UNIHUBS

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D3.1 NEEDS ANALYSIS REPORT

UNIHUBS

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Image Src: images of consortium members at our workshop

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Executive summary

This Training Needs Analysis Report has been developed under the UNIHUBS project to identify the professional development needs of staff at Higher Education Institutions (HEIs) and Digital Innovation Hubs (DIHs) in Ghana, Kenya, and Tanzania. Drawing on a triangulated methodology—combining a review of relevant literature, analysis of current practices, and semi-structured interviews with 41 DIH and HEI professionals—the report provides a comprehensive, evidence-based foundation for the creation of standardized training materials to support collaborative knowledge creation and innovative teaching practices.

The findings highlight critical areas for capacity building. These include the need to enhance digital pedagogy skills, integrate entrepreneurship education systematically into curricula, strengthen technical digital competencies, develop human skills such as collaboration and communication, and foster the ability to establish and manage sustainable partnerships between HEIs, DIHs, and the broader digital innovation ecosystem. Participants emphasized the importance of designing modular, flexible, and practice-oriented professional development programs tailored to the realities of African educational and innovation contexts.

The report also confirmed strong interest among HEI and DIH staff in advancing experiential learning methods, co-creation frameworks, and hands-on, interdisciplinary projects that prepare students for real-world digital careers. Key barriers identified include infrastructural limitations, bureaucratic hurdles, limited access to digital resources, and insufficient institutional support mechanisms.

Building on these insights, the next phase of the UNIHUBS project will focus on developing standardized, easily adaptable training materials. Rather than creating entirely new content, the consortium will draw from a wide range of resources already developed in previous projects (such as SE4Ces and AfriConEU) and leverage the partners' substantial experience in teacher and innovator training. The training resources will be adapted to ensure coherence, accessibility, and direct applicability to African HEI and DIH environments.

Importantly, this report is considered an evolving document. It will continue to be updated throughout the project lifecycle to reflect the real and emerging needs of African partners, ensuring that the final outputs are truly responsive, sustainable, and impactful. Through these efforts, UNIHUBS aims to foster a new generation of educators and digital innovation professionals capable of driving educational transformation, strengthening innovation ecosystems, and enhancing student employability across Africa.

Introduction

The digital transformation of economies worldwide has placed an increasing demand on higher education institutions (HEIs) and Digital Innovation Hubs (DIHs) to align educational offerings with labor market needs, particularly in the fields of digital innovation and entrepreneurship. Recognizing these challenges, the UNIHUBS project, funded under the Erasmus+ Capacity Building in Higher Education program (Grant Agreement No. 101128313), aims to enhance the capacities of HEIs in Ghana, Kenya, and Tanzania by strengthening their collaboration with DIHs and fostering innovative, experiential educational practices that improve student employability.

This report focuses on identifying the training needs of HEI and DIH staff in relation to collaborative knowledge creation and innovative teaching methodologies. It forms part of Work Package 2 (WP2) and sets the foundations for the development of targeted training materials and professional development activities. The findings will also inform future co-creation workshops and capacity-building initiatives designed to modernize curricula, promote entrepreneurial thinking, and better integrate HEIs into digital innovation ecosystems.

The development of this report builds on the comprehensive groundwork laid by several key UNIHUBS deliverables, including:

- The "Best Practices Report" (D.2.2), which reviewed successful capacity-building initiatives and educational innovations from both European and African contexts, offering evidence-based strategies to enhance HEI and DIH effectiveness.
- The "Needs Analysis Report" (D2.3), which investigated skills mismatches, learning needs, and collaboration challenges across partner countries through extensive focus group discussions.
- The "Collaboration Network" report (D2.4), which mapped the existing structures of cooperation among HEIs, DIHs, industry, and policymakers, identifying successes and barriers to effective collaboration.

Together, these documents highlight that despite some promising initiatives, significant gaps remain in the areas of pedagogical innovation, digital skill integration, industry engagement, and experiential learning opportunities.

Introduction

In particular, the Needs Analysis revealed that academic curricula often lack the incorporation of critical digital competencies (e.g., AI, data analytics) and soft skills (e.g., teamwork, problem-solving), while collaboration with DIHs is frequently ad hoc and lacks sustainability, especially in rural settings.

Moreover, the Best Practices Report underscored the effectiveness of initiatives that foster entrepreneurship-driven curricula, interdisciplinary learning, blended and hybrid education models, and strong academia-industry partnerships. It became clear that for HEIs and DIHs to play a transformative role in the digital innovation sector, there is a pressing need for systematic professional development that equips staff with new methodologies, collaborative skills, and digital pedagogies.

Therefore, this report adopts a multi-dimensional approach. First, it reviews the current state of collaborative and innovative educational practices in Europe and Africa, drawing lessons from best practices. Second, it assesses the current educational programs and practices within partner HEIs in terms of their ability to foster entrepreneurial mindsets, embrace innovative teaching approaches, involve digital innovation actors in content development and delivery, and provide students with real-world learning opportunities. Third, it integrates findings from newly conducted structured interviews with HEI and DIH staff, aimed at identifying specific knowledge gaps and professional development needs.

Ultimately, this work will contribute to the broader objectives of the UNIHUBS project: enabling HEIs to become proactive agents in digital innovation ecosystems, building sustainable collaboration frameworks with DIHs and industry, and preparing students to thrive in rapidly evolving labor markets. By providing a solid evidence base, this report serves as a strategic resource for designing high-impact, scalable training programs that meet the real needs of educators and innovators in Africa's digital future.

Methodology

The methodological approach underpinning this report has been designed to ensure a comprehensive, evidence-based, and contextually relevant analysis of the training needs of HEI and DIH staff. It integrates both secondary data from project deliverables and best practices and primary data collected through semi-structured interviews, applying a mixed-methods framework that ensures both breadth and depth of understanding.

The first phase involved an in-depth analysis of existing UNIHUBS deliverables. The Collaboration Network Report provided detailed insights into existing partnership structures, modes of engagement, and challenges in collaborative knowledge creation between HEIs, DIHs, and industry actors across Africa and Europe. The Needs Analysis Report offered critical findings from eight focus group discussions involving 69 participants from HEIs and DIHs in Ghana, Kenya, and Tanzania, highlighting key learning needs, skill gaps, and barriers to collaboration. The Best Practices Report identified successful capacity-building models and educational innovations from both European and African contexts, offering actionable recommendations and scalable strategies for strengthening HEI-DIH collaboration and fostering entrepreneurial education. These documents served as a foundation for identifying recurring themes, preliminary gaps, and successful models to guide the development of the interview instruments and later stages of analysis.

Recognizing the limitations of desk research in capturing the lived experiences and nuanced needs of stakeholders, the second phase involved the design of two tailored structured interview guides (see appendices 1 and 2). One was created for HEI Academic Staff and another for DIH Professionals. The interview guides were co-developed by consortium partners under the leadership of the project coordinator, based on the key findings of the Needs Analysis and Best Practices reports, ensuring that they captured relevant aspects such as collaboration practices between HEIs and DIHs, adoption and barriers to innovative teaching methodologies, opportunities and gaps in experiential learning and entrepreneurial education, digital skills integration and infrastructure challenges, and professional development needs and aspirations. Each guide consisted of both open-ended and closed questions aimed at encouraging rich, detailed responses, allowing participants to express their experiences, perceptions, and expectations freely.

A purposive sampling strategy was employed to ensure the inclusion of diverse perspectives from academic staff with experience in curriculum development, teaching innovation, or industry collaboration, as well as DIH professionals involved in mentoring, training, innovation management, or partnerships with HEIs. Participants were drawn from the UNIHUBS partner institutions in Ghana, Kenya, and Tanzania, ensuring

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geographical diversity and a balance between rural and urban contexts. Gender balance and representation of different disciplines were also considered where feasible, with a goal to have at least of 25% representation of women.

Interviews were conducted online, following the culturally appropriate practices identified in the earlier phases of the project. In instances where logistical constraints prevented in-person meetings, interviews were held via secure online platforms. All interviews were conducted with informed consent, and confidentiality and anonymity were assured. The interviews lasted between 45 to 60 minutes each and were audio-recorded with participant permission. In total, 41 interviews were conducted, 21 with DIH staff and 20 with HEI staff.

Thematic analysis was applied to the interview transcripts. This involved familiarization with the data through repeated reading of transcripts, initial coding to identify recurring patterns, challenges, and training needs, categorization of codes into overarching themes aligned with the objectives of the report, and triangulation with findings from the desk review to validate and enrich emerging insights. This approach ensured that the analysis was both grounded in stakeholder experiences and contextualized within broader systemic observations.

All stages of the research adhered to the ethical standards set forth by the UNIHUBS consortium. Participation was voluntary, with informed consent obtained from all interviewees. Data was anonymized for reporting purposes, and no identifying information is presented in this report. The following picture illustrates the process followed for the creation of the needs analysis report.

Methodology

While every effort was made to ensure robustness, some limitations must be acknowledged. These include limited availability of some stakeholders due to competing academic or professional commitments, potential bias due to reliance on self-reported data, and variability in digital infrastructure which occasionally limited online participation. These limitations were mitigated as much as possible through flexible scheduling, thorough probing during interviews, and cross-verification of findings.

The methodological rigor of this approach provides a solid foundation for the subsequent sections of the report, ensuring that the training needs identified are both evidence-based and practically relevant for the UNIHUBS consortium and its broader stakeholder community.

Synthesis of the review of the State-of-the-Art

The synthesis of the state of the art presented in this section aims to provide readers with a consolidated understanding of the context in which the UNIHUBS project operates. It compiles and interprets the key information from previous deliverables to ensure that readers can follow the report more effectively and grasp the foundational concepts that have shaped the analysis.

The exploration of the state of the art regarding collaborative knowledge creation and innovative teaching methodologies reveals a dynamic landscape where HEIs and DIHs are increasingly called upon to bridge gaps between academic training and labor market demands. Across Europe and Africa, a growing body of initiatives underscores the critical role of experiential learning, entrepreneurship-driven curricula, and digital competency development in enhancing student employability and fostering innovation ecosystems.

In the European context, the emphasis on digital education, as articulated in strategic documents like the Digital Education Action Plan 2021-2027, has prompted HEIs to adopt blended learning models, integrate digital tools into pedagogical practices, and build robust partnerships with industry actors. Programs such as INNOTAL and ACCESS exemplify the success of co-creation models where students, faculty, and industry collaborate on real-world projects, enhancing both technical and soft skills crucial for the digital economy. These initiatives illustrate that interdisciplinary learning environments, combined with mentorship and practical exposure, substantially increase graduates' readiness for employment and entrepreneurial endeavors.

Synthesis of the review of the State-of-the-Art

Similarly, in Africa, institutions are embracing innovative approaches to curriculum design and delivery to respond to digital and entrepreneurial skill gaps. The Innoversity Africa project and the CARISCA initiative in Ghana demonstrate the impact of integrating entrepreneurial thinking, digital literacy, and industry collaboration into higher education frameworks. Such programs have shown that by embedding experiential components like startup development modules, hackathons, and stakeholder-engaged research projects, HEIs can create pathways that not only enhance student competencies but also foster closer ties with DIHs and broader innovation ecosystems.

The analysis also reveals that successful initiatives often prioritize faculty development, ensuring that educators are equipped with contemporary pedagogical skills and digital competencies. Faculty engagement in continuous professional development, exposure to real-world innovation processes, and participation in interdisciplinary co-creation activities emerge as critical factors enabling HEIs to adapt to the fast-evolving demands of the labor market.

Despite these successes, the review highlights persistent challenges. A significant proportion of HEIs, particularly in rural and under-resourced regions, continue to struggle with inadequate digital infrastructure, limited access to industry partnerships, and traditional pedagogical models that emphasize theoretical knowledge over practical application. These gaps reinforce the need for targeted capacity-building initiatives that address both systemic barriers and individual professional development needs.

Overall, this synthesis of the state of the art provides clear evidence that enhancing collaborative knowledge creation and adopting innovative teaching methodologies are indispensable strategies for equipping students with the skills needed in the digital innovation sector. It also confirms that sustainable change requires systemic efforts, encompassing curriculum reform, faculty training, digital infrastructure investment, and the cultivation of strong, mutually beneficial partnerships between HEIs, DIHs, and the private sector.

Synthesis of existing practices in African countries

Ghana, Kenya, Tanzania

This section presents a synthesis of existing practices in Ghana, Kenya, and Tanzania regarding collaborative knowledge creation, innovative teaching methodologies, and employability-focused education. The aim is to provide readers with a comprehensive background, drawing from previous UNIHUBS deliverables, to facilitate a better understanding of the local contexts and challenges that this report addresses.

The review of practices in Ghana reveals a higher education environment that is increasingly aware of the importance of embedding entrepreneurship and digital skills into curricula. Initiatives such as the CARISCA project have successfully connected academic programs with industry demands, particularly in sectors like health and agriculture supply chains. However, the broader analysis indicates that while there are promising models, many HEIs still face difficulties in systematically integrating experiential learning opportunities, co-creation practices with DIHs, and sustained partnerships with the private sector. Faculty members often lack access to structured professional development programs that could enhance their capacity to innovate pedagogically and collaborate effectively beyond institutional boundaries.

In Kenya, the landscape is characterized by significant strides in entrepreneurial education, supported by national strategies promoting innovation and digital literacy. Kenyan universities have initiated partnerships with local innovation hubs and incubators, offering students exposure to real-life projects and startup ecosystems. Nevertheless, the UNIHUBS Needs Analysis Report shows that these practices are not yet uniformly embedded across institutions, with rural universities facing particular challenges related to digital infrastructure, limited access to DIHs, and the persistence of traditional, lecture-based teaching approaches. There is a notable demand for capacity-building initiatives that enable academic staff to design interdisciplinary, project-based learning experiences and for mechanisms that formalize and sustain HEI-DIH collaboration.

Tanzania presents a mixed picture, where policy initiatives supporting innovation ecosystems exist but implementation at the HEI level varies considerably. Programs like Innoversity Africa provide examples of how entrepreneurship and innovation training can be embedded in university education to foster student-led startups and socially relevant innovations. However, the gap between national ambitions and institutional realities remains significant. According to the findings from the Collaboration Network Report, HEIs in Tanzania often struggle with fragmented industry relationships, limited co-design of curricula with DIHs, and inadequate hands-on learning opportunities for students. Faculty members express a strong interest in adopting more innovative teaching practices but cite lack of training, insufficient resources, and unclear pathways for engagement with external actors as major barriers.

Synthesis of existing practices in African countries

Ghana, Kenya, Tanzania

Across the three countries, the synthesis of existing practices highlights several cross-cutting themes. While there is a growing recognition of the importance of digital skills, entrepreneurial mindsets, and collaborative learning models, actual implementation remains uneven. Success stories tend to be localized and often dependent on the enthusiasm of individual champions rather than institutionalized strategies. The reliance on traditional, content-heavy pedagogical models persists, and efforts to modernize curricula and integrate DIH collaboration are frequently hindered by infrastructural and organizational constraints.

Thus, this synthesis underscores the critical need for targeted, context-sensitive professional development programs aimed at equipping HEI and DIH staff with the skills, tools, and collaborative frameworks necessary to drive systemic change. It also affirms that capacity-building efforts must address both individual competencies and institutional structures to achieve sustainable improvements in student employability and innovation capacity in Ghana, Kenya, and Tanzania.

Interview results

This section presents the findings from the semi-structured interviews conducted with 20 HEI academic staff and 21 DIH professionals in Ghana, Kenya, and Tanzania. The objective of these interviews was to deepen the understanding of training needs, collaboration practices, challenges, and opportunities for professional development related to collaborative knowledge creation, innovative teaching, and student employability in the digital innovation sector. The interviews complement the insights derived from the document review and previous analyses and provide firsthand accounts of the lived experiences of key stakeholders.

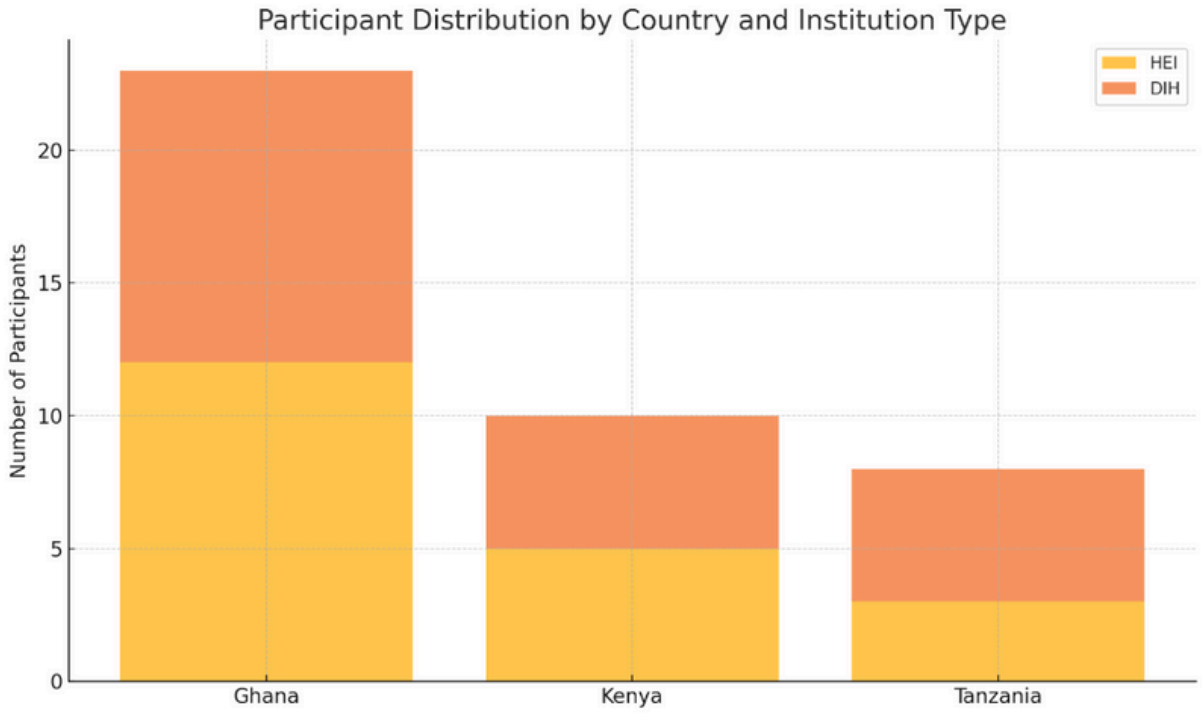
The presentation of the results follows the structure of the two distinct interview guides co-designed by UNIHUBS partners for each target group (see appendices). For DIH professionals, the interviews explored their roles and experiences collaborating with HEIs, the types of joint activities undertaken, the skill gaps observed among students and staff, their involvement in teaching and mentoring, the digital tools used to support collaboration, and the training needs identified to enhance their contribution to education and innovation ecosystems. For HEI academic staff, the interviews addressed their experiences with DIH collaboration, the use of innovative and experiential learning methods, the challenges in implementing pedagogical innovation, the integration of entrepreneurial thinking into curricula, their digital capacity, and their professional development priorities.

Interview results

Throughout this section, results are organized thematically according to the key dimensions covered in the interview protocols. This ensures coherence between the perspectives of HEI and DIH participants and allows for a comprehensive cross-analysis of common challenges, specific gaps, and contextualized recommendations. Responses are presented in a narrative form, with thematic synthesis capturing the diversity of experiences while highlighting overarching patterns across countries and types of institutions. Direct quotations are included where relevant to illustrate key findings while preserving participant anonymity.
Thus, the report aims to provide a clear and systematic account of the training needs and collaboration dynamics between HEIs and DIHs, which will inform the subsequent design of tailored training materials and capacity-building activities under the UNIHUBS project.
Participants information

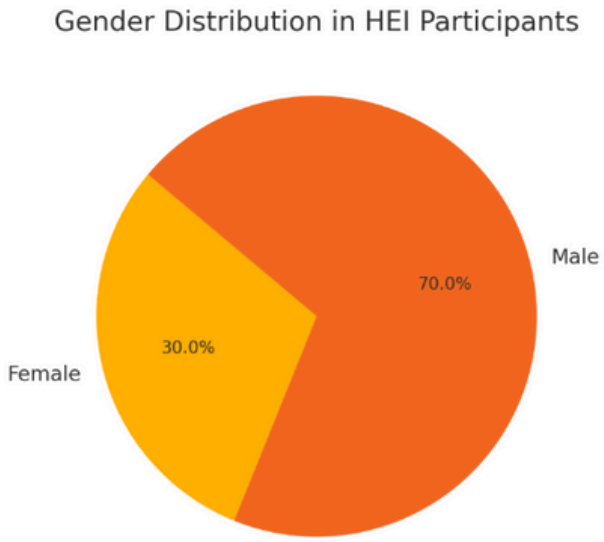
A total of 41 individuals participated in the semi-structured interviews, exceeding the initial target of 30 participants set in the project proposal. Among these, 21 participants were staff members from Digital Innovation Hubs (DIHs) and 20 were academic staff from Higher Education Institutions (HEIs). This significant level of engagement highlights the strong interest of stakeholders in contributing to the objectives of the UNIHUBS project.

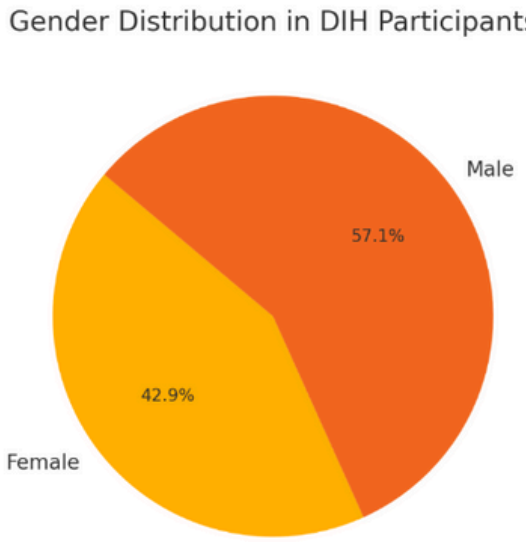
Within the group of HEI participants, there were 12 respondents from Ghana, 5 from Kenya, and 3 from Tanzania. For the DIH group, participation was distributed among 11 respondents from Ghana, 5 from Kenya, and 5 from Tanzania. This geographical spread ensured a balanced representation across the three target countries, offering insights into both urban and rural innovation ecosystems.



Interview results

Regarding gender distribution, the project not only achieved but exceeded its gender balance goals. Among the HEI participants, there were 6 female and 14 male respondents. In the DIH group, there were 9 female and 12 male participants. With over 25% of participants being female in both groups, the project successfully fulfilled its commitment to promoting gender inclusivity in its research activities.





The diversity in professional backgrounds, institutional types, and gender among participants enriches the findings, offering a multi-faceted perspective on the training needs and collaboration dynamics between HEIs and DIHs across Ghana, Kenya, and Tanzania.

Participants brought a wide range of expertise and professional backgrounds to the study, reflecting the diverse realities of the digital innovation and higher education landscapes in Ghana, Kenya, and Tanzania.

Among the DIH participants, many held leadership roles centered around training, incubation, entrepreneurship, and digital skills development. Some participants led training and incubation programs, focusing on equipping early-stage startups with project-based skills and fostering partnerships with local tech firms. Others were engaged in youth engagement and capacity building, organizing innovation events and developing pathways for young innovators to contribute to sectors such as food systems and climate resilience. Several DIH representatives worked on building inclusive digital skills ecosystems, especially in underserved regions, by designing training programs and managing community partnerships. Leadership positions included Heads of Technology overseeing developer training programs and CEOs managing hubs focused on business development, startup incubation, access to finance, and market linkage. Additionally, some participants represented national hub networks, bringing a broader ecosystem perspective to the study.

Interview results

Among the HEI participants, the majority occupied academic or administrative roles, ranging from lecturers and deans to registrars and quality assurance officers. Their expertise covered a broad spectrum, including Information Technology, Cybersecurity, Digital Forensics, Environmental Education, Management, Marketing, Creative Arts, and Technology-Enhanced Education. Participants also reported responsibilities related to academic quality assurance, student data management, postgraduate education, and the development of innovation hubs within their institutions. Several academic staff members were actively involved in mentoring students, developing research-driven innovations, and promoting entrepreneurship and business development activities aligned with university strategies. Faculty members emphasized their engagement with digital transformation efforts and their commitment to fostering entrepreneurial mindsets among students.
This diversity of roles and expertise across DIH and HEI participants reflects the multidimensional nature of the challenges and opportunities facing the higher education and innovation sectors in the target countries. It also underscores the necessity for tailored, cross-sectoral professional development initiatives that acknowledge and build upon the varied experiences and institutional contexts of the staff involved.

Collaboration experiences between HEI and DIH

The collaboration experiences between Digital Innovation Hubs (DIHs) and Higher Education Institutions (HEIs) varied considerably across the participants, offering valuable insights into the current landscape and opportunities for strengthening partnerships.
Among DIH participants, the majority reported active collaboration with HEIs through a variety of channels. Several DIH professionals highlighted experiences in co-designing training programs, delivering guest lectures, and supporting student-led tech innovation projects. Others indicated their involvement in facilitating internship placements and innovation challenges in collaboration with universities and colleges. Many DIH respondents played key roles in regional innovation forums, student mentorship programs, and collaborative learning events aimed at enhancing students' digital and entrepreneurial skills.
Several DIH participants emphasized their function as facilitators, bridging academia, civil society, and industry by organizing joint research projects, digital skills academies, and policy dialogues on emerging skill requirements for the digital economy. One DIH representative specifically mentioned a strong engagement with universities through an immersive design thinking program that enables university students and faculty to work closely with rural communities, promoting local development through innovation and entrepreneurship.

Nonetheless, a minority of DIH respondents noted limited collaboration with HEIs, either due to lack of formal agreements or because interactions were limited to occasional events or hosting HEI delegations without long-term engagements.
On the HEI side, many academic participants confirmed that they are actively teaching or coordinating courses related to digital skills, innovation, and entrepreneurship. Several lecturers reported delivering modules on entrepreneurship, digital commerce, innovation management, cybersecurity, database systems, and artificial intelligence. Some respondents also coordinated programs within institutional innovation hubs, linking academic content with real-world entrepreneurial activities.

Interview results

Despite the generally positive engagement, a number of HEI participants acknowledged that their collaboration with DIHs remained sporadic or limited in scope. While some served as advisors, patrons, or mentors to student innovation groups, others admitted that direct partnerships with DIHs or external industry actors were not fully institutionalized within their universities.
The data reveal a promising foundation of collaboration between DIHs and HEIs, particularly in areas related to student skills development and innovation ecosystem building. However, it also underscores the need for more structured, formalized, and sustainable collaboration models to maximize mutual benefits. Building stronger frameworks for co-creation, integrating DIHs more systematically into curriculum development and delivery, and expanding access to joint research and entrepreneurship initiatives appear essential for the future success of HEI-DIH partnerships under the UNIHUBS project.

The nature of collaboration between DIHs and HEIs as reported by participants reveals a predominantly project-based approach. Among DIH respondents, the majority described their current engagement with HEIs as "project-based," reflecting short-term, often grant-funded initiatives centered around specific training programs, innovation challenges, or mentorship activities. A few participants characterized their collaboration as "long-term," indicating more sustained relationships with universities involving ongoing capacity-building initiatives and joint research efforts. Only a limited number of respondents noted "ad-hoc" collaborations, usually linked to occasional events or informal knowledge-sharing activities. Similarly, on the HEI side, collaboration with DIHs and companies appeared to be predominantly project-driven rather than structurally embedded in institutional strategies. Many HEI respondents reported involvement in innovation hackathons, industry-led certification trainings, and co-supervision of student research projects in partnership with DIHs or companies. Specific examples included co-designing innovation challenges, organizing startup incubation programs, engaging industry stakeholders in curriculum development, and conducting consultancy and applied research projects with SMEs. Nonetheless, several HEI participants admitted to having limited or no direct experience with formalized DIH partnerships, with interactions mainly focusing on supporting student startups or informal industry consultations. A number of HEI staff indicated that while student-level engagement in innovation ecosystems was present, systemic, institution-wide collaborations were either nascent or absent.

The interview data suggest that while strong individual collaborations exist between DIHs and HEIs, most partnerships remain project-based and driven by immediate opportunities rather than long-term strategic alignment. This finding points to the need for more sustainable and structured collaboration frameworks that integrate DIH involvement into curriculum planning, student mentoring programs, and broader research and innovation strategies within HEIs.

Interview results

Identified challenges by participants

Participants identified a range of challenges affecting collaboration between DIHs and HEIs, many of which converge around structural, procedural, and cultural differences between the two sectors. A recurring theme among DIH participants was the presence of bureaucratic hurdles, with several respondents citing rigid administrative processes, lengthy approval times, and misalignment between the speed of industry projects and the academic calendar as significant barriers. These challenges often led to delays in project execution and missed opportunities for agile collaboration.

Another critical challenge highlighted was the misalignment between the skills focus of HEIs and the immediate needs of the digital innovation sector. DIH participants observed that many academic programs lacked a strong emphasis on practical, real-world application, making it difficult for students to transition smoothly into innovation-driven environments. Capacity limitations at the institutional level, limited resources for sustained engagement, and difficulties in maintaining student participation due to academic workload and lack of incentives were also commonly reported.

From the perspective of HEI participants, challenges largely mirrored those noted by DIHs. Many reported struggles with securing consistent funding for collaborative activities, formalizing long-term institutional agreements with DIHs, and dealing with administrative bottlenecks that slowed down responsiveness to partnership opportunities. Mistrust between academia and industry, limited government support for strengthening research and innovation linkages, and low motivation among faculty to engage in external collaborations due to workload pressures further complicated efforts to build sustainable partnerships.

Additionally, faculty members' hectic schedules, market competition with more established institutions, and limited access to practical equipment were seen as practical barriers to integrating more experiential and innovation-focused learning approaches. Some HEI respondents also pointed to a lack of familiarity among students with new digital tools and platforms as a constraint to effective collaboration with DIHs.

Preferred types of collaboration and support needs

Participants expressed a strong desire to move toward more structured and integrated forms of collaboration between DIHs and HEIs. DIH professionals and academic staff alike called for the development of joint projects that go beyond short-term initiatives to embed innovation and entrepreneurship more deeply within the educational ecosystem.

A frequent suggestion was the creation of collaborative learning spaces, innovation hubs, and multi-stakeholder labs that bring together students, faculty, startups, and policymakers to address real-world challenges, particularly in areas such as digital equity and community development. Respondents advocated for more hands-on training opportunities for students, with an emphasis on early and continuous industry exposure through internships, project-based learning, and co-created innovation challenges.

Interview results

Several participants recommended the establishment of formalized curriculum design collaborations, where DIHs contribute to co-teaching and co-developing academic programs, ensuring alignment between academic outputs and industry demands. Calls for joint grant applications, fundraising initiatives, and co-supervision of student-led research projects were also common, highlighting the need for resource pooling and mutual capacity-building.
In terms of support and training to facilitate better collaboration, participants identified a range of needs. DIH staff emphasized the importance of continuous professional development in digital skills, project management, and design thinking for both themselves and academic staff. They also stressed the necessity for training programs that address institutional policy models for public-private partnerships and ease collaboration governance. Access to seed funding for joint pilot projects, frameworks for official collaboration agreements, and secondment opportunities for academic staff and students into industry environments were seen as key enablers.

Academic participants added that seminars, workshops, and digital literacy training would be beneficial, alongside access to infrastructures that enable innovation, such as digital labs and innovation hubs. They suggested that having dedicated coordination structures within HEIs to manage DIH relationships, as well as targeted scheduling support to facilitate regular engagement, would significantly enhance the sustainability and impact of partnerships.

Moreover, DIH participants identified several critical skill gaps among both students and academic staff, which hinder their ability to thrive in digital innovation ecosystems. The findings highlight a consistent need for strengthening three broad skill categories: technical skills, human skills, and entrepreneurial mindset. Technical skill gaps were the most frequently cited, particularly in areas such as coding, data analysis, digital literacy, and the use of emerging technologies. Respondents emphasized that many students and even faculty members lacked sufficient proficiency in applying digital tools for problem-solving, research, and innovation, thereby limiting their ability to engage meaningfully with DIHs and industry partners. Equally important were the human skills gaps identified by participants. Skills such as effective communication, collaboration, teamwork, empathy, and problem-solving were considered essential but often underdeveloped. Participants noted that even when students possessed technical capabilities, their limited ability to work effectively within teams, communicate ideas, and adapt to interdisciplinary environments posed significant barriers to employability and innovation readiness.

Finally, there was a strong emphasis on the need to cultivate an entrepreneurial mindset among both students and academic staff. Participants highlighted the importance of fostering creativity, initiative-taking, risk tolerance, and resilience. They stressed that encouraging entrepreneurial thinking should not be limited to business students but should be integrated across all disciplines to better prepare graduates for the dynamic demands of the digital economy.

Interview results

DIH contributions to student employability and hands-on learning opportunities

DIH participants consistently emphasized their critical role in enhancing the employability of students through exposure to real-world challenges, hands-on training, and mentorship opportunities. Many DIH representatives highlighted that their hubs provide students with practical experiences through internships, hackathons, and digital innovation projects that mirror the demands of industry environments.
Participants detailed activities such as guiding students to develop entrepreneurial mindsets, providing mentorship focused on industry best practices, supporting students in acquiring digital skills, and offering opportunities to work directly on community-centered innovation projects. They emphasized the importance of exposing students to multidisciplinary teamwork and connecting them with global and local innovation ecosystems to expand their career opportunities.

On the side of HEIs, academic staff shared that students have access to a variety of experiential learning opportunities, including industrial attachments, field trips, laboratory work, hackathons, makerthons, case challenges, and internships. These engagements often involve collaboration with both public and private sector organizations, providing students with invaluable exposure to practical environments and real-world problem-solving.

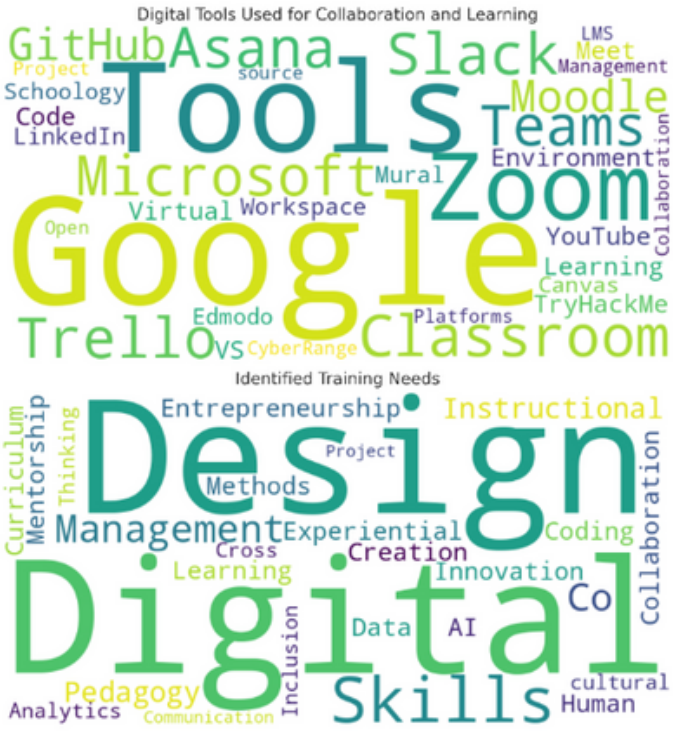
Interview results

However, challenges persist in ensuring that all students have equitable access to these opportunities, particularly given resource limitations and high student numbers in some institutions. Participants also noted the need for more systemic integration of experiential learning into curricula to guarantee that practical exposure is not left to isolated initiatives.
When asked about the support or training needed to strengthen the integration of experiential or entrepreneurial elements, both DIH and HEI respondents emphasized the following: faculty training in experiential learning methods; access to digital tools and platforms; curriculum development support focused on embedding entrepreneurship and digital skills; funding for pilot projects and student startups; and stronger collaboration frameworks between industry and academia. Faculty participants also pointed to the necessity of continuous professional development, adequate institutional support structures, and closer engagement with industry experts to foster authentic, career-relevant learning experiences for students.

Digital tools and technological challenges

Both DIHs and HEIs reported utilizing a wide range of digital tools and platforms to support training, collaboration, and teaching activities. DIHs predominantly used learning management systems, collaboration platforms such as Slack and Microsoft Teams, project management tools like Trello and Asana, and a variety of digital prototyping tools. Other widely adopted tools included Google Workspace, Zoom, MoodleCloud, Mural, and custom-built innovation tracking platforms.

HEI staff similarly reported frequent use of platforms such as Zoom, Moodle, Google Classroom, Microsoft Teams, and specialized tools for programming, cybersecurity, and data analysis, such as GitHub, VS Code, Cisco Packet Tracer, and TryHackMe. Several faculty members also incorporated entrepreneurial and business development tools like lean canvas templates and value proposition canvases into their teaching practices. The following word cloud illustrated the digital tools reported by participants during the interviews.



Interview results

Despite the extensive adoption of digital tools, numerous challenges were identified. From the DIH perspective, significant barriers included limited access to resources and devices for students, inadequate digital infrastructure, disparate digital literacy levels among faculty, and resistance to adopting new technologies within academic environments. Data privacy concerns, especially in cross-border collaborations, and difficulties related to the high costs of paid digital tool subscriptions were also noted.
Similarly, HEI staff cited a number of obstacles, such as intermittent internet connectivity, lack of devices among students, technical difficulties during live sessions, the need for frequent updates and adaptation to rapidly changing tools, and low student engagement in virtual learning environments. Some participants highlighted a lack of adequate training for both students and faculty on how to use new platforms effectively, leading to inefficiencies and disruptions during teaching and collaboration.

Training priorities

Interview participants were asked to reflect on the most pressing training needs that would support greater collaboration and educational innovation. Among DIH respondents, there was strong emphasis on developing skills in instructional design, particularly for creating interactive and inclusive learning modules, digital facilitation, and youth-centered content design. Other priorities included digital inclusion strategies, intercultural communication, collaborative foresight, project-based learning facilitation, and real-time co-creation of curricula leveraging digital tools and AI.
Training topics prioritized for DIH staff included youth empowerment strategies, inclusive mentorship model development, innovation linked to climate and food systems, and digital transformation in education. Respondents emphasized the need for practical, hands-on approaches within the training materials, recommending the use of real-world case studies, interactive exercises, flexible toolkits, and sustained access to ongoing resources.

HEI respondents similarly highlighted the need for professional development focused on using digital tools effectively, integrating entrepreneurship into curricula, and teaching for employability. Key areas identified for future training included digital pedagogy, experiential and field-based learning methods, participatory teaching approaches, digital entrepreneurship, and the use of collaborative platforms. Faculty members also stressed the importance of practical content delivery, the use of live and interactive methods, and continuous, modular professional development tailored to real-world African contexts. The following word cloud illustrates the training needs reported by the 41 interviewees.

Interview results

Several reflections reinforced that professional development should be flexible, offline-accessible when needed, and integrate soft skills like cross-cultural communication, leadership, and mental well-being. Participants emphasized that training should help bridge the gap between theoretical knowledge and practical application, with a particular focus on the realities faced in the African innovation landscape.

Discussion: Identified training needs

This discussion section triangulates evidence from the review of literature and best practices, the analysis of existing practices in Ghana, Kenya, and Tanzania, and the findings from the interviews with HEI and DIH staff. By drawing on these three complementary sources, a clearer and more validated picture of the current training needs is formed.

The desk review and best practices analysis revealed that innovation in higher education demands a dual focus: the integration of digital skills and entrepreneurial competencies into curricula, and the strengthening of partnerships between academia and external innovation actors. Similarly, the study of African practices emphasized the need for experiential, community-driven learning models and pointed to barriers such as resource limitations, bureaucratic constraints, and limited cross-sector engagement.

The interview results echoed and expanded upon these findings, adding grounded insights from practitioners. Across all sources, five major training needs emerged.

First, there is a consistent and urgent call for building digital pedagogical capacity. Staff require skills not only in using digital tools but also in designing digitally mediated, student-centered learning experiences. This involves capacity-building in instructional design, hybrid and virtual facilitation, use of collaborative platforms, and adaptation to low-bandwidth environments.

Interview results

Second, there is an emphasized need for entrepreneurial education and employability-focused training. Entrepreneurship must be systematically embedded into academic programs across disciplines, supported by staff development in innovation pedagogy, startup mentorship, and project-based learning approaches that bridge education and industry.
Third, the importance of strengthening technical digital skills cannot be overstated. The gaps in coding, data analytics, digital literacy, and cybersecurity observed across the interviews mirror concerns in the literature and country analyses. Digital upskilling must target both students and staff to ensure relevance in emerging labor markets.

Fourth, human skills development — including communication, collaboration, leadership, and cross-cultural competencies — is critical. As highlighted by participants and best practice reviews alike, these skills are essential for fostering innovation and must be explicitly cultivated through professional development programs.
Fifth, collaboration and partnership management skills emerged as a cross-cutting need. Building effective, sustainable partnerships with DIHs and industry actors requires staff to be trained in co-creation methodologies, public-private partnership models, grant writing, and innovation ecosystem building.

Finally, a recurring theme was the need for training approaches that are modular, flexible, and practice-oriented. Participants expressed a strong preference for experiential and real-world case-based learning, adaptable to African institutional realities, and capable of supporting both online and offline access.

Summary and next steps

This report provided an analysis of the training needs of HEI and DIH staff, triangulating evidence from the literature review, analysis of current practices, and interviews with key stakeholders. It highlighted clear areas for development, including digital pedagogy, entrepreneurial education, technical digital skills, human skills, and collaboration management.

Building on these findings, and in line with the UNIHUBS framework and the outcomes of this task, the next phase will focus on the development of standardized training material. This material will be designed to facilitate knowledge exchange between HEIs, DIHs, and other digital innovation actors; familiarize trainees with collaborative and innovative teaching methods; enhance their understanding of co-creation methodologies; and expand their knowledge on experiential learning approaches.

Rather than creating entirely new content, the project will capitalize on the extensive experience and existing resources of the consortium partners. Training resources developed in previous projects, such as SE4Ces and AfriConEU, will be adapted and standardized for broader reusability. This approach aligns with UNIHUBS' role as a capacity-building initiative and ensures that the final materials will be practical, modular, and easily transferable to a wide range of educational contexts.

In the next steps, the consortium will:

- Review and select high-quality existing training resources relevant to digital innovation, co-creation, and experiential learning.
- Adapt and reorganize selected materials to ensure coherence, standardization, and alignment with UNIHUBS objectives.
- Develop new complementary content where necessary, ensuring contextual relevance for African HEIs and DIHs.
- Pilot the training materials with selected groups to gather feedback and make necessary refinements.

Through these actions, UNIHUBS aims to contribute to the long-term professional development of educators and innovation professionals, strengthen HEI-DIH collaboration, and ultimately improve student employability and innovation outcomes in the digital sector.

Summary and next steps

It should be noted that this is an evolving document. It will continue to be updated to reflect real and emerging needs from African partners, ensuring that the final training resources are fully responsive to the local contexts and challenges faced by HEIs and DIHs across the target regions.

Appendix 1

Interview guide for DIH staff (https://form.jotform.com/211483382281353)

💡 **INTERVIEW GUIDE – DIH Professionals**

Thank you for joining this interview, which is part of the UNIHUBS project. We're exploring how Digital Innovation Hubs (DIHs) can better collaborate with Higher Education Institutions (HEIs) and support training, innovation, and student employability. Your insights will guide the development of training for DIH and HEI staff.
This guide is anonymous and your identify will be protected. Your responses will be useful for the design and development of learning materials that address your learning needs.
The whole guide will take you approximately 45 minutes to complete.
Please respond the following question by the 20th of April 2025 at 14.00 CEST.
If you have any questions about your participation in this study please contact our project coordinator at vlachopoulos@rsm.nl

- By clicking on the box below you give your consent to participate in this study**

I give my full consent

- Which of the following countries are you representing?*

Ghana
Kenya
Tanzania

- Gender*

Male
Female
Prefer not to disclose

Background Information

1. Can you briefly describe your role at the DIH and your area of work (e.g., entrepreneurship, training, incubation)?
2. Have you worked with universities or colleges before? In what capacity?*
3. Do you currently offer any training programs or activities involving students or faculty?*

Yes No

Partnerships with HEIs

4. How would you describe your current collaboration with HEIs?*

ad-hoc
project-based
long-term
other

5. What kinds of joint activities have you been involved in (e.g., mentoring, co-teaching, curriculum design, hackathons)?*
6. What are the key challenges in working with HEIs?*
7. What kind of collaboration would you like to see more of?*

Appendix 1

Skill Gaps and Training Needs

8. Based on your experience, what are the main skill gaps among students or even academic staff?*

Technical (e.g., coding, data)

Human skills (e.g., communication, collaboration)

Entrepreneurial mindset

Other

9. What kind of training would you find useful for your team to better support educational innovation?*

Co-design of educational content

Facilitation skills

Digital pedagogy

Other

Involvement in Teaching and Learning

10. Have you been involved in teaching or training students? If so, in what format?*

11. What support would help you contribute more effectively to university teaching or student mentorship?*

12. What do you see as your DIH's role in helping students become more employable?*

Digital Tools

13. What kind of digital tools or platforms does your DIH use to support training or collaboration?*

14. What challenges do you face in engaging with HEIs using these tools?*

15. What digital or instructional design skills would help your team collaborate more effectively?*

Final Reflections

16. What training topics would you prioritize for your staff to strengthen collaboration with HEIs?*

17. Is there anything else you'd like to add to help us design useful training materials for DIHs?*

Appendix 2

Interview guide for HEI staff (https://form.jotform.com/210874148358058)

🎓 **INTERVIEW GUIDE – HEI Staff**

Thank you for participating in this interview as part of the UNIHUBS project, which aims to support collaboration between HEIs and DIHs, improve educational innovation, and enhance student employability in the digital innovation sector. Your input will help us identify training needs and shape professional development materials for academic staff.

This guide is anonymous and your identify will be protected. Your responses will be useful for the design and development of learning materials that address your learning needs.

The whole guide will take you approximately 45 minutes to complete.

Please respond the following question by the 20th of April 2025 at 14.00 CEST.

If you have any questions about your participation in this study please contact our project coordinator at vlachopoulos@rsm.nl

- By clicking on the box below you give your consent to participate in this study*

I give my full consent

- Which of the following countries are you representing?*

Ghana
Tanzania
Kenya

- Gender*

Male
Female
I prefer not to disclose

Background Information

1. What is your role and area of expertise at your institution?*
2. Are you currently teaching or coordinating any courses related to digital skills, innovation, or entrepreneurship?*
3. Have you worked directly with DIHs, startups, or industry in your teaching or curriculum development?*

Collaboration with DIHs and Industry

4. Have you been involved in any co-creation or collaboration projects with DIHs or companies? What did that look like?*
5. What challenges have you faced when trying to establish or maintain such partnerships?*
6. What types of support or training would make collaboration easier or more impactful for you?*

Teaching Innovation and Pedagogy

7. What innovative or active learning methods are currently used in your courses (e.g., flipped classrooms, project-based learning, challenge-based learning)?*
8. How confident do you feel in designing and delivering these types of learning experiences?*
9. What barriers do you face when trying to implement new teaching approaches (e.g., time, support, training)?*
10. What kind of professional development would help you most (choose the most needed option):*

Teaching for employability
Integrating entrepreneurship
Using digital tools effectively
Other

Appendix 2

Interview guide for HEI staff (https://form.jotform.com/210874148358058)

Experiential & Entrepreneurial Learning

11. What opportunities do your students have for hands-on learning (e.g., internships, hackathons, case challenges)?*
12. What support or training would help you integrate experiential or entrepreneurial elements in your courses?*
13. To what extent does your curriculum promote entrepreneurial mindsets or problem-solving for real-world issues?*

To a great extent
To some extent
To a limited extent
Not at all

Digital Capacity

14. What digital tools or platforms do you regularly use in your teaching?*
15. What are the main challenges you face when using these tools?*
16. What kind of digital training would support you in delivering more innovative, collaborative, or experiential learning?*

Final reflections

17. If a training course were designed specifically for educators like you, what 2–3 focus areas would be most useful?*
18. Is there anything else you'd like to share that could help shape future professional development?*

Contact Us

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Image Src: images of consortium members at our workshop