



Integrated Entrepreneurship Capability and Embedding Framework (IECEF): A Framework for the South African Higher Education Sector



higher education
& training

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Table of contents

Foreword	3
Preamble	4
Acknowledgment of contribution	6
Executive summary	7
Chapter 1: Introduction	10
• Overview of the Integrated Entrepreneurship Capability and Embedding Framework • Structure of the Framework Document • How to Engage with this Document • Overview of the Integrated Entrepreneurship Capability and Embedding Framework (IECEF) • Structure of the Framework Document	
Chapter 2: The case for change	12
• The Changing Role of Higher Education • The South African Context • Entrepreneurship as a Graduate Capability	
Chapter 3: Key Insights from the Evidence Base	16
• Introduction to the Evidence Base • From Evidence to Framework	
Chapter 4: The Integrated Entrepreneurship Capability and Embedding Framework (IECEF)	26
• Introducing the Integrated Entrepreneurship Capability and Embedding Framework (IECEF) • The Five Interconnected Domains of the Integrated Entrepreneurship Capability and Embedding Framework (IECEF) • Macro–Meso–Micro Alignment • Institutional Leadership • Chapter Summary	
Chapter 5: Conclusion	38
References	39

Foreword

South African higher education operates in a period of profound economic, social and technological change. Universities are expected not only to advance knowledge and prepare graduates for established professions, but also to develop people who can respond creatively to uncertainty, identify opportunities, solve complex problems and create value for society. Entrepreneurship education has an important role to play in fulfilling this responsibility. Its relevance extends beyond the establishment of new businesses. Entrepreneurial capability is increasingly important to graduates across all disciplines, whether they become entrepreneurs, professionals, researchers, public servants or community leaders.

South Africa's universities have made significant progress in advancing entrepreneurship. However, entrepreneurship education remains unevenly embedded across institutions, qualifications and disciplines. In many instances, valuable entrepreneurship activities operate alongside the formal curriculum rather than as an integral part of the student learning journey.

The Integrated Entrepreneurship Capability and Embedding Framework (IECEF) responds to this challenge. Commissioned by Universities South Africa (USAf) through the Entrepreneurship Development in Higher Education (EDHE) programme, the framework provides a coherent and adaptable architecture through which universities can progressively embed entrepreneurial capability across institutional strategy, curriculum design, teaching and learning, assessment, ecosystem partnerships and quality enhancement.

The IECEF does not prescribe a uniform model for

every institution. This framework respects the diversity of our universities while establishing shared principles that can guide institution-wide and sustainable action. It enables each university to determine an appropriate point of entry and implementation pathway within its context. Importantly, the framework positions entrepreneurship as a shared institutional responsibility. Its successful implementation requires the participation of all university stakeholders. Strategic commitment must be translated into programme design and, ultimately, into meaningful student learning experiences.

USAf therefore presents the IECEF as a developmental resource for the sector. It is intended to support institutional reflection, coordination, curriculum renewal and continuous improvement, not to introduce another layer of compliance. Its value will be realised through thoughtful adaptation, collaboration and sustained institutional commitment. We invite our universities and their partners to use this framework to strengthen the development of entrepreneurial graduates who are equipped not merely to navigate change, but to shape it responsibly and contribute to inclusive economic and social development.



Dr Phethiwe Matutu

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Preamble

The Integrated Entrepreneurship Capability and Embedding Framework (IECEF) represents a significant step in the continuing work of the Entrepreneurship Development in Higher Education (EDHE) programme to advance entrepreneurship across South Africa's public universities. Since its establishment, EDHE has worked with universities and sector partners to strengthen student entrepreneurship, support academics and professional staff, and advance the institutionalisation of entrepreneurship within higher education. This work has demonstrated both the depth of innovation already present in the sector and the need for greater alignment between institutional strategy, formal curricula, teaching practice, student development and entrepreneurship support ecosystems.

The IECEF has been developed in response to this need. It is informed by research literature, national policy priorities, comparative practice and engagement with higher education stakeholders. At its centre is the proposition that entrepreneurial capability should be accessible to students across disciplines and qualification levels. Entrepreneurship should not be regarded solely as a specialist field for students intending to establish businesses, nor should its development depend only on participation in voluntary extracurricular activities.

The framework therefore adopts a broader understanding of entrepreneurship as the capacity to identify and act on opportunities, mobilise resources, develop innovative responses to complex challenges and create economic, social, cultural or environmental value. From this perspective, entrepreneurial capability strengthens graduate adaptability, employability, agency and lifelong learning while also contributing to innovation and national development.

The IECEF brings together five interconnected domains:

- 1) Institutional Leadership and Strategic Commitment
- 2) Curriculum Design and Graduate Capability
- 3) Teaching, Learning and Assessment

- 4) Entrepreneurship Ecosystem and Partnerships
- 5) Quality Enhancement, Monitoring and Continuous Improvement

These domains operate across the macro level of institutional leadership and governance, the meso level of faculties, departments and academic programmes, and the micro level of teaching, learning, assessment and student experience. Their alignment is essential if entrepreneurship is to progress from a collection of individual initiatives to a coherent and sustainable institutional capability.

The framework is deliberately enabling and adaptable. It does not assume that all universities will begin from the same position or follow an identical implementation pathway. Institutions may enter through curriculum renewal, leadership and governance, pedagogical innovation, ecosystem development or quality enhancement, depending on their existing strengths and priorities. Over time, however, sustainable embedding requires these areas to become increasingly aligned and mutually reinforcing.

The IECEF should consequently be used as:

- a strategic reflection and planning resource;
- a guide for curriculum and programme renewal;
- a basis for strengthening teaching, learning and assessment;
- a mechanism for connecting curricular and extracurricular entrepreneurship provision;
- a platform for institutional coordination and partnership development; and
- a reference point for monitoring progress and supporting continuous improvement.

It is not intended to replace effective initiatives already operating within universities. Rather, it provides a common architecture through which existing and future initiatives can be connected, strengthened

and aligned with the broader goal of developing entrepreneurial graduates.

Through this framework, EDHE invites universities to consider not only how entrepreneurship is taught, but how entrepreneurial capability is cultivated throughout the student journey and supported by the institution. Its implementation will depend on institutional ownership, academic engagement, student participation, appropriate resourcing and continued collaboration across the higher education sector.

The IECEF is offered as a shared foundation for this work and as an invitation to South African universities to advance from entrepreneurship activity towards the systematic and inclusive development of entrepreneurial capability.



Dr Edwell Gumbo

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Acknowledgement of contribution

The Integrated Entrepreneurship Capability and Embedding Framework (IECEF) was developed through collaborations led by Dr Khosi Radebe and Prof Ayansola Ayandibu on behalf of Universities South Africa (USAf) under the Entrepreneurship Development in Higher Education (EDHE) Programme.

The aim of the project was to provide South African universities with a practical, evidence-based framework for embedding entrepreneurship across institutional strategy, teaching and learning, research, innovation partnerships and student development. The framework draws on national and international literature analysis

and synthesis, institutional practice, stakeholder engagements, reports and extensive experience in entrepreneurship education.

The authors extend their sincere appreciation to all stakeholders including the EDHE Community of Practice, institutional leaders and entrepreneurship practitioners who contributed their expertise and insights throughout the development of this framework. Their collective knowledge and contribution helped shape a framework that aims to strengthen entrepreneurial capability and institutional impact within the higher education sector.

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Executive Summary

Higher education's core functions are changing alongside global socio-economic and technological shifts. Graduates from today's universities need solid professional knowledge as well as the core competencies required to cope with uncertainty and solve complex social problems. Among these, entrepreneurial competence has broadened beyond the narrow, traditional definition of entrepreneurship as simply starting a business to a general competence applicable to all professional and social contexts. It covers opportunity recognition, creativity, problem solving, collaboration, adaptability and value creation.

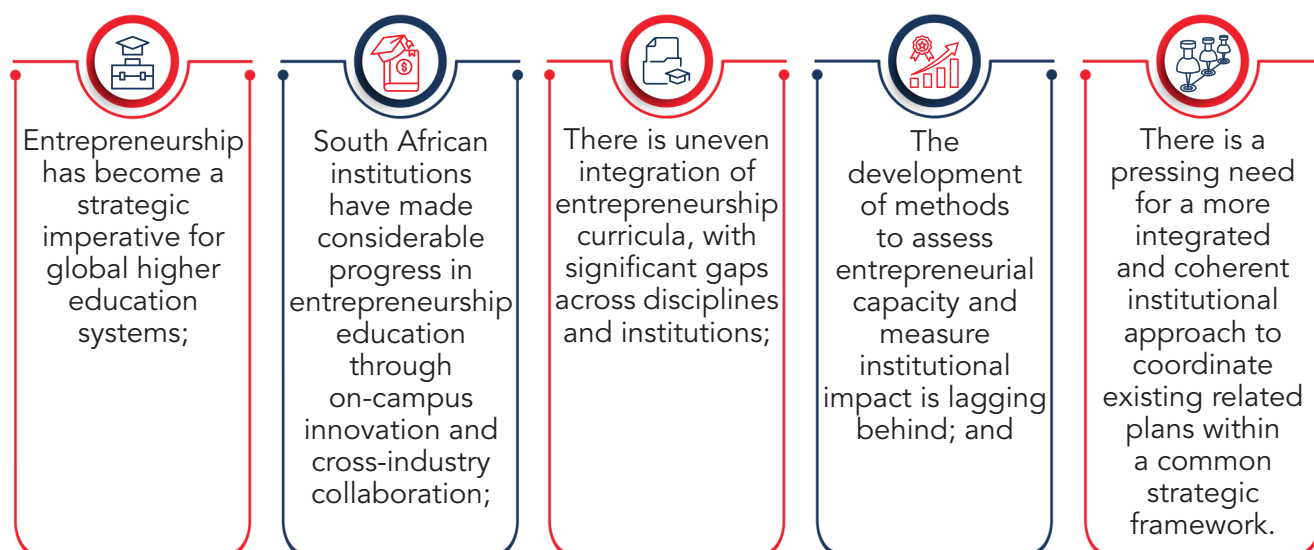
The South African higher education sector has achieved a series of tangible accomplishments in the development of entrepreneurship education over the past ten years by drawing on national policy initiatives, institutional strategic arrangements, and industry-wide support programmes. Institutions nationwide have progressively expanded their entrepreneurship centres, improved on-campus innovation ecosystems, introduced structured entrepreneurship courses, and offered students more practical entrepreneurship opportunities. But significant challenges continue to constrain entrepreneurship education in South Africa: the level of integration of entrepreneurship education across different institutions, academic departments and programmes is highly uneven, and the quality of implementation varies considerably across dimensions including alignment with institutional strategies, curriculum integration, pedagogical adoption, assessment practices and quality improvement.

To address this gap / the above-mentioned gap, the Entrepreneurship Development in Higher Education (EDHE) programme under Universities South Africa (USAf) commissioned the development of the Integrated Entrepreneurship Capability and Embedding Framework (IECEF). This framework provides South African higher education institutions with a coherent, evidence-based and flexible approach to embedding entrepreneurship. It does not create a

standardized model for mandatory implementation, but provides a broad conceptual framework that institutions can tailor to their own mission, strategic priorities, and local contexts.

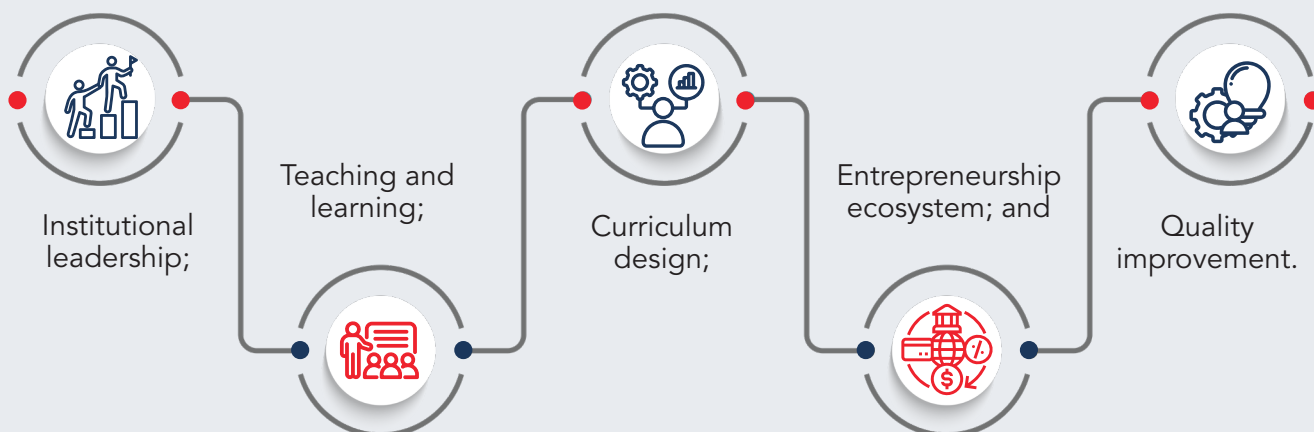
The evidence base for the framework is developed from

international literature and comparative institutional practice, national policy systems and stakeholder engagement outcomes. The five core conclusions are presented below. In response to these findings, the framework defines entrepreneurial competence



as a composite core literacy for graduates that can be actively cultivated in across all disciplines and qualification levels. From the perspective of universities as institutions, the framework calls for a common

entrepreneurship education built on five core areas:



These areas include three levels of action dimensions within universities: macro institutional level, meso programme level, and micro teaching and learning level.



The domains of the framework are formally defined. This set of arrangements is able to enhance the alignment among policies, strategies, curricula, pedagogies and graduate competency development, whilst maintaining enough flexibility to meet the differentiated needs of different universities in the sector.

It is important to emphasise that the present framework is an enabling tool and not a compliance or certification requirement. It can accommodate the diversity of higher education institutions across South Africa, respect differences in the level of maturity of entrepreneurship education at each institution and allow all institutions to adapt their implementation approaches to their own local contexts, provided they are consistent with the nationally unified principles for embedding entrepreneurship curricula.

The framework will provide the core strategic support for a systematic upgrading of entrepreneurship education in the higher education sector of South Africa, supporting South African universities in preparing graduates who can create value within increasingly complex, dynamic and uncertain environments.



CHAPTER 1: Introduction

Background

Entrepreneurship education has gained strategic importance across the global higher education sector. At the same time, the definition of entrepreneurship has evolved from a narrow understanding, limited only to launching new enterprises, to a general graduate competency applicable to all types of professional and social contexts, supporting the development of individuals' innovative thinking, environmental adaptability, and responsible leadership.

In South Africa, there has long been agreement at the highest level that entrepreneurship education should be implemented. At national level, entrepreneurship education is one of the key mechanisms that drive national development, as set out in both the National Development Plan (NDP 2030) and the National Plan for Post-School Education and Training (NPPSET 2021–2030). EDHE has also enabled the initial roll-out of entrepreneurship education at the institutional level.

However, entrepreneurship education in South Africa is still faced with a significant development challenge of uneven integration (Khoza, 2026). Most universities currently provide entrepreneurship education primarily through extracurricular programmes such as entrepreneurship centres, innovation hubs, incubators, and start-up competitions, rather than systematically embedding entrepreneurship education into the full cycle of teaching, learning and assessment in formal curricula (Sivasanker & Beharry-Ramraj, 2026). This leads to various restrictions on the development of students' entrepreneurship competency, including restrictions related to students' major, institutional context and the voluntary nature of participation.

To address this dilemma, USAf, through EDHE, commissioned the IECEF as a framework grounded in evidence that South African universities can use to embed entrepreneurship in the curriculum, supporting the transformation of the country's higher education

sector and inclusive socio-economic development. Entrepreneurship education should be upgraded from a scattered extracurricular supplement to a graduate competency embedded across all disciplines, so that its value for national development can be fully realised.

This project team is releasing this report of the Integrated Entrepreneurship Capability Embedding Framework for the South African higher education sector. The framework is built around providing a systematic, coherent solution for South African higher education institutions of varying backgrounds, supporting all universities to develop entrepreneurship competency as a planned, curriculum-integrated, measurable core competency for graduates. To make the framework rigorous, the project team has conducted four core tasks in sequence: a literature review of domestic and international studies, a comparison of entrepreneurship education practices in different regions, an analysis of national policies and existing institutional frameworks, and a stakeholder

Overview of the Integrated Entrepreneurship Capability and Embedding Framework (IECEF)

The key framework presented in this document is the IECEF, which gives higher education institutions a structured pathway to implement entrepreneurship education in practice. The framework suggests that entrepreneurship education should be integrated across the entire teaching, curriculum design, institutional leadership and University-enterprise cooperation, rather than being restricted to stand-alone course modules or extracurricular activities. It is developed from a systemic perspective and can be customised to reflect the backgrounds, priorities and levels of entrepreneurship education maturity of different institutions. The framework consists of five interrelated domains, and Figure 1.1 introduces its basic structure and working logic.

National framework for Embedding entrepreneurship into the curriculum

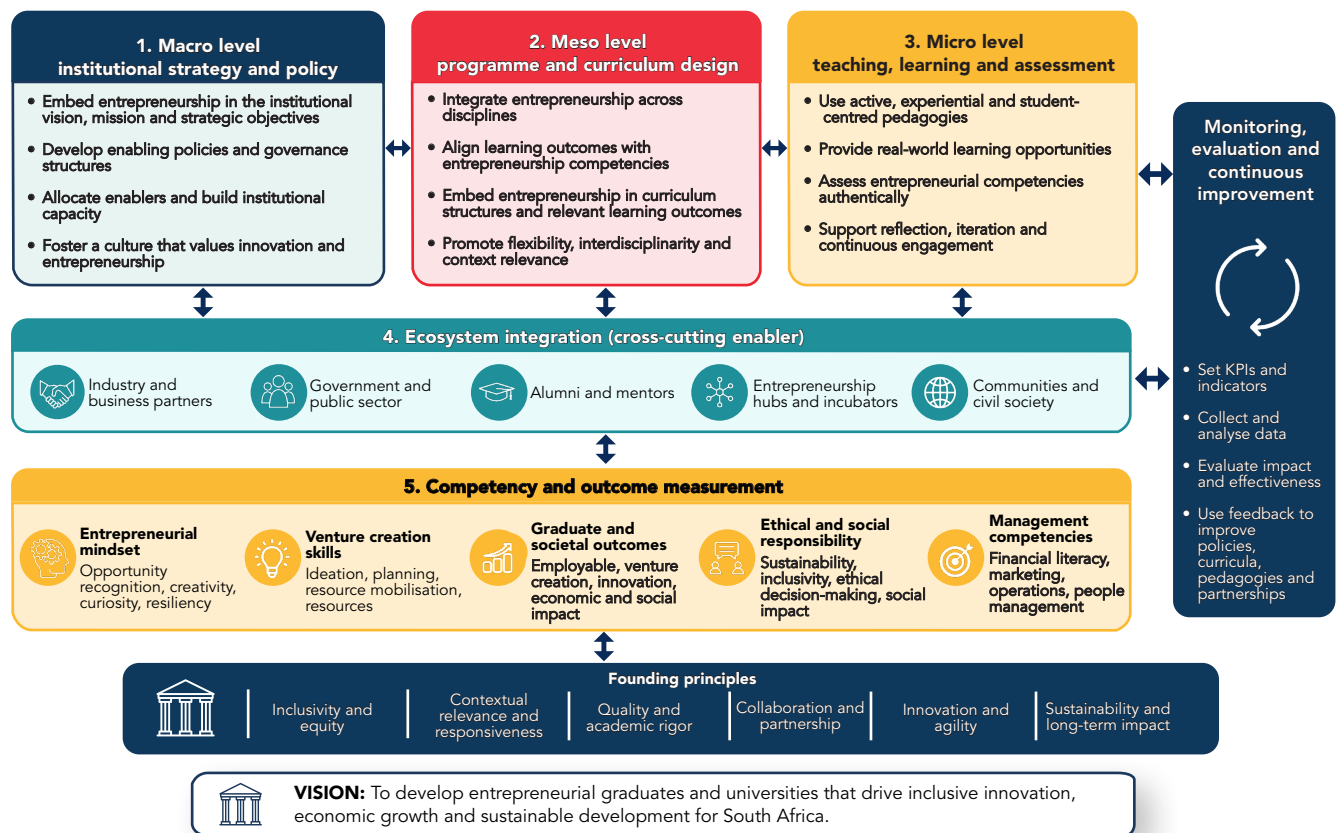


Figure 1.1: Integrated Entrepreneurship Capability and Embedding Framework (IECEF)

The IECEF is structured around five core domains with distinct functions. Institutional Leadership and Strategic Commitment provides the vision and governance. The Curriculum Design domain integrates entrepreneurial competencies across the entire range of disciplines. The Teaching, Learning and Assessment domain promotes student-centred experiential learning. The Entrepreneurship Ecosystem and Partnerships domain coordinates all relevant stakeholders on and off campus. The Quality Improvement, Monitoring and Continuous Improvement domain ensures the sustained implementation of the framework. The five domains form an integrated system with a synergistic, interconnected logic of operation.

A distinctive feature of the framework is the Macro–Meso–Micro Alignment Model, whose three levels are the university-wide institutional level, the curriculum

level of the faculty and department, and the level of teaching and student engagement. Alignment across these levels is what enables the continuous and stable implementation of entrepreneurship education on university campuses. The framework’s aim is to produce entrepreneurial graduates who can identify opportunities, solve complex problems and create value for society.

Structure of the framework document

The remainder of this document is organised into four further chapters. Chapter 2 sets out the rationale for change. Chapter 3 organises the evidence supporting the framework. Chapter 4 explains the IECEF’s structure and application pathways.

CHAPTER 2: The case for change

The changing role of higher education

The Changing Role of Higher Education

This chapter first addresses the transformation background of the global higher education system, mapping the core shifts between the traditional functions of universities and the new requirements now placed on them. This study systematically examines developments and transformations in the global higher education field over the past two decades and presents its core argument through three progressive themes.

Higher education in a changing global context

The first theme concerns the core drivers and value shifts of global higher education transformation. This identifies the central driving forces behind the transformation of the sector, and highlights that within the knowledge economy, universities have transformed from traditional knowledge-transmission institutions into a strategic core of the global innovation network, supporting the accumulation of key human capital.

From knowledge transmission to capability development

The second theme concerns empirical evidence of the transformation of teaching models across regions. This is based on cross-regional comparative research conducted across the world's core higher education regions to examine the fundamental changes in what global employers require of university graduates' skills. Besides basic professional knowledge, employers have also added critical thinking, cross-boundary collaborative capacity and adaptability to changing environments to their list of core required skills. This demand has pushed higher education towards competency-based education, authentic learning, experiential pedagogies and graduate attributes that prepare students for lifelong learning and adaptability.

Entrepreneurship within the contemporary university

The third theme concerns the reconstruction of the meaning of entrepreneurship education and its rising strategic importance. Entrepreneurship education has moved away from the traditional narrow stereotype of being only about starting commercial ventures and has emerged as a key subject within global higher education policies, institutional strategies and curriculum discourse. Universities worldwide have made substantial institutional investment in entrepreneurship education, to prepare graduates to face a complex and uncertain future environment and have established a range of institutional structures and support mechanisms seeking to build an on-campus ecosystem suited to cultivating innovative and entrepreneurial talent.

However, based on the cross-institutional international literature reviewed for this study, there is generally a clear implementation gap in entrepreneurship ecosystem construction globally. This core contradiction, the gap between institutional vision and curriculum practice, is a common problem confirmed across the international research reviewed. Most universities' entrepreneurship promotion activities have long been confined to the single framework of dedicated entrepreneurship centres or business schools, which fail to break down departmental barriers to form collaborative synergy. A whole-institution approach must therefore be adopted for university entrepreneurship education to achieve meaningful outcomes in practice. This must include institutional strategy, curriculum design, the entire process of teaching and learning, multi-dimensional assessment systems, and the participation of on- and off-campus ecosystem stakeholders. The development of entrepreneurial talent cannot be left to a few departments to carry alone.

Implications for South African higher education

Against this backdrop of a shared global challenge, the analytical lens now turns to the South African higher education context. South Africa has one of the highest youth unemployment rates in the world, and domestic higher education institutions carry a core mission to relieve employment pressure and support economic development through entrepreneurship education.

The South African context

This section sets out the distinctive strategic position and local development context for promoting entrepreneurship education in South Africa, anchors youth unemployment as a central development challenge, and sets out the core requirements for deploying an institution-wide entrepreneurship pathway across South Africa's higher education sector.

Youth unemployment and graduate employability

For decades, higher education has been the main global route for people to improve their job prospects (Awashreh, 2026). But the global labour market has taken on entirely new features: competition is intensifying, and uncertainty has increased sharply. The rapid pace of technological change has accelerated automation and digital transformation, fundamentally altering the nature of graduate employment; working professionals now need to master comprehensive abilities that go beyond professional knowledge alone (Li, 2024). The traditional notion of employability, focused on securing stable employment immediately after graduation, is increasingly outdated.

The employability of contemporary graduates must therefore be redefined to include the ability to adapt to changes in the labour market, to identify and create opportunities, to innovate in organisations, to create sustainable enterprises,

where appropriate, and to contribute to economic and social development. This also requires colleges and universities to produce graduates who can manage uncertainty and create value in a variety of occupational contexts.

Entrepreneurship education is an important mechanism through which universities can strengthen graduate employability (Ayandibu, 2025). It enables graduates to succeed within a rapidly changing labour market and contributes to the country's national development goals by developing entrepreneurial mindsets, opportunity recognition, innovation capacity, and problem-solving ability.

National policy imperatives

The South African government has, in succession, put in place the NDP 2030 and NPPSET. USAf has also put in place support programmes at institutional level to match these policies. Entrepreneurship education has now become a key element of the national higher education agenda in South Africa, moving beyond the stand-alone initiatives of individual universities. All higher education institutions are expected to embed entrepreneurship education into teaching, learning and institutional strategy to support graduate success, innovation, and the achievement of national development goals

(Nor et al., 2025).

The role of universities in national development

Universities have long been recognised for three traditional core functions: talent cultivation, research, and social service. As the world enters a new stage of innovation-driven development, new demands have been placed on the scope of universities' functions. In addition to upholding their traditional core values, universities are also required to be deeply embedded in national innovation chains, becoming irreplaceable actors within national innovation systems. This global trend has also been a powerful driver of the transformation of South African higher education. In response to national

development needs, local universities have actively promoted entrepreneurship education and introduced a series of practical implementation carriers and teaching arrangements, including entrepreneurship centres, innovation hubs, incubators, accelerators, enterprise development programmes, entrepreneurship modules, multi-disciplinary innovation challenges and university–industry partnerships (Kachamba & Enerst, 2026).

These initiatives indicate that South African universities have made progress in entrepreneurship education incrementally. However, a national diagnostic survey conducted for this study points to a core implementation dilemma: the vast majority of entrepreneurship resources and related arrangements are overconcentrated in a small number of top universities and their dominant disciplines, leading to severe inequality of entrepreneurship participation opportunities for students across different institutions and academic backgrounds. More importantly, these entrepreneurship education initiatives have not been systematically embedded into the curricula of all disciplines and qualification levels, making it difficult to achieve the aim of cultivating entrepreneurship competencies for all students.

Why entrepreneurship matters now

The combination of South Africa's socio-economic challenges, evolving labour market demands, and a supportive national policy environment creates an opportunity to strengthen entrepreneurship education (Maka, 2023). The question facing the sector is no longer whether entrepreneurship should form part of higher education, but how it can be embedded coherently and educationally meaningfully, extending beyond additional modules or extracurricular activities into curriculum design, teaching, learning, assessment and institutional strategy.

Entrepreneurship as a graduate capability

This section traces the evolution of the concept of entrepreneurship within the higher education sector over the last three decades, along clear logical stages.

The evolving concept of entrepreneurship

The first stage is the foundational stage of the old paradigm. The central focus of entrepreneurship education practice in traditional higher education was narrow, aimed only at developing individuals' capability to start and manage new businesses. Related courses were offered only in business schools and business-related disciplines. At that time, entrepreneurship was seen as a single economic activity closely tied to business founding, business planning and enterprise management, directed exclusively at those who aimed to become business owners.

The second stage is a major cognitive shift. The modern academic community has offered a new definition of entrepreneurship. It is a multi-dimensional general-purpose competence in a much wider scope than new business creation. Its fundamental elements include opportunity identification, resource mobilisation and the creative response to challenges, all for the sake of creating economic, social or environmental value. This definition acknowledges that entrepreneurial activities are relevant to all types of careers, organisations and communities, and that they apply to all groups of people, not just founders of new ventures.

The third stage works through the real-world implications of this conceptual shift. This conceptual change has transformed entrepreneurship in an independent academic discipline into a common educational approach that cultivates and nurtures critical thinking, capacity for responsible innovation and deliberate approaches to addressing uncertainty among graduates. It also changes the focus of entrepreneurship education from teaching specific knowledge, to developing people who are able to think and act entrepreneurially in their lives and work.

Entrepreneurship beyond new venture creation

As Wise's (2024) study points out, the application of entrepreneurship has expanded beyond traditional boundaries. It is more than just about individuals creating new businesses, but about innovation inside organisations and transformation in the public sector and responses to social and environmental issues. Entrepreneurship is a broad-based competence today that is not limited by a person's job or

educational background and has led to concepts such as entrepreneurial universities, entrepreneurial graduates and entrepreneurial ecosystems. For all these reasons, entrepreneurship education must move from a niche professional program to a core component of the skill set of all graduates

Entrepreneurship as a transversal graduate attribute

Entrepreneurship should be viewed as a cross-cutting trait that all graduates can develop. This is consistent with the general educational goal of developing transferable skills. Its core competency dimensions of opportunity recognition, complexity management, boundary-crossing collaboration and diverse value creation can complement specialised disciplinary knowledge in all domains. Entrepreneurial capabilities can act on and strengthen any academic discipline, far from devaluing disciplinary knowledge.

Curriculum implications

The current model of entrepreneurship education, based on stand-alone modules, extracurricular activities and dedicated entrepreneurship centres, is insufficient on its own. Entrepreneurial competencies need to be embedded across the whole curriculum through institutional strategy, programme design, learning outcomes, teaching methods, assessment practices, and graduate attribute frameworks (Olatunde & Akinsanya, 2026). This must include all disciplines, including engineering, health sciences, law, education, agriculture, humanities and creative arts, to support systematic curriculum reform. This shift in emphasis enables institutions to move beyond measuring participation in entrepreneurship activities, towards evaluating students' competence development and graduate outcomes, giving all students equal opportunity to develop entrepreneurial competencies regardless of discipline or career aspirations.

This broad definition of entrepreneurship provides the knowledge base for the IECEF.



Chapter 3: Key insights from the evidence base

Introduction to the evidence base

The IECEF presented in this study is not only a theoretical framework. It is based on strong evidence, in multiple layers and dimensions. The supporting system for the framework was built in parallel with the framework itself to ensure its rigour and its applicability to real-world situations, thereby avoiding the limitations of generic frameworks that overemphasise theory at the expense of empirical grounding. To identify the priorities and practical contexts to which the framework should respond, the study first examined out the results of transnational comparative research on entrepreneurship education covering Africa, Europe, the United States and Asia.

The study used four research methods comprehensively: systematic international literature review, comparative policy analysis, multi-context university overview and curriculum analysis. These procedures helped to identify three interrelated analytical dimensions that span macro-level institutional strategies, meso-level programme and curriculum design, and micro-level teaching, learning and assessment practices. The process allowed the study to identify common models, contextual differences, and implementation challenges across higher education systems.

Based on the above findings, this study further synthesised the relevant literature on entrepreneurial competence, curriculum theory and competence-based education. This work not only provided the interpretive basis for the findings of the above comparative research, but also laid the theoretical foundation for the core concepts and principles of the IECEF. It goes beyond describing practices of entrepreneurship education and explores the conditions under which entrepreneurship education can grow into a coherent, measurable educational competence that can be integrated into curricula.

This study used relevant content from two types

of authoritative policy frameworks: international and national, in terms of the policy dimension. Internationally, it refers to policy positions of the OECD, UNESCO and the European Commission that all list entrepreneurship as a key graduate competence underpinning innovation, employability and lifelong learning. At national level, it refers to related policies of South Africa's National Development Plan 2030 (NDP 2030), NPPSET and EDHE. All these national policies focus on entrepreneurship as a strategic priority in an effort to improve the development potential of graduates and boost the socio-economic development of the country.

Rather than analysing each source of evidence in isolation, the study uses an evidence-synthesis approach to identify consensus points across the evidence base, extracting the recurring patterns of entrepreneurship embedding in higher education systems rather than offering only descriptive overviews. The synthesis shows that, while context differs across countries and institutions, two core dimensions of current entrepreneurship practice are highly consistent: the strengths of existing entrepreneurship practice, and the systemic challenges that hinder effective curriculum integration.

Supporting evidence was collected in Table 3.1 from which the IECEF is developed. By integrating streams of evidence, the study was able to generate five core insights that act as the conceptual bridge between the empirical research and the framework formally introduced in Chapter 4.

The in-depth analysis in Table 3.1 indicates that the key findings of many evidence streams eventually coalesce into five common themes. These are not isolated observations but consistent judgements,

Table 3.1. Summary of the Evidence Informing the Development of the Proposed Framework

Evidence base	Evidence across the review	Cross-cutting interpretation	Illustrative sources	Implications for the proposed framework	Key insight
International and national policy review	Entrepreneurship is consistently positioned within higher education policy as a mechanism for strengthening innovation, graduate employability, economic participation and national development.	There is strong convergence across policy environments that entrepreneurship should form part of the higher education mission.	OECD; UNESCO; European Commission (EntreComp); African Union; NDP 2030; NPPSET; EDHE.	The framework should position entrepreneurship as an institution-wide strategic priority rather than a standalone initiative.	Entrepreneurship has become a strategic priority across higher education systems.
Institutional analysis (Africa, Europe, USA, Asia and South Africa)	Universities have established entrepreneurship centres, incubators, innovation hubs, competitions, accelerators and industry partnerships, demonstrating substantial institutional investment.	Entrepreneurship is highly visible across institutions, but implementation approaches differ considerably.	Continental institutional review; EDHE institutional landscape.	The framework should build on existing institutional strengths rather than replace them.	Significant progress has been made across higher education institutions.
Curriculum and pedagogical review	Entrepreneurship is often concentrated within business schools or isolated modules, with inconsistent integration across programmes, faculties and qualification levels.	Curriculum embedding remains fragmented despite strong institutional commitment.	Continental curriculum analysis; comparative institutional review.	The framework should support coherent curriculum integration across macro, meso and micro levels.	Entrepreneurship remains unevenly embedded within formal curricula.
Literature review and comparative analysis	Experiential learning is increasing globally; however, competency assessment, evaluation frameworks and outcome measurement remain underdeveloped. Student participation is often measured, but capability development is not.	The challenge is no longer whether entrepreneurship should be adopted, but how it should be systematically embedded within higher education.	Multicontinental synthesis; South African diagnostic; stakeholder insights.	The framework should provide an integrated, coherent and adaptable approach to curriculum embedding.	The evidence supports the development of an integrated entrepreneurship capability and embedding framework.
Overall synthesis of all evidence streams	Strong policy support, institutional commitment and growing practice provide a solid foundation for the next phase of entrepreneurship education. However, fragmented implementation limits systemic impact.	The challenge is no longer whether entrepreneurship should be adopted, but how it should be systematically embedded within higher education.	Multicontinental synthesis; South African diagnostic; stakeholder insight.	The framework should provide an integrated, coherent and adaptable approach to curriculum embedding.	The evidence supports the development of an integrated entrepreneurship capability and embedding framework.

evident across a range of evidence streams including international academic outputs, comparative institutional practices, policy analyses and stakeholder perspectives. Together, they offer empirical and conceptual support for the IECEF proposed in this study.

Key Finding 1: Entrepreneurship has become a strategic priority across higher education systems

The study's comprehensive review of the existing evidence base produces clear and consistent core conclusions: entrepreneurship education has evolved from a specialised educational activity to a strategic priority within higher education systems globally. The comparative analysis of this study shows that although there are differences in terminology, policy context and institutional practice paths in different countries and regions, the core positioning of entrepreneurship education shows strong global convergence; that is, the core role of entrepreneurship education is to help graduates adapt to the increasingly complex economic, technological and social environment. This conclusion is a common thread in the three pillars that support the analytical framework of this study: review of international literature, comparative institutional evaluation and policy analysis at national and international levels.

Evidence emerging from the review

This study uses three core research methods: systematic review of international literature, comparative institutional analysis and policy analysis at national and international levels. Entrepreneurship education has gradually evolved from a marginal, niche educational activity to a core strategic priority in the global higher education system. The terminology, policy contexts and institutional trajectories differ from country to country, but the basic positioning of entrepreneurship education is very similar across the globe.

In terms of concept, current research has broken away from the traditional view that entrepreneurship is synonymous with starting new businesses. Entrepreneurship education is now recognised as an interdisciplinary educational approach that enables students to develop

the capacity to identify opportunities, resolve complex issues, create value and cope with uncertainty. This shift in perception is true for the four main areas discussed in this study: the literature on entrepreneurship education, research on competency-based education, graduate competency frameworks, and research on higher education transformation.

Entrepreneurship education has been incorporated into institutional practices, university strategies, graduate development agendas and national higher education priorities in Africa, Europe, Asia and the United States. Its implementation is specific to institutional context, governance structures and national strategies, and is delivered through five shared platforms: dedicated entrepreneurship centres, innovation ecosystems, curriculum reform programmes, experiential learning opportunities and strategic alliances. Entrepreneurial competencies are included among the key skills for graduates in the policy frameworks of UNESCO, the OECD and the European Commission, as part of their support for innovation, employment, lifelong learning and sustainable development.

To explain the development basis of entrepreneurship education in the higher education sector of South Africa, this study reviews three national policy frameworks, namely the National Development Plan 2030 (NDP 2030), NPPSET and EDHE. In summary, these policies position entrepreneurship education as a key mechanism to improve graduate outcomes, increase institutional responsiveness, and contribute to the country's inclusive development.

Synthesis of the evidence

This study synthesises different forms of evidence across the dimensions of global academic, policy and institutional practice, and draws out a widely shared consensus: entrepreneurship education has become a core element of contemporary higher education, notwithstanding the diversity of implementation approaches adopted by different institutions. The key question in the current field has moved from

‘whether to embed entrepreneurship education into an institution’s mission’ to ‘how to develop embedded models that combine educational value, institutional coherence and sustainability across different disciplinary and organisational contexts’. In addition, entrepreneurship education is no longer the business of business schools or entrepreneurship centres alone; it is a strategic priority that needs to be promoted in a coordinated way throughout the entire institution.

Implications for the proposed framework

Based on this review, the IECEF is proposed to support institutions in translating strategic commitments into systematic curriculum practice, directing institutions to move from a fragmented, siloed approach to entrepreneurship projects towards an integrated curriculum-embedding model across the institution, through the alignment of five key dimensions: institutional leadership, curriculum design, teaching and learning, assessment, and ecosystem engagement.

Key Finding 2: Significant progress has been made across institutions

Both internationally and locally in South Africa, higher education institutions tend to identify entrepreneurship education as a significant institutional priority and invest significant effort into developing programmes related to entrepreneurial learning, innovation and graduate development. Although the scale, maturity and institutional focus of these programmes vary, existing evidence confirms that the higher education sector has created a firm foundation to support future curricular transformation.

Evidence emerging from the review

This section reviews the development of entrepreneurship education based on a comparative study of a multi-regional global sample of universities. Currently, entrepreneurship education is a core institutional priority identified by all universities worldwide, including South African universities. They have invested in programmes on entrepreneurial learning, innovation and career development for graduates. Despite differences in programme scale, maturity, and institutional focus between countries and

individual universities, the higher education sector has established a solid foundation for potential curriculum transformation.

Rewrite the paragraph so that the three approaches are explicitly and consistently listed.



EDHE has enhanced inter-university collaboration and leadership development in South Africa, increasing attention to entrepreneurship education at local universities and advocating for its inclusion on core institutional agendas.

Entrepreneurship education is no longer an emerging practice within the higher education sector; it is now in a stage of active implementation and continuous iteration to meet educational, economic and social needs.

Synthesis of the Evidence

Institutions of higher education around the world do not follow a single, uniform model for implementing entrepreneurship education. Each institution builds its approach based on its own mission, strategic priorities, disciplinary strengths, regional context and available resources. Variations in implementation models are a measure of institutions’ adaptive capacity, and should be regarded as a core strength rather than a developmental deficit.

Implications for the proposed framework

The IECEF proposed in this study does not replace

existing entrepreneurship initiatives, entrepreneurship centres, or existing programmes at any institution. Rather, it is a scaffold for strategic alignment, curricular integration, and intra-institutional coordination of existing initiatives, designed to be compatible with the differing entrepreneurship education maturity levels of institutions, integrating a nationally unified reference point with support for context-specific adjustment.

Key Finding 3: Entrepreneurship remains unevenly embedded within curricula

While the evidence demonstrates that entrepreneurship has become a strategic priority and that universities have made substantial progress in advancing entrepreneurship education, a third, and particularly significant, finding emerged from the evidence base. Across the literature, policy review and comparative institutional analysis, entrepreneurship continues to be embedded inconsistently within higher education curricula. Although entrepreneurship is increasingly visible within institutional strategies and extracurricular activities, its integration into formal teaching, learning and assessment remains uneven across institutions, faculties, programmes and qualification levels.

This finding emerged consistently across the international comparative review and represents one of the most significant challenges confronting entrepreneurship education in higher education. the problem is not a lack of initiatives, but a lack of coherent, systematic plans for curricular embedding.

Evidence emerging from the review

This study uses three research methods: literature review, policy review, and comparative analysis of international higher education institutions. The collected evidence indicates that the current integration of entrepreneurship education into the educational system of South African universities is largely unbalanced. Although entrepreneurship education has become a strategic priority for most universities and has achieved some implementation outcomes, the level of entrepreneurship education integration differs widely

across universities, schools, majors and even degree levels. Most entrepreneurship education activities are still present only in the strategic documents of universities or as isolated extracurricular activities; very few programmes are systematically integrated into formal teaching and academic assessment. All three research methods support this central finding, and it has strong empirical support.

The study also shows that the core contradiction in the current field of entrepreneurship education in South Africa's higher education has shifted from "a lack of entrepreneurship-related programmes" in the early stage to "a lack of coherent implementation pathways that can systematically integrate various programmes into the educational system."

Cross-institutional comparison of the cases of the surveyed universities shows five main characteristics and existing challenges: First, entrepreneurship education is highly concentrated in the business and management programmes, and the coverage in other disciplinary fields is extremely low. Second, while there are positive examples of interdisciplinary entrepreneurship education in areas like engineering, health sciences, agronomy, education and the creative industries, most of these programmes are small, institution-specific initiatives, and no university-wide systematic strategy has been formed. Third, much of the entrepreneurship education provision is delivered outside the formal teaching system, as standalone modules, optional courses or extracurricular practice projects, and is not integrated into professional training plans or graduate development pathways. Fourth, the various student entrepreneurship initiatives, like entrepreneurship centres, innovation hubs and incubators, have indeed created practical value in building a campus entrepreneurship ecosystem, but participation in these programmes is voluntary, and they mainly serve students who are already actively seeking entrepreneurship opportunities. Fifth, the maturity of entrepreneurship education varies greatly among different institutions: some universities have taken measures to integrate entrepreneurship education into the whole process of curriculum development, graduate competency training, and teaching innovation; however, some are still at the

initial stage with only a few isolated projects led by individual scholars, entrepreneurship centres, or specific schools.

Differences in the maturity of entrepreneurship education across institutions can largely be attributed to Differences in their institutional contexts, development priorities, resources available and strategic direction. The main pain point is the long-standing lack of a unified framework capable of guiding the systematic embedding of entrepreneurship education into the mainstream curriculum. The geographical location of the institution, students' disciplinary background and the voluntary nature of participation limit students' chances to develop entrepreneurial competencies, and no systematic curricular structure has been established.

Synthesis of the evidence

The problem is not one of universities' unwillingness to invest resources, but rather the inherent complexity of embedding entrepreneurship education into a heterogeneous higher education landscape. The solution to this problem lies in the coordination of four basic elements: university leadership, curriculum planning, teaching practice, and graduate competency development.

Implications for the proposed framework

The foremost priority of today's entrepreneurship education is not to establish new independent programmes or to expand sporadic extracurricular activities, but to systematically integrate entrepreneurial competency training into the existing curriculum system. This approach directly supports the IECEF framework, which is structured around three dimensions of higher education: the macro institutional level, the meso curriculum level and the micro teaching, learning and assessment level. This framework has the potential to close the gap between university strategy and student learning, positioning entrepreneurship education as a measurable, full-cycle competency as opposed to a discrete practical activity.

Key Finding 4: Assessment and measurement remain underdeveloped

The fourth core research finding of this study is drawn

from the existing body of evidence relating to the assessment and measurement of entrepreneurship education. There has been substantial growth in entrepreneurship programmes, curriculum innovation and experiential learning in higher education. However, systematic approaches to assess entrepreneurial competencies and to evaluate the impact of entrepreneurship education remain underdeveloped. Assessment is one of the least developed aspects of the implementation of entrepreneurship courses.

This is not to suggest that there are no evaluation practices in entrepreneurship education. On the contrary, current assessments are fragmented and inconsistent and often do not correspond to the core entrepreneurial competencies that higher education institutions aim to develop. The root cause of this problem lies in the fact that entrepreneurship education has shifted towards developing comprehensive competencies in graduates, but assessment has not kept up with this shift.

Evidence emerging from the review

At present, the field of entrepreneurial competency has not yet formed a mature and comprehensive assessment and measurement system. There is a very distinct core contradiction in this field: the entrepreneurship education curriculum system is continuously evolving, while the supporting assessment system remains underdeveloped and disconnected from curricular developments. The purpose of entrepreneurship education has long changed from the establishment of new venture creation to the development of general and comprehensive entrepreneurial competencies. However, assessment practices have completely failed to keep pace with this change: assessment methods remain fragmented and scattered, and unified assessment standards have not been established.

In this research review of the development of global entrepreneurship education, three sets of core current conditions can be identified. First, innovations on the teaching side are widely implemented: many higher education institutions around the world have adopted experiential teaching methods, including project-based learning, challenge-based learning, community-engaged learning, innovation projects,

business simulations, and interdisciplinary collaboration, to replace the purely theoretical teaching used in earlier years.

Second, the lag on the evaluation side is a real problem: most institutions still rely on traditional outputs, such as business plans, course reports, pitch presentations and activity participation, as the core of their assessments, and rarely assess opportunity recognition, creativity, resilience, collaboration, value creation, ethical decision-making or entrepreneurial mindset. Third, there is inconsistent application of universal competency frameworks: international frameworks such as EntreComp provide clear guidance on capability definitions, but institutions vary widely in how they apply them, and only a small minority have developed mechanisms for progressive monitoring of entrepreneurial capability development or long-term impact assessment

Synthesis of the evidence

The development speed of entrepreneurship education has far outpaced the update speed of evaluation systems. Most institutions use participation in entrepreneurial activities as a proxy for educational success, rather than measuring actual development of entrepreneurial capabilities. Entrepreneurial capability is a composite capability comprising knowledge, skills, attitudes, behaviours and values that develops over long-term learning across multiple contexts; evaluation must therefore evolve towards developmental, competency-based assessment. It is important to distinguish clearly between measuring entrepreneurial activity and measuring entrepreneurial competency: traditional metrics such as the number of entrepreneurship modules, student participation headcounts, competition scale, or incubator project numbers reflect only the superficial activity level of entrepreneurship initiatives, and cannot confirm that graduates have actually acquired the competencies entrepreneurship education intends to develop.

Implications for the proposed framework

To improve the practical outcomes of entrepreneurship education, assessment and measurement should be given the same level of importance as curriculum design and teaching practice. For entrepreneurial competence

to be identified as a core skill for graduates, higher education institutions (HEIs) need a fully systematic and transparent mechanism covering the whole chain of defining, nurturing, assessing and continuously monitoring entrepreneurial competence. This study therefore proposes the IECEF on this basis. At the heart of the framework are three pillars that permeate the entire learning cycle of students:



This allows HEIs to demonstrate the level of graduates' entrepreneurship competence, to support the continuous improvement of the curriculum, to increase the accountability of HEIs, and to move institutions from merely reporting participation rates to demonstrating the actual impact of entrepreneurship education on graduates' employability and on institutional objectives. The higher education sector has already established a foundation for entrepreneurship education; the main remaining gap is the lack of coherence between curriculum and assessment.

Key Finding 5: The evidence demonstrates the need for an integrated entrepreneurship capability and embedding framework

The final and overarching insight emerging from the evidence synthesis is that the higher education sector has reached a point where the development of an integrated entrepreneurship framework is both timely and necessary. The preceding findings collectively demonstrate that entrepreneurship has become a strategic priority within higher education, that universities have made significant progress in

advancing entrepreneurship education, and that considerable innovation has taken place across institutional, curricular and pedagogical contexts. At the same time, the evidence consistently highlights persistent challenges relating to curriculum coherence, institutional alignment and the assessment of entrepreneurial capability.

Rather than representing isolated issues, these challenges are interconnected and reflect the absence of a common institutional approach to embedding entrepreneurship throughout the student learning journey. Collectively, the evidence suggests that the next phase of entrepreneurship education should not focus on expanding isolated initiatives, but on strengthening the coherence, integration and sustainability of existing practice through a shared conceptual framework.

Evidence emerging from the review

The evidence is clear that the time is right for an integrated framework. The sector has made real progress: entrepreneurship education is now an established strategic priority with wide-ranging innovation across institutions, curricula and teaching methods. But it still faces three persistent issues: a lack of curriculum cohesion, a lack of collaboration between institutions, and poor assessment of entrepreneurial competencies. These problems are interrelated; their

root cause is the absence of a unified institutional pathway for embedding entrepreneurship education across the whole of a student's learning journey.

Drawing on international academic literature, comparative institutional analysis, and policy review, the common development path across universities worldwide moves from entrepreneurship being regarded as an extracurricular activity or a business-school-only discipline, towards becoming a university-wide educational priority. Institutions across countries have invested in supporting resources such as entrepreneurship centres, innovation ecosystems, interdisciplinary teaching models and student entrepreneurship programmes. However, institutional fragmentation remains a widespread problem globally: multiple entrepreneurship programmes run in parallel without

a unified curriculum philosophy or institutional implementation model, and strategic commitments to entrepreneurship do not consistently flow through to curriculum design, teaching practice, assessment systems and graduate competency development. As a result, entrepreneurship education yields high-quality outcomes only in isolated pockets, rather than as a cohesive, university-wide endeavour. Similar implementation challenges are faced by institutions worldwide, regardless of national context or governance system. This is a systemic problem, not one specific to individual institutions or to South Africa.

Synthesis of the evidence

Entrepreneurship education in higher education has entered a new development stage. The work of the earlier phase, raising awareness, establishing institutional structures, and broadening student participation, is largely complete. The future development focus has shifted from expanding the number of entrepreneurship programmes to improving alignment across five core links: institutional strategy, curriculum design, teaching practice, assessment systems, and quality improvement. Rather than advocating a standardised, prescriptive model, this study frames the diversity of institutional pathways that have evolved under different higher education systems as a core strength.

Implications for the proposed framework

Based on this premise, this study developed the IECEF framework to complement and reinforce, not replace, the existing entrepreneurship education efforts of each institution. It addresses the core gap identified during the evidence compilation stage, provides a common reference baseline for the integration of entrepreneurship education at macro, meso and micro levels, and builds on existing development outcomes. The future of entrepreneurship education is not about adding isolated and scattered projects but about building an integrated institutional system. It is necessary to establish coordination across the entire chain, including leadership, institutional strategy, curriculum development, teaching practice, evaluation, quality assurance and cooperation with ecosystem partners, so that entrepreneurial competence ultimately becomes

a measurable graduate outcome. These evidence-based needs are specifically addressed by the IECEF. It combines structural discipline with flexibility, helping institutions to optimise existing practices, strengthen the coordination of the curriculum, and promote the cultivation of entrepreneurial competence across different disciplines and qualification levels, while respecting the developmental diversity of each institution.

The five core insights outlined in this chapter together form the evidence base on which the IECEF rests. They demonstrate that while entrepreneurship education has made significant strides, the next step is a more integrated, coherent and competence-oriented approach to curriculum embedding. The following chapter presents the conceptual foundations, design principles, and structure of the IECEF.

From evidence to framework

The evidence review of the global development of university entrepreneurship education shows that universities in all countries have actively promoted entrepreneurship education across four main areas: establishing dedicated entrepreneurship centres, building on-campus innovation ecosystems, expanding entrepreneurship-oriented experiential learning, and formally integrating entrepreneurship education into institutions' long-term development strategies. But in practice, there is a universal contradiction: fragmentation and uneven development. The way forward is not to create new entrepreneurship programmes, but to connect and strengthen existing practices.

Why a new framework is needed

The evidence reviewed does not point to a lack of institutional commitment. Universities have shown real leadership, innovation and investment in advancing entrepreneurship across teaching, learning and student development. The chal-

lenge is that these initiatives have often evolved independently, resulting in varying levels of curriculum integration, institutional alignment and student experience. As entrepreneurship continues to evolve from a specialised area of study towards a graduate capability relevant across all disciplines, institutions need a shared conceptual framework that connects institutional strategy, curriculum development, teaching practice and graduate outcomes, without prescribing a single institutional model.

Persistent challenges limiting systematic curriculum embedding

The cross-national and cross-institutional comparative review conducted for this study reveals four common challenges that hinder the systematic embedding of entrepreneurship education: inconsistent standards for interdisciplinary curriculum integration; significant gaps in the translation of institutional strategy into programme implementation; misalignment between on-campus entrepreneurship ecosystems and formal curricula; and the lack of mature competency assessment systems for evaluating graduates' entrepreneurship competence. These are field-wide challenges within a complex higher education system, not failures of individual institutions, and addressing them requires the coordination of multiple links to build a systematic solution

Bridging the policy-to-practice gap

Entrepreneurship education has been incorporated into national policies, institutions' medium- and long-term development strategies, and core competency requirements for graduates in most countries. These wide-ranging strategic commitments, however, have been consistently met with obstacles to implementation, and cannot easily be translated into coherent and unified curriculum practices. A persistent challenge is closing the gap between policy commitment and actual curriculum implementation. Bridging this gap requires an alignment mechanism spanning institutional planning, curriculum design, teaching and learning, assessment, and ecosystem engagement. This is the value of an integrated development pathway.

Towards an integrated approach

Integrated development is not the same as standardised, uniform requirements. Within the South African higher education context, institutions have different strengths reflecting their missions, disciplinary backgrounds and regional priorities. A national framework for entrepreneurship education tailored to South Africa must therefore balance strategic coherence with the flexibility to adapt to local contexts.

Chapter synthesis

This chapter has used the evidence base to elaborate the core rationale for the IECEF, which explicitly addresses three key challenges: inconsistency of curricula, lack of institutional alignment, and difficulties in assessing entrepreneurship competencies. The specific content of the framework is described in detail in the next chapter.



Chapter 4: The Integrated Entrepreneurship Capability and Embedding Framework (IECEF)

Introducing the Integrated Entrepreneurship Capability and Embedding Framework (IECEF)

Following the review of entrepreneurship education in South Africa's higher education system in the preceding chapters, this study identifies three substantive achievements to date: entrepreneurial competence has been established as a core graduate training goal for South African universities; universities have achieved significant breakthroughs in advancing the on-the-ground implementation of entrepreneurship education; and progress has been made in building supporting institutional ecosystems. However, three long-standing issues remain: a lack of cross-stage coherence in entrepreneurship education curricula; a lack of institutional coordination between teaching and research units and administrative departments; and a lack of a systematic evaluation system for students' entrepreneurial competence.

To address this gap, this study developed the IECEF. It is important to clarify that the IECEF is not a new, independent model of entrepreneurship education, but an enabling tool that integrates the existing strengths of university-led entrepreneurship education to achieve structured improvement. It moves away from the narrow framing of entrepreneurship education as solely about creating new ventures and available only to business students and instead grounds itself in the objective of nurturing competence-oriented, cross-disciplinary entrepreneurial literacy, using non-prescriptive design principles that accommodate the diverse development contexts of South African universities with different foundational conditions and institutional orientations.

The framework consists of five key dimensions: institutional leadership, curriculum design, teaching

and learning, assessment, and alignment with the wider innovation ecosystem. It is implemented at three levels – the macro institutional level, the meso programme and curriculum level, and the micro teaching and learning level – with the goal of systematically cultivating entrepreneurship competence for all graduates, in all disciplines and at all qualification levels.

This chapter aims to lay an evidence-based foundation for a model that South Africa's higher education sector can adapt and sustain over time.

Design philosophy

The design philosophy behind the IECEF is an evidence-based, competence-oriented tool that fits institutional systems. It aims to systematically integrate entrepreneurship education into university curricula. The framework is directly driven by the research findings presented in the previous chapter. While entrepreneurship education has become a strategic priority for higher education, three core pain points are faced by institutions of all types: insufficient curriculum coherence, low institutional adaptability, and the lack of an entrepreneurship competence assessment system. To tackle these challenges, the framework intentionally enhances the links between its five key modules: institutional strategy, curriculum design, teaching and learning activities, assessment systems, and ecosystem engagement.

The IECEF defines entrepreneurship as a graduate competence that can be developed in all disciplines and at all qualification levels, enabling graduates to

create value in business, public, social and community contexts. This differs from traditional entrepreneurship education models that focus only on business creation or isolated projects. It repositions entrepreneurship as a fully integrated educational competence rather than an add-on, peripheral course, strengthening subject-based learning and graduates' capacity to adapt to a complex, dynamic world.

The key design principle of the framework is institution-wide participation. Consistent with the evidence set out in Chapter 3, entrepreneurship education achieves the best outcomes when institutional leaders, curriculum planning teams, frontline teaching staff, assessment departments and ecosystem partners work collaboratively rather than in isolation. The IECEF is therefore explicit that embedding entrepreneurship is a shared responsibility across the institution, not the sole concern of entrepreneurship centres or individual academic champions. Sustained curriculum transformation requires multiple stakeholders to move forward together.

The framework is further built on systems thinking, which treats curriculum transformation as the result of interaction between multiple institutional components rather than a single, isolated intervention: curriculum design influences teaching practice; assessment shapes learning behaviour; institutional leadership creates an enabling environment; and ecosystem partners provide authentic entrepreneurial learning contexts. The framework's aim is to improve coordination across institutional systems by identifying the interdependencies among these stakeholders, and to promote a coherent, unified pathway for cultivating entrepreneurial competence.

The framework's core design is enabling rather than directive, so it can accommodate the varied characteristics of South African universities, including institutional

mission, student demographic profile, disciplinary strengths, resource base and entrepreneurship maturity. This frees the framework from a one-size-fits-all template and allows it to be matched to institutions' real, on-the-ground implementation needs.

The framework also embraces continuous improvement as a core principle, reflecting the ever-changing nature of entrepreneurship education, and sets out mechanisms to sustain its long-term operation: evidence-based decision-making, competence development, authentic assessment and institutional learning. In doing so, the framework aims not only to support curriculum transformation in the near term, but also to foster the long-term development of entrepreneurial universities capable of preparing graduates for an uncertain and changing future.

The framework consists of five interconnected implementation domains, with their corresponding goals set out in Table 4.1. These domains are not independent, separate elements, but form an organic whole running through the entire process of entrepreneurship education.

The five domains presented in Table 4.1 should not be interpreted as independent components operating in isolation. Rather, they represent an integrated institutional system through which entrepreneurship capability is progressively developed across the student learning journey. The IECEF recognises that sustainable curriculum transformation depends upon alignment between institutional leadership, curriculum design, teaching and learning, ecosystem engagement and quality enhancement. Figure 4.1 illustrates the conceptual architecture of the framework and demonstrates how these domains interact across the macro, meso and micro levels of higher education.

Table 4.1. The Five Domains of the Integrated Entrepreneurship Capability and Embedding Framework (IECEF)

Domain	Purpose
Institutional leadership and strategic commitment	Embedding entrepreneurship into institutional vision, governance, policies and leadership.
Curriculum design and graduate capability	Integrating entrepreneurial capability into programme design, learning outcomes and graduate attributes.
Teaching, learning and assessment	Developing entrepreneurial capability through pedagogy, authentic learning and competency-based assessment.
Entrepreneurship ecosystem and partnerships	Connecting students with industry, communities, incubators, innovation hubs and entrepreneurial ecosystems.
Quality enhancement, monitoring and continuous improvement	Measuring impact, evaluating capability development and supporting continuous institutional improvement.

Framework Architecture

The Integrated Entrepreneurship Capability and Embedding Framework (IECEF)

The IECEF is an integrated systems framework supporting the systematic embedding of entrepreneurial

competencies within higher education. It responds directly to the fragmentation of independent activity sequences and linear implementation models that have characterised the field the field to date. It is structured around five interconnected core domains: institutional leadership, curriculum design, teaching and learning, ecosystem linkage, and quality improvement.



No single one of these can operate in isolation; the overall effectiveness of the framework depends entirely on the coordinated alignment of all five.

The framework's operational logic maps onto three levels of higher education: macro, meso and micro. The macro institutional level is responsible for leadership, governance, and strategic decision-making; the meso level of faculties and programmes is responsible for program design and curriculum system development; and the micro teaching level is responsible for instruction, assessment, and authentic learning experiences. It is only when these three levels are fully aligned that an institution's entrepreneurship education vision can be translated into actionable educational practice. This hierarchical logic concretises the abstract framework into specific actions for different educational stakeholders and thus greatly enhances its operability. The framework takes a whole institution approach, emphasising that entrepreneurship education is not the sole responsibility of a single faculty, entrepreneurship centre or academic lead. It needs the collective efforts of institutional leadership,

academic faculties, curriculum developers, teaching and learning specialists, entrepreneurship support agencies, quality assurance departments, students and external partners.

Figure 4.1 provides a conceptual representation of the framework and illustrates its cross-domain and cross-level relationships. In Figure 4.1. The framework is positioned as an industry-wide shared institutional reference point for the South African higher education sector. It underpins the implementation logic for entrepreneurship education delivery, yet maintains the flexibility to adapt to institutions with varying operational foundations. Its main function is that of a mechanism for endogenous institutional improvement: it helps implementation by bringing together existing entrepreneurship-related resources within the institution. Thus, it helps to mitigate resource-related barriers to the adoption of new frameworks, and it caters to the implementation needs of institutions with different foundational conditions.

As illustrated in Figure 4.1, the IECEF is organised around five interconnected domains that collectively

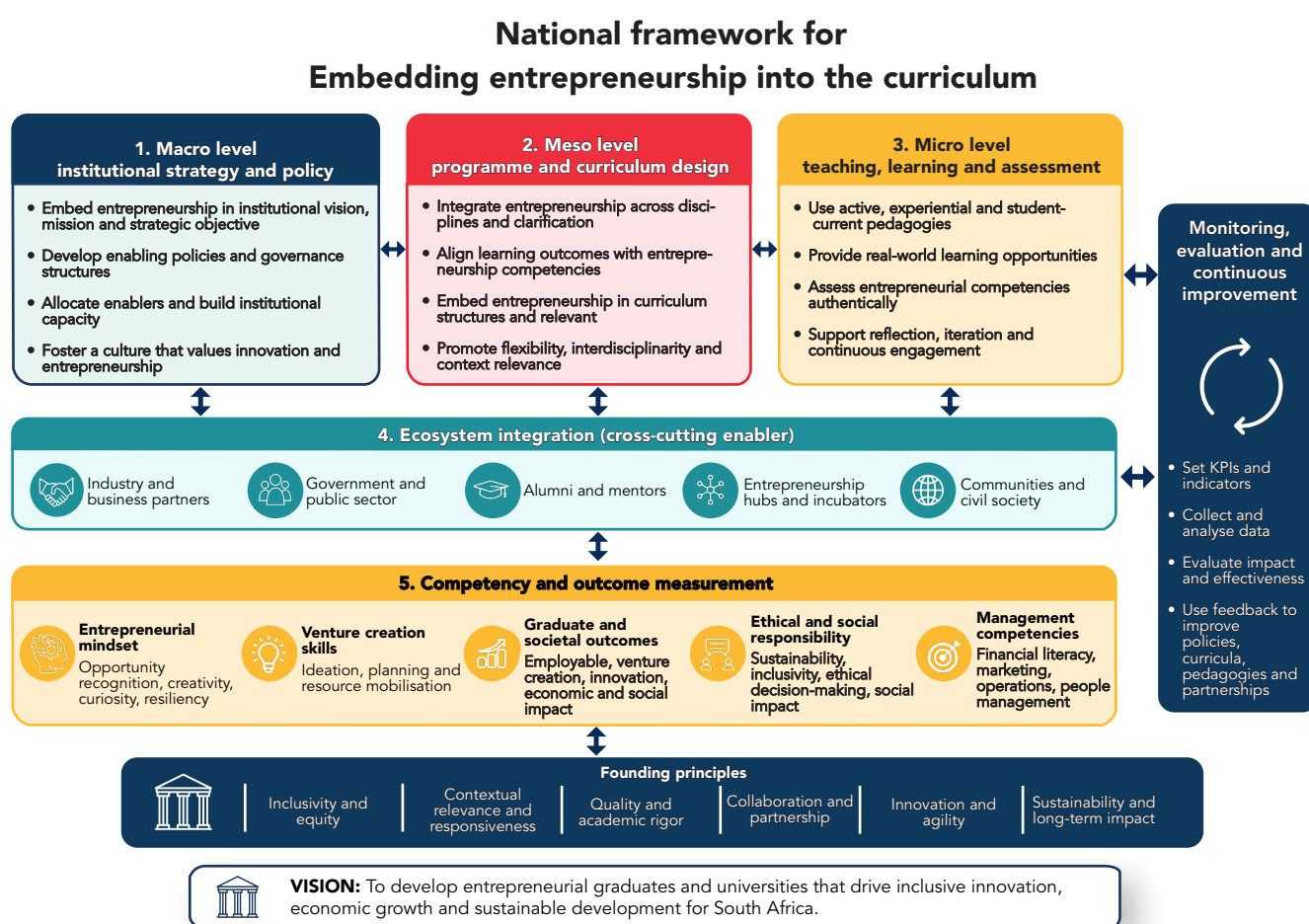


Figure 4.1: Integrated Entrepreneurship Capability and Embedding Framework (IECEF)

support the systematic embedding of entrepreneurship across institutional strategy, curriculum, teaching and learning, ecosystem engagement and continuous quality enhancement. Each domain addresses a distinct but complementary dimension of entrepreneurship capability development and is discussed in the sections that follow.

The Integrated Entrepreneurship Capability and Embedding Framework (IECEF) should be understood as an integrated systems framework that supports the systematic embedding of entrepreneurship across higher education. Rather than representing a sequence of independent activities or a linear implementation process, the framework illustrates the institutional conditions required to cultivate entrepreneurial capability throughout the student learning journey. It recognises that meaningful curriculum transformation can only be achieved when institutional strategy, curriculum design, teaching and learning, assessment, and entrepreneurship ecosystem development are aligned and mutually reinforcing.

Interpreting the framework

It is important to clarify that the IECEF is not a sequence of operational processes to be implemented in a linear order, but an integrated system requiring multi-dimensional coordination and mutual reinforcement. Only when strategy, curriculum, teaching and ecosystem are fully aligned can institutions achieve effective transformation of their entrepreneurship education curricula. Implementation logic is segmented into three levels: the macro level, equivalent to building an entrepreneurship-supporting environment at the institutional level; the meso level, equivalent to implementing and adapting the framework at the faculty and department level; and the micro level, equivalent to developing individual students' entrepreneurship competence. Alignment across these three levels is the basic precondition for the framework's vision to be realised in practice.

The IECEF has two main differentiators. First, there is a need for an institution-wide perspective that requires the joint participation of all stakeholders and the responsibility for entrepreneurship education

should never be shifted to a single entity alone. Secondly, it takes an enabling rather than restrictive positioning, which fully adapts to the differentiated development foundations of various institutions across South Africa, and does not require a unified implementation path.

The framework is a holistic conceptual architecture for all industries. Each institution is free to interpret the framework with its own operational contexts. The framework follows nationally agreed principles for integrating entrepreneurship into curricula. It is primarily a tool to support the institution's own development. Its core function is to connect and integrate the various scattered entrepreneurship projects that already exist on campus, rather than replacing the mature entrepreneurship programs that institutions currently run. The framework encourages institutions to move away from fragmented operations towards a consolidated and sustainable model of entrepreneurship education.

Guiding principles

The core guiding principles of the IECEF are based on multiple sources of evidence and are responsive to local needs in South Africa. It is responsive to the diversity of the country's higher education system by not prescribing one solution fits all, and ultimately presents six mutually supporting principles: They provide some clarity for higher education institutions to make their own adjustments. They are a balance of institutional flexibility and national uniformity.

The Five Interconnected Domains of the Integrated Entrepreneurship Capability and Embedding Framework (IECEF)

Domain 1: Institutional leadership and strategic commitment

The evidence gathered for this study clarifies a widespread misunderstanding within the entrepreneurship education sector: many practitioners incorrectly equate

entrepreneurship education solely with curriculum-based provision. This cognitive gap produces three negative effects:

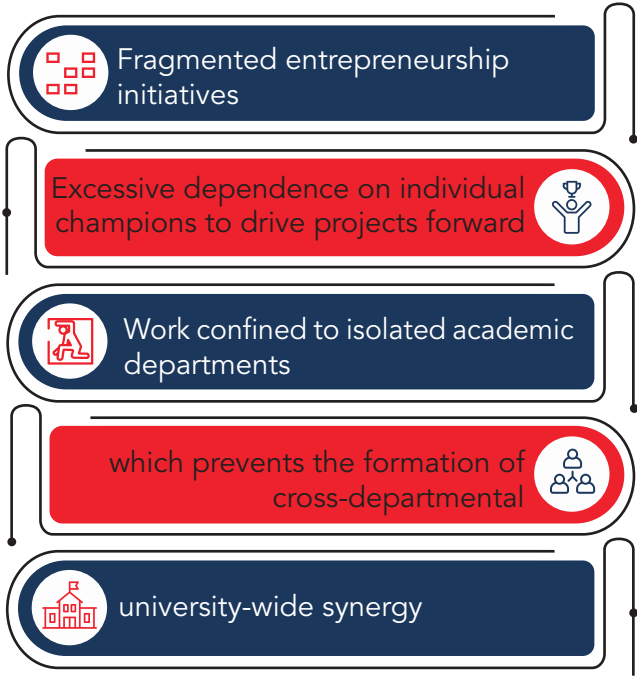


Table 4.2. Key Components of Domain 1: Institutional Leadership and Strategic Commitment

Component	Contribution to Entrepreneurship Embedding
Strategic leadership	Positions entrepreneurship as an institutional priority and drives organisational commitment.
Institutional policies	Aligns entrepreneurship with institutional planning, governance and graduate development.
Governance and accountability	Establishes oversight mechanisms, roles and responsibilities for implementation.
Resource commitment	Supports sustainable implementation through appropriate financial, human and infrastructural investment.
Cross-institutional collaboration	Promotes coordinated action across faculties, support units and entrepreneurship centres.

The main objective of this domain is to build the institutional-level implementation base for entrepreneurship education. It requires university leaders, as core implementing actors, to incorporate entrepreneurship education into institutional strategy, the graduate competency framework, teaching and learning plans, departmental priorities, and resource allocation processes. These link to five

core components, set out in Table 4.2.

The effective operation of the other four domains of the IECEF depends on the success of Domain 1. While university leadership can only set the strategic direction and create an enabling environment, real transformation is actualised through the second domain: curriculum design and graduate capability development, supported by innovation and the

Table 4.3. Key Components of Domain 2: Curriculum Design and Graduate Capability

Component	Contribution to entrepreneurship embedding
Graduate capability development	Integrates entrepreneurial competencies as institutionally recognised graduate attributes.
Curriculum integration	Embeds entrepreneurial capability across programmes and disciplines rather than through isolated modules.
Programme design	Aligns programme outcomes, learning experiences and curriculum structures with entrepreneurship capability development.
Constructive alignment	Ensures coherence between learning outcomes, teaching approaches and assessment practices.
Interdisciplinary learning	Encourages collaboration and innovation across disciplinary boundaries.

optimisation of students' learning experiences.

Domain 2: Curriculum design and graduate capability

This domain's core positioning is that entrepreneurship competencies are purposefully embedded throughout curriculum design and graduate development; curricula are the primary vehicle for systematically cultivating students' entrepreneurship competencies, and entrepreneurial knowledge, skills and mindsets are delivered through interdisciplinary instructional design across all qualification levels. This challenges the common assumption that entrepreneurship education is limited to standalone modules or programmes confined to business disciplines. Instead, entrepreneurship competencies should be integrated with the knowledge systems, practical scenarios, and career needs of each academic discipline, so that students in all majors can acquire core entrepreneurship competencies such as opportunity identification and complex problem-solving. Curriculum design needs to match programme outcomes, graduate attributes, learning activities and assessment practices to avoid

producing fragmented capability development.

The five key components established for this domain, graduate competency development, curriculum integration, programme design, constructive alignment and interdisciplinary learning, each contribute distinctly to embedding entrepreneurship, reframing it from an optional supplement to institutional curricula into a core goal of curriculum design.

Embedding entrepreneurial competence across all academic programmes carries two benefits: it helps graduates adapt to an increasingly dynamic labour market, and it supports the long-term development of innovation, employability and lifelong learning.

Domain 3: Teaching, learning and assessment

Embedding entrepreneurship education successfully is not just a matter of curriculum design. It depends equally on high-quality teaching, learning and assessment practices that build entrepreneurial competence. This domain aims to enable students to develop, apply and demonstrate entrepreneurial competence through authentic and engaging learning

experiences, cultivated through active participation, critical reflection and experiential learning rather than passive transmission of knowledge. Appropriate pedagogies should encourage inquiry, creativity, collaboration, experimentation and problem-solving within real-world contexts, giving students authentic opportunities to engage with complex challenges, develop innovative solutions and reflect on their learning. This reinforces both their specialised academic learning and the generic competencies they need to adapt to a rapidly changing professional

environment.

Assessment matters just as much in this domain. Consistent with the evidence presented in Chapter 3, the framework promotes assessment approaches that go beyond measuring theoretical knowledge to focus on the development and application of entrepreneurial competence. Authentic assessment, reflective practice, project-based learning and competency-based assessment provide valid evidence of learning while reinforcing the practical application

Table 4.4. Key Components of Domain 3: Teaching, Learning and Assessment

Component	Contribution to entrepreneurship embedding
Student-centred pedagogy	Encourages active, collaborative and experiential learning
Authentic learning	Connects classroom learning with real-world entrepreneurial challenges
Innovative teaching practice	Promotes creativity, critical thinking and opportunity recognition.
Competency-based assessment	Measures the development and application of entrepreneurial capability.
Reflective learning	Encourages continuous personal and professional growth through critical reflection.

Domain 4: Entrepreneurship ecosystem and partnerships

This domain recognises the fundamental value of partnerships with external stakeholders, including industry, government, communities and entrepreneurs. These collaborations create real-world learning opportunities that grow students' entrepreneurial capabilities while also improving the practical relevance and social impact of university education. The framework encourages institutions to build a full-chain collaborative ecosystem, integrating curricular and extracurricular entrepreneurship activities and supporting students in opportunity identification, innovative practice, entrepreneurial development, and social value creation, while helping entrepreneurship education continuously adapt to changing economic, technological and social needs.

This framework identifies structured mentorship programmes as a core cross-cutting supporting element as entrepreneurial capabilities are developed over time. A mentor pool can consist of entrepreneurs, alumni, industry professionals and senior practitioners who can guide students, be their role models, expand their professional network and share practical insights. It closes gaps in formal learning, helps students convert entrepreneurial knowledge into practice, respond confidently to different challenges, and create value.

This domain reinforces a core principle: through in-depth interaction with the environments where innovation and value creation occur, students' entrepreneurial capabilities are enhanced, enabling them to turn their learning into concrete action.

Table 4.5. Key Components of Domain 4: Entrepreneurship ecosystem and partnerships

Component	Contribution to entrepreneurship embedding
Industry partnerships	Connects learning with professional and entrepreneurial practice.
Community engagement	Promotes socially responsive and locally relevant entrepreneurship education.
Innovation ecosystems	Provides students with access to entrepreneurial support structures and networks.
Mentorship and Alumni Networks	Establishes structured mentoring relationships between students, alumni, entrepreneurs and industry professionals to support entrepreneurial capability development, career readiness, networking and enterprise growth.
Experiential opportunities	Facilitates internships, competitions, mentoring and enterprise development activities.
Collaborative partnerships	Strengthens knowledge exchange and institutional impact through external engagement.

Domain 5: Quality enhancement, monitoring and continuous improvement

The core integrated domain 5 of the IECEF framework deals with quality enhancement, monitoring and continuous improvement. The embedding of entrepreneurship education has to be sustainable, evidence-based and consistent with the institution's own development needs. This domain corrects the common misconception that entrepreneurship education is a one-off educational intervention, clarifying that it is a long-term institutional development process which requires regular reflection, monitoring and optimisation. It gives institutions mechanisms to measure progress, identify areas for improvement and strengthen long-term impact. It can help with decisions on course updates, staff development, partnership optimisation, and resource allocation. Fundamentally, it argues that institutions should focus on proactive learning and improvement rather than compliance alone.

As an integrated domain, the IECEF can support

the operation of the whole framework and drive the optimisation of the other four domains.

Quality improvement is an integrated domain of the IECEF and it supports the ongoing improvement of all other domains in the supporting framework. This underpins the fundamental premise that the development of entrepreneurial capabilities is an ongoing institutional project, which can be continually enhanced through evaluation, collaboration and

Macro–Meso–Micro alignment

The essence of the IECEF is that the development of entrepreneurial competence must span all interconnected levels of the higher education system. Effective alignment across three tiers, the macro institutional level, the meso programme and departmental level, and the micro teaching and learning level is required for the successful implementation of the framework's five domains.

Isolated interventions targeting only one tier cannot achieve sustainable transformation; only concerted action across the whole institution can deliver full implementation.

At the macro institutional level, the key task is coordinating university-wide strategic planning for entrepreneurship education, resource allocation and cross-departmental collaboration mechanisms. At the meso programme and department level, the task is to translate institutional strategy to fit each discipline's characteristics, designing an implementation path suited to the unit and connecting to frontline teaching needs. At the micro level, the focus is on students' entrepreneurship competency development, brought about through teaching, learning and assessment activities that bring together teachers, students and entrepreneurship support practitioners to collaboratively develop the knowledge, skills and behaviours needed for entrepreneurship, across spaces such as classrooms, laboratories, studios, communities and innovation sites. Student-centred pedagogies, authentic assessment, experiential learning and reflective practice enable students to apply disciplinary knowledge in innovative ways

and build the confidence and capability needed for entrepreneurial thinking and action.

It is important to point out that these three levels are not in a linear hierarchical relationship. Instead they operate as an integrated institutional system which is characterised by ongoing interaction, feedback and mutual reinforcement. This iterative cycle continually lays the foundation for the development of entrepreneurial capabilities. This three-tiered perspective gives institutions full flexibility to decide where to start implementation, based on their own strategic priorities, existing strengths, and the maturity of their entrepreneurship education: some institutions may want to begin by implementing institutional governance and leadership development; others may want to begin by implementing curriculum updates, pedagogical innovation, or engagement with external entrepreneurial ecosystems. Sustainable implementation requires the incremental achievement of a coordinated alignment at all three levels, independent of the initial situation. The cross-level alignment is the main operational logic for the implementation and scaling of the IECEF.

Table 4.6. Key Components of Domain 5: Quality enhancement, monitoring and continuous improvement

Component	Contribution to entrepreneurship embedding
Monitoring and evaluation	Tracks implementation and institutional progress.
Evidence-informed decision-making	Integrates entrepreneurship within institutional quality management systems.
Quality assurance	Ensures that entrepreneurship embedding is incorporated into institutional quality management and review processes
Institutional learning	Encourages reflection, knowledge sharing and organisational improvement.
Continuous enhancement	Ensures the framework remains relevant, responsive and sustainable over time.

Table 4.7. Alignment of the IECEF Across the Macro, Meso and Micro Levels

Institutional level	Primary focus	Illustrative responsibilities
Macro	Institutional leadership, strategy and governance	Institutional vision, entrepreneurship strategy, policy development, governance, resource allocation, quality assurance oversight.
Meso	Faculty, school and programme implementation	Curriculum design, graduate attributes, programme renewal, interdisciplinary collaboration, academic leadership.
Micro	Teaching, learning and student experience	Learning design, pedagogical practice, authentic assessment, student engagement, experiential learning and capability development.

The framework can help universities maintain a strategic link between institutional leadership, programme design and student learning, thus encouraging a transformation from isolated entrepreneurship initiatives towards an integrated, institution-wide framework for developing students' entrepreneurship competencies.

Institutional implications

The main function of the IECEF is to strategically connect institutional leadership, programme design and student learning, encouraging universities to move away from scattered, fragmented entrepreneurship initiatives towards a coherent, university-wide pathway for entrepreneurial capability development. The success of the framework depends on the commitment and coordinated action of multiple stakeholders across the university. While university leadership is responsible for setting the strategic direction, embedding entrepreneurship is a campus-wide responsibility requiring participation from academic leaders, academic schools and departments, professional support units, entrepreneurship centres, quality assurance departments, students, and others. The development of entrepreneurial capability is a university-wide mission, not the responsibility of any one department or individual.

Institutional leadership

University leadership must provide an enabling environment for embedding entrepreneurship systematically across the whole university: developing a clear strategic vision, embedding entrepreneurship into institutional plans, allocating appropriately matched resources, progressing cross-departmental collaboration, communicating the institutional importance of entrepreneurship as a core graduate competency, and shaping a campus culture that values innovation, creativity and responsible value creation. University leadership undertakes this top-level coordination role.

Faculties

As the university's intermediary connecting layer, academic schools and departments are tasked with translating the university's vision into discipline-specific curricular and practical activities. This includes programme review, embedding entrepreneurial capabilities into graduation requirements, advancing interdisciplinary collaboration, and supporting faculty curricular innovation, so that entrepreneurship development fits the context of each academic discipline. Schools and departments play an important role in advancing this work.

Academic Staff

As frontline implementers of the framework, academic staff facilitate its on-the-ground delivery through curriculum design, teaching, assessment and related work. They use student-centred, experiential teaching to cultivate students' core competencies, and further promote the continuous iteration of entrepreneurship education through reflective practice and participation in communities of practice.

Entrepreneurship Centres

Entrepreneurship centres provide important institutional leadership in supporting entrepreneurship education beyond the formal curriculum. Their contribution includes facilitating co-curricular programmes, coordinating industry and community partnerships, supporting student enterprise development, and providing expertise that complements faculty-led curriculum initiatives. Within the IECEF, entrepreneurship centres are positioned as institutional partners that enable collaboration across academic and non-academic environments while strengthening the university's broader entrepreneurship ecosystem.

Students

Students are the primary beneficiaries of the framework and active participants in entrepreneurship capability development. The framework encourages students to engage purposefully with curricular and co-curricular learning opportunities, interdisciplinary collaboration, innovation activities and experiential learning. Through active participation and reflective practice, students progressively develop the entrepreneurial knowledge, skills, behaviours and mindsets required to create value within professional, social and community

Quality assurance

Quality assurance structures play an important role in supporting the sustainability and continuous improvement of entrepreneurship curriculum embedding. This includes integrating entrepreneurship within institutional quality management processes, monitoring

implementation, supporting evidence-informed evaluation, and facilitating continuous curriculum enhancement. Quality assurance therefore helps ensure that entrepreneurship capability development remains aligned with institutional objectives while responding to emerging educational priorities and stakeholder feedback.

Collectively, these institutional roles reinforce the collaborative, systems-oriented nature of the IECEF. By recognising the complementary parts played by different institutional stakeholders, the framework promotes a coordinated approach to entrepreneurship curriculum embedding that strengthens institutional coherence, supports graduate capability development, and sustains entrepreneurship education across the South African higher education sector.

Chapter summary

This chapter introduced the IECEF: its conceptual foundations, guiding principles, architecture and five interconnected domains. It also explained how the framework operates across the macro, meso and micro levels of higher education, and set out the expected institutional outcomes and implications for key stakeholders. We conclude that this framework has the coherence and adaptability to support all higher education institutions in South Africa in flexibly incorporating it into their own entrepreneurship capacity-building efforts, provided that institutions promote broad stakeholder participation and adapt the framework to their own diverse institutional contexts. Together, these elements provide a coherent and adaptable framework for embedding entrepreneurial capability within South African higher education institutions

Chapter 5: Conclusion

The IECEF aims to help South Africa's higher education sector build consensus and provide an evidence-based, unifying basis for developing entrepreneurship competence as a core graduate attribute. While recognising the different contexts of South African higher education institutions, the framework is unified, coherent, and flexibly adaptable. It breaks down five core aspects of implementation: institutional strategic integration, curriculum design, teaching and learning practices, ecosystem partnerships, and continuous quality improvement, translating the the concept of integration into practical and actionable pathways for implementation. Four core conditions are also essential to the successful rollout of this system: sustained leadership, institutional commitment, cross-sector collaboration, and continuous improvement across the sector.

The framework was originally developed for the higher education sector but can be expanded through cross-sector collaboration, bringing together USAf, the EDHE programme, and basic

education stakeholders. This alliance will nurture early development of entrepreneurial mindsets, identify and incubate entrepreneurial talent, prepare future students for the entrepreneurship education, learning and innovation opportunities they will encounter in higher education, and ultimately foster entrepreneurial competence as a lifelong capability. Such collaboration will create an increasingly interconnected national entrepreneurship ecosystem.

As South African higher education responds to the continuing economic, technological and social changes in the country, the IECEF provides a strategic platform for cultivating graduates who are innovative, opportunity-driven, adaptable and capable of creating sustainable economic and social value. In doing so, it supports institutional transformation and is consistent with the country's macro-level goals of inclusive growth, innovation and sustainable development.



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