mark Maliko Byamukama	Multi-media specialist/ ODEL	Chairperson
2	Euku John	Accountant	Member
3	Dr. Hellen Aluku	Lecturer/ SET	Member
4	Namirembe Mwajuma	Procurement Officer	Secretary

Assessment of submitted bids/ bid evaluations were carried out on October 4th 2024. Below are the outcomes from the evaluation results for the four companies that responded to the call for Request for Quotations.

Table 3.4: Summary of the evaluation of the four companies that summitted their bids.

S/N	Company	Technical Responsiveness	Reasons for responsiveness/ non responsiveness
1	MFI Document Solutions Ltd	NR	Not indicating the model number and type of Wi-Fi technology under router. Not indicating the type and model of UPS
2	Mercury Computers Ltd	NR	Not responsive on Camera for specifying its components as attachments yet it should be supplied as a complete system
3	Uplink Investments Ltd	NR	Not compliant on Bid security declaration (eligibility)
4	Access IT Ltd	R	Was responsive for quoting all the required items as per the required specifications

Access IT Ltd was the only company found to be eligible, compliant and substantially responsive for quoting all the required items as per the required specifications. Below are the items quoted by Access IT Ltd as per the specifications.

Table 3.5: Items to be supplied by Access IT Ltd and their respective quotations.

S/N	Items	Unit of measure	Quantity	Unit Cost (UGX)	Total Cost (UGX)
1	Supply of a Laptop Apple 14" MacBook pro (M3 Pro, space black	Piece	01	13,110,000	13,110,000
2	Supply of Video conferencing system Logitech GROUP video conferencing system	Set	01	3,987,500	3,987,500
3	Supply of MIFI with its accessories NETGEAR Nighthawk M1 4G LTE Mifi Mobile Hotspot	Piece	01	1,080,000	1,080,000
4	Supply of TV set with its accessories Hisense 75-Inch Ultra HD 4K Smart QLED TV (75Q6N-PRO)	Piece	01	4,500,000	4,500,000
5	Supply of TV Mount	Piece	01	650,000	650,000
6	Supply of UPS	Piece	01	4,369,000	

	APC Smart-UPS 2200VA LCD 230V				
7	Supply of Extension cables	Piece	01	130,000	
8	Router TP-Link Archer GE800 Router	Piece	01	3,100,000	
				Sub-total	30,926,500
				VAT 18%	5,566,770
				Grand total	36,493,270

Due to overshooting the budget costs, the committee recommended negotiation to remove the following items from the supply.

1. UPS
2. Router
3. External cables.

It was agreed that the negotiated contract cost is **UGX 27,526,450 (Twenty seven million five hundred twenty six four hundred fifty shillings only).**

Based on the above negotiation, the following items were therefore supplied by Access IT Ltd.

Table 3.6: Items supplied by Access IT Ltd and their respective costs

S/N	Items	Unit of measure	Quantity	Unit Cost	Total Cost
1	Supply of a Laptop	Piece	01	13,110,000	13,110,000
2	Supply of Video conferencing system	Set	01	3,987,500	3,987,500
3	Supply of MIFI with its accessories	Piece	01	1,080,000	1,080,000
4	Supply of TV set with its accessories	Piece	01	4,500,000	4,500,000
5	Supply of TV Mount	Piece	01	650,000	650,000
				Sub-total	23,327,500
				VAT 18%	4,198,950
				Total contract price	27,526,450

It was agreed that the negotiated contract cost is **UGX 27,526,450 (Twenty seven million five hundred twenty six four hundred fifty shillings only).**

The depreciation process in Uganda/Soroti University

Uganda government uses cash basis of accounting for depreciation and therefore assets once bought are expensed (depreciated at 100%). It is the same basis of accounting that Soroti University Implements for depreciation. However, there is an asset register where the different classes of assets are posted for proper management.

2.3 Installation

The school of Engineering and Technology (SET) has dedicated the ICT hub space to be used to house the ABC BlendEd Project equipment, and all meetings associated with ABC BlendEd project activities. This class is located on the ground floor of the Soroti University main building. Therefore, the procured H-PBL equipment has been installed in the ICT Hub. This classroom is available for use by students and teachers whenever needed. There is generally good internet connection in this classroom. However, a standby router is available to back up the internet speed if need be. Security is also guaranteed for the equipment. There is a standby generator at the university to guard against power fluctuations.



Figure 4.1: Equipment received from the supplier.



Figure 4.2: The process of equipment installation at the ICT Hub dedicated classroom.

2.4 Use

The equipment has been installed and tested by qualified staff from the Directorate of ICT of Soroti University. The Logitech GROUP Conferencing system, the laptop and the screen are all working well. However, there is a need to make some adjustments to maximize the screen. There is a dedicated senior lab technician in the ICT Hub to give assistance to the users (both students and teachers of the ABC BlendEd project) in case there are technical glitches. Access to this classroom is possible anytime for all users under the ABC BlendEd project. The key to the room can be collected from the Chief custodian's office or at the University security desk.

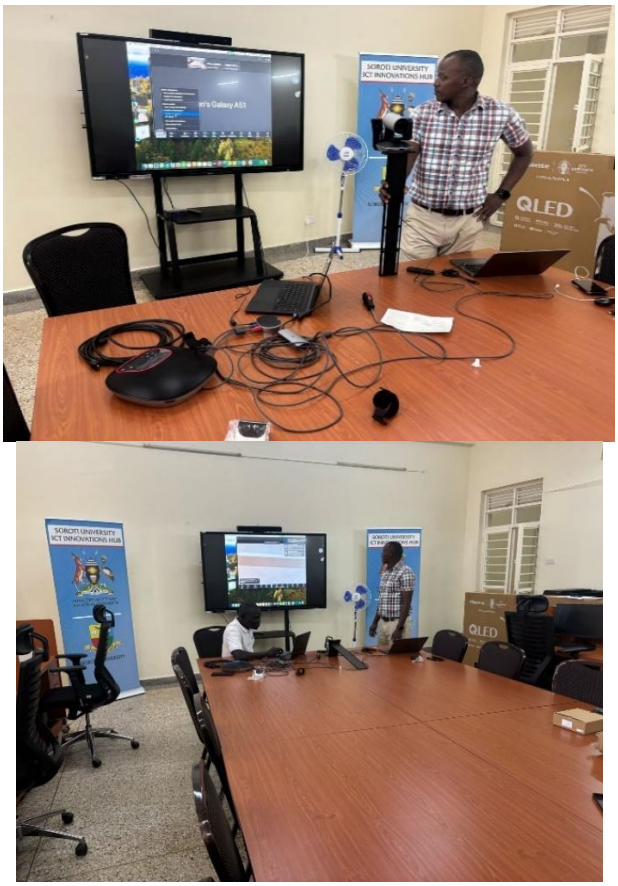


Figure 4.3: Testing of the installed H-PBL Equipment testing.

3 Federal Technical University Minna, Nigeria

To support immersive teaching and remote learning under the BlendEd initiative, FUTMinna invested in **Hybrid Classroom Equipment**. The equipment categories included:

- **Video collaboration system** with microphones (Logitech)
- **Computer system** with UPS
- **Interactive Smart TV** and stand

Procurement Prioritization

Due to budget considerations, procurement followed the prioritization below:

a. **Logitech Rally Bar** with microphones (core video collaboration system)

b. **Computer system and UPS**

c. **Smart board**

- If not feasible, replace with **Smart TV**
- If budget remains constrained, substitute with a **big screen TV**

3.1 Acquired equipment

Procured Items and Cost Summary

S/N	Item Description	Unit Rate (₦)	Total Amount (₦)	Remarks (€)
1	75-inch Ultraslim Smart TV and Installation	1,700,000.00	1,700,000.00	
2	Two (2) Core i7 Laptops and Accessories	2,100,000.00	4,200,000.00	
3	Logitech Group Video Conferencing System with Expanding Microphones	1,793,000.00	1,793,000.00	
4	Software License and Equipment Stand	847,000.00	847,000.00	
5	Installation and Technical Support Services	700,000.00	700,000.00	
	Total		**9,240,000.00**	**5,481.37**

Justifications for Adjustments

- A **Smart TV** was procured in place of the smart board due to budget limitations.
- A **UPS** was not listed separately, as laptop battery support rendered it less urgent; however, future inclusion is advised.

3.2 Procurement

Procedures Followed

The procurement followed FUTMinna's standard guidelines for equipment acquisition:

- **Three quotations** were obtained from certified suppliers. (IT Solution, Optimus Cybernautics and D'3 SMS Enterprise)
- Selection was based on **cost-efficiency**, **compatibility with BlendEd objectives**, and **vendor credibility**.
- All suppliers submitted bids compliant with equipment specifications.

Depreciation Policy

According to the university's accounting standards, equipment depreciation follows a **straight-line model over five years**, applied annually. Records are managed by the Bursary Department.

Timeline

- **Planning & Approval**: June – August, 2024
- **Procurement & Delivery**: August- December, 2024
- **Installation & Setup**: April, 2025
- **Operational Use Begins**: April, 2025

3.3 Installation

Facility and Setup

The University allocated a dedicated office space for the **ABC Blended and Product Development Laboratory**. All procured equipment was installed in this facility.

Institutional Contributions

- Office space was provided by FUTMinna
- Staff supported the logistics and installation oversight

Installation Notes

- The installation was delayed briefly due to the unavailability of the technician.
- **Power and connectivity** were confirmed stable post-installation.
- The only challenge encountered was the **instability of the naira**, which impacted final pricing slightly during procurement.

Photos of Installation

(Insert high-resolution photos showing equipment setup in the assigned classroom/lab)

3.4 Use

Use and Impact

Current Utilization

The equipment is proposed to be used for:

- **BlendEd programme activities/online classes and interactions**
- **Video conferencing for BlendEd and other academic meetings**

- **Faculty development sessions**

Student Access

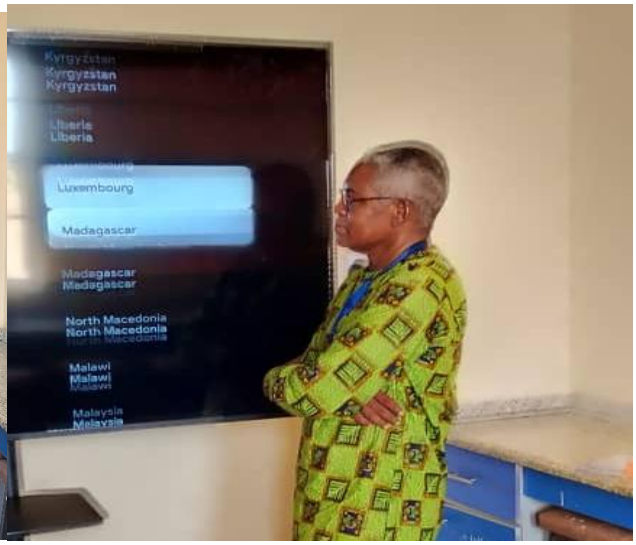
- Students will use the room for scheduled **BlendEd tutorials**, **project meetings**, and **virtual presentation**.
- The system is particularly useful for **collaborative learning**, **virtual lab demonstrations**, and **real-time academic supervision**.

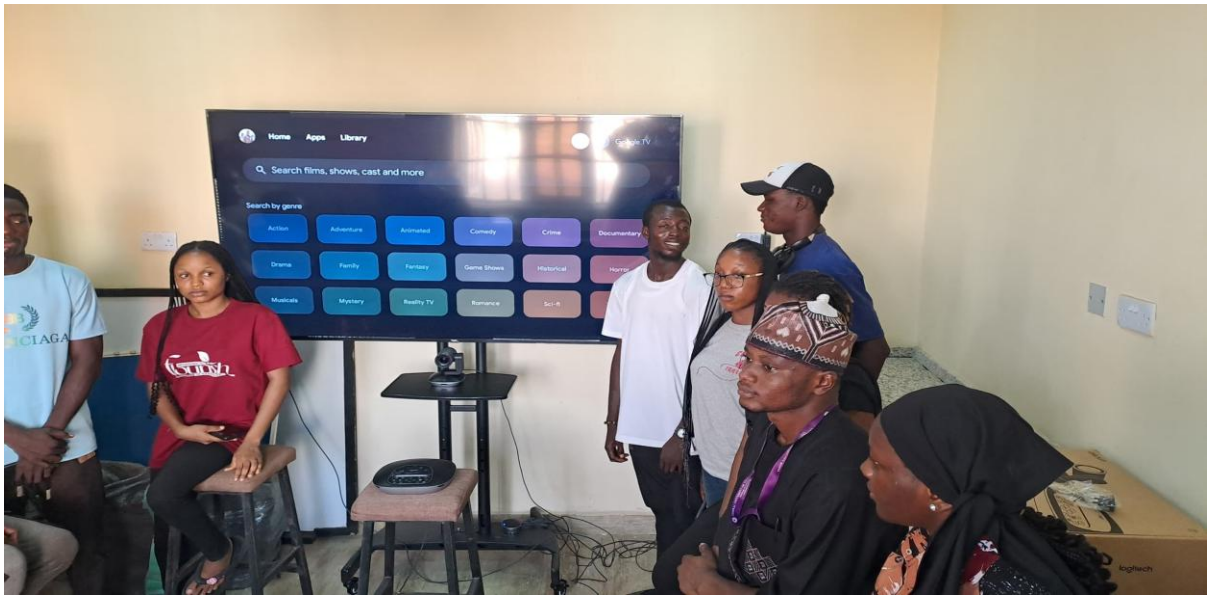
Access and Oversight

- The facility is managed by the FUTminna **Blended team member and Technicians**.
- Access is granted to **both staff and students** through an internal scheduling system.






Kyrgyzstan
Kyrgyzstan
Liberia
Liberia
Luxembourg
Madagascar
Madagascar
Madagascar
North Macedonia
North Macedonia
Malawi
Malawi
Malaysia
Malaysia


Home
Apps
Library
Search films, shows, cast and more
Search by genre


Home
Apps
Library
Google TV
Search films, shows, cast and more
Search by genre
Action
Adventure
Animated
Comedy
Crime
Documentary
Drama
Family
Fantasy
Game Shows
Historical
Horror
Musicals
Mystery
Reality TV
Romance
Sci-fi

4 Makerere University, Uganda

Under the ABC BlendEd project, Makerere University, like other partner African Universities, was allocated a total of euros 8.000 to procure a video conference system that is expected to promote hybrid engagement of students especially those doing internship with the project. The guidance from the project coordinator was a hybrid classroom equipment that comprised of: (1) video collaboration system, microphone, logitech rally bar; (2) computer, UPS; and (3) smart board, smart tv, big screen (in order of decreasing priority. It was further advised that in situations where the allocated budget of euros 8.000 was not enough to get all the items, institutions would prioritize to get first the Logitech, then the laptop (and UPS if needed), then the smartboard (change to smart TV if money is not enough and lastly to big screen).

4.1 Acquired equipment

Specifications, supplier and cost.
The equipment or video conference facility was of the specifications below as was provided by **Centric Solutions (U) Ltd** – the pre-qualified service provider for ICT equipment in Makerere University.

	Items/constituents of the web-conference system/facility and specifications	
1.	**Smart TV screen (Specifications)**	
	• Hisense 75" SMART UHD 4K LED TV Screen resolution: 3840 x 2160p; • Resolution type: 4K • Motion rate: 120 • Display aspect ratio: 16:9 • Audio output power (watts): 10W x 2	• Audio technologies: DTS Studio Sound™ • Power consumption: 250W • Power supply: AC 120V, 60Hz • Mount pattern: VESA 400 x 300
2.	**Logitech conference system (specifications)**	
	• Conference Cam solution for meetings with up to 14 participants • LCD display for Caller ID and other info • Tripod mountable • 360-degree full-duplex speakerphone	• Dockable wireless remote control • Support 1080P HD (1920×1080) video call @ 30FPS • Echo and noise-cancelling technology • Kit contains: camera, speakerphone & hub •
3	**Laptop**	
	• HP Pro book 440 Ci5 • 13th Gen Intel® Core i5-1335U, vPro (12 MB cache, 10 cores, 12 threads, up to 4.6 GHz Turbo) processor • Windows 11 Professional 64-bit • Microsoft Office Professional 2021 • Intel® Iris Xe Graphics • 14.0" FHD+ (1920x1200), WVA, Anti-glare, • Non-Touch, 250nits, 45% NTSC	• 16 GB, 2 x 8GB, DDR5, 4400 MT/s memory • 512 GB PCIe NVMe SSD • Intel Wi-Fi 6 AX211, 2x2, 802.11ax • Bluetooth • wireless card • Backlight English Keyboard • External I/O Ports & Slot: 2 USB 3.2 Gen 1 (5 Gbps), • USB 3.2 Gen 1 (5 Gbps) Type-C, 1 RJ45 (1 Gbps),
4	**Cables, transport and installation of system**	
	• 20m HDMI Cable full copper • Power Cable 6 metres	• 2 gang Socket UK standards and its accessories

Cost: Delivery and installment of the e video facility was costed UGX 29,929,520. The service provider is yet to be paid as soon as he submits an invoice to Makerere University – College of Agricultural and Environmental Sciences. With fluctuating euro -shilling foreign exchange rates, the exact euro equivalent that will be paid to the service provider will be known on the day the funds will be transferred to the account of the service provider.

We settled for a Smart TV screen because its cost fitted in our budget. Smart boards are way expensive. The rest of the items are as agreed. Instead of UPS we will buy power guards. To minimize dust settling on the screen, a cotton cloth will be fitted to cover it when not in use.

4.2 Procurement

The procurement process of the video conference system (IT): When procuring such IT equipment, Makerere University prefers the Directorate of Information and Communication Technology Support (DICTS) to provide information/guidance on the standard specifications that the university trusts to reflect the desired quality, regardless of what budget exists. The procurement procedure/process is meticulous. The process began with requesting for the specifications recommended by the university through the Directorate of Information and Communication Technology Support (DICTS), the unit that guides on IT related equipment. Director DICTS suggested some specifications that pointed to a quality that was way more expensive than the budget – more than twice! The specifications from DICTS in summary included:

- A smart Television screen of size 86 inches with diagonal of 85.6", connectivity, clear voice and compliant with a power supply of AC 120V, 50/60Hz
- Two Speakers of High-performance 3" (76mm) driver with Mini XLR cable (9.6 ft (2.95m)) that connects to Display Hub for both signal and power
- Two Mic pods – Four microphones with eight beamforming elements, with a Pickup range of 15 ft / 4.5m diameter
- Camera – with Ultra-HD imaging system supports: 4K, 1440p, 1080p, 900p, 720p, and SD at 30fps; 1080p, 720p at 30fps and 60 fps; Pan +90°; automatic inversion detection to correct image orientation and camera controls when mounted upside down, 15X HD Zoom, automatic, 3 camera presets etc
- One display hub – HDMI Type A (X2); USB type B and C; powers one or two speakers
- Remote control –RF remote control (Line of sight not required); CR2032 batteries
- Two power cables
- Laptop: 13th Gen Intel® Core i5-1335U, vPro (12 MB cache, 10 cores) 12 threads, up to 4.6 GHz Turbo) processor; Windows 11 Professional 64-bit; Microsoft Office Professional 2021; Intel® Iris Xe Graphics; 14.0" FHD+ (1920x1200), WVA, Anti-glare, Non-Touch, 250nits, 45% NTSC; 16 GB, 2 x 8GB, DDR5, 4400 MT/s memory; 512 GB PCIe NVMe SSD; Intel Wi-Fi 6 AX211, 2x2, 802.11ax and Bluetooth wireless card; Backlight English Keyboard; External I/O Ports & Slot: 2 USB 3.2 Gen 1 (5 Gbps), 1 USB 3.2; Gen 1 (5 Gbps) Type-C, 1 RJ45 (1 Gbps), 1 HDMI 1.4 port, 1; SD-card slot

These specifications could not be delivered under our limited budget. The next step was to engage the prequalified service provider that would provide a video conference system that did not exceed euros 8,000.

Engagement of pre-qualified company (Centric Solutions (U) Ltd) to procure the video system at a cost that fitted our budget: Makerere university procures equipment and services through prequalified companies/firms registered by the university. We were running late (equipment was supposed to have been bought in 2024) and needed a fast and reliable prequalified firm with a known track record of timely delivery with compliance to quality and value for money. Through guidance of the procurement officer in the College of Agriculture and Environmental Sciences, Centric Solutions (U) Ltd, one of the university service providers was engaged and requested for a quotation. This service provider is known for his quick delivery on limited budgets with patience. As the project coordinator, I shared with the service provider the specifications from DICTS and we held a discussion on what could be offered given the budget. We agreed on workable specifications of the required e video conference system that suited our budget and objective (Big Smart TV screen, video conference system that could accommodate about 20 participants; and a laptop) including its transportation and installation at Makerere University Agricultural Research Institute, Kabanyolo (MUARIK) – Graduate training building, the venue that was formally allocated for the facility. Centric Solutions (U) Ltd submitted a quotation that aligned the preferred specifications.

As the contact person/coordinator, ABC-BlendEd project, I put in a formal requisition to the office of the Principal to procure a video conference system (with specifications or quotation attached) through filling a form 5 under the project. This is standard procedure. On that form 5, the head of department/unit signs and the accounts office confirms availability of funds before the process continues. The Principal then forwards the request to the procurement officer in CAES. The procurement and contracts committee in the college reviewed and approved

the specifications, quotation and the proposed service provider. The procurement and disposal office then gave Centric Solutions (U) Ltd a Limited Purchase Order (LPO) after all approval process. It is the LPO that the service provider bases on to deliver the items ordered for. The items were indeed delivered and installed as expected. The college then waits for the invoice from the service provider to embark on the payment process. On receiving the invoice, the contact person or project coordinator who formally requested for the equipment to be procured submits a request to the principal to allow payment of the service provider. Among the documents submitted is the invoice attached – it has the bank details of the service provider to be used. When all paperwork is cleared, between the university bursar and college, the accounts office makes a direct bank transfer. The foreign exchange rate (guided by Bank of Uganda rates) of that time when payment is effected is what tells us how much of the euros was used. The service provider acknowledges receipt of payment and avails the college with a receipt as proof of payment cleared.

The disposal and depreciation process in Makerere/Uganda (Detail the timeline).

Below is the process indicating steps that Makerere (guided by the procedure of the Government of Uganda) follows to dispose off an asset especially if the disposal method is by sale

- Identification and inspection of assets due for disposal (10 days)
- Authorization of disposal process by filling form 28 (5 days)
- Valuation of asset for reserve price and report submitted for further execution (30 days)
- Proposal of disposal method (3 days)
- Approval or disposal method (4 days)
- Invitation of bids (2 days)
- Preparation of bids and provision of clarification (15 days)
- Receiving and opening of bids (1 day)
- Evaluation of bids (10 days)
- Approval of Evaluation of report (5 days)
- Communication of contract award (3 days)
- Receipt of payment for the asset (10 days)
- Authorization to release asset (3 days)

The university can dispose off an asset through any of the following methods: (a) public auction; (b) public bidding; (c) sale to public officers; (d) direct negotiations; (e) trade-in; (f) transfer to another procuring and disposing entity; (g) conversion or classification of assets into another form; (h) destruction of assets; (i) Donation.

In selecting a disposal method, the following factors are taken into account:
(a) the potential market value of the asset;
(b) the volume of the asset, whether one-off or bulk;
(d) the number and location of potential bidders;
(e) the location of the asset;
(g) national security and public interest issues;
(h) health and safety issues;
(i) legal or human rights issues;
(j) environmental considerations;
(k) the trade-in value of the asset;
(l) the possibility of transferring the asset to another procuring and disposing entity.

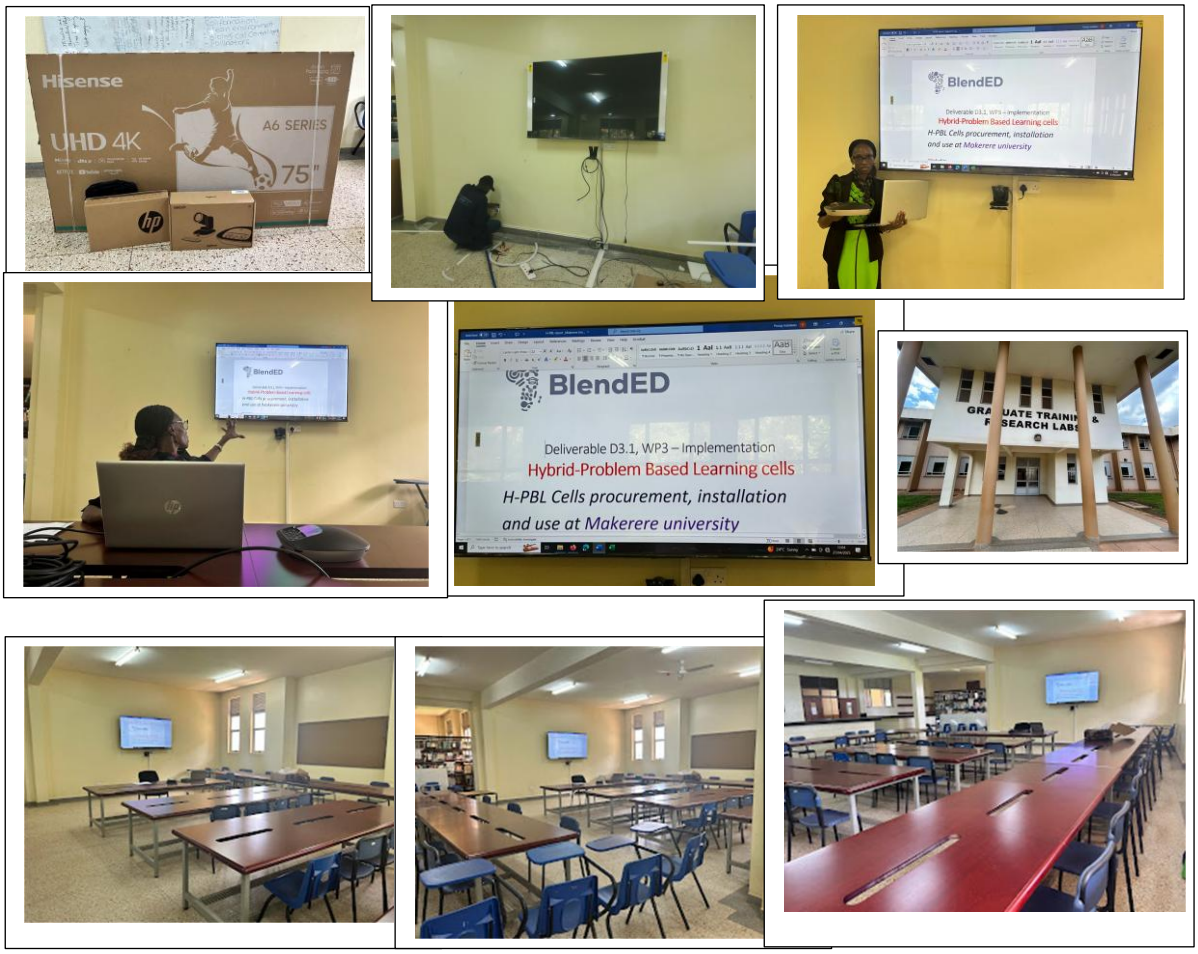
Depreciation is a systematic allocation of the depreciable amount of an asset over its useful life. Depreciable amount is the cost or value of an asset less its estimated residual value. Residual value means the amount to be realized from the assets at the time of its disposal or decommissioning. Makerere university, guided by policies of the Government of Uganda values all assets and recognizes that its assets are depreciated according to accounting standards and policies prescribed by legislation (https://policies.mak.ac.ug/sites/default/files/policies/Finance%20%20Manual.pdf). Government of Uganda calculates depreciation of its assets using the straight-line method. Further details are provided in the Financial Management Practice and Procedures Manual, Government of Uganda. Straight line depreciation is the most

commonly used and straightforward depreciation method for allocating the cost of a capital asset. It is calculated by simply dividing the cost of an asset, less its salvage value, by the useful life of the asset.

The government of Uganda categorizes its assets into financial and non-financial. Under the non-financial are current and non- current assets. Under the non-current are the tangible (fixed) that include both movable and non-movable, and non-tangible assets. The e video conference facility/system is an example of the tangible assets. Depreciation or residue value of the tangible assets like ICT and office equipment (computers and ICT equipment, hence the e video conference system) is calculated with a useful life estimated to be 5 years and capitalization value at 1.5m. From the financial management policy and procedure manual https://mcld.org/wp-content/uploads/2023/06/MCLD-UGANDA-Financial-Management-policy-May-2023.pdf calculation of the depreciation looks at useful life of the equipment to be estimated at 4 years and an annual depreciation rate of 25%.

4.3 Installation

The e video conference system (Hybrid-problem based Learning cells – H-PBL) that constitutes a 75-inch smart TV screen, Logitech video system and laptop was installed at the graduate training building in Makerere University Agricultural Research Institute Kabanyolo (MUARIK), in a lecture/classroom space on one side of the library therein. Photos showing evidence of installation for use are below.



Equipment was checked for compliance with specifications on delivery, installation overseen and tested for use by the College IT person. Currently, the building has no wireless internet but the university is yet to fix that. In the mean time access to internet is through a router. The building is secure (security guards employed and security lights present). Power supply is guaranteed. We will purchase power surge guards o protect the equipment before full time use.

4.4 Use

The equipment is ready for use! Priority for use will however be given to the students and staff under the ABC BlendEd project/course. When not in use by the ABC BlendEd team members (students and staff), it will be open for use by other members of the college for blended lectures or online meetings. Any person that wishes to use the facility will be required to submit a formal request to the project coordinator (copied to the Principal of the college (CAES)). This will promote accountability and order of use. A book that keeps record of who used or booked when will be put in place for proper records and follow up in case of a problem. The building and library room has a custodian that locks and opens all rooms. The book will be with the custodian of the building.

5 Universidade Zambeze, Mozambique

UniZambeze was assigned by the ABC BlendEd budget an amount of 8.000€ to acquire the equipment needed to equip a classroom for activities in hybrid mode, with participants in-person and other online.

5.1 Acquired equipment

According to the law of the procurement in Mozambique, in January 2025 we announced to all enterprises in our region to apply for a possibility to supply equipment to UniZambeze, in Angónia, namely:

i. 1 Logitech group video conferencing system;
ii. 1 TV LED 65‘;
iii. 1 Printer Laser Jet Pro MFP 4103dw;
iv. 1 Computer 11th gen intel (R) Core (TM) i5;
v. 2 Microphones;
vi. 2 Broad band router for internet;
vii. 1 Projector;
viii. 1 UPS;
ix. 4 Electric extension;

5.2 Procurement

During application the applicants submitted invoices detailing the prices of all items described in the announcement. After this process, in February 2025 we selected three applicants and elaborated the contract of each selected enterprise. The three contracts were then submitted to the Administrative Court of Tete province to allow us to proceed with the process of acquiring the equipment. After seven days, at the end of February 2025, the Administrative Court stamped on the contracts allowing us to proceed.

Then among these three selected enterprises, in March 2025 we therefore selected one, with low prices to supply the materials. The enterprise was instructed to deliver these in two steps. In the first step, they had to deliver items i to v, and in the second and last step deliver items vi to ix.

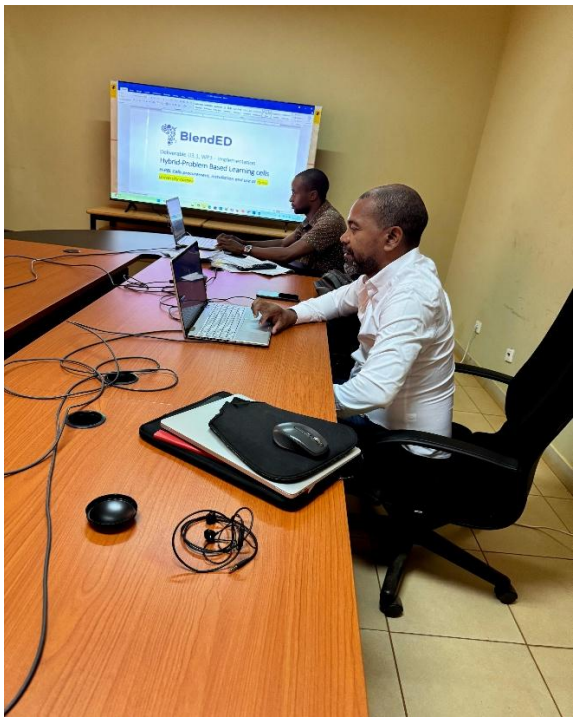
On 13th March 2025 the one selected enterprise bought, brought and delivered the first part of all equipments demanded by UniZambeze and the first payment of 5,311.29€ made from UniZambeze to the Enterprise called Yankho La Angoni Computer Service Ltd. The remaining materials, from item vi to ix, will be delivered on June 2025.

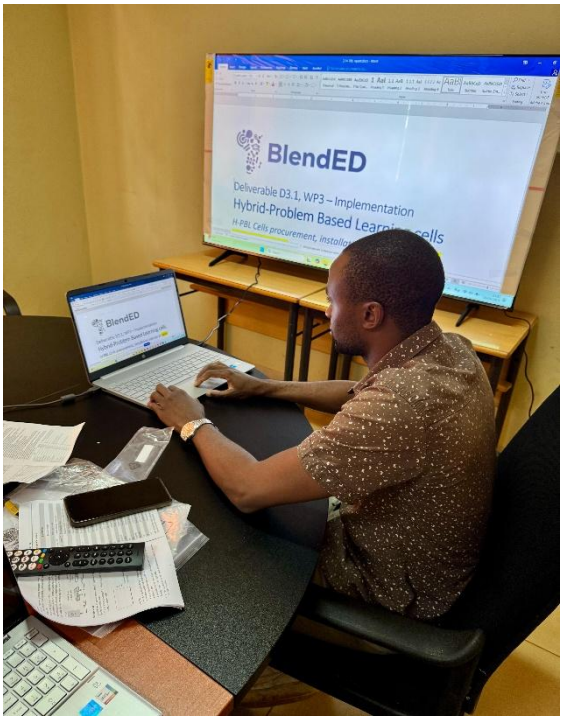
5.3 Installation

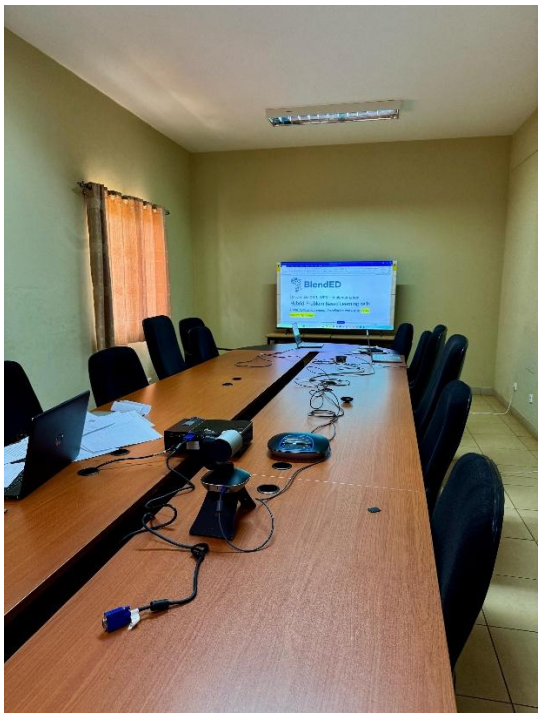
The equipment received is basic for the normal functioning of our hybrid classroom and to attend all online sessions for students and teachers at our university.

5.4 Use

The equipment was well installed and is now operating as expected in our hybrid classrom as indicated by the following photos.


BlendED


BlendED
Deliverable D3.1, WP3 – Implementation
Hybrid-Problem Based Learning cells


BlendED


BlendED
Deliverable D3.1, WP3 – Implementation
Hybrid-Problem Based Learning cells

6 University of Nigeria Nsukka, Nigeria

There is a growing demand for flexible, inclusive, and resilient education systems in Africa. By blending face-to-face and online learning, hybrid classrooms bridge gaps in access to quality education, accommodate diverse learning styles, and ensure continuity of learning during disruptions. To achieve Deliverable D3.1 under Work Package 3, University of Nigeria provided an office space in the Faculty of Agriculture Building for the ABC BlendED Hybrid-Problem Based Learning cells. The following equipment are required for the H-PBL Cells: immersive connection, video collaboration system, microphone, Logitech rally bar, smart board, and computer. The budget of €8,000 provided for Deliverable D3.1 was sufficient to complete this task.

6.1 Acquired equipment

Table 1 describes the acquired equipment with specification.

Table 1. H-PBL Cells Equipment with specification

S/N	Product	Qty	Rate (Naira)	Cost (Naira)
1	Logitech Conference Webcam 960-001054 Autofocus, 360-degree rotation, 360-degree capture, face detection	1	1,000,000	1,000,000
2	5G Router with Power bank ZLT X25 5G Super-Fast Smart Box Wi-Fi Router with Unlimited Browsing	4	100,000	400,000
3	Hp Elitebook 840 G6 intel core I5 Touchscreen 8gb Ram/512 gb SSD win 11 pro	2	700,000	1,400,000
4	Smart 75” (UHD) interactive flat panel touchscreen 75" 4k(UHD) display In-built 4k(13mp) camera Dual Operating system: Android 13 + Windows 20-point multi-touch Anti-glare screen	1	5,850,000	5,850,000
5	Movable stand for screen Adjustable width for 55" to 75" tv. Aligned wheels.	1	625,000	625,000
6	Transportation		227,000	227,000
7	Office Security fittings and finishing		928,000	928,000

	Total			**₦10,430,000.00**

The Euro equivalent of ₦10,430,000.00 (using conversion rate of ₦1550 to €1) is €6,729.03.

6.2 Procurement

In accordance with the University of Nigeria's procurement protocols, a tender was publicly announced. Four UNN-accredited vendors—ET-Pros Global, Samtech Enterprise Nig, Sicotech Enterprise, and UFO Tech—were shortlisted in December 2024. Quotations were obtained from all four suppliers, as attached. Following a competitive review, UFO Tech, having submitted the lowest bid, was selected and commissioned to supply the required equipment. The equipment were received by the University of Nigeria Central store by February 2025. After the documentation, they were released to the ABC BlendEd Team.

6.3 Installation

The assigned office space for the ABC BlendEd was handed over by the Dean of Agriculture to the Project Team. The office space was equipped with a conference table and chairs. Extra security measures were taken by installing burglary proof and changing the existing door locks (Figures 1 and 2). Other finishing works and repairs were done to increase the aesthetic value of the room. The acquired equipment was installed (Figure 3) and are working as expected.



Figure 1. Installation of burglary proof



Figure 2. Installation of burglary proof and change of key

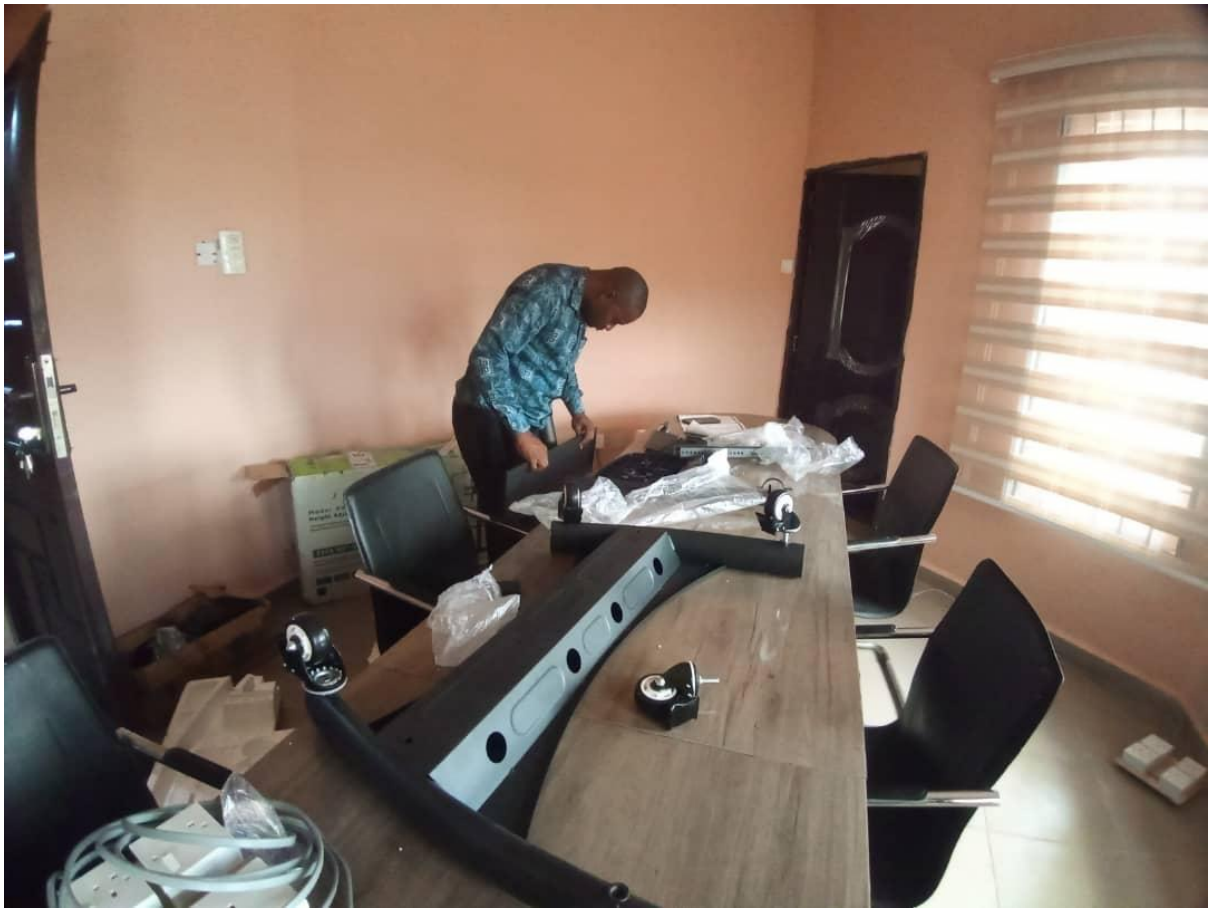


Figure 3. Installation of the interactive screen

6.4 Use

The acquired equipment is actively used to support ABC BlendEd activities in the university. Students will use the room for virtual collaboration, access online resources, and engage in live discussions with peers and facilitators. Faculty members will also use the space for delivering hybrid lectures and mentoring sessions. The room is accessible to all departments upon booking.



Figure 4. Photographic evidence of the equipment in active use

7 Eduardo Mondlane University, Mozambique

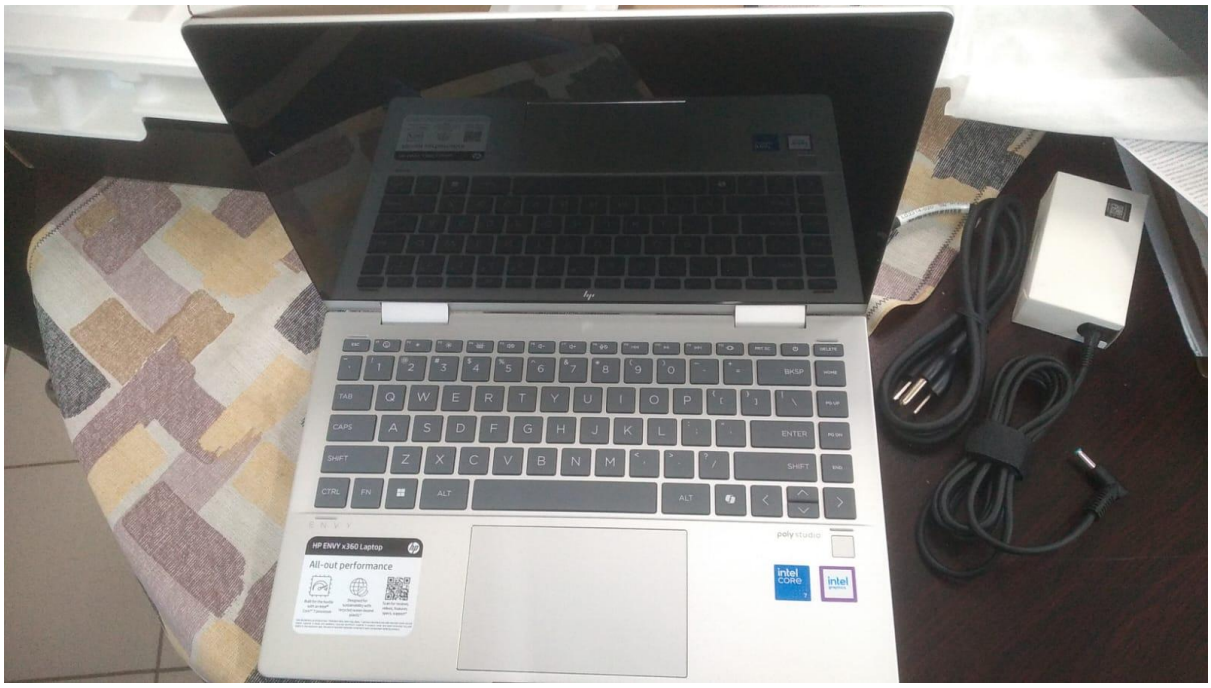
7.1 Acquired equipment

At Eduardo Mondlane University through the ABC BlendEd project we were able to acquire 2 equipment, namely, the lap top (HP ENVY X 360 14-ES1023DX Intel Core i7, 150U RAM 16GB 1TB SSD 14.1 Touchscreen FPR Win 11 Silver) and the Logitech video conference system for Mid to large Sized Rooms, USB Plug and Play, HD Video and crystal audio, expansion microphones, remote control, connectivity and usage, full duplex speakers.

S/N	Product	Qty	Cost (MZN)
1	Logitech video conference system	1	194,242,000
2	lap top	1	120,060

Below are the two pictures of the acquired lap top





Below are the pictures of the Logitech video conference equipment









7.2 Procurement

The procurement process followed the three-quotation procurement process. The process was as follow: 1. The project coordinator prepared the request for acquiring the equipment to the Dean of the Faculty of Agronomy and Forestry Engineering. After the authorization process, the procurement office of the Faculty started the procurement process which included the preparation of the letter of request for quotation followed by market survey of the items acquited; After getting the quotation, the process that included the three quotations was again sent to the dean for requesting authorization of purchasing the equiment. After the authorization from the Dean to acquire the equiment, the process was sent to procurement office again for contract elaboration. The selection process of the provider was based on lowest price and quality. The contract was then signed by the University and service provider selected. The contract was then sent to administrative court for clearance. After the clearance process, the equiment provider was informed to provide the equiment to the Faculty and final the paiment was made to the provider.

7.3 Installation

Due to limited space the equipment was not installed in a specific office. It is being used in different offices of the Faculty and the Centre of Excellence. Discussion is still ongoing to identify a room at the Faculty of Centre where it can be installed.

7.4 Use

The equipment is being used for meetings related to the project implementation.