BlendED

Deliverable D2.1, WP2 – Design

ABC BlendEd Course Syllabus

A blended mobility project course unit that can be effective in promoting students' employability while bringing added value to the sector of Agriculture in Africa.

The process and the results

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

Executive Summary

Deliverable D2.1 presents the design and development of the ABC BlendEd course syllabus, an innovative blended mobility project course intended to strengthen students' employability, entrepreneurship and professional competencies while generating practical value for agriculture and related sectors in Africa. Developed under Work Package 2 – Design of the ABC BlendEd Erasmus+ Capacity Building in Higher Education project, the deliverable documents the pedagogical foundations of the course, the analysis underpinning its adaptation to African higher education, the lessons learned from three pilot editions and the final syllabus developed by the project partners.

Building on the European BlendEd experience

The ABC BlendEd model builds on a European course established in 2009/10 and progressively developed around international, interdisciplinary and project-based collaboration. Students from different countries and academic backgrounds work in teams on authentic challenges, combining virtual collaboration with short periods of physical mobility. This approach gives students the opportunity to gain international and intercultural experience while remaining at their home institutions for most of the course, reducing some of the financial and logistical barriers associated with longer periods abroad. It also provides an environment in which students can apply their disciplinary knowledge while developing teamwork, communication, leadership, problem-solving, project-management and entrepreneurial competencies.

Pedagogical foundations and African context

The deliverable reviews pedagogical approaches that can support employability, including challenge-based and project-based learning, problem-based learning, collaborative online international learning, work-integrated learning, experiential learning and design-thinking approaches. Examples from African higher education demonstrate the relevance and potential of these approaches, while also highlighting challenges related to digital connectivity, access to devices, staff capacity, curriculum integration, assessment and sustainable funding.

The analysis of employability initiatives at ABC BlendEd partner universities identifies an existing foundation of practical learning, internships, research projects, entrepreneurship education, digital skills development, industry engagement and international collaboration. However, the extent to which these initiatives are integrated into a coherent learning experience varies. ABC BlendEd can complement existing provision by bringing these elements together around authentic challenges, multidisciplinary teamwork and the development of solutions relevant to companies, farmers and communities. The deliverable consequently recommends connecting the course to established academic and employability pathways, making transversal competencies explicit in assessment, strengthening stakeholder involvement and monitoring outcomes beyond the completion of student projects.

Adaptation through three pilot editions

The European model was adapted through three pilot editions implemented during the 2023/24–2025/26 project period. The first edition, delivered in 2024 with 12 students, established the initial African implementation. The experience highlighted the difficulties of involving company representatives from distant regions and of relying on online participation where internet connectivity is unreliable. From the second edition onwards, challenges were therefore selected with greater attention to the regions hosting the face-to-face activities, and responsibility for course coordination progressively shifted to the African partners, supported by their European counterparts.

The third edition further highlighted the high cost of travel within Africa and the limitations of the available project budget. In response, the partnership introduced a hybrid mobility model, in which partners meet face-

to-face within their own countries while joining the international kick-off and closing activities online. This arrangement reduces travel costs while preserving opportunities for personal interaction, team building and international collaboration. Together, the three editions provided an iterative process through which the course could be refined in response to institutional conditions, stakeholder availability, student needs and available resources.

The final ABC BlendEd syllabus

The resulting syllabus defines ABC BlendEd as an eight-week blended, challenge-based and transdisciplinary project course worth six credits, corresponding to an estimated workload of 180 hours. It targets final-year undergraduate or master's students from agriculture, business, engineering, environmental studies, economics, marketing, design and other relevant fields. Its flexible structure allows participating universities to align the course with existing academic provision, including internship or industrial traineeship units where appropriate, without making formal curriculum revision a prerequisite for adoption.

Students work in international and multidisciplinary teams to understand a real-world challenge, develop and present a feasible solution, and engage with the relevant stakeholders. The course aims to strengthen students' ability to integrate scientific, technical and entrepreneurial knowledge; collaborate across disciplinary and cultural boundaries; lead projects with ethical and sustainable impact; and demonstrate digital adaptability and lifelong learning. The syllabus also establishes the importance of inclusive participation, accessible learning arrangements, effective academic supervision and meaningful engagement with challenge providers.

Quality assurance and continuous improvement

Recognising that a successful course depends on more than the quality of its final project, the deliverable proposes a framework for assessing the student experience. Its indicators address inclusion and equitable participation, digital access, team collaboration, clarity of requirements, academic supervision, challenge relevance, learning gains, employability-related competencies and overall satisfaction. The proposed methodology combines student feedback with evidence from peer assessment, project outputs and company or stakeholder feedback. Data should be collected at the beginning, during and at the end of the course, with optional follow-up after completion. The results can inform timely support during delivery and guide improvements between editions.

Conclusions and potential for wider adoption

D2.1 provides a documented basis for implementing ABC BlendEd in the six participating African universities and offers a starting point for other institutions or consortia interested in adopting the model. Its central contribution is the development of a course that retains the core principles of international blended collaboration and authentic project work while adapting its duration, workload, mobility arrangements and implementation requirements to the African context.

The long-term value of ABC BlendEd will depend on institutional ownership, sustained engagement with companies and communities, appropriate academic recognition, staff capacity and the availability of resources to support future editions. By connecting education with research, innovation and real-world agricultural challenges, the course offers a practical mechanism for developing students' employability and entrepreneurial competencies while encouraging solutions that respond to local needs.

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1 Introduction

The ABC BlendEd project aims to strengthen students' employability and entrepreneurial competencies in African higher education through an innovative blended mobility model based on international, interdisciplinary and challenge-based learning. Building on the experience of the European BlendEd course, the project adapts this educational approach to the specific needs and circumstances of African universities, with a particular focus on agriculture and its related sectors. The model enables students from different institutions and fields of study to work collaboratively on real-world challenges proposed by companies and other stakeholders, developing practical solutions while strengthening the technical, transversal and entrepreneurial competencies required for their future professional lives.

Deliverable D2.1, developed under Work Package 2 – Design, documents the process followed to adapt the European BlendEd model and establish the ABC BlendEd course syllabus. This process combined an analysis of the European course experience, a review of pedagogical approaches for promoting employability, an assessment of existing employability initiatives at the African partner universities, and the progressive refinement of the course through three pilot editions. The intention was not simply to transfer an established European model to a different context, but to develop a course that responds to the academic, institutional, technological and financial realities of the participating African universities.

The deliverable first presents the evolution and main characteristics of BlendEd in Europe, followed by an analysis of pedagogical approaches that support the development of employability-related competencies. It examines relevant practices and experiences in African higher education, including examples of challenge-based and project-based learning, blended mobility and industry- or community-engaged learning. It also analyses the initiatives already implemented by ABC BlendEd partner universities, identifying opportunities to strengthen synergies between education, research, innovation and engagement with employers and local communities.

A further section documents the evolution of ABC BlendEd across its three pilot editions. It explains the main adaptations introduced in response to implementation experience, including the course workload and duration, the selection of locally relevant challenges, the organisation of international collaboration and the use of hybrid mobility to address travel and funding constraints. The deliverable also proposes a framework for assessing the quality of the student experience, with indicators and methods to support monitoring and continuous improvement.

The final outcome is the ABC BlendEd course syllabus, developed collaboratively by the project partners and informed by the lessons learned from the pilot editions. The syllabus provides a practical starting point for the six participating African universities and for other higher education institutions interested in adopting the model. Its flexible design allows institutions to integrate the course into existing academic provision, where appropriate, without necessarily requiring a formal curriculum revision.

Overall, D2.1 presents both the rationale behind the ABC BlendEd model and the process through which it was adapted and refined. It aims to support the implementation of a relevant, inclusive and sustainable learning experience that connects academic knowledge with real-world challenges, strengthens students' employability and entrepreneurship, and generates practical value for agriculture and local communities in Africa.

2 BlendEd in Europe

BlendEd[1] in Europe is running in 2026/27 its 18th edition. The course had its first edition in the academic year of 2009/10. The syllabus of the course has changed significantly along these 18 years (Figure 1). We started back in 2009 with project proposals designed by academics and with teams of IT students only; in 2012 we moved to multidisciplinary teams of students. In 2015 we started having projects proposed by companies; the concept crossed EU borders for the first time in 2016, involving the State Technical University of Volgograd, from the Russian Federation and two years after we started working with colleagues from the Middle East, and more recently, since 2018/9 with colleagues from the Federal Technical University Minna, Nigeria. This was the seed that launched the evolution to Africa. The fact that the Polytechnic of Porto was coordinating the ATHENA European University was also a significant booster to rollout BlendEd – the European branch – and ABC BlendEd – the African branch.

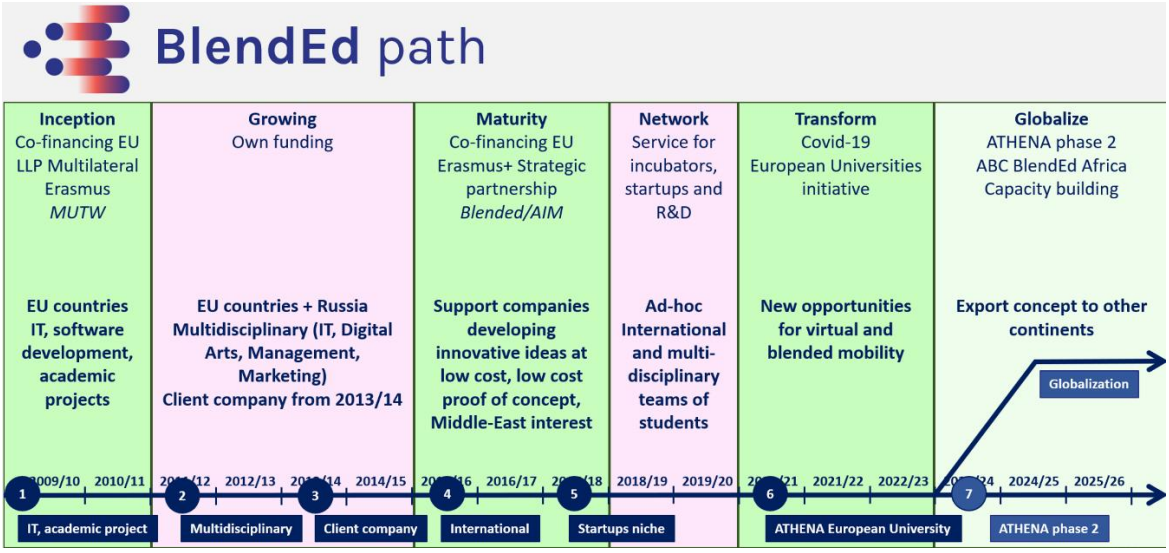


Figure 1: BlendEd path

Since 2009, we have enrolled more than 500 students; last year we ran the 17th edition of BlendEd in Europe, with 59 students and the 3rd edition of BlendEd Africa, with 36 students, in total 95 students. The 18th edition of BlendEd Europe started in mid-September, and we expect to have another class of more than 60 students. The 4th edition of BlendEd Africa will be launched in mid-November envisaging a class of 36 students.

BlendEd in Europe and in Africa (ABC BlendEd) share a common purpose: to provide students with an intensive international, intercultural and multidisciplinary learning experience while allowing them to remain at their home institution for most of the course period, with only two weeks of physical mobility, tearing down the several barriers preventing many to engage in international mobility during studies. Through collaborative, challenge-based projects involving students from different countries and disciplines, the model develops teamwork, entrepreneurship, communication and other employability skills, while generating practical solutions to real-world challenges and delivering value to local communities.

[1] https://www.blended4future.com/



BlendEd Europe kick-off meeting in Heraklion, 2025



ABC BlendEd meeting local farmers in Angónia, 2025

Figure 2: BlendEd Europe and Africa

2.1 EU Background

2009-2011: The Blended EU project course concept goes back to 2009 with the EU-funded Lifelong Learning project of **MUTW** – Multinational Undergraduate Team Work. With 11 partner universities from 9 different countries, blended learning was introduced and validated for the first time. Students of the participating universities formed different teams and worked for a full semester on their assigned challenge. The students learned to work together in a blended way: starting with a physical introduction week, followed by an online period of working together from their home institution and ending with a physical project closure week.

Multinational Undergraduate Team Work 2009

praxis 2011

Blended Mobility 2015

ATHENA EUROPEAN UNIVERSITY 2020

BlendED 2023

MULTINATIONAL UNDERGRADUATE TEAM WORK (MUTW)

What it is: A collaborative learning model where undergraduate students from different countries work together in international teams on real-world projects. The approach combines virtual teamwork with short physical mobility periods to create a rich intercultural experience.

Goal: To develop students' soft skills, global awareness, and ability to work in diverse teams while reducing the financial and logistical challenges of traditional long-term mobility. MUTW also aims to strengthen employability through practical, project-based learning without major curriculum changes.

How it works: Students are grouped into geographically dispersed, multidisciplinary teams. They collaborate online using digital tools for planning and execution, and meet physically for intensive sessions focused on hands-on work and team building.

Application: Initially designed for engineering education, the MUTW concept is adaptable to any discipline that benefits from international project collaboration and teamwork.

2011-2014: The BlendEd course continued through the EU-funded project **PRAXIS**. PRAXIS is a thematic network that focuses on improving project-based learning and internships across European higher education. Its main goal is to enhance student employability and soft skills by creating innovative models and tools for project/internship courses. The PRAXIS consortium involved 44 members, including universities, companies, research labs, and chambers of commerce, working together to establish a European Centre for Project/Internship Excellence. [13]. The online portal offers a Virtual Project/Internship Market, which is a marketplace for international student internships and projects. It also offers a PRAXIS Center of Excellence (offering Opportunities for institutions and companies to collaborate and share best practices).

PRAXIS NETWORK

What it is: A European network dedicated to strengthening project-based learning and internships in higher education. It connects universities, companies, and organisations to develop innovative models and tools for international project and internship experiences.

Goal: To better prepare students for the labour market by enhancing their soft skills, international collaboration, and practical experience. At the same time, PRAXIS aims to bridge the gap between academia and industry and foster sustainable partnerships.

How it works: Through an online platform and a strong partner network, PRAXIS offers a Virtual Project/Internship Market where students, companies, and institutions can connect. Students work in international, multidisciplinary teams on real projects or internships. The network also provides quality guidelines and best practices for project-based education.

Application: While the initiative has a strong focus on engineering and technology, the concept is applicable to any course or internship involving international project work.

In a next phase, 6 European partners continued to offer the Blended course to students without external or EU-funding.

2015-2018: **BlendEd** (Blended Academic International Mobility) is an Erasmus+ Strategic Partnership for Higher Education. This EU-funded project aims to promote blended mobility as a sustainable way to enhance students' international exposure and employability. This consortium counts 10 full partners (8 higher education institutions, 1 GIS association, and the European Association of Erasmus Coordinators) and involves organisations from over 20 European countries. [14]. It established a European foundation for blended mobility. BlendEd addresses barriers to traditional mobility (such as cost and time constraints) by combining virtual components with short physical mobility, making international exposure more accessible and scalable for students and institutions.

BLENDED ACADEMIC INTERNATIONAL MOBILITY (BLENDED)

What it is: A model for international student collaboration where teams work from their home institutions, brought together through a mix of online tools and a short physical mobility period.

Goal: To promote students' soft skills and international cooperation while addressing the cost and logistical barriers of traditional international mobility. Promote students' employability through non-formal learning without major curriculum changes.

How it works: Students work in geographically dispersed, multidisciplinary teams on projects. The virtual component facilitates online teamwork, while the short physical meetings focus on real-life collaboration.

Application: While initially developed for engineering, the concept is applicable to any course or internship that involves international project work.

2020-2023: **ATHENA** – Advanced Technology Higher Education Network Alliance European University (ATHENA) is a federation of 10 mid-size Higher Education Institutions (HEI) in European countries. It draws on their combined strengths to reach a common objective: deliver high-quality education with a positive impact on research, youth employability and social advancement at the national and European level.

ATHENA's holistic, inclusive view of education targets excellence in both the provided education and the implemented applied research. Joint research and educational projects foster synergies between HEI and stakeholders, boost competitiveness, attract funds to support its programmes and leverage fully the network's infrastructure and scientific potential. The network's educational and research priorities are informed by the respective European priorities and needs. ATHENA addresses the digital transformation of society and industry 4.0 requirements, contributing to create A Europe Fit for the Digital Age.

ATHENA EUROPEAN UNIVERSITY ALLIANCE (ATHENA)

What it is: A federation of 10 mid-size Higher Education Institutions (HEI) in European countries addressing the digital transformation of society.

Goal: ATHENA attempts to become a worldwide renowned federation of HEI that delivers highly qualified professionals for the labour market assuring a swift and effective transition from Education to Labour, and advances the transfer of knowledge and research results to society.

How it works: ATHENA's deep internationalisation facet imprints to the local communities a more vibrant atmosphere that is converted naturally into more opportunities to evolve and grow due to the new points of view brought in by a dynamic international body of students, teachers and administrative staff.

Application: ATHENA works towards the Internationalisation of the European Higher Education Area.

The European universities in the BlendEd team run the BlendEd course every year since 2009/10 (Figure 3) with a combination of own university funding, company fees and (since a couple of years) through BIP subscription (Erasmus Blended Intensive Programme).

2.1.1 Blended Intensive Programmes (Erasmus+ BIPs)

BIPs are a newer initiative, often supported by Erasmus+, that formalises this blended approach to student and staff mobility. These are short-term programmes that combine a compulsory physical mobility period with a compulsory virtual component for online collaboration.

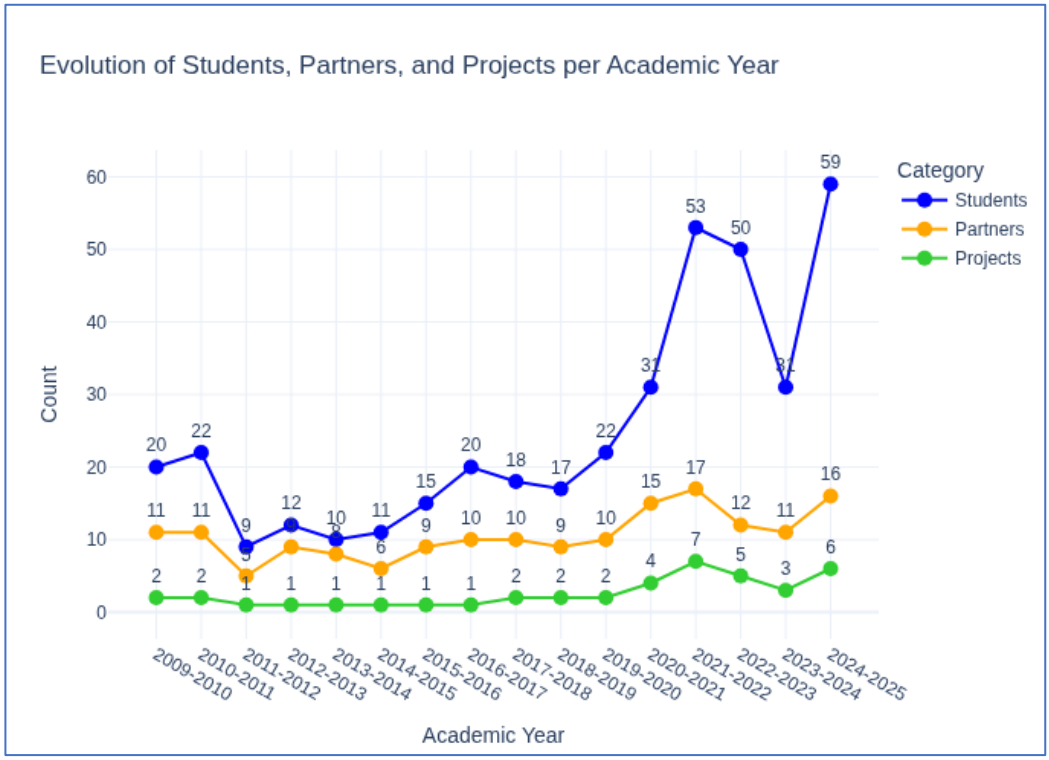


Figure 3: European BlendEd course evolution

Throughout the years a lot of material has been created to help build and grow the Blended course within Europe: books, websites, guidelines with best practices, videos, the Blended Mobility page at Wikipedia, etc.

To run the Blended Mobility course, partners mostly gave equivalence to one of their already existing courses within their curricula, mostly the 'internship' course.

The BlendEd team includes more than 30 universities from which approximately 15 join each yearly course edition depending on funds availability. It is a dynamic but stable partnership. The BlendEd paradigm is moving forward towards its next milestone, the 20th anniversary of the European course that will be celebrated at the same time as the 6th anniversary of ABC BlendEd course in Africa.

Some universities however adapted their curriculum and introduced a devoted course for the Blended Mobility programme, such as the case of Odisee in Gent.

2.2 Learning environment

Multidisciplinary team

A BlendEd project is all about teamwork and international collaboration with students of different disciplines. This experience improves technical and social skills and gives a boost towards employability.

Intercultural team

The students, and their supervisor teachers, are grouped in international project teams. Participating partners are coming from different countries. Some countries have common frontiers or even languages, but still different cultures. Each individual is influenced by the culture of nation, region, family, professional group, education, religion and age. Parameters of influence are, among other, the language, the way of thinking,

behavioural norms, styles of communication, understanding of time and space and job orientation. On the base of those and some other similar parameters, a team member can get the feeling to be misunderstood, not to know what others want to tell, or what their expectations are. To avoid most of described situations, a workshop and practical exercises for rising cultural awareness by participants are organised at each edition of BlendEd during the preparatory phase and at the kick-off meeting.

Size of the team

In an agile project setup, the recommended team size is most of the times 5-9 persons. If the project size is too big, the communication and complexity overhead will be very high.

Good results were achieved with team sizes from 6-18 students. If a project has more than 10 involved persons, the recommendation is to use project management frameworks like SCRUM Nexus and create several SCRUM teams, which communicate on regular basis. The communication overhead of a distributed team is already an issue, and if the team sizes are too big, the communication between project participants becomes more difficult and less effective. Smaller teams can tackle complexity and issues more easily and effectively.

The role of team building

Don't underestimate or ignore the importance of team building during the kick-off week. Students with different backgrounds, expertise, culture, languages, habits and character meet up and must form a solid trustable team without knowing each other in the first place. This doesn't happen in a blink of the eye and must be initiated by the organising party. Use methods and games to get to know each other in an informal and fun way.

A good idea is to start the project with a playful and energetic ice-breaking activity that combines team challenges with getting-to-know-each-other games. It is also recommended to incorporate more team building opportunities during the kick-off week, such as a student dinner, an international evening, or a bowling event.

After the kick-off week the students go back to their home institutes and cooperation continues through digital meetings over great distances. Therefore it is important that the relations between the team members have solid common ground.

2.3 Pedagogical approaches

Open project specification

The students' project specification should be open and providing the necessary information on the domain but not all the detailed implementation. This specification should be focused on the problem/challenge being proposed to the students not on the solution. After a brief presentation of the problem domain there should be room for students' questions allowing them to create an informed common understanding of the problem.

The main benefits of this approach come from the learning environment to which students are exposed: an international, intercultural, interdisciplinary team working at a distance. Providing an open specification of the problem/challenge to solve forces students to intensive cooperation and communication in order to come up with a solution. This gives students the chance to practice and improve their soft skills in an effective non-formal way.

Solve business problems using IT

Information technology is present in all walks of life and it is a widely accepted tool to tackle business problems and facilitate business processes. Business is a multi-dimensional process that involves many stakeholders working together to achieve a set goal. The aim of BlendEd projects is to establish a team with multidisciplinary competences to solve business problems and as a result promote the inter-team communication and collaboration skills of all team members. BlendEd participating students are required to be

selected from different fields of study in order to fulfil the skill requirements needed to address all aspects of a business problem. To put it in a context below are some skill examples that a team would require to address business problems using information technology:

- Project manager - A team requires a member with project management skills to plan and execute projects.
- Business analyst - A team requires a member with business skills to analyse the business aspects of a project.
- System Analyst and Designer - A team requires a member with system analysis and design skills to specify system requirements and design possible solutions
- Marketer - A team requires a member with product marketing skills to identify possible customers and plan marketing strategies.
- System developers - A team requires members with system development skills to develop the design solutions and test the end product.

Beside the above IT skills all members have to possess communication skills as well as being adaptable.

Link to the professional world

Although the majority of the blended-AIM partnership members are related to the higher education sector (traditional, technical, polytechnic, applied sciences universities), you will also find (among others) as part of our partnership stakeholders from different sectors such as research laboratories, networks, associations, incubators, manufacturing and technology companies, chambers of commerce, consultancy and development advisories, ...

All our partners are engaged in offering qualified projects to students, providing the best experience for all stakeholders in the tripod: University–Students–Professional world, and supporting the employability of talent in the EU and elsewhere.

With a real-life partner, the students are provided with a realistic and challenging assignment which requires them to reflect on issues surrounding the use of IT in the client company by evaluating their IT strategy and the impact of IT on their stakeholders and customers. The students adopt the role of professional consultants and software developers who are given a project brief requiring them to develop a presentation to be pitched at executive level. They prepare a supporting narrative explaining and justifying their thinking, as well as their use and application of IT. They are required to give a robust defence and justification of their decisions and solution to the problem, as well as a demonstration of the final product.

In this way the industrial partner obtains a useful working product and the students experience ‘a good healthy dose of reality’ with real deadlines, budgets and stakeholders, thereby achieving a mutually beneficial and fruitful partnership.

Any organisation that finds the blended-AIM project valuable is invited to join the blended-AIM consortium as an Associated Partner.

Usage of IT-tools

For the product development to support the teamwork the blended-AIM project is funded by the European Union’s Lifelong Learning Programme to allow students from different European and Middle Eastern partner universities to collaborate in an international setting to achieve a common outcome. This separation presents a great challenge in team collaboration and communication. Although the students have short face-to-face

meetings at the beginning and end of the project, during the project they can only communicate in a virtual way. Also the administrative and academic staff who are supervising the students from the partner institutions have to communicate with each other during the project period.

The following requirements for the students' communication platform/tools were identified as:

- Basic sharing of documents
- Advanced file sharing with version control for source code and resources
- Allowing information to be broadcasted to participants
- Web conference tool with video and audio capabilities
- Allow asynchronous (e.g. discussion fora) and synchronous (e.g. instant messaging) communications
- Advanced calendar sharing for project management
- Providing wiki-like features to document and support code and software
- Allow usage statistics collections, i.e. showing the commitment of the students to their team and other statistics are important for teachers and for evaluation purposes, such as statistical reports on accesses and download/uploads.

Based on these requirements a list of tools that the students could use was prepared. Some tools have the same functionality as others. The students were given the freedom to select their usage preferences from the range of tool sets on offer and were not obliged to use any particular one.

The requirements described above were relatively easily met by a combination of several software tools and methods as follows:

- Communication and Project Management; Adobe Connect, TeamSpeak (not well), Skype, Slack, Trello (not well), Team Foundation Server (TFS), Google Docs
- Software Development; some of the above in addition to Jenkins CI server, GitHub, Angular JS (since the use of jQuery and Javascript poses problems of legibility and maintainability of the code), Azure cloud computing platform, Scrum Nexus

After a short exploration phase (the latest at the end of the kick-off meeting) the team has to decide which tools they will use for communication, for development and for managing the project.

Provide credit points to students

Students participating in the blended mobility project should get credits for their participation. This amount can vary from rather low (minimum 5) to high (e.g. 20) ECTS.

Rationale: less than 5 credits makes it difficult to collaborate for a whole semester, taking into consideration that 1 credit corresponds to around 30 hours of work.

For example: 5 credits x 30 hours = 150 hours.

5 day kick-off week + 5 day finalise week = 10 days x 8 working hours = 80 hours. That only leaves 70 working hours during the semester.

Most curricula have project courses, traineeship moments, a final thesis project or other courses that perfectly fit for participating in a blended mobility project.

A problem that arises when having teams of students from different institutions is that not all students will receive the same amount of ECTS credits. This means that some students are expected to put a bigger amount of workload into the project than others.

This 'problem' can actually be seen as an opportunity: it serves as a simulation of a real world environment in which a company has specific budgets for IT, management, marketing, etc. In the setting of a blended-AIM project, the budget is not measured in currency, but rather in ECTS credits, say an 'ECTS budget'. It is essential that all team members know each others' ECTS load and are aware that therefore some students are expected to work more hours than others.

For example: let's say there are 3 design students in the team, two of them getting 6 ECTS credits, and one of them getting 12 ECTS. This means the team has a design budget of 24 ECTS (12+6+6) x 30 hours = 720 design hours. 1 ECTS credit corresponds to 30 hours of work.

2.4 Logistics and implementation issues

Running a BlendEd course requires financial resources and a preliminary analysis of risks and mitigation measures.

2.4.1 Funding

The BlendEd paradigm requires financial resources to support the activities performed abroad. It is of relevance to know what activities require financial support, to estimate the amount and to know where to get it.

Activities requiring financial support

The main costs to be covered relate to the meetings abroad.

Students and supervisor teachers from each institution participating in the BlendEd project course are expected to attend two meetings:

- kick-off meeting
- project closing meeting

It is recommended that each of these meetings lasts for five working days.

Some additional costs may occur, such as for acquiring a Visa or for involving an extra person providing support for a student with special needs.

Besides the face-to-face meetings the development of the product might also require special resources, such as:

- development servers
- product specific needs, like lab materials, specific hardware or licence fees for some tools or services

Sources of financing

Funding sources are dynamic, new sources may appear and the current ones may disappear or change their funding rules and/or procedures. To select the alternatives that might be available at a certain moment local and European funding opportunities should be investigated.

- **EU funding**
    - The costs related to the meetings abroad might be covered by Erasmus+ funds, mainly through "Key Action 1" mobilities (Learning Mobility of Individuals, see the Erasmus+ Programme Guide: https://erasmus-plus.ec.europa.eu/programme-guide/part-b/key-action-

1) or “Key Action 2” projects (Cooperation among organisations and institutions, see: https://erasmus-plus.ec.europa.eu/programme-guide/part-b/key-action-2).

- **Institutional funding**
  - Associate partners (universities) are not getting EU funding, so they have to take care about financing their participating students and teacher. Such university (faculty, school, institute or any other unit inside the university) has to invest own funds for activities like this. Limitations can appear because of lack of procedures inside the university for such cases (how to pay travel costs to the student that is not involved in EU, CEPUS or similar mobility schemas). Associate partners should fund students as full partners are doing so that all students are treated equally. Next to this, associate partners outside EU will have to find funds for visa application processes alongside the funding already mentioned.
  - Local funding – Universities with EU-funding can face the fact that the available project budget is not sufficient to cover all the costs. In that case it is up to the universities themselves to apply co-funding from their own means. Also in this case it is important to manage equal treatment of all participating students.
- **Companies funding**
  - Companies, associations, foundations, and/or any other public funds or organisations, that are prepared to finance costs of participants (priority is given to students) in the project, can provide external funding, that can be used for basic funding or co-funding. In addition, also in this case, students have to be treated equally. Selection of students and teachers for external funding must be clear and transparent and should not expect unpaid activities from holders.
  - Companies that participate in the project and are willing to co-fund or additionally prizing students are welcome to do this on a clear and transparent base. For additional work, they can hire students out of the scope of the blended-AIM project if they agree with them.
  - Companies might provide the required equipment and/or support the expenses related to the specific needs of the product development.

2.4.2 Risk management

An overview of the problems that might occur and possible solutions to mitigate them.

- **Legal issues**
  - Visa problems - Depending on the nationality of the participants the application for Visa needs to be addressed early enough so that the participants can be part of the physical meetings. Therefore, the meeting dates and places need to be set early enough. An invitation letter of the host partner might be required in order to apply for the Visa. The partner needing the invitation letter should request it from the host partner.
  - Insurance for students - Since the local regulations of the partner institutions are valid, it needs to be assessed which arrangements (for example: travelling documents) have to be made so that all travelling participants are insured during the trip.
  - Student disciplinary procedures - Participating students are coming from different cultures and education backgrounds which may sometimes lead to a conflict and disagreement be it personal or task related. A disciplinary procedure should be drafted and approved and be given to the participating students at the start of the project to make sure meetings are taking place in a controlled environment.
  - Student grading and certificate - Partner institutions may set different ECTS for the project carried out by their students. A grading and certification procedure guideline should be in place to guide partner institutes.

- **Students fail their assignment**
  - In order to avoid students failing their assignment, students should be selected carefully. Points to consider include:
    - Academic progress – students should have the required prior knowledge for the challenge and be sufficiently advanced in their studies (e.g. having completed the required share of credits).
    - Motivation and commitment – a short motivation letter or interview helps to assess the student's genuine interest and willingness to invest time throughout the whole course, including the online phase.
    - Availability – students must be able to attend both physical mobility periods and the scheduled online meetings, without conflicts with exams, internships or other obligations.
    - Language proficiency – students need a sufficient level of English to communicate and collaborate effectively in an international team.
    - Teamwork and intercultural attitude – openness to working with peers from different cultures and disciplines, and the ability to handle feedback and disagreement constructively.
    - Self-management and digital skills – the blended format requires students to work independently, manage deadlines and use online collaboration tools.
    - Travel readiness – a valid passport, timely visa application and any health or insurance requirements should be checked at selection stage.
    - Team composition – the selection should aim for balanced teams in terms of disciplines, skills, gender and home institutions.
    - Clear expectations – selected students should receive the course plan, workload, assessment criteria and code of conduct before they commit, so they know what is expected of them.
  - After students selection, supervisors should be in regular contact with the students in order to detect arising problems early and react on those with the focus to keep the student team productive.

3 Pedagogical approaches to promote transversal/soft skills

This section summarises the state-of-the-art in pedagogical approaches used to promote soft skills in higher education. It describes current pedagogical approaches commonly used in higher education to develop soft skills (communication, teamwork, critical thinking, adaptability, intercultural competence, problem-solving, self-regulation, etc.).

3.1 Challenge-Based Learning (CBL) — real-world, student-driven problems

What it develops: creativity, critical thinking, collaboration, communication, self-directed learning.
How: students work in teams on authentic societal/industry "challenges", iterate solutions, present to stakeholders. CBL explicitly aims for transferable soft skills because the problems are open-ended and require negotiation, role distribution, and stakeholder communication. [1]

3.2 Project-Based Learning (PjBL) — extended, interdisciplinary projects

What it develops: teamwork, project management, problem-solving, adaptability, professional communication.
How: long-term, scaffolded projects often co-designed with industry/community partners; assessment focuses on outcomes, artifacts and process (milestones, reflections). Systematic reviews in HE report consistent gains in collaboration, problem-solving and workplace readiness [2].

3.3 Problem-Based Learning (PBL) — small teams solving a focused problem

What it develops: critical thinking, self-directed learning, clinical/practical reasoning, communication.
How: students encounter a problem first, identify learning needs, research, and reconvene to apply knowledge — the tutor is a facilitator. Widely used in health/engineering and transferable to other disciplines. (See reviews of PBL outcomes in HE literature cited under PjBL review) [2].

3.4 Collaborative Online International Learning (COIL) / Virtual Exchange (VE) / Blended Mobility

What it develops: intercultural competence, communication (including digital communication), teamwork across distance/timezones, language skills, adaptability.
How: structured collaborative tasks link classrooms across countries (synchronous + asynchronous), often culminating in joint deliverables; blended mobility mixes short physical mobility with virtual collaboration to amplify learning and inclusion. Evidence shows VE/COIL strengthens intercultural communication and digital collaboration skills and is increasingly used as part of inclusive mobility strategies [3].

3.5 Work-Integrated Learning (WIL), Internships and Industry-Linked Projects

What it develops: professional communication, teamwork, responsibility, time management, workplace adaptability.
How: placements, real client briefs, mentorship from industry; these experiential contexts provide immediate feedback loops and authentic socialisation into professions. Recent frameworks emphasise integrating industry to boost future readiness [7].

3.6 Design Thinking / Maker-Centred Approaches

What it develops: creative problem-solving, iteration, empathy, collaboration, tolerance for ambiguity.
How: human-centred iterative cycles (empathise, define, ideate, prototype, test) embedded in courses; often combined with CBL/PjBL. Literature points to synergy between CBL and design thinking for soft-skill outcomes [8].

3.7 Team-Based Learning (TBL) and Peer Collaboration (including Peer Assessment)

What it develops: collaboration, accountability, communication, leadership, feedback literacy.
How: structured team tasks, readiness assurance tests, peer-evaluation; effective when teams are stable and tasks require interdependence. Peer assessment also explicitly trains giving/receiving feedback — a critical soft skill [2].

3.8 Experiential Learning and Service Learning

What it develops: civic engagement, empathy, communication, problem-solving, reflection.
How: community projects or real-world practica with emphasis on reflective cycles (experience → reflection → conceptualisation → experiment), which foster metacognition and ethical reasoning [7].

3.9 Flipped Classroom and Active Learning (including simulations and role-play)

What it develops: communication, critical thinking, oral presentation, teamwork in face-to-face sessions.
How: content consumed before class; class time used for discussion, case work, role-play and simulations that target interpersonal skills. Meta-analyses show active learning increases student engagement and higher-order skills [2].

3.10 Reflective Practice, e-Portfolios and Assessment for Learning

What it develops: self-awareness, self-regulated learning, career-readiness, evidence-based reflection on skill growth.
How: students collect artifacts, reflect on competencies, set goals; rubrics and competency frameworks make "soft skills" assessable and explicit. Several recent studies and systematic reviews recommend e-portfolios and validated rubrics to make soft-skill development visible and assessable [6].

3.11 Digital Simulations, Serious Games and Virtual Labs

What it develops: decision-making, teamwork (when multiplayer), communication, resilience under pressure.
How: simulated workplace scenarios or crisis-management games that replicate stakes and require coordination; growing evidence for effectiveness when combined with debrief/reflection [5].

4 Cross-cutting design principles that maximise soft-skill gains

Across these approaches, recent syntheses identify recurring design features that reliably promote soft skills:

- **Authenticity** — tasks grounded in real problems or real stakeholders increase relevance and transfer [1].
- **Collaboration + interdependence** — tasks should require genuine interdependence (not only parallel work) [2].
- **Scaffolding + facilitation** — teacher/facilitator role shifts to coach; clear milestones and formative feedback are essential [1].
- **Reflection & assessment** — structured reflection (guided journals, e-portfolios) and competency-based rubrics turn tacit behaviour into measurable learning [6].
- **Intercultural and digital literacy supports** for virtual/blended mobility (language scaffolds, time-zone management, platform training) [3].

5 Evidence quality and recent trends

There is a growing body of recent systematic reviews and empirical studies (2022–2025) documenting soft-skill gains across CBL, PjBL, COIL/virtual exchange and experiential WIL; however, heterogeneity in how "soft skills" are defined and measured remains a challenge. Many reviews call for clearer competency frameworks and validated instruments [6].

Virtual and blended mobility (COIL + short physical mobility) is increasingly seen as a scalable, inclusive strategy to achieve intercultural and communication outcomes traditionally associated with study-abroad, and recent work shows positive impacts when courses are well-designed and facilitated [3].

5.1 Practical recommendations for course designers

Combine **authentic projects** + **structured reflection** (e.g., project deliverable + reflective e-portfolio). [7]

Use **mixed modalities**: face-to-face skills labs + virtual collaborative tasks to prepare students for hybrid workplaces [9].

Make soft skills **explicit** in rubrics and assessment criteria; train students in giving/receiving feedback [6].

For international collaboration, budget time for **relationship building and intercultural orientation** (not just task time) [4].

6 Use in African universities: what we know

To situate blended/virtual mobility work in an African context we review how the pedagogical approaches we discussed are being (or could be) used in African higher education institutions, drawing on available research and examples, including both successes and challenges.

6.1 Project-Based Learning (PjBL) / Problem-Based Learning (PBL)

- At Jomo Kenyatta University of Agriculture and Technology (Kenya) a four-year "AgriSCALE" project trained lecturers/mentors in PBL and engaged students in industry-related challenges; students developed communication, research and critical-thinking skills [15].
- A review for South Africa found that PjBL is "gaining traction" in HE but still in early stage: it promotes creativity, critical thinking, collaboration, problem-solving; yet many institutions face infrastructural/resource/curriculum alignment challenges [16].
- A pilot randomised controlled trial in Ghanaian TVET is comparing PBL with workplace experience learning for soft-skills development [17].
  Implication: PjBL/PBL is actively used in some African universities and shows promise for soft skills, especially when aligned with real-industry/community challenges.
  Challenges: resource constraints (tech, staffing/training), resistance to change, assessment issues [18].

6.2 Collaborative Online International Learning (COIL) / Virtual Exchange

- The iKUDU Project (South Africa + European HEIs) explicitly embeds COIL virtual exchanges, aiming to establish 55 COIL projects involving 5000 students across South Africa and Europe [19].
- A specific COIL study involving Durban University of Technology (South Africa, SA) found improvements in collaboration skills when students in SA and the UK engaged in a joint virtual cybersecurity/AI-project [10].
  Implication: African universities *are* engaging in virtual/blended mobility and COIL practices, especially as part of internationalisation and cross-border collaboration. These contribute to intercultural communication, digital collaboration and soft skills.
  Challenges: Digital/internet infrastructure, time-zone/coordination issues, access to devices and stable connectivity. Some papers highlight such barriers [10].

6.3 Soft Skills Development and Institutional Context

- A Tanzanian study found students in a university setting identified top soft skills needed: communication, leadership, decision-making, teamwork, problem-solving. They also reported that institutions have a role but students also rely on self-initiative to develop these skills [20].

- A broader review of employability in rural-based African universities emphasised the need for curriculum reform, stakeholder engagement and practical/hands-on learning to improve graduate readiness (which implicitly includes soft skills) [11].
- A commentary by the World Economic Forum argued that African universities need to emphasise soft skills (problem solving, decision making, creativity, teamwork, customer orientation) aligned to labour-market needs [21].
  Implication: There is recognition across the African HE sector of the importance of soft skills; many initiatives are underway, but integration into mainstream pedagogy is uneven.

6.4 Blended Learning / Life Skills

- At University of Johannesburg (South Africa), adaptive/blended learning approaches in community engagement projects were used to enhance inclusive learning, societal impact and life-skills teaching [12].
- A South African paper explored blended learning for "life skills" teaching (which overlaps greatly with soft skills), based on observations of and interviews with two Life Skills teachers [22].
  Implication: Blended modalities are being used to embed soft/life skills in African HE and community contexts; this aligns well with the blended/virtual mobility focus of ABC BlendEd

6.5 Key Enablers and Blockers in African contexts

The African higher education environment differs from the European case in several aspects requiring careful analysis when adapting new learning paradigms to be effective. A few enablers and blockers might be identified as a starting point.

6.5.1 Enablers

- International partnerships and EU/Erasmus+ funded projects (e.g., iKUDU) provide resources/training and help embed new pedagogies.
- Use of real-world challenges tied to local industry/community contexts increases relevance and student motivation (e.g., HAMK PBL-BioAfrica student-challenges in Kenya/Uganda/Zambia) [23].
- Digital connectivity and mobile technologies growing across many African HEIs.
- Institutional recognition of employability/soft-skills gap creates impetus for pedagogical change.

6.5.2 Blockers

- Infrastructure limitations (ICT access, stable internet, devices) hamper virtual/blended and active pedagogy rollout [18].
- Staff capacity and resistance: shifting from teacher-centred to facilitative methods (PBL/CBL) demands training/time [16].
- Assessment and resource difficulties: adapting curricula, aligning assessment of soft skills, managing large class sizes [16].
- Students accustomed to lecture/rote models may struggle with self-directed/teamwork tasks [18].
- Contextualisation: imported pedagogies must adapt to local languages, cultures, institutional contexts; one size does not fit all.

6.6 Fit for Blended Mobility / Virtual Mobility and Soft Skills

Given the ABC BlendEd focus on blended and virtual mobility in higher education, the African HE context offers both opportunity and caution:

- **Opportunity**: Virtual exchange/COIL in African institutions supports intercultural competence, digital teamwork, communication skills. Example: South Africa-UK COIL cybersecurity project.
- **Opportunity**: Blended mobility (combining short physical exchange + virtual collaboration) aligns well with African contexts where full semester abroad may be unaffordable.
- **Opportunity**: Real-world challenge-based student work tied to local industry/community (agri-entrepreneurship, sustainability) supports soft-skills (adaptability, problem-solving, collaboration) and local relevance (see Kenya/Zambia example).
- **Caution**: Implementation must account for connectivity, device access, time-zone/partner coordination, cultural and language differences in virtual teams.
- **Caution**: Assessment frameworks for soft skills may be underdeveloped in many institutions, so rubrics may need to be built or adapted and staff trained.
- **Caution**: Scaling such approaches across institutions may require investment in staff development, infrastructure and institutional buy-in.

6.7 Emerging Gaps and Research Directions in Africa

- There remains limited large-scale empirical evidence of how challenge-based learning (CBL) and project-based learning specifically impact soft-skills outcomes in African HEIs beyond case studies.
- More work needed on validated instruments for measuring soft skills within African cultural/institutional contexts (self-report vs behavioural).
- Need for longitudinal studies tracking graduate outcomes (employability, adaptability) linked to these pedagogical approaches.
- Virtual mobility combined with local context (blended mobility) is still relatively novel in many African institutions — more research on student experience, technology mediation, and intercultural teamwork is needed.
- Research on how to adapt rubrics/assessment for soft skills in African HE contexts (large classes, resource constraints) is sparse.

6.8 Summary

In short, many African higher-education institutions are increasingly using pedagogical approaches (PjBL/PBL, COIL/virtual exchange, blended learning) that align with soft-skills development. They show promise in promoting communication, teamwork, problem-solving, intercultural competence and adaptability. However, widespread adoption faces infrastructural, institutional, cultural and assessment challenges. For blended/virtual mobility and challenge-based learning in ABC BlendEd, Africa offers relevant examples and contexts — but also calls for careful design, support, and evaluation.

7 African case studies and outcomes

The following 8 case studies from African higher-education institutions and collaborative projects show how the pedagogies discussed in Section 6 (CBL, PjBL/PBL, COIL/virtual exchange, blended learning, WIL, design-thinking-style student challenges) are being used in Africa. Each case includes: institution/project, pedagogical

approach, what was done, soft-skills targeted, outcomes/evidence, implementation challenges, and sources. A references list follows the cases.

7.1 Case 1 — AgriSCALE / JKUAT and Egerton University (Kenya): Agri-entrepreneurship via PBL

Institution / project: AgriSCALE (Erasmus+), implemented with Jomo Kenyatta University of Agriculture & Technology (JKUAT), Egerton University and partners.
Approach: Problem-/project-based learning (PBL/PjBL) applied to agri-entrepreneurship curricula and student challenges.
What was done: Curriculum redesign, lecturer training in PBL facilitation, student challenge events where multi-university teams worked on authentic agri-business problems.
Soft skills targeted: Problem-solving, teamwork, entrepreneurship, communication, project management, adaptability.
Outcomes / evidence: Project reports and university news show institutional curriculum reform, faculty capacity building, and student challenge events used to scaffold employability and entrepreneurial competencies. Documented outputs emphasise student teamwork, industry engagement and applied learning.
Implementation challenges: Sustainable scaling, faculty training/time, aligning assessment and employer expectations [24].

7.2 Case 2 — PBL-BioAfrica (HAMK with Kenya and Zambia HEI): real-life student challenges

Institution / project: HAMK (Häme University of Applied Sciences, Finland) in partnership with HEIs in Kenya and Zambia (PBL-BioAfrica).
Approach: Project-/problem-based student challenges focused on bioeconomy and bioentrepreneurship.
What was done: Multi-partner student challenges and capacity building for faculty to implement contextualised PBL; transnational mentoring and problem briefs tied to local industry/community needs.
Soft skills targeted: Collaboration, creativity, disciplinary integration, entrepreneurship, communication, self-directed learning.
Outcomes / evidence: Project pages and reports describe cross-institutional student challenges, faculty development, and documented student outputs addressing local bio-economy issues. The initiative created regional communities of practice for PBL.
Implementation challenges: Logistics of multi-country events, resourcing, and sustaining communities of practice after project funding [25].

7.3 Case 3 — iKUDU (South Africa ↔ Europe COIL capacity-building)

Institution / project: iKUDU — an EU-funded Capacity Building in Higher Education project (South African + European consortium; 2019–2024).
Approach: COIL / Virtual Exchange embedded into curriculum internationalisation (contextualised COIL).
What was done: Built a community of practice, training for staff on COIL design and facilitation, multiple COIL pilots embedding virtual exchanges into courses across South African partner universities.
Soft skills targeted: Intercultural competence, digital collaboration, communication, reflective practice, teamwork across cultures.
Outcomes / evidence: Project materials and university partner pages report many COIL pilots, institutional capacity building for sustainable COIL adoption, and emphasis on contextualising COIL to local transformation agendas (not just 'imported' models).
Implementation challenges: Aligning curricula across partners, teacher training needs, and ensuring mutual co-creation rather than top-down models [26].

7.4 Case 4 — Durban University of Technology (South Africa) — COIL with Liverpool John Moores University (UK)

Institution / project: Durban University of Technology (DUT) COIL projects; one published COIL study involved DUT and Liverpool John Moores (LJMU).
Approach: COIL as a "third space" for joint coursework (example: cybersecurity/AI project).
What was done: Joint modules where students from DUT and LJMU collaborated online on cybersecurity tasks, using synchronous and asynchronous tools and shared deliverables.
Soft skills targeted: Digital collaboration, teamwork, intercultural communication, problem solving in technical contexts.
Outcomes / evidence: A 2025 empirical paper found COIL improved students' collaboration skills and cybersecurity awareness; more DUT students reported improvements in collaboration than LJMU students (contextual differences noted). The DUT COIL programme webpage documents broader COIL adoption.
Implementation challenges: Connectivity and access differences, differing student expectations, scheduling across time zones, need for scaffolded intercultural orientation [10].

7.5 Case 5 — Ashesi University (Ghana) — Project-based curriculum in engineering / first-year PjBL

Institution / project: Ashesi University (Ghana) — institutionally-embedded PjBL elements (esp. in engineering & entrepreneurship).
Approach: Locally relevant project-based learning for first-year engineering students and across other programmes.
What was done: Projects in first-year courses requiring teamwork, design tasks, and presentations; strong emphasis on ethics and communication alongside technical skills.
Soft skills targeted: Self-efficacy, teamwork, communication, ethical reasoning, problem-solving.
Outcomes / evidence: Conference and institutional reports show increased student self-efficacy, engagement and soft-skill development tied to PjBL modules. Ashesi is frequently cited as a regional exemplar for combining liberal arts and project-based practice.
Implementation challenges: Resourcing projects for larger cohorts and ensuring consistent facilitator support [27].

7.6 Case 6 — University of Cape Town (UCT, South Africa) — PBL in health sciences & facilitator development

Institution / project: University of Cape Town — problem-based learning in MBChB / health sciences curricula.
Approach: Structured PBL with facilitator guides and ongoing facilitator development for clinical curricula.
What was done: Formal PBL facilitator resources, integrated cases in medical curriculum to develop clinical reasoning and teamwork; institutional support for facilitator training.
Soft skills targeted: Clinical reasoning, communication, teamwork, ethical decision-making, reflective practice.
Outcomes / evidence: UCT provides facilitator guides and curricular documentation showing institutionalisation of PBL within the medical faculty; literature on UCT PBL practice highlights facilitator training as key to sustaining PBL.
Implementation challenges: Maintaining facilitator capacity, resourcing small-group work, and aligning assessment with PBL outcomes [28].

7.7 Case 7 — University of Johannesburg (South Africa) — Blended learning in social work & life-skills

Institution / project: University of Johannesburg (UJ) — blended learning approaches used in social work and life-skills teaching.
Approach: Blended learning (mix of online and face-to-face) to increase active learning, use of virtual tools, and community engagement.
What was done: Blended modules that combine online preparation and face-to-face skills labs or community practice; studies report practical gains in engagement and life-skills but also document the digital divide impact.
Soft skills targeted: Communication, reflective practice, empathy, client interaction skills, digital collaboration.
Outcomes / evidence: Peer-reviewed research (2021) reports increased engagement with blended approaches in social work education but warns of inequality across institutions and contexts (digital divide).
Implementation challenges: Unequal access to devices/connectivity across student populations, varying institutional digital readiness [29].

7.8 Case 8 — Makerere University (Uganda) — community-engaged projects & experiential outreach

Institution / project: Makerere University — multiple community outreach and experiential projects (long history of translating research & teaching into community practice).
Approach: Experiential learning / service learning and community-engaged research projects used to build applied competencies.
What was done: Pilot projects linking university research/teaching with community needs (health, agriculture, policy outreach), often involving student teams and multidisciplinary problem solving.
Soft skills targeted: Civic engagement, teamwork, communication, problem solving, leadership, applied research skills.
Outcomes / evidence: Case literature (PMC article) documents pilot projects and the university's role in translating research into practice; outcomes include practical community impacts and student applied learning, but the literature also discusses scaling and resource constraints.
Implementation challenges: Sustaining funding for outreach, aligning academic incentives with community engagement, and coordinating multidisciplinary teams [30].

7.9 Cross-case synthesis

Cross-case synthesis – what this means for blended/virtual mobility and challenge-based work in Africa

- **Widespread but uneven adoption.** PBL/PjBL, COIL/VE and blended learning are deployed across Africa — from medical schools (UCT) to engineering (Ashesi), agriculture (AgriSCALE) and social work (UJ) — but institutional capacity and scale vary [15].
- **International projects accelerate uptake.** Erasmus+/EU projects (AgriSCALE, iKUDU), and northern partner-funded capacity projects (HAMK PBL-BioAfrica) are major drivers of faculty training, community of practice formation and pilot COILs [24].
- **Soft skills gained are consistent across contexts.** The recurring soft-skill outcomes are teamwork, communication (including digital), problem solving, adaptability and intercultural competence — matching global findings [27].
- **Digital & equity challenges are the main barriers.** Connectivity, device access, and the digital divide shape who benefits from virtual/blended mobility. Institutional training for facilitators and alignment of assessment to soft-skills remain persistent needs [29].

7.10 Design recommendations

Design recommendations – for implementing/expanding these approaches in African HEIs

1. **Start with pilot COIL/PBL projects** linked to local partner challenges and build faculty communities of practice (use iKUDU/AgriSCALE models) [26].
2. **Invest in facilitator training** (PBL facilitation, intercultural scaffolding for COIL) before scaling [28].
3. **Design hybrid mobility** (short physical exchange + virtual collaboration) to make internationalisation accessible and reduce cost barriers [19].
4. **Triangulate soft-skills assessment** (self, peer, facilitator) and use e-portfolios to document evidence of learning [27].
5. **Plan for equity**: include device/data stipends, asynchronous options, and localised materials to mitigate the digital divide [29].

7.11 Case studies from Nigeria, Mozambique and Uganda

The following six case studies from universities and projects in Nigeria (2), Mozambique (2) and Uganda (2) show how PBL/PjBL, COIL/virtual exchange, blended learning, challenge-based projects, entrepreneurship challenges and community-engaged experiential learning are being used to develop soft skills. Each case includes: what was done, pedagogical approach, soft-skills targeted, outcomes / evidence, implementation challenges, and sources.

Nigeria — Case A: University of Ibadan / Problem-Based & Project Approaches in English / General Education

What & approach: A quasi-experimental classroom study applied a *Problem-Based Learning (PBL)* approach to improve writing performance and related higher-order skills among Nigerian undergraduates. The intervention replaced lecture-only methods with structured PBL tasks across a semester.
Soft skills targeted: Critical thinking, independent inquiry, communication (writing), collaboration (group tasks).
Outcomes / evidence: The study reported measurable improvement in students' writing performance and engagement compared with control groups — evidence that PBL supports communication and critical thinking in Nigerian higher-education contexts.
Implementation challenges: Small sample and short timeframe in the study limit generalisability; scaling across courses requires faculty training and curriculum alignment.
Source(s): Empirical study of PBL with Nigerian undergraduates [31].

Nigeria — Case B: University of Ibadan / Nigerian Enterprise Challenge (Entrepreneurship Challenge)

What & approach: The Centre for Entrepreneurship & Innovation (University of Ibadan) runs the **Nigerian Enterprise Challenge** (and similar challenge/competition platforms across Nigerian universities) — a structured, team-based entrepreneurship challenge where students form teams, develop business propositions and pitch to industry panels. Pedagogically this is *challenge-based / project-based learning* with industry mentors.
Soft skills targeted: Teamwork, communication (pitches & reports), creativity, problem solving, leadership, business-communication.
Outcomes / evidence: Institutional descriptions and event pages document repeated runs of the challenge,

student startups and partnership with industry; participants report enhanced entrepreneurial competencies and employability orientation. Challenges include securing sustained industry mentoring and equitable access for students from less-resourced departments.
Source(s): University of Ibadan Centre for Entrepreneurship event pages [32].

Mozambique — Case C: Eduardo Mondlane University (UEM) — Blended learning pilot in Faculty of Education (2005)

What & approach: A documented pilot introduced a *blended online + face-to-face* teaching model in the Faculty of Education at Eduardo Mondlane University using a course management system (CMS) to support student-centred learning activities. The work is an early, well-cited example of blended approaches in Mozambican HE.
Soft skills targeted: Digital literacy, self-regulated learning, communication, reflective practice (through online discussions and assignments).
Outcomes / evidence: The pilot paper describes increased student participation, more flexible learning paths, and pedagogical shifts towards student-centred activities — though it emphasises infrastructural and training needs for sustainable roll-out.
Implementation challenges: ICT infrastructure limitations, staff training, and the need to adapt blended models to local linguistic and contextual realities.
Source(s): Pilot study / EJ (ERIC) paper on blended learning at Eduardo Mondlane University [33].

Mozambique — Case D: Community-engaged maternal health project (southern Mozambique) — Experiential & Service Learning

What & approach: University-linked community engagement projects (documented in health systems literature) implemented experiential/service-learning style interventions to improve maternal health outcomes — university students and staff worked with local communities on practical interventions and education campaigns.
Soft skills targeted: Civic engagement, communication (community outreach), teamwork, problem solving, cultural competence.
Outcomes / evidence: A 2023 peer-reviewed article documents the community engagement strategy and implementation outcomes; students participating in these projects gained practical competencies and applied learning, and the projects produced measurable community health impacts. The study highlights the value of experiential approaches for both community benefit and student skill development.
Implementation challenges: Sustaining funding, aligning university incentives with long-term community engagement, coordination across disciplines.
Source(s): Amosse et al., 2023 (PMC article on community engagement for maternal health in southern Mozambique) [34].

Uganda — Case E: Gulu University — Systematic introduction of Problem-Based Learning (PBL)

What & approach: Gulu University (in partnership with Danish universities and projects) systematically introduced and adapted *Problem-Based Learning* (PBL) across programmes to respond to employer needs and promote active learning. The process included testing PBL methods, adapting cases to local contexts, and building facilitator capacity.
Soft skills targeted: Problem solving, teamwork, self-directed learning, communication, contextualised professional reasoning.

Outcomes / evidence: Project pages and institutional reports describe iterative adoption, faculty development workshops, and pilot results showing improved student engagement and alignment with workplace expectations. The work at Gulu is often cited as a model for context-sensitive PBL in Uganda.
Implementation challenges: Need for long-term capacity building, reconciling curriculum constraints and assessment practices, and ensuring sufficient staff/facilitator resources for small-group PBL.
Source(s): Gulu University PBL project description and implementation pages [35]; peer-reviewed study of PBL workshops at Gulu University, 2016–2019 [38].

Uganda — Case F: (Complementary) Makerere University — Community-engaged experiential learning

(Complementary to Case 8, with a focus on community projects.)
What & approach: Makerere University runs multiple community engagement and experiential projects linking student teams with public health, agriculture and policy problems — using service learning and multidisciplinary project work.
Soft skills targeted: Leadership, teamwork, community communication, applied problem solving, reflective practice.
Outcomes / evidence: Peer-reviewed documentation and institutional reporting show student learning outcomes alongside measurable community impacts; case literature emphasises Makerere's long history of translating applied research/teaching into community practice. Challenges include resourcing and ensuring academic recognition for community-engaged work.
Source(s): Makerere University community engagement literature and articles [30], [36], [39].

7.12 Synthesis: Nigeria, Mozambique and Uganda

Short synthesis and practical notes

- **Common pattern:** Across Nigeria, Mozambique and Uganda the pedagogies discussed (PBL/PjBL, blended learning, challenge-based projects, COIL/virtual exchange, and experiential/service learning) are present — often introduced via externally funded projects, entrepreneurship centres, public-health partnerships or institutional pilots [31].
- **Soft-skill gains reported:** Communication, teamwork, critical thinking, digital literacy and civic engagement are the most frequently reported improvements [37].
- **Key constraints to design for:** digital divide (connectivity / device access), staff facilitator capacity, sustainable funding, and the need to localise imported pedagogical models. Pilot + scale approach with facilitator training and equity measures (device/data support, asynchronous design) is recommended [33].

8 Pedagogical approaches to promote employability at partner universities

This section analyses the initiatives currently implemented across ABC BlendEd partner universities. Based on this assessment, it identifies effective practices and opportunities to strengthen synergies between education, research and innovation, and proposes recommendations for enhancing employability. Particular attention is given to how the ABC BlendEd model and syllabus can complement existing institutional initiatives, address identified gaps, and support the development of students' technical, transversal and entrepreneurial competencies within the African higher education context.

8.1 Summary of employability initiatives at each partner university

We mapped and analysed state-of-the-art pedagogies for the development of entrepreneurship, international cooperation, critical thinking; identified current approaches to promote employability and identified opportunities to apply the BlendEd paradigm.

8.1.1 Soroti University, Uganda

Soroti University promotes employability primarily through practical engineering education and links with industry. Initiatives include industrial training placements, a first-year practical recess term, industry visits, practical components in technical courses, participation in national exhibitions, and mandatory student involvement in research projects. The appointment of an Industrial Liaison Officer strengthens connections with employers and supports placements and industry engagement. Student orientation also introduces career opportunities and the skills developed through the programme.

8.1.2 Makerere University, Uganda

Makerere University's College of Agriculture and Environmental Sciences combines field experience, practical learning, research and the development of transferable skills. Students participate in internships or supervised experiential learning, typically lasting ten weeks, and in practical recess-term activities covering agricultural production, engineering, economics and entrepreneurship. Final-year Agriculture students undertake supervised research projects. Communication, social skills, ethics, participatory approaches and extension methods are addressed through curricular activities, while open talks, guest lecturers, academic mentoring and referrals to job opportunities provide additional career support.

8.1.3 Federal University of Technology, Minna (FUT Minna), Nigeria

FUT Minna adopts a broad approach combining industry-relevant curricula, technical training, work experience, career support and entrepreneurship. Curriculum development draws on industry expertise and alumni tracer studies, while students can access technical workshops and short courses in areas such as coding, data analysis, digital marketing and project management. The Student Industrial Work Experience Scheme provides at least one semester of workplace experience. Career counselling and job-search preparation complement entrepreneurship programmes, collaborative research with industry, specialist centres and international exchange opportunities.

8.1.4 University of Nigeria, Nsukka (UNN), Nigeria

UNN promotes employability through curriculum enhancement, transferable skills, technical training and strong links with industry. Industry collaboration and alumni tracer studies inform curriculum development, while communication, teamwork, problem-solving and critical thinking are integrated into learning. Technical workshops and short courses, industrial placements through the Student Industrial Work Experience Scheme, career counselling, CV and interview preparation, and entrepreneurship training support students' transition to employment. Collaborative research, specialist programmes linked to industry needs and international exchange opportunities further broaden students' professional experience.

8.1.5 Zambeze University, Mozambique

The Faculty of Agricultural Sciences at Zambeze University promotes employability through practical coursework, entrepreneurship education, digital literacy and professional development. Five undergraduate courses are described as fully practical, with additional opportunities to work with partner institutions and local enterprises, although formal internships are not included in the curriculum. Students develop business plans through an entrepreneurship course and can attend seminars, open sessions, twice-yearly webinars and short courses in areas such as data analysis, reference management and meteorological measurement. Virtual

learning and the use of digital tools support students' digital literacy, while courses on ethics, research methods and teaching didactics contribute to broader professional skills. The university also identifies further short-course provision and expanded national and international partnerships as areas for development.

8.1.6 Eduardo Mondlane University (UEM), Mozambique

Eduardo Mondlane University has a broad employability ecosystem covering undergraduate programmes in agriculture, veterinary medicine, food technology, animal production, aquaculture, agricultural economics, rural development and related fields. The programmes covered by the university's report are accredited through the relevant national processes, with additional professional accreditation requirements applying to certain engineering and veterinary programmes.

Practical learning is integrated throughout the undergraduate curriculum. Students undertake agricultural practice modules in the first and second years, practical work within technical courses, and two four-week internships during the third year. Final projects involve either attachment to an industry or organisation or field-based research, requiring students to formulate or address a problem, collect and analyse data, write a report and defend their findings.

UEM also organises annual employment fairs for fourth-year students and graduates, involving companies, alumni, public institutions and civil society organisations. Memoranda of understanding with partner institutions support placements and final projects, complemented by opportunities to participate in research and development projects. Digital skills are developed through a first-year Information and Technology Sciences course and, depending on the programme, more specialised training in data analysis, geographic information systems and other digital tools.

Entrepreneurship is another significant component. The Centre of Excellence in Agrifood Systems and Nutrition, the Information and Technology Centre and the Schools of Entrepreneurship in Chibuto support business development and self-employment. According to the report, the Centre of Excellence in Agrifood Systems and Nutrition has incubated more than 40 graduates and supported the creation of 20 spin-offs. UEM also participates in regional and international exchange activities. ABC BlendEd complements this provision by creating opportunities for international, multidisciplinary teamwork and collaborative problem-solving around practical challenges.

8.2 Cross-Institutional analysis and recommendations

The six ABC BlendEd partner universities report a substantial range of initiatives to prepare students for employment and professional life. These include practical coursework, internships, research projects, employer engagement, entrepreneurship education, digital skills development, career guidance and international collaboration. Nevertheless, the initiatives differ in their breadth, structure and degree of integration into students' academic journeys.

The overall picture is not one of an absence of employability initiatives, but rather of an opportunity to connect and reinforce existing provision. Several universities already have strong foundations on which to build more integrated, challenge-based and collaborative learning experiences.

8.2.1 Pattern 1 — Practical and experiential learning is widely established

All six universities report activities connecting academic knowledge with practical applications. These include industrial placements and research projects at Soroti, Makerere, FUT Minna and UNN; practical courses and enterprise engagement at Zambeze; and practical learning throughout the curriculum, structured internships and industry- or field-based final projects at UEM.

UEM's provision is particularly notable for its combination of practical modules across the degree, two third-year internship periods and final projects involving research or workplace attachment. Makerere also offers structured field attachment and practical recess-term activities, while FUT Minna and UNN describe semester-long industrial placements.

However, the nature and duration of workplace exposure differ. Zambeze, for example, relies on practical courses and engagement with partner institutions rather than formal internships. This suggests an opportunity to complement existing approaches with additional authentic projects that do not depend exclusively on formal placements.

8.2.2 Pattern 2 — Transferable skills and entrepreneurship are recognised, but their integration varies

Communication, teamwork, problem-solving, professional ethics and social skills feature in several universities' initiatives. Makerere explicitly addresses communication, public speaking, extension methods and social skills. FUT Minna and UNN integrate transferable skills into their curricula, while Zambeze includes courses related to ethics, research methods and broader professional development. UEM's internships and final projects provide opportunities to develop analytical thinking, scientific communication, report writing and evidence-based decision-making.

Entrepreneurship is also present, particularly at FUT Minna, UNN, Zambeze and UEM. UEM's incubation activity and reported spin-offs illustrate a pathway from graduate training towards business creation.

The opportunity is to ensure that these competencies are not only taught but also repeatedly practised, assessed and demonstrated through authentic tasks. Entrepreneurship can similarly be strengthened by connecting classroom learning with mentoring, market validation, incubation and implementation.

8.2.3 Pattern 3 — Employer and community engagement provides an important foundation

The universities use a range of mechanisms to connect learning with professional environments. These include industrial training, field visits, guest lectures, employer partnerships, collaborative research, employment fairs and memoranda of understanding.

FUT Minna and UNN report particularly broad combinations of industry collaboration, career support, technical training and specialist programmes. Soroti has an Industrial Liaison Officer, while Makerere combines placements with field-based activities, mentoring and professional talks. Zambeze involves local enterprises in practical courses. UEM adds annual employment fairs and established partnerships that can support placements and final projects.

These mechanisms create opportunities to improve students' understanding of labour-market expectations and to connect academic work with real needs. Their effectiveness can be enhanced by involving employers and community stakeholders throughout the learning process, rather than only at the placement or recruitment stage.

8.2.4 Pattern 4 — Career support and labour-market feedback are unevenly described

FUT Minna and UNN report career counselling, CV and interview preparation, and job-search support. Makerere offers professional guidance, mentoring and referrals to employment opportunities. UEM's annual employment fairs create direct contact between students, graduates and prospective employers. Soroti provides career orientation, while Zambeze identifies further career-development courses as an area for improvement.

FUT Minna and UNN also report the use of alumni tracer studies to inform curriculum development. UEM identifies systematic graduate-outcome tracking as an area that could help assess the effectiveness of its existing provision.

A common opportunity is to strengthen the feedback loop between graduates, employers and academic departments, using evidence of graduate destinations and employer expectations to improve both curricula and employability initiatives.

8.2.5 Pattern 5 — Digital competence is an increasingly important component

Digital literacy and technical training feature in several institutions. FUT Minna and UNN offer technical workshops and short courses in areas such as coding, data analysis, digital marketing and project management. Zambeze integrates virtual learning and selected statistical packages into its teaching. UEM provides foundational IT training and, depending on the programme, more specialised skills in data analysis, geographic information systems and other digital tools.

These activities provide a basis for further developing students' ability to use digital tools professionally, collaborate remotely, analyse information and communicate results. ABC BlendEd can contribute to this development through its blended learning format and digital collaboration across institutions, provided that students have appropriate access to connectivity and technical support.

8.2.6 Pattern 6 — International exposure exists, but opportunities can be broadened

FUT Minna and UNN describe international exchange programmes, while UEM reports regional and international exchanges involving students from different countries. Zambeze also expresses an interest in expanding its national and international partnerships. The other universities provide opportunities for students to engage with external professional environments through fieldwork, industry partnerships and research activities.

ABC BlendEd offers a complementary form of international exposure. Students can collaborate with peers from different countries and disciplines while remaining at their home institutions for most of the semester, with two weeks of physical mobility. This approach can broaden participation in international learning without requiring a full semester abroad.

8.2.7 Overall assessment

The partner universities demonstrate a solid foundation for employability promotion. Their existing provision spans practical learning, work experience, professional skills, entrepreneurship, digital competence and employer engagement. UEM adds a particularly broad combination of structured practical learning, employment fairs, partnerships and established incubation activity.

The main opportunity is to connect these elements more systematically and ensure that students can develop and demonstrate employability competencies throughout their studies. ABC BlendEd can contribute to this objective by providing a structured, international and challenge-based experience that complements existing curricula and professional development mechanisms.

8.3 Recommendations to strengthen employability promotion

The following recommendations build on the existing initiatives reported by the six universities.

1. **Integrate employability into programme design.** Map technical, transversal, entrepreneurial and digital competencies across each programme. Identify where these are introduced, practised and assessed, ensuring progressive development rather than relying on isolated courses or end-of-programme experiences.

2. **Expand authentic, challenge-based learning.** Introduce multidisciplinary projects addressing real challenges identified by companies, farmers, public institutions and local communities. Students should apply disciplinary knowledge, collaborate in teams, develop solutions and present their results to external stakeholders.
3. **Strengthen work-based learning pathways.** Continue developing internships, field attachments, industry visits and supervised research. Where formal internships are not available or cannot be expanded, practical courses and challenge-based projects can provide additional opportunities to engage with real professional problems.
4. **Make transferable skills explicit and assessable.** Communication, teamwork, problem-solving, critical thinking, initiative, leadership and intercultural collaboration should be deliberately developed through group projects, presentations, reports, stakeholder interaction and peer evaluation.
5. **Connect entrepreneurship education with implementation.** Build on existing entrepreneurship courses and incubation structures by helping students validate ideas, develop business models, test solutions and access mentors or incubators. UEM's existing incubation experience offers a particularly relevant foundation for connecting promising ABC BlendEd projects with further development opportunities.
6. **Strengthen employer and community participation.** Involve companies, farmers, public institutions and community organisations in defining challenges, mentoring students, reviewing outputs and assessing the relevance of proposed solutions. Existing employment fairs, memoranda of understanding and industry partnerships can provide channels for this engagement.
7. **Provide continuous career development support.** Extend career guidance beyond orientation and final-year recruitment activities. Career portfolios, CV and interview preparation, alumni mentoring, professional networking and guidance on self-employment can help students prepare for different career pathways.
8. **Use alumni and employer feedback systematically.** Build on existing tracer studies and employer engagement to identify skills gaps, emerging opportunities and graduate outcomes. Use the evidence to inform curriculum reviews and improve the relevance of employability initiatives.
9. **Develop digital and collaborative competencies.** Strengthen students' ability to use professional software, manage and analyse data, collaborate online and communicate results. Blended learning can provide opportunities to practise these skills in authentic, internationally collaborative settings.
10. **Broaden access to international learning.** Develop collaborative projects and blended mobility opportunities that expose students to different professional and cultural contexts. Ensure that participation is supported by appropriate connectivity, supervision and inclusive learning arrangements.
11. **Monitor outcomes, not only activities.** Track student participation, competency development, employer feedback, project adoption, further development of student ventures and graduate destinations where available. This will help institutions understand which initiatives are most effective and identify areas for improvement.
12. **Connect existing initiatives rather than duplicating them.** Employability initiatives should be designed as complementary parts of an institutional strategy. For example, an ABC BlendEd project could feed into a final-year research project, an internship, an entrepreneurship programme or an incubation pathway, depending on the student's needs and the project's potential.

8.4 ABC BlendEd as a mechanism to strengthen employability

ABC BlendEd can complement the employability initiatives already in place by bringing together several elements within a single structured learning experience: multidisciplinary teamwork, international

collaboration, authentic challenges, practical problem-solving, entrepreneurship and engagement with external stakeholders.

The model combines online collaboration during most of the semester with two weeks of physical mobility. Students from different countries and disciplines work in teams to develop proof-of-concept solutions to real challenges. The approach is intended to generate outputs that are relevant to stakeholders and communities while developing competencies applicable to professional life.

Its contribution is particularly relevant because the universities already offer many of the individual elements needed for employability. ABC BlendEd can help connect them in an integrated project in which students must apply their knowledge, collaborate with others, manage tasks, communicate with stakeholders and deliver a tangible output.

8.4.1 How ABC BlendEd can complement each university

Soroti University: The model can build on practical engineering education, research projects, industry visits and the work of the Industrial Liaison Officer. It can provide additional opportunities to apply technical knowledge in multidisciplinary teams, develop entrepreneurial thinking and collaborate internationally on real-world challenges.

Makerere University: ABC BlendEd can complement field attachments, practical recess-term learning, research projects and extension methods. It offers a structured opportunity to apply agricultural and entrepreneurial knowledge to challenges defined with external stakeholders, while developing international teamwork and communication skills.

FUT Minna: The model can reinforce existing entrepreneurship programmes, technical workshops, industry partnerships and work placements. It provides an integrated setting in which students can combine technical, digital and transversal competencies to develop practical solutions with potential commercial or community value.

University of Nigeria, Nsukka: ABC BlendEd can connect existing entrepreneurship, collaborative research, technical training and international exchange activities through a sustained team project. It can provide further opportunities for multidisciplinary collaboration and the development of solutions to authentic professional challenges.

Zambeze University: The model can complement practical courses, local enterprise engagement and entrepreneurship education. It can bring these elements together in a structured project, extending students' exposure to international collaboration, multidisciplinary problem-solving and practical outputs. It should reinforce rather than replace the practical learning already available at the faculty.

Eduardo Mondlane University: ABC BlendEd can complement UEM's strong existing provision in practical coursework, internships, final projects, employment fairs, digital skills and entrepreneurship incubation. Its main added value is the opportunity to combine these competencies in an international, multidisciplinary project. Challenges sourced from agrifood businesses, farmers, research organisations or other partners could connect with the university's existing internship and final-project pathways. Promising outputs could also be referred, where appropriate, to CE-AFSN or other relevant entrepreneurship and incubation initiatives for further development. This would position ABC BlendEd as a bridge between existing academic and employability activities rather than as a separate, competing initiative.

8.4.2 Recommendations to maximise ABC BlendEd's contribution

Embed the course in existing academic structures. Where feasible, recognise participation through academic credits, elective modules, capstone projects, entrepreneurship courses or other established mechanisms. This can help secure continuity and institutional ownership.

Connect projects with existing employability pathways. Establish links with internships, research projects, employer partnerships, career services and entrepreneurship centres. A challenge identified during ABC BlendEd could lead to a subsequent internship, final-year project or further development through an incubation programme.

Build a sustained pipeline of relevant challenges. Engage companies, farmers, public institutions, research organisations and communities in defining well-scoped challenges. Each challenge should have an identifiable stakeholder, a clear problem statement and realistic expectations for what can be achieved during the course.

Assess both technical and transversal competencies. Evaluate not only the quality of the proposed solution but also teamwork, communication, problem-solving, initiative, entrepreneurship and intercultural collaboration. Portfolios and project presentations can help students demonstrate these competencies to prospective employers.

Support promising outputs beyond the course. Establish referral pathways to mentors, incubators, enterprises and community organisations that can help teams move from proof of concept towards implementation. UEM's existing incubation structures provide one example of how this continuity could be supported.

Strengthen institutional ownership and staff capacity. Assign responsibility for coordination, stakeholder engagement and quality assurance, and train additional facilitators to deliver future editions. Integrating the course into existing provision can reduce dependence on temporary project funding.

Use the Community of Practice to exchange experience. Partner universities can share challenges, teaching resources, assessment approaches and evidence of student outcomes. The Community of Practice can support peer learning, quality improvement and adaptation of the model to different institutional and labour-market contexts.

Evaluate employability outcomes. Collect evidence of competency development, student and stakeholder experience, project adoption and follow-up opportunities. Where feasible, monitor whether projects lead to further research, internships, business development or employment-related opportunities. Such evidence can help demonstrate the model's contribution and guide future improvements.

8.5 Overall conclusion

The six ABC BlendEd partner universities already implement a broad range of initiatives to promote graduate employability. These include practical learning, internships, research projects, industry engagement, entrepreneurship education, digital skills development, career guidance and international collaboration. UEM's structured practical learning, employment fairs and established incubation activities further illustrate the range of institutional mechanisms available to support graduates.

The principal opportunity is to make employability development more integrated, experiential and continuous throughout students' studies. **ABC BlendEd can serve as a complementary mechanism for connecting existing initiatives through authentic challenges, international and multidisciplinary teamwork, practical outputs and entrepreneurial exploration.** Its effectiveness will depend on the quality of the challenges, the involvement of external stakeholders, the explicit assessment of employability competencies and the integration of promising projects into existing institutional pathways.

By linking ABC BlendEd with internships, research projects, employer engagement, career services and entrepreneurship or incubation structures, partner universities can strengthen its contribution to students' readiness for employment, self-employment and innovation. This approach can also help ensure that student projects deliver practical value to communities and other stakeholders, while supporting the long-term sustainability and institutionalisation of the ABC BlendEd model.

9 BlendEd evolution in Africa

Partners discussed the syllabus of the BlendEd course running in Europe to identify the needed adjustments to tailor it to the reality of agriculture studies in Africa and to advance the current standing in relation to the academic activities in place to promote students employability.

Based on this groundwork, we adapted the syllabus of the BlendEd course unit, along three iterations corresponding to the 3 pilot editions of the course (Table 1, upgrades in each pilot are highlighted in capital letters in bold and red colour) that ran during the funding period – 2023/24 till 2025/26. We started by analysing the syllabus of the 2022/23 edition of the BlendEd course in Europe, its 14th edition. We realised that we couldn't go for a 4 months period because 5 out of 6 partners could include ABC BlendEd in their curriculum as an equivalent unit to Industrial Traineeship that accounts for 6 credits – 1 credit accounts for an effort of 30 hours. For that reason, the number of credits was reduced from 15 ECTS to 6 credits, corresponding to 180 hours. This was the only change to the BlendEd syllabus in the first pilot edition. The course ran from May to July 2024 with a class of 12 students. The challenges for the students were requested from companies in the 6 partner countries. The coordination board of the 1st pilot edition was composed of colleagues from the EU partners who have an extensive experience in coordinating BlendEd courses, the partners from African universities were supporting and taking responsibility along the first pilot edition, being guided by them.

At the 1st pilot we have realised that it is very difficult for company representatives to attend face-to-face meetings if they are not from the region where the university hosting the meeting is based. Internet connection in remote regions is very unstable or unavailable which makes online attendance difficult. For this reason, it was decided that from the 2nd pilot only, we would only request companies from the regions where the face-to-face meeting will occur to propose challenges for students.

From the second pilot on, the coordination board was composed exclusively of representatives from the African partner universities, seconded by the European colleagues.

For the 3rd pilot edition, the partner institutions in Africa were faced with lack of money to support travel and subsistence. The budget had been spent to assure the first two pilot editions. Travelling in Africa is rather expensive and the project budget was computed on the basis of the EU regulations that as an estimate for travels in Africa that is very low compared to the real situation. The coordinator transferred funds for the partners in Africa but the maximum amounts that could be transferred were not enough to cover the travel costs to all partners. The partnership came with a solution that proved to be very successful in overcoming shortage of funds. We designed and implemented a new model that we have called Hybrid Mobility where the partners in each country meet face-to-face and all partners meet online during the kick-off and closure meetings. This way we reduce significantly the costs while still giving students the chance to travel and meet colleagues in person from other regions and other universities, while cooperating at a distance with the rest of the team from abroad. This allowed us also to give this ABC BlendEd opportunity to more students and partners agreed to engage 6 students from each university instead of the 4 students that were foreseen at the ABC BlendEd application, an increase of 50% in the number of students from the 2nd to the 3rd pilot edition. This way, during the three pilot phases that ran during the funded period, we have enrolled 72 students instead of the 60 that were foreseen in the application.

Table 1: ABC BlendEd syllabus evolution

	EU 2022/23	ABC 2023/24	ABC 2024/25	ABC 2025/26
Duration	4 months, from March to June	**2 MONTHS, FROM END OF MAY TO JULY**	2 months, from end of May to July	2 months, from end of May to July
Format	Blended: online combined with face-to-face	Blended: online combined with face-to-face	Blended: online combined with face-to-face	**HYBRID, ONLINE COMBINED WITH FACE-TO-FACE AT NATIONAL LEVEL**
Target group	Final year undergraduate or master's students	Final year undergraduate or master's students	Final year undergraduate or master's students	Final year undergraduate or master's students
Institution	Polytechnic of Porto	ABC BlendEd partner universities	ABC BlendEd partner universities	ABC BlendEd partner universities
Degree	Bachelor			
Course title	BlendEd	ABC BlendEd	ABC BlendEd	ABC BlendEd
Academic year	2022/23	2023/24	2024/25	2025/26
Semester	Spring semester	Spring semester	Spring semester	Spring semester
Credits	15 ECTS	**6 CREDITS**	6 credits	6 credits
Workload (hours)	Preparatory phase: 1 or 2 days Kick-off week: 30h (5 days times 6h/day) – 1 credit Project closing week: 30h (5days times 6h/day) – 1 credit Online phase: 390h – 13 credits	Preparatory phase: 1 or 2 days Kick-off week: 30h (5 days times 6h/day) – 1 credit Project closing week: 30h (5days times 6h/day) – 1 credit **ONLINE PHASE: 120H – 4 CREDITS**	Preparatory phase: 1 or 2 days Kick-off week: 30h (5 days times 6h/day) – 1 credit Project closing week: 30h (5days times 6h/day) – 1 credit Online phase: 120h – 4 credits	Preparatory phase: 1 or 2 days Kick-off week: 30h (5 days times 6h/day) – 1 credit Project closing week: 30h (5days times 6h/day) – 1 credit Online phase: 120h – 4 credits
Coordination board	**Portugal** - Polytechnic Institute of Porto, Prof Nuno Escudeiro **Belgium** - Odisee University of Applied Sciences, Prof Kristien Van Assche	**Portugal** - Polytechnic Institute of Porto, Prof Nuno Escudeiro **Belgium** - Odisee University of Applied Sciences, Prof Kristien Van Assche **Germany** - Siegen University, Prof Hubert Roth **Greece**	**MOZAMBIQUE** - Eduardo Mondlane University (UEM) - Prof. Rogério Marcos Chiulele - Zambeze University (ZU) – Prof. Paulino Bartolomeu Sandramo **NIGERIA** - Federal University of Technology, Minna (FUT Minna) – Prof. Egwim Evans	**Mozambique** - Eduardo Mondlane University (UEM) - Prof. Rogério Marcos Chiulele - Zambeze University (ZU) – Prof. Paulino Bartolomeu Sandramo **Nigeria** - Federal University of Technology, Minna (FUT Minna) – Prof. Egwim Evans

	EU 2022/23	ABC 2023/24	ABC 2024/25	ABC 2025/26
		- Hellenic Mediterranean University, Prof George Papadourakis	- University of Nigeria, Nsukka (UNN) – Prof. Anthonia Achike **UGANDA** - Makerere University – Prof. Prossy Isubikalu - Soroti University – Prof. Hellen Aluku	- University of Nigeria, Nsukka (UNN) – Prof. Uchechukwu Paschal Chukwundi **Uganda** - Makerere University – Prof. Prossy Isubikalu - Soroti University – Prof. Hellen Aluku
Cooperation with local communities	Companies are invited to propose challenges for students to develop a proof of concept, a prototype.	Companies are invited to propose challenges for students to develop a proof of concept, a prototype.	**COMPANIES FROM THE COUNTRIES WHERE THE FACE-TO-FACE MEETING WILL OCCUR ARE INVITED TO PROPOSE CHALLENGES FOR STUDENTS TO DEVELOP A PROOF OF CONCEPT, A PROTOTYPE.**	Companies from the countries where the face-to-face meeting will occur are invited to propose challenges for students to develop a proof of concept, a prototype.
Number of students	50	12	24	**36**

10 Quality of students' ABC BlendEd experience

The quality of students' ABC BlendEd experience should be assessed by examining not only whether students successfully complete their projects, but also whether the learning process provides an equitable, inclusive, supportive and professionally relevant experience. The assessment should cover the entire learning journey: the preparatory phase, the initial face-to-face week, the online collaboration period, and the final face-to-face week.

The quality framework should reflect the realities of African higher education, including differences in digital infrastructure, internet affordability and reliability, access to suitable devices, language proficiency, institutional resources, and opportunities to engage with industry. These conditions should be treated as contextual factors to be addressed through appropriate course design and support, rather than as shortcomings attributable to students.

The proposed framework uses a quality scenario supported by measurable indicators. The scenario describes what a high-quality student experience should look like; the indicators provide evidence to determine whether that experience has been achieved and where improvements are needed.

10.1 Quality scenario: a high-quality ABC BlendEd student experience

A student participating in ABC BlendEd feels welcomed, respected and included in an international, multidisciplinary team; understands the project objectives and their individual responsibilities; and has equitable opportunities to contribute their knowledge, skills and ideas.

Throughout the course, the student can access the resources, digital tools and support needed to participate meaningfully, despite possible connectivity, financial or institutional constraints. Team members communicate effectively across countries, disciplines and cultures, share responsibilities, manage disagreements constructively, and make progress towards a solution to a genuine company challenge.

Academic supervisors and company representatives provide timely guidance, constructive feedback and appropriate professional exposure without undermining student autonomy. The student develops disciplinary knowledge, digital collaboration skills, intercultural competence, teamwork, problem-solving and project management skills. At the end of the course, the student can demonstrate their contribution to a tangible project outcome, explain what they have learned, and identify how the experience has strengthened their readiness for employment.

This scenario (Table 2) defines quality from the student's perspective. It combines learning effectiveness, equitable participation, team functioning, adequate support, industry relevance and employability development.

10.2 Quality indicators

Eight quality dimensions are proposed, with a manageable set of indicators that can be collected across all ABC BlendEd editions. The indicators combine students' perceptions with evidence of actual participation and learning outcomes.

Table 2: ABC BlendEd quality indicators

Quality dimension	Proposed indicators	How to assess
1. Inclusion and belonging	1.1. Sense of belonging to the international team. 1.2. Perception that different cultural and disciplinary perspectives are respected 1.3. Perceived fairness of participation and decision-making.	Student survey; team reflection
2. Accessibility and digital participation	2.1. Ability to access online activities, resources and communication channels. 2.2. Frequency of participation disrupted by connectivity, device, electricity or data-cost constraints. 2.3. Effectiveness of alternative arrangements and support when technical barriers occur.	Student survey; participation records; support logs
3. Team collaboration and functioning	3.1. Clarity of team objectives, roles and responsibilities. 3.2. Effectiveness of communication and coordination. 3.3. Fair distribution of workload and contribution. 3.4. Ability to resolve disagreements constructively.	Student survey; peer assessment; team deliverables

Quality dimension	Proposed indicators	How to assess
4. Learning experience and pedagogical support	4.1. Clarity of learning outcomes, project requirements and assessment criteria. 4.2. Adequacy and timeliness of academic supervision. 4.3. Usefulness of feedback for improving project work. 4.4. Perceived autonomy and active involvement in learning.	Student survey; supervisor feedback records
5. Challenge relevance and industry engagement	5.1. Perceived relevance of the company challenge to real-world problems. 5.2. Accessibility and responsiveness of company mentors. 5.3. Opportunity to apply disciplinary knowledge and integrate different fields. 5.4. Perceived usefulness of company feedback.	Student survey; company feedback; project review
6. Digital collaboration and self-management	6.1. Ability to use digital tools for communication, co-creation and project management. 6.2. Effectiveness of online and asynchronous collaboration. 6.3. Ability to organise work, meet milestones and manage time independently.	Student self-assessment; project records
7. Learning gains and employability	7.1. Perceived improvement in problem-solving, teamwork and intercultural communication. 7.2. Perceived improvement in project management, digital collaboration and adaptability. 7.3. Ability to demonstrate an individual contribution to the team solution. 7.4. Ability to explain the competencies gained and their relevance to employment.	Pre/post self-assessment; peer assessment; individual reflection; project portfolio
8. Overall satisfaction and perceived value	8.1. Overall satisfaction with the BlendEd experience. 8.2. Perceived value compared with traditional courses. 8.3. Willingness to recommend the course to other students. 8.4. Perceived value of international mobility and company engagement.	End-of-course survey; student focus group

10.3 Measurement methodology

To make the framework practical regardless of different levels of institutional and digital capacity, data collection should be lightweight, consistent and based on tools that all partners can realistically use.

A. Data collection moments

T1 — Course start

During the kick-off week

Establish students' expectations, initial confidence, previous experience with international teamwork and digital collaboration, and anticipated barriers to participation, diagnostic assessment.

T2 — Mid-course

During the online collaboration period, eventually at the interim pitch/release.

Identify connectivity and participation barriers, team conflicts, workload imbalances, difficulties accessing supervision, and emerging learning needs. This assessment should trigger corrective action rather than merely document problems.

T3 — Course completion

During or immediately after the closing week

Assess the quality of the overall experience, perceived learning gains, team performance, industry engagement, satisfaction and employability-related outcomes.

T4 — Follow-up (optional)

Three to six months after completion

Explore whether students have used their new competencies in subsequent studies, internships, employment or other professional activities.

B. Recommended rating scale

For perception-based indicators, use a common five-point Likert scale (Table 3).

Include "Not applicable" and "Unable to assess" options where appropriate. Report the percentage of positive responses (scores 4–5), the mean score where useful, and the response rate. For barriers such as internet access, report their frequency separately.

C. Contextual factors to record

Interpreting the indicators requires understanding the conditions in which students participate. Collect a small amount of contextual information, without making the survey unnecessarily burdensome:

- Country and home institution.
- Study field and team role.
- Availability of a suitable device and reliable electricity.
- Internet reliability and affordability of mobile data.
- Access to a suitable workspace and institutional support.
- Language and communication difficulties, where relevant.

Table 3: Rating scale

Score	Interpretation
1	Strongly disagree / Very poor
2	Disagree / Poor
3	Neither agree nor disagree / Adequate
4	Agree / Good
5	Strongly agree / Excellent

Analyse results by institution, country or other relevant groups where sample sizes permit, protecting student confidentiality. This helps distinguish problems in course design from structural barriers and identify where targeted support is needed.

D. Suggested performance targets

The following are provisional internal quality targets, not externally validated standards. They should be reviewed after the first African implementation cycle.

Table 4: Quality targets

Indicator	Suggested target
Overall satisfaction	At least 80% positive responses
Sense of belonging and inclusion	At least 80% positive responses
Clarity of project requirements and assessment	At least 80% positive responses
Satisfaction with academic supervision	At least 80% positive responses
Satisfaction with company engagement	At least 80% positive responses
Perceived improvement in teamwork and intercultural skills	At least 75% reporting improvement
Perceived improvement in employability-related competencies	At least 75% reporting improvement
Students experiencing unresolved barriers that prevent meaningful participation	0% target
Student completion rate	At least 90%, with reasons for non-completion analysed

Targets should be interpreted alongside qualitative feedback and contextual information. For example, a low digital participation score should lead to an investigation of connectivity, data costs, scheduling and available alternatives, rather than automatically being interpreted as poor student engagement.

10.4 How to use the results for continuous improvement

The indicators should be used not only to evaluate the experience retrospectively, but also to improve it while the course is running.

- During the course: identify and address barriers to participation, resolve team issues and adjust supervision or communication practices.
- At course completion: compare results across teams and institutions, identify strengths and weaknesses, and gather student recommendations.
- Between editions: agree on corrective actions, assign responsibilities and monitor whether the changes improve the next cohort's experience.

The framework should also combine student feedback with peer assessments, project deliverables and company feedback. This triangulation reduces reliance on self-reported perceptions alone and provides a more robust assessment of educational quality.

10.5 Recommended core indicator set for ABC BlendEd

If ABC BlendEd needs a concise quality-assurance instrument that can be implemented consistently across all partner universities, the following 12 core indicators are recommended:

- Students feel included and respected within their international team.
- Students have equitable opportunities to contribute.

- Students can participate effectively despite digital access constraints.
- Team objectives, roles and responsibilities are clear.
- Communication and workload distribution within teams are effective.
- Academic supervision and feedback are timely and useful.
- The company challenge is authentic, relevant and meaningful.
- Students can apply and integrate knowledge from different disciplines.
- Students develop digital collaboration and project-management skills.
- Students improve their teamwork, intercultural communication and problem-solving competencies.
- Students perceive the experience as improving their readiness for employment.
- Students are satisfied with the overall experience and would recommend BlendEd to other students.

These 12 indicators offer a manageable common framework for cross-institutional comparison. The additional indicators in the full framework can be used diagnostically whenever a core indicator reveals a problem.

The key quality principle for ABC BlendEd should be that success is not defined solely by the quality of the final project. It also depends on whether every student has a meaningful opportunity to participate, learn, contribute and develop competencies relevant to their future professional life, regardless of their institution's resources or their individual circumstances.

11 ABC BlendEd syllabus

This is the final version of the ABC BlendEd – innovative course for sustainable development of agriculture in Africa – syllabus as developed by the project partners during the 3 pilot editions of the course. This version of the syllabus is adopted by the six African universities. It may be used as a starting point for other consortia willing to start running an ABC BlendEd course, including a completely new partnership with or without the six ABC BlendEd promoters.

IDENTIFICATION	
Duration	8 weeks (6 credits)
Format	Blended (virtual + short-term physical mobility)
Target group	Final year undergraduate or master's students in Agriculture, Business, Engineering, Environment, Economics, Marketing, Design, or any other field of studies.
Institution	Federal University of Technology Minna (FUT Minna) Makerere University (MU) Soroti University (SUN) Eduardo Mondlane University (UEM) Zambeze University (ZU) University of Nigeria Nsukka (UNN)
Degree	All universities except UEM are giving equivalence to Industrial Traineeship course or a similar unit. However, this is not mandatory for every participating university; each partner university adapts ABC BlendEd to its specific programme without the need to engage in a formal curriculum revision. This is one of the distinctive features of ABC BlendEd model that contributes most to its flexibility and easiness of adoption.
Course title	ABC BlendEd: challenge-based, international, transdisciplinary project
Academic year	2025 – 2026 (This is the updated syllabus version for the third pilot edition of the ABC BlendEd Erasmus+ CBHE project)
Semester	Spring semester

IDENTIFICATION	
Credits	6 credits, one credit corresponds to 30 hours of work. The number of credits may be different depending on the university and the study field
Workload (hours)	Preparatory phase: 1 or 2 days Kick-off week: 30h (5 days times 6h/day) – 1 credit Project closing week: 30h (5days times 6h/day) – 1 credit Online phase: 120h – 4 credits
Pre-requisites	• ABC BlendEd is a project course where students put in practice the technical hard skills they have acquired during their studies. It is a capstone project course assuming that students master most of the technical knowledge, competences and skills that are expected from a graduate in their field of studies. The students who want to apply for the project must already have completed 80% of the credits of their bachelor programme. • Students must be fluent in English or another common language (announced by the participating universities)
Equivalence	The course(s) that will be credited as equivalent for this ABC BlendEd course can be: • Industrial traineeship • Farm practice • Internship • Field attachment • Or any other equivalent project course
Briefing	The ABC BlendEd methodology is devoted to creating and managing international multidisciplinary teams of students who will collaborate to develop a solution for a problem/challenge. These teams are set up for an 8-week course period with the purpose of developing and presenting a prototype or a proof-of-concept for a given challenge. The course preparation starts in the first semester. At this stage the teachers collect challenges from companies and select the most interesting ones with regards to its pedagogical potential. The selected challenges are presented to final-year-undergraduate or master students. Applicants are selected based on a set of criteria defined by each partner university and the teams for each challenge are setup. This process commonly is concluded by the end of December. This still gives time to organise the logistics for the first face-to-face meeting that runs at the beginning of the second semester, usually in May. At this first face-to-face meeting, students get to know each other, the company who is offering the challenge and the challenge proposal itself. The challenge is provided to the students by the company, but no specifications are given concerning the solution to develop; that is the students' task. Students must interact and collaborate during the course period to agree on the necessary specifications and on how to integrate all the elements of the solution. The first face-to-face meeting runs for five consecutive working days during which students design a first draft of the solution for the challenge at hand, organise themselves to work as a team during the course period and assign responsibilities to each team member according to the number of credits they get for their work. At the end of the week the envisaged solution by each team is discussed with the company, the teachers and the students so all agree on a solution proposal to work on. After this first meeting, students work from their home institution, at a distance from each other, through online collaboration platforms. At the end of the project all modules of the solution must be integrated and the fully operational system, a unique product, will be presented by the students as a team.

IDENTIFICATION	
	Usually in July, students get together face-to-face again to finalise their solution, their final presentation and to discuss the delivered product with the client company and the teachers. The team must guarantee that all parts integrate well to produce a unique solution for the problem and present the full solution to a project jury. The project jury will be composed of a teacher from each partner institution and a representative from the client company. It is through this innovative paradigm that ABC BlendEd develops transversal skills, promotes international cooperation and improves the quality of higher education both from the point of view of the students, the teachers and the employers. ABC BlendEd is an innovative project course paradigm that develops soft skills, mainly teamwork, communication and leadership, while practising the hard/technical skills taught during the bachelor/master's degree.

CONTEXT AND GOVERNANCE	
Educational context	ABC BlendEd embeds a traditional project course unit in a learning environment that strengthens students' technical expertise and soft skills without altering the standard degree programme. It accommodates one or more courses totalling at least 6 credits and the home institution ensures full credit recognition. It is a capstone project course, empowered by intercultural, international and interdisciplinary collaboration, where student teams solve industry challenges. Students from different study domains will be assigned to the project: agriculture, business, engineering, environment, economics, marketing, design.
Pedagogical approach	Challenge Based Learning, Experiential Learning, Project Based Learning, Blended Mobility, Hybrid Learning, Transdisciplinary, International.
Inclusivity and accessibility	The course adheres to Universal Design for Learning (UDL) principles: multiple means of engagement, representation, and expression. Materials are accessible via low-bandwidth options and translated summaries; gender balance and linguistic diversity are monitored to ensure equity.
Goals	Strengthen students' employability. Promote innovative, entrepreneurial, and sustainability competencies through blended/hybrid, challenge-based learning.
Graduate profile	Graduates of the ABC BlendEd course will be able to: - Design and implement a solution to a given challenge - Integrate scientific, technological and entrepreneurial approaches to achieve innovation - Collaborate effectively in cross-cultural and interdisciplinary teams - Lead community-driven projects with ethical and sustainable impact - Demonstrate lifelong learning, digital adaptability and intercultural competence
Global description	The ABC BlendEd course is a blended mobility challenge-based project course offering students the opportunity to experience international collaboration while being mainly at their home institution. Students are integrated in an international and multidisciplinary team to develop a solution for a challenge from a company in a blended mobility setting. It grants students a unique opportunity to benefit from intensive intercultural, international and multidisciplinary experience during studies while remaining at their home institution during the lifetime of the course except for two weeks. Developing curricular activities involving students from different countries and disciplines, collaborating as a team to complete projects that generate relevant outputs to the community, improves students' enthusiasm as well as their teamwork and communication skills.

CONTEXT AND GOVERNANCE	
Coordination board	The ABC BlendEd course is a collaboration between a distinguished number of universities throughout Africa. For the first three editions of the course these are the participating universities and corresponding teachers/local coordinators in charge: **Mozambique** - Eduardo Mondlane University (UEM) - Prof. Rogério Marcos Chiulele - Zambeze University (ZU) – Prof. Paulino Bartolomeu Sandramo **Nigeria** - Federal University of Technology, Minna (FUT Minna) – Prof. Egwim Evans - University of Nigeria, Nsukka (UNN) – Prof. Uchechukwu Paschal Chukwundi **Uganda** - Makerere University – Prof. Prossy Isubikalu - Soroti University – Prof. Hellen Aluku
Cooperation with local communities	Local companies are invited to propose challenges for students to develop a proof of concept, a prototype.

ROADMAP	
Course plan	The course runs along four phases (Table 5): preparation, kick-off, development, closure.
Preparatory phase	Online, before the first face-to-face meeting. - Get into contact with your team members - Discover the proposed challenge - Create team webpage (who is who, what's the project challenge)
Kick-off meeting	Face-to-face, 5 days, start of project. **Monday** - Meet client who presents challenge in more detail (companies pitch) - Ice breaking/Social activities to get to know teammates (e.g. game, mindfulness, workout) - Competency workshops (e.g. Team dynamics, Cultural awareness, …) - Brainstorm with team to fully understand the challenge - Exchange ideas within team for possible solutions **Tuesday** - Prepare for online collaboration – organise yourselves as a team - Assign roles: team leader, main client contact, buddy allocation, … - Define work calendar: Agree timing for regular meetings - Choose toolset to use: - Learning platform: Moodle, Canvas, … - Communication: e.g. WhatsApp, Facebook, MS Teams, Zoom, Google Meet, Miro, … - Project Management: Trello, Asana, Jira, … - Iterative development: version control system, CI/CD pipeline, reporting dashboard, central group platform, … - Note: Open-source options are prioritised to ensure sustainability. **Wednesday** - Preliminary pitch (what – how – who) **Thursday** - Teamwork **Friday** - Prepare teams pitch to present solution idea(s) to client & teacher board: - Describe/sketch solution proposal - Present team structure and organisation - Define milestones and releases

ROADMAP	
	- Incorporate feedback - Receive certificate of attendance to the kick-off meeting
Online phase	Virtual, 6 weeks. - Update team website: logbook (history of important parts/decisions regarding the challenge: research, solution steps) - Collaborate online with the team towards a chosen solution (POC) - Regular team meetings: organised by students, attended by all team members, within team and also together with team's assigned teacher coach - Regular line-up with client: still on right track, common understanding of solution - Regular individual follow-up meeting with student's local supervisor - Intermediate online presentation to client & teacher board: i. Give progress overview: current standing, what went well, what went wrong, plan to conclude, … ii. Demonstrate intermediate results iii. Reflection: milestones reached, blocking factors, … iv. Incorporate feedback
Closure meeting	Face-to-face, 5 days, end of project **Monday** - Project briefing by team, current status, weekly plan **Monday to Thursday** - Teamwork - Wrap up solution – integrate all parts towards a proof-of-concept (POC), a prototype - Workshops/seminars: e.g. career development, entrepreneurship **Friday** - Final solution pitch: presentation towards client & teacher board - Hand over all documentation and solution material to client - Final assessment: grading, feedback and reflection - Fill in Student Feedback Form - Receive ABC BlendEd project certificate

Table 5: Course plan

Phase	Duration	Format	What
Online preparation	1, 2 days	Virtual	Team formation, Challenge assignment
Kick-off	1 week	Face-to-face	Project information, workshops/seminars, Setup tools, responsibilities and development plan
Project work	6 weeks	Virtual	Prototyping/develop field solution, intermediate presentation/release
Closure	1 week	Face-to-face	Presentation, final reporting, reflection portfolio, workshops/seminars

MATERIALS, TOOLS AND RESOURCES	
Workshops/Seminars	During the face-to-face meetings students will follow one or more workshops. Several workshops are available to be chosen from. The course coordination team chooses the workshops to run at each course edition. During kick-off: Focus on intercultural cooperation and teamwork - Multicultural awareness - Check your online profile @LinkedIn - Social skills

MATERIALS, TOOLS AND RESOURCES	
	- SCRUM During closure: Focus on career development - Digital literacy - Entrepreneurship - Career Development
Groupware tools for online teamwork and cooperation	During the lifetime of the project students will select and use tools and platforms to work together online. Here's a reference list of commonly used tools and platforms: - LMS: Moodle / Canvas - Collaboration: MS Teams / Zoom - Project management: Trello / Asana - Data: Open Science Framework, GIS datasets Communication tools: - https://teams.microsoft.com - https://slack.com/ - https://www.adobe.com/products/adobeconnect.html - https://moodle.org/ - https://www.zoom.com/ - https://www.webex.com/ - https://www.teamspeak.com/en/ - https://trello.com/ - https://docs.google.com/ Development tools and platforms, version control: - https://gitlab.com/ - https://github.com/ - https://subversion.apache.org/ - https://azure.microsoft.com/ - https://www.jenkins.io/ - https://angular.dev/

TEACHING, LEARNING AND ASSESSMENT	

Learning methodology	Teaching and learning approaches
	- **Active learning**: inquiry: experimentation; reflection
	- **Collaborative learning**: multicultural; co-design; negotiation; empathy; peer accountability; structured digital places (e.g. Teams)
	- **Reflective practice**: metacognitive skills; critical self-awareness through reflective journals & end-of-phase debriefings
	- **Mentorship and scaffolding**: academic and industry mentor; feedback loops & formative assessment
	Pedagogical Philosophy
	- **Learning as Co-Creation**: Education becomes a partnership among students, teachers, and stakeholders. Shared inquiry and co-design of agricultural solutions cultivate ownership, intrinsic motivation, and deeper learning.
	- **Outcome-Based Learning**: Learning outcomes follow EQF/ACQF standards and cover:
	  - Knowledge: agricultural systems, sustainability principles, innovation processes.
	  - Skills: teamwork, digital collaboration, critical analysis, entrepreneurship.
	  - Attitudes: ethical awareness, inclusivity, lifelong-learning mindset.

Learning outcomes	By the end of this course, students will be able to:

	TEACHING, LEARNING AND ASSESSMENT
Competency highlights	**Knowledge** - Understand core concepts: agro-ecological principles, sustainable farming systems and digital technologies (e.g. IoT, GIS, remote sensing) - Grasp policy and market context: agricultural policies, global food security challenges, socio-economic drivers. **Technical/Hard skills** - Analyse a challenge offered by a real-life client (with focus on African challenges such as agriculture, health, …) - Compare different technical approaches and identify their limitations. - Propose a set of possible solutions and identify their pros and cons - Choose a best suitable solution for the given challenge - Design and implement a proof of concept (PoC) using digital tools and hardware/software integration **Professional/Soft/Transversal skills** - Communicate effectively through reports, presentations and consultations with stakeholders. - Collaborate online with an appropriate toolset. - Apply project-based learning methods to real-world challenges. - Demonstrate openness to feedback and continuous improvement. **Attitudes** - Have an international, intercultural mindset - Be open to new technologies. - Exhibit ethical collaboration, inclusivity, and leadership in multicultural teams. - Demonstrate adaptability and commitment to lifelong learning. - Have adopted an agile way of working within a team **Entrepreneurship**: the capacity to think creatively, take calculated risks, and transform ideas into actionable outcomes that drive growth and innovation. Key attributes: - Opportunity Recognition: Ability to spot gaps in the market or organisational processes and propose solutions. - Innovation & Creativity: Developing new ideas, products, or methods that add value. - Risk Management: Assessing potential risks and making informed decisions to minimise impact. - Adaptability: Adjust strategies when faced with changing circumstances or unexpected obstacles. Why it matters: entrepreneurship fosters adaptability and growth, enabling individuals and organisations to remain competitive in dynamic environments. **Teamwork and Leadership**: the ability to collaborate effectively within diverse teams while guiding, motivating, and empowering others to achieve shared goals. Key attributes: - Collaboration: Build trust and work constructively with team to deliver results. - Communication: Clearly convey ideas and listen actively to foster understanding. Promote open communication. - Conflict Resolution: Handle disagreements constructively to maintain team cohesion. - Delegation and empowerment: Assign tasks strategically and supports team members' growth.

	TEACHING, LEARNING AND ASSESSMENT
	- Time management: Balance individual and group responsibilities effectively, maintaining productivity and ensuring deadlines are met. - Vision and influence: Inspire others through clear direction and positive leadership. - Initiative: Take proactive steps by proactively contributing ideas, organising tasks, and supporting team members. - Decision-making and accountability: Demonstrate leadership by guiding decisions, motivating peers, and ensuring accountability within the team. - Resilience: Adapting to challenges, persisting through uncertainty and maintain focus and persistence under pressure to achieve results. Why it matters: strong teamwork and leadership foster trust, drive productivity, enable teams to deliver high-quality and innovative results in dynamic environments. **Problem-solving**: the ability to analyse real-life challenges (e.g., agriculture, health), identify root causes, propose solutions, and develop effective, innovative solutions that achieve desired outcomes. Key attributes: - Analytical thinking: Break down problems into manageable components and evaluate options logically. - Critical thinking: Assess information objectively, question assumptions, and make reasoned judgments to identify the best solutions. - Creativity and innovation: Generate new ideas and approaches to solve challenges. - Decision-making: Assess alternatives and choose the most effective solution based on evidence and impact. - Resourcefulness: Utilise available tools and information efficiently to resolve issues. Why it matters: problem-solving drives progress and efficiency, enabling individuals and organisations to overcome challenges and seize opportunities. **Professionalism**: the ability to consistently demonstrate integrity, accountability, and ethical behaviour while maintaining high standards of quality and respect in all professional interactions. Key attributes: - Integrity and ethics: Act with honesty, fairness, and responsibility in all situations. - Reliability: Deliver on commitments and meet deadlines with consistency. - Accountability: Take ownership of actions, decisions, and outcomes. - Respect and courtesy: Treat colleagues, clients, and stakeholders with professionalism and empathy. - Quality orientation: Strive for excellence in work output and attention to detail. - Adaptability: Maintain composure and professionalism under pressure or in changing circumstances. - Continuous improvement: Seek feedback and pursue opportunities for growth and learning. Why it matters: professionalism builds trust, strengthens relationships, and ensures a positive reputation for both individuals and organisations.
Assessment and evaluation	The course applies both formative and summative evaluation. This strategy is grounded in participatory engagement of students, staff, and stakeholders. Main goal is to improve competences of students linked to employability, to develop soft skills that they will barely develop in regular courses: communication, foreign language skills, teamwork, IT literacy, critical thinking.

	TEACHING, LEARNING AND ASSESSMENT
	Formative evaluation: Focus on the process of co-creation and development of soft-skills (improvement-oriented), continuous assessment by observation of behaviours by each students' supervisor teacher. Ongoing feedback through online monitoring, draft reviews, peer comments, and mentor consultations. Promote continuous improvement through reflective feedback loops. **Summative evaluation**: Focus on the development process, on the results and their added value (accountability-oriented). Cumulative judgement of final outputs. A panel of assessors will use rubric templates that are agreed on by the ABC BlendEd coordination board. The assessment components of the course are: **Team project report**: Final written submission summarising research, analysis, and solution, 40% **Final presentation and defence**: Oral communication and Q&A session during closure meeting, 20% **Individual reflection portfolio**: analytical journal on learning process and personal growth, 20% **Peer evaluation**: Structured evaluation of teamwork contribution, 10% **Supervisor appraisal**: Professional conduct and initiative, 10% Assessment rubrics supporting the assessment process: - Project report rubric: 40% - Reflection portfolio rubric: 20%. - Presentation rubric: 20%. - Peer Evaluation rubric: 10%. Monitoring and evaluation instruments: - Student feedback form - Mentor evaluation checklist - Peer evaluation - Community impact reporting template Rules - All components are evaluated in the 0-100 range. These marks can then be converted to each partner's own marking scale. - All components are mandatory. - Approval of the course depends on a minimum weighted average mark of these components equal to or higher than 50. - All deliveries are compulsory. Late delivery may not be accepted. - A team score is set. Through peer evaluation and/or individual outcomes, the individual score of a student can deviate from the team score that was set.

12 Conclusions and next steps

12.1 Conclusions

This deliverable shows that the European BlendEd model can be successfully adapted to African higher education. Over three pilot editions, the partnership retained the core principles of international blended collaboration and authentic, challenge-based project work, while adjusting the course's duration, workload, mobility arrangements and coordination to local conditions. The resulting syllabus – an eight-week, six-credit course that partner universities can align with existing units such as industrial traineeships without formal

curriculum revision – provides a documented basis for implementation in the six participating universities and a starting point for other institutions and consortia.

The pilots also revealed where the model is most sensitive: unreliable internet connectivity, the difficulty of involving company representatives from distant regions and the high cost of travel within Africa. Selecting challenges from the regions hosting the face-to-face activities, shifting coordination to the African partners and introducing a hybrid mobility model have helped to address these constraints. The analysis of the partner universities further confirms that ABC BlendEd complements, rather than replaces, existing practical learning, internships, entrepreneurship education and industry engagement, by bringing these elements together around real-world agricultural challenges.

12.2 Next steps

To consolidate these results and sustain the course beyond the project period, the partners should:

- **Embed the course in academic pathways:** formalise credit recognition and link ABC BlendEd to existing internship, traineeship and employability provision at each partner university.
- **Make transversal competencies explicit in assessment:** apply the agreed rubrics consistently so that teamwork, communication, leadership and entrepreneurial competencies are assessed alongside project outputs.
- **Strengthen stakeholder engagement:** build a regional pool of companies, farmers and community organisations able to propose relevant challenges and take part in the kick-off and closing activities.
- **Implement the quality framework:** collect student, peer and stakeholder feedback at the beginning, during and at the end of each edition, add follow-up after completion where feasible, and use the results to refine the course between editions.
- **Secure institutional ownership and resources:** develop staff capacity for coaching and supervision, and identify funding to sustain the hybrid mobility model and future editions.
- **Promote wider adoption:** share the syllabus and lessons learned with other institutions and consortia interested in running an ABC BlendEd course.

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