African Creative Futures: Mainstreaming Creativity in the South African Skills Ecosystem.

A Dissertation

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I would like to extend my deepest gratitude to all those who have supported me on this transformative journey. To the creative South Africans whose resilience and innovation continue to inspire me, thank you for showing me the boundless possibilities of our collective imagination. To my family, your unwavering belief in my potential has been the cornerstone of my strength—this achievement is as much yours as mine. To the academic staff who have guided and challenged me, your wisdom and encouragement have ignited my passion for lifelong learning.

To the Africa I love—rich in culture, creativity, and potential—this work is dedicated to you. It is a tribute to the emerging African creative futures that continue to push boundaries, reimagine possibilities, and build a more innovative and inclusive world. May we continue to rise, create, and shape our destiny with pride

"The 4th Industrial Revolution is not about technology - it's about creativity and innovation."

Klaus Schwab, Founder and Executive Chairman of the World Economic Forum

"In the 4th Industrial Revolution, creativity and imagination will be the most valuable skills."

Satya Nadella, CEO of Microsoft

"The creative mind is the greatest wealth."

Proverb from the Yoruba people of Nigeria

“The cosmic forces have intriguingly conspired to bless our beloved country with ... material riches, with wondrous opportunities for human creativity and … love, and with truly exciting possibilities in the evolution of the spiritual condition of those destined to live and share in this country.”

Chief Justice Ismail Mahomed during the Convention for a Democratic SA

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Abstract

Creative future skills will be essential for Africa and South Africa, driving economic development, innovation capacity, and the ability to respond to the evolving socio-political environments of the Fourth Industrial Revolution (4IR) era. This study explores opportunities for developing creativity and creative thinking, key future skills, within South Africa's current 4IR planning. Using an exploratory qualitative approach, the research examines how creativity is experienced and understood, alongside the social and cultural factors influencing creative thinking, through three distinct lenses: educators, skills ecosystem managers, and youth. The study aims to understand how creativity is experienced, taught, and implemented and its wider application within South Africa's skills ecosystem, in the context of ongoing 4IR planning. It investigates the current approaches to creative education in South Africa and identifies key social and cultural factors shared by South African educators, skills ecosystem managers and youth that can guide the implementation of creative education. Furthermore, it seeks to demonstrate potential reforms in creative education through an appropriate praxis model.

Keywords: creative thinking, innovation, Fourth Industrial Revolution, South Africa, future skills, education reform

TABLE OF CONTENTS

List of Figures

List of Tables and Appendices

List of Tables

List of Appendices

Chapter 1

Introduction

"As the traditional bedrock of economic development continues to transform and machines and automation become standard practice, people need to reflect strongly on the role that creativity can play in shaping, framing, communicating and influencing economic and related occupational changes. While new technologies and automation may eliminate the need for certain forms of work and labour, they will also open up previously unimagined opportunities in industries that thrive on creativity and innovation" (Haines & Mangope, 2017).

The fourth industrial revolution (4IR) has become a focus for countries in the last five to ten years as it has become evident that the complexity and scope of the changes and the resulting impact on government, business, civil society and individuals it brings pose both great opportunities and great threats to the world. One of the most profound impacts of this new era is its impact on education i.e. how we view and use knowledge, and how we teach and learn. There is consensus that the convergence of cyber and physical systems which characterise this revolution will require completely different ways of thinking about education, skills development and the world of work in general. It is also widely accepted that the critical skills needed for humans to thrive in this new environment are a list of "human" skills topped by creativity, problem-solving and critical thinking (Stoepfgeshoff, 2018; World Economic Forum, 2023). Our human creative ability is our competitive advantage in a 4IR economy, and South Africa potentially has one of the most abundant resources of human creativity and innovation potential in the world in the form of its large youth population.

Emanating from the work of the Presidential Commission on the Fourth Industrial Revolution that culminated in the Diagnostic Report on the Fourth Industrial Revolution and subsequent national strategies based on the report's findings, South Africa is focusing on fast tracking human capacity development as a priority investment for the country and there is a drive to elevate 21st century skills as critical skills for the future of work. In theory, these "human" or "soft" skills as they are called, are embedded in our school curriculum (Department of Basic Education, 2023; Eadie et al., 2021), but there are some obvious disconnects in terms of our

youth being able to demonstrate the top three future skills adequately. South Africa scored 44% for innovativeness, an indicator in the World Economic Forum's Future of Growth Report measuring among others, the state of South Africa's talent and institutional environments (World Economic Forum, 2024). The 2023 Trends in International Mathematics and Science Study (TIMMS) report reveals that South African Grade 5 learners ranked last among 59 countries in both mathematics and science, a consistent factor in our learners' performance (Mullis et al., 2023; Siyavula Foundation, 2022). This is also evidenced by our consistently low performance in global entrepreneurship rankings (Bowmaker-Falconer & Herrington, 2020) and the general perception in the workplace that creative thinking and adaptability are skills which are missing in the South African workplace (Accenture, 2024; World Economic Forum, 2023). It would seem that we have a challenge in the South African school system regarding future skills (creativity, critical thinking, problem solving) being adequately taught, and learned.

At the same time, young South Africans demonstrate incredible innovation abilities. There is evidence which outlines the capacity of young Africans to be more proficient at grabbing new opportunities, skillful at producing outcomes with limited resources and more resilient during hardship (Mazibuko, 2020; Theron & Theron, 2010; Thomas, 2016). Creativity and human relations are skills that are deeply embedded in both traditional and modern African culture (Mpofu et al., 2012). In my own work with youth in townships, high levels of creativity and problem-solving ability have been demonstrated over and over.

Africa's growing youth population and the continent's largely unexploited natural resources position Africa at an advantage for creativity and innovation in the twenty-first century (Munyoki, 2019) .There is a school of thought that the authoritarian style of schooling brought by colonisation distorted traditional African cultural values, teaching which discourages questioning and deviating from the norm, and that "minds are effectively colonised" (Mans, 2012). It is generally accepted in creativity theory that creative thinking is grounded strongly in the contextualisation of our culture, history and belief systems , presenting interesting questions around the nexus between the education system and the cultural orientation of learners with regards to creativity.

For South Africa to adequately develop our human capital to meet the challenges and rise to the opportunities of the fourth industrial revolution, investigation of the current state of understanding and approaches to creativity and creative thinking in our skills ecosystem is needed.

The research aims to explore how the present and future needs for creative thinking can be advanced in the context of the South African skills ecosystem. This includes examining the social and cultural factors, implementation challenges and mindsets influencing creativity and creative thinking in South Africa from the perspective of teachers, learners and skills ecosystem managers, to understand possible approaches to mainstreaming and elevating creativity in education as an urgent priority to prepare our youth adequately for the future of work, a changing economy and a myriad of socio-economic challenges our country must overcome.
Following this, secondary research questions are:
- How are creativity and creative thinking understood, experienced and implemented by the role players in the South African skills ecosystem?
- are Western biases currently detracting from the quality and outcomes of creative education in South Africa, and how?
- what are the key social and cultural factors, shared by South Africa's youth, that can guide the implementation of creative education?
- how can potential reforms in creative education be demonstrated through an appropriate praxis model?

I hope to add a perspective to the many education conversations in the country which will advance critical, practical, interventions to appropriately and quickly position our youth to participate productively in the economy and social development of the country. The intent is to assist in developing more robust theories for teaching and learning environments for creative education that translate into implementable, high-impact instruction in the South African public skills ecosystem. This data will be interpreted alongside a review of recent literature on creativity theory, future skills, the fourth industrial revolution, the creative and knowledge or “new” economies, creative education, an African perspective of creativity, and the future of work. The praxis model is intended to develop a framework for creativity education for the South African skills ecosystem which can be used in the processes for alignment of

the education ecosystem being driven by the Presidential Commission on the Fourth Industrial Revolution and the subsequent streams being driven by relevant ecosystem institutions implementing aspects of the national 4IR strategy.

I served on this Commission, driving the Human Capacity Development and the Future of Work component of the work. During the period January 2019 to August 2020 the Commission, comprised of thirty individuals from multiple sectors worked on a diagnostic report covering seven streams of work i.e. Social and Economic Impact, Capital Markets and Financing, Policy and Legal, Infrastructure and Resources, Commercialisation and Industrialisation, Science, Technology and Innovation, and Human Capacity Development and the Future of Work.

I chaired the Human Capacity Development and the Future of Work workstream, and it was in this context of looking at the skills ecosystem from a systems point of view and trying to establish what will be needed to position South Africa to benefit from the ubiquitous technological changes and the resulting societal, educational and business shifts this is bringing, that it became apparent to me that the “soft skills” or competency skills” as they are referred to in the Commission Report, were not necessarily prioritised in the skills ecosystem. At best, there are smaller pockets of excellence in integrating these skills into teaching and learning and large deficits, particularly in the public education system where prioritising these skills is concerned.

My own background in working in the field of creativity and entrepreneurship brought about the realisation that creativity is essential to innovation. My role on the Commission required research, reading and attending a variety of skills ecosystem conferences and other gatherings. I have been struck by the acknowledgement of creativity as a critical skill in many of these discussions and fora, but a seeming lack of implementation in terms of clear directives and strategy, as well as practical implementation tools and frameworks. The Diagnostic Report on the Fourth Industrial Revolution presented to the President included clear recommendations regarding the prioritising of creativity and creative thinking in the skills ecosystem. My intention is that the research and recommendations set out in this dissertation can contribute to the implementation of the Commission’s report recommendations,

which include a re-evaluation of the skills ecosystem in the country to include essential competencies such as creativity, critical thinking and problem solving.

Chapter 2

Literature Review

This literature review covers the high-level characteristics that constitute the concept of the 4IR, how it is defined globally and what is meant by “future skills”. This serves to frame the context for why these skills are important and what the required shifts within education are in a 4IR social and economic context. The South African context and the need for innovative solutions and the role of creativity in addressing these issues are highlighted. Creativity as an economic catalyst and a driver of competitiveness is explored and the literature review provides an overview of industrial revolutions caused by creativity throughout history.

The context and challenges of the skills ecosystem in South Africa are highlighted in the context of the changing global demand for a shift in education and identifying what the required changes mean in a South African context. Context specific approaches to creativity education are examined, along with creative education theory which outlines creative education definitions and approaches. This includes a review of current methods and theories in creative education, along with insights on various strategies for teaching and fostering creativity as an essential skill. An African perspective on creativity is highlighted, as well as any research already done on how creativity is integrated in the school system currently in South Africa, to what effect and what models, if any are being used for creative education. The link between creativity and innovation and the relationship between these processes is highlighted.

While writing this dissertation, the changes brought about by artificial intelligence via the launch of ChatGPT and other generative AI interventions were substantial. Consequently, the literature review includes a section on future possibilities for creative education that discusses the impact of AI on creativity and education, as well as looking at the phenomenon of “super-creativity”, a human and machine collaboration to create.

2.1. 4IR and the Future of Work – Why Creativity is Essential

It is common knowledge that we live in a hyperconnected world in which

technological advancement is so rapid that it is often difficult to keep up with the pace of change. According to Klaus Schwab, World Economic Forum founder, articulation of this phenomenon which he termed “the fourth industrial revolution (4IR)”, is necessary due to the unprecedented scale and range of the changes that exponential technological innovation is enabling around the world (Schwab, 2016). This necessitates that countries craft appropriate responses to the systemic economic, political and social shifts these changes demand (Schwab, 2019; McKinsey & Company 2021; Accenture, 2024).

The 4IR is characterised by key technologies that enable the integration of cyber and physical systems, producing entirely new products and new business models. While there is no commonly agreed upon definition for the 4IR, it is essentially characterised by the blurring of the lines between cyber, physical and digital systems in an unprecedented integration of human and technological interfacing which differentiates this industrial revolution from the previous ones. It is the seismic shifts this revolution is predicted to catalyse in social and economic contexts globally that warrant urgent attention from policy makers, educators and economists (Lee et al., 2018; Presidential Commission on the Fourth Industrial Revolution, 2020).

Systemic change is thus a given in our current environment. In 2019, President Ramaphosa announced the formation of a Presidential Commission on the Fourth Industrial Revolution set up to advise the government on a strategic response to the Fourth Industrial Revolution (Presidency, 2019). The subsequent report prioritises investment in human capital as a primary recommendation with strong proposals for the alignment of the skills ecosystem to accommodate 4IR relevant education and skilling (Presidential Commission on the Fourth Industrial Revolution, 2020).

The impact of the fourth industrial revolution will be keenly felt in how the world of work changes. The World Economic Forum (2023) predicts that the composition of the workforce will change as companies reduce human labour in favour of more efficient and cheaper machine options and look to reskill their workforce for emerging new roles. What is significant about these new workplace roles is that they will elevate human skills to a place of prominence (World Economic Forum, 2023). The NEDLAC (2019) report on the future of work in South Africa concedes that the fourth

industrial revolution is a given and that substituting humans with machines is a real option for the country. They state that “in a knowledge and innovation economy, basic skills are no longer sufficient. Advanced secondary and tertiary education must equip the labour force with the skills to generate ideas and shape and develop to fit the changing world”(Roux et al., 2019, McKinsey & Company, 2021). Only those with specific sets of relevant high-level skills will benefit from these changes.

The World Economic Forum consistently identifies key skills essential for the future of work, with creativity and creative thinking regularly ranking among the top three most critical competencies (World Economic Forum, 2023). Schwab concurs that it is these human capacities that will give companies a competitive advantage in the age of machines and that human creativity is an important resource in developing and growing economies and societies in a 4IR era (Schwab, 2019). However, it is also important to note that one third of the skills we prioritise now will be redundant in two years, which emphasises the need to not focus on skills so much as competencies and distinctly human abilities which will enable individuals to be flexible, creative, adaptable and entrepreneurial (ILO, 2022).

Ongoing re-skilling and lifelong learning have become essential as the evolving nature of the technologies and their impacts on how we work and live are constantly changing, requiring regular up-skilling (Gratton, 2017; ILO, 2022; McKinsey & Company, 2021). Emelyanenko (2019) refers to the need for “meta-cognition skills” meaning the capacity to deliberately combine different skills and critically assess which are needed for diverse situations (Emelyanenko, 2019). Higher percentages of people will need social, emotional and high-level cognitive skills (McKinsey & Company, 2021). New operating models and new ways of approaching almost every domain of society require us to urgently look at how we will educate and how our education institutions will need to be structured to prepare our human capacity for the challenges and opportunities of the 4IR.

Chaos and complexity theory, referring to a “complex changing and deeply interconnected world”, and non-linear dynamic systems theory (NDS) are concepts that have been used in the “hard sciences” for the past 50 years, but which are new in the social sciences. Richards builds on these concepts, coining the term “creative

new normal", which describes a worldview shift she feels is essential in our uncertain times, one that allows openness, awareness of process, systems understanding and action orientation (Richards, 2023). Sitorus & Sakinah state that, "learning in the classroom after the Covid-19 outbreak is known as learning in the new normal era" (Sitorus & Sakinah, 2021). Indeed, we do not know where things will be in the next 20 or 50 years and the ability to have a worldview in which creative ability is foregrounded will be essential for humankind to stay alive and flourish. Hugely disruptive global circumstances including COVID-19, wars in Ukraine and the Middle East, the exponential growth of AI and a myriad of other political social and economic disruptions have marked the past 5 years, all of which highlight the imperative of creativity in education. There is a growing movement to challenge the current neoliberal approach to education, which frames 21st-century learning as a competitive pursuit measured by standardised test scores. Instead, the focus must shift towards inclusion and social justice as essential educational outcomes, particularly in light of the increasing volatility of today's world. (Ramlackhan et al., 2024). Ramlackhan et al further state that, "The complexity of educational settings and the dynamism of these environments call for new approaches to teaching, leading and learning that prepares learners for an interconnected global community with skills, strategies and capacities to handle issues creatively" (Ramlackhan et al., 2024). Kurniawan & Zunidar assert that, "the last twenty or so years have seen a global revolution so that in many places creativity has moved from the fringes of education and/or from the arts to being seen as a core aspect of educating (Kurniawan & Zunidar, 2021).

This supports the calls for a refocus on our established delimitations of what educating and learning means and a need to align our skills ecosystem for relevance in a context-specific way in our times and regions (Presidential Commission on the Fourth Industrial Revolution, 2020; Ramlackhan et al., 2024).

2.2. The South African context and the need for innovative solutions

South Africa finds itself in a challenging position with close to zero growth economically, high levels of unemployment particularly among its youth and significant challenges in its education system. In addition to the local challenges, the country is part of a changing global environment facing significant socio-economic

and political tensions and crises. According to the World Bank, “inequality (in South Africa) remains among the highest in the world, and poverty was estimated at 62.7% in 2023, based on the upper-middle-income country poverty line, only slightly below its pandemic peak. These trends have prompted growing social demands for government support, which could put the sustainability of public finances at risk if they are to be met.” In addition, electricity supply challenges, crumbling water and transport infrastructure and poor governance exacerbate the country’s challenges (World Bank, 2024).

While South Africa’s youth potential is immense and could potentially hold options for the county’s future, there is also a threat to the country’s stability if this “demographic dividend” remains economically inactive and has insufficient access to education (Lebakeng, 2024; Presidential Commission on the Fourth Industrial Revolution, 2020). Youth should be involved in crafting the solutions designed for them and “new and imaginative thinking” is critical in designing interventions that involve youth (Lebakeng, 2024).

While South Africa doesn’t fare badly on the Global Innovation Index’s ranking of 132 countries, coming in at number 59 in the 2023 Report, and up two places from the previous year, there is an acknowledgement that the level of inputs into the national system of innovation far exceeds the level of innovation outputs. There is also an inconsistent performance across the system, with pockets of excellence where resources are more readily available and other system elements lagging significantly behind (Department of Science Technology & Innovation, 2019; National Advisory Council on Innovation, 2019; World Intellectual Property Organization (WIPO), 2023).

Our socio-economic challenges and the resulting urgency to meet our current development deficits, as well as the demand in South Africa to simultaneously respond to the enormous changes in the global environment make the quote by Advocate Thuli Madonsela in a recent newspaper article more pertinent. She states that, “the truth is, we cannot delay our appointment with destiny. The question is, will we choose to meet our destiny via the path that powered Hitler and Nazism or the leap of faith that yielded the Italian Renaissance? Whatever path we choose will seal

not only our destiny but will, as Nazism and the Renaissance did, reverberate globally and into the future" (Madonsela, 2021). The reference to Nazism and the Renaissance denotes two paths that were chosen by nations in the wake of national devastation, the first that of Germany's response to post-pandemic social and economic devastation and the latter, Italy's response to the same. Italy's response is referred to as visionary and inspired, as the government was advised to invest substantially in art, creativity and innovation, while Germany's response involved sticking to a familiar path, one that bred dissatisfaction with the government in the face of grinding poverty and paved the way for Hitler to exploit this national anger. Italy's "gamble" led to what became known as the Renaissance, a period of science, art, innovation and invention that re-characterised the world as we knew it and changed history. After studying the global impacts of COVID-19 on education, Reimers suggests this "education renaissance," drawing parallels to how post-crisis investment in the arts and sciences in Florence led to the Italian Renaissance, emphasising creativity and humanism as key to recovery (Reimers, 2021). Today's problems affect large sectors of society and cross geopolitical, socioeconomic and disciplinary borders, for example, climate change, pandemics and geopolitical tensions, necessitating "social" or collective creativity to tackle these issues effectively (Edgell & Lee, 2023).

2.3. The Evolution of Creativity Through Industrial Revolutions

The Industrial Revolutions mark pivotal moments in global history where technological advancement fundamentally transformed economies, labour, and societies. Each revolution brought with it new ways of thinking, working, and solving problems—gradually reshaping the role and value of creativity in the workplace and beyond. From mechanisation in the 18th century to today's fusion of human and machine intelligence, creativity has evolved from being constrained by repetitive processes to becoming a core competency for innovation and competitive advantage. The table below maps the trajectory of these industrial changes and examines how each stage influenced the development and importance of creative thinking (Pedota & Piscitello, 2021; Rassanjani et al., 2021; Fomunyam, 2020; Rajwani et al., 2024; Ziatdinov et al., 2024; Ubu-Ulbeh et al., 2024).

Industrial Revolution	Timeline & Key Features	Impact on Creativity
1st Industrial Revolution (IR 1.0)	*Late 18th century (1760–1840)*Driven by water power and the steam engine; introduced mechanised textile production and the factory system (Rassanjani et al., 2021; Fomunyam, 2020; Rajwani et al., 2024).	Creativity was primarily applied by inventors and entrepreneurs solving mechanical and production challenges. However, the shift to standardised, machine-based work reduced the space for individual craftsmanship and creative variation (Ziatdinov et al., 2024).
2nd Industrial Revolution (IR 2.0)	*Late 19th to early 20th century*Widespread use of electricity, assembly lines, and mass production; major advances in steel, chemicals, and transportation (Rassanjani et al., 2021; Ziatdinov et al., 2024).	The emphasis on uniformity and efficiency in production further limited the role of creativity, as product modification became difficult and costly (Rassanjani et al., 2021). Manufacturing processes became more rigid and less conducive to experimentation.
3rd Industrial Revolution (IR 3.0)	*Mid-20th century onwards*Introduction of computers, semiconductors, and early digital technology; use of CAD, CAM, and early Internet applications (Rassanjani et al., 2021; Fomunyam, 2020; Rajwani et al.,	Digital tools began enhancing creative capacities by allowing individuals to design, test, and iterate ideas faster. Software and computing facilitated new forms of creative work, particularly in design, communication, and problem-solving (Pedota & Piscitello, 2021).

	2024; Ziatdinov et al., 2024).	
4th Industrial Revolution (IR 4.0)	*Early 21st century – present*Integration of AI, IoT, big data, cloud computing, robotics, and cyber-physical systems. Technologies interact across digital, physical, and biological domains (Fomunyam, 2020; Rassanjani et al., 2021; Ubu-Ulbeh et al., 2024).	Creativity is now seen as an essential skill for both individuals and organisations. Technology provides vast new tools and materials for idea generation, but also challenges traditional thinking. Creativity is needed to adapt, innovate, and navigate complex systems (Pedota & Piscitello, 2021).
5th Industrial Revolution (IR 5.0)	*Emerging (post-2015)*Focus on human-machine collaboration and sustainable development. Emphasises a human-centred approach, combining human intelligence and ethics with advanced technologies like AI, IoT, and 6G (Rajwani et al., 2024; Ziatdinov et al., 2024).	Creativity is central, as humans work alongside intelligent machines to solve complex problems. The focus on well-being, adaptability, and lifelong learning creates an environment where creative problem-solving and innovation thrive, aiming for both efficiency and social value (Pedota & Piscitello, 2021; Rajwani et al., 2024).

Table 1: Industrial Revolutions' Impact on Creativity

2.4. Creativity as an economic catalyst and driver of competitiveness

The fourth industrial revolution is causing a shift in how economies work and are structured. Historically, with every industrial revolution, economies have evolved and adapted to absorb and reflect the dynamics of each revolution's impact. Lee et al provide an interesting model based on the changing relationships within the ever-

evolving economies resulting from the first to fourth industrial revolutions. They assert that the first and second industrial revolutions resulted in a centralised network economic model, the third industrial revolution produced a dispersed hub-based or decentralised model, while the fourth industrial revolution is causing the economy to be structured as a distributed network where each point has equal power, creating larger markets with multi-product societies that are personalised (Lee et al., 2018).

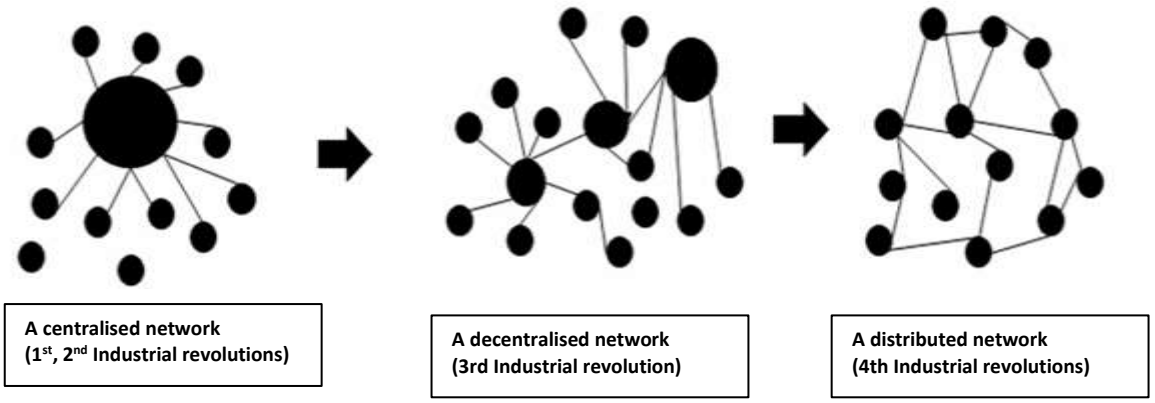


Figure 1: Industrial Revolutions and Network Relationships (Lee et al., 2018)

What makes this structural description interesting is that it aligns with the characteristics of the knowledge or creative economy, which operate as distributed network models. In these models, economic power is decentralised, with all points in the network holding equal influence, eliminating the need for traditional middlemen. The once-dominant hub-based hierarchical structure is no longer the prevailing model, indicating an emerging new structure for the economy. Pitso describes a “quinary” economic sector that is emerging as characterised by its disruption and reorganising of the economic activities of the primary, secondary, tertiary and quaternary sectors (first through fourth industrial revolutions). This comprises using advanced machine capabilities and artificial intelligence to exponentially deliver service value to humankind. He advocates for accelerated exploration of human-machine interaction to produce collaborative innovative ideas (Pitso, 2019).

In the shifts that the fourth industrial revolution is causing there is a search for the “new economy” (Dubina et al., 2012). A study by Dubina et al searching over 150 research databases found that “knowledge economy”, “innovation economy”,

“learning economy” were the most discussed concepts for the past fifty years and “creative economy” was the most discussed concept of the last 20 years in research on the “new” economy. They suggest that the “new” economy is a model that integrates the creative, knowledge and innovation economies via dense interactive innovation activities. Dubina et al term this “new” economy the creativity economy, which is defined as “a new stage for economic development, based on a flow of constant and mass creativity that produces new ideas and problem solutions” (Dubina et al., 2012).

The Nomura Institute in Japan believes that the “creativity age” is replacing the “information age” as the next leading worldwide economic spotlight. According to Kao, “This is the age of creativity because the subtext of global competition is increasingly about a nation’s ability to mobilise its ideas, talents and creative organisations” (Kao, 1996). South Africa’s foresight exercise for Science, Technology and Innovation undertaken by the National Advisory Council on Innovation (NACI) in 2019 recommends technology-enabled learning, multiple learning platforms and the alteration of the current education curriculum to entrench entrepreneurship, innovation and creativity, as key to developing and sustaining the innovation needed to reach the country’s 2030 social and economic developmental goals (National Advisory Council on Innovation, 2019). South Africa’s White Paper on Science, Technology and Innovation similarly emphasises “the growing interconnectedness and complementarity between the natural sciences, and the humanities and social sciences, the potential for creativity and innovation that these connections can generate, and the limits of using isolated scientific approaches to tackle societal challenges” (Department of Science Technology & Innovation, 2019). Economic reports also highlight the substantial untapped potential for innovation that could be harnessed to advance South Africa’s economic and social development objectives. (Presidential Commission on the Fourth Industrial Revolution, 2020; The World Bank, 2023).

While the advent of the 4IR is highlighting the urgent need for creativity and creative thinking skills in our present day, creativity has been at the foundation of every significant social and economic shift historically. To follow the development of economies over time is to observe the remarkable imagination, innovation and

creativity of humankind. From the earliest times, progress and forward movement in economic activity have resulted when human beings creatively explore ways to solve problems in their environment in pursuit of bettering their lives and advancing their communities.

Over the past approximately 250 years the world has experienced at least three industrial revolutions. Prior to these however, Africa is credited with significant industrial capabilities such as first century Kingdom of Kush's (modern day Sudan's) agricultural systems, metalworking, and lucrative trading hub. Egypt's physics and astronomy produced the pyramids and an international trade in iron artefacts from local producers. From the eleventh century Mapungubwe in Southern Africa's gold mining and beneficiation led to international trade for the region and thirteenth to seventeenth century Timbuktu was a centre for international trade and commerce supported by robust scientific and industrial capabilities (Fagan, 1969; Chirikure et al., 2015; Wood, 2000).

Mathematics and geometric calculations have been done in Africa for over 35 000 years, a well-developed system of astronomy including calendar systems was found in multiple North and West African countries, and important developments in the field of medicine emanated from Africa thousands of years ago (Munyoki, 2019). The indigenous innovation practices in pre-colonial Africa led to technology that provided local solutions and was considered culturally and environmentally appropriate (Bhagavan, 1979). Ndemo and Aiko argue that African technology prioritises improving quality of life in ways that go beyond material wealth, placing significant value on human, cultural, and spiritual aspects. However, post-independence Africa relied heavily on foreign technology being imported and indigenous local innovation became stifled (Ndemo & Aiko, 2016).

Artige and Lubart refer to the Neolithic Revolution as providing the first major economic consequences of creativity. Humans shifted from being consumers of natural resources to introducing agriculture and livestock breeding. The fact that this period is described as a revolution attests to the social and economic impact of the creativity, imagination and testing of new ideas that resulted in an agrarian lifestyle across all five continents (Artige & Lubart, 2020). This led to further industrial periods

we have come to known as the first, second third and fourth industrial revolutions. In each iteration of these revolutions, new ideas, catalysed by creativity, led to innovations that changed how economies worked, as well as the resulting social shifts. The creative thinking underpinning these revolutions led to the invention of electricity, steam power, engines, the internet, computers and subsequently the core technologies of what we now call the fourth industrial revolution i.e. quantum computing, 3D printing, the internet of things, blockchain etc. According to Artige and Lubart, “countries where creativity is prohibited may experience limited economic change and temporary economic growth, but not the long-term growth that has characterised Western countries since the industrial revolution” (Artige & Lubart, 2020).

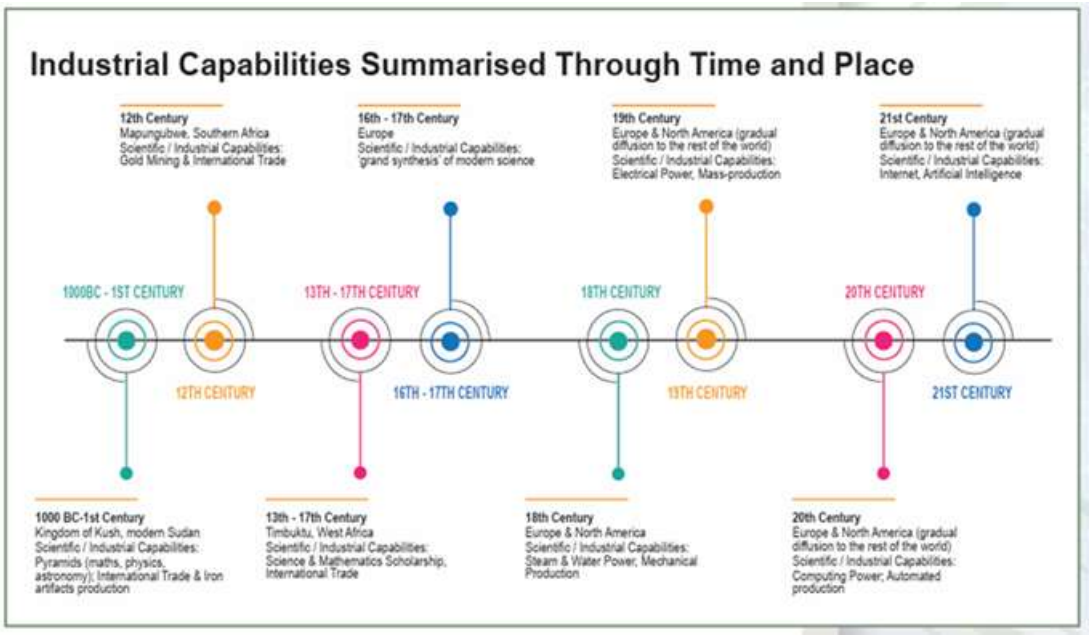


Figure 2: Industrial Capabilities Summarised Through Time and Place (Presidential Commission on the Fourth Industrial Revolution, 2020)

Recent studies underscore the pivotal role of organisational creativity in achieving competitive advantage and sustaining resilience in dynamic business environments. Chang and Chen (2023) demonstrate that entrepreneurial creativity can effectively influence organisational innovation, especially when supported by platform leadership and a conducive organisational culture. Similarly, Audretsch et al. (2019)

emphasise that fostering innovation within an organisation is essential for navigating uncertainty and maintaining relevance in an increasingly knowledge-driven economy (Audretsch, 2019; Chang & Chen, 2023). Dimnwobi et al state that, “creativity and innovation are important elements of competitiveness,” emphasising that the achievement of national development goals in African countries is dependent on the combination of these three tools or concepts (Dimnwobi et al., 2016). Creativity has also been linked to employment growth in firms, particularly where R&D is combined with creativity (Medase & Savin, 2023). Effective creativity drives subsequent innovations which “spring from the application of knowledge”, and when this innovation is correctly supported it enables the commercialisation process which leads to economic growth (Yusuf, 2009). Creativity is thus the source of economic growth and a critical condition for innovation.

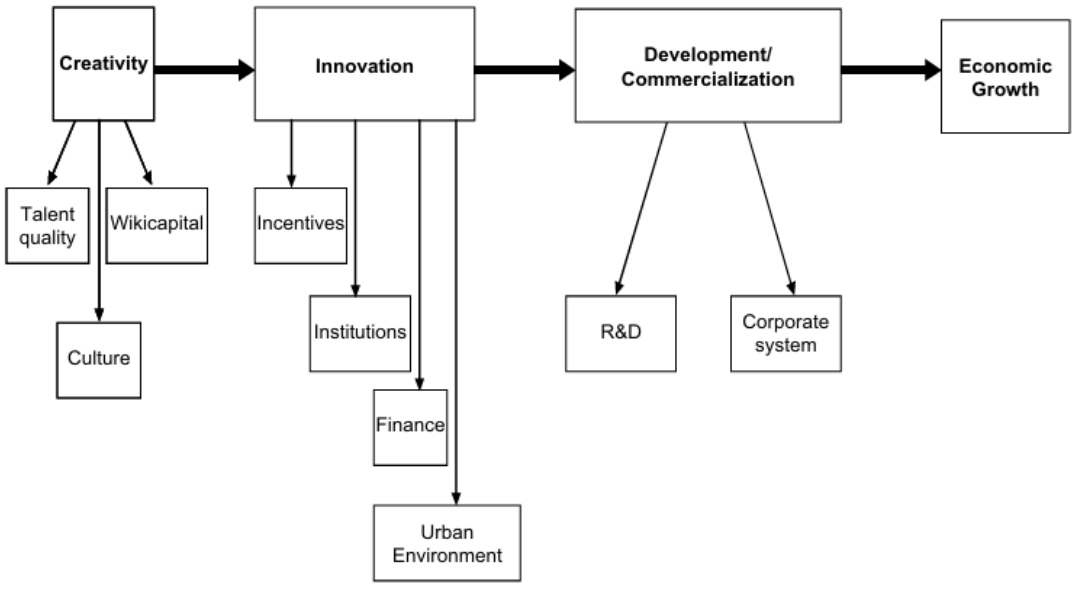


Figure 3: Creativity And Economic Performance (S. Yusuf, 2009)

Yusuf provides a useful diagram placing creativity at the source of economic growth, informed by the available talent pool, culture and traditions and “wiki-capital” (network capital). Creativity leads to innovation which, when sufficiently supported by incentives, institutions, investments and enabling environments, enables the commercialisation process, leading to economic growth (Yusuf, 2009). The link between creativity and innovation is significant. There must be creativity before there can be meaningful innovation (Munyoki, 2019). Yusuf states that, “the creative act is

the basis of an innovation" (Yusuf, 2009). Economic and technological shifts over the past 15 years have reinforced and expanded Yusuf's (2009) model positioning creativity at the core of economic growth. Recent research by Florida (2019), UNCTAD (2021), and OECD (2020) emphasises that digitalisation and technological innovation have amplified creativity's role in driving diverse and resilient economies. Post-pandemic analyses further highlight that creative capacities underpin economic recovery and adaptation in an increasingly interconnected, technology-driven global economy (Hutton & Lu, 2022).

Innovation refers to a new way of doing something or solving a problem. It may be a process of a physical invention and is often described as a "practical implementation of a new idea" (Munyoki, 2019). Auh concurs stating that "innovation refers to the implementation of creative ideas". He adds that "creative ideas without successful implementation are of no use in the business sector" (Auh, 2024). This highlights the utilitarian elements of innovation and the conversion of creative ideas into commercially viable products or outputs as the primary value of innovation to organisations and countries alike. Nakano and Wechsler state that, "innovation is always linked to the insertion, implementation or development of an idea, product or service for the purpose of utility in society" (Nakano & Wechsler, 2018). According to the Organisation for Economic Co-operation and Development (OECD), innovation plays a key role in driving economic growth, and it can be categorised into four main types: product innovation, process innovation, marketing innovation, and organisational innovation. (Organisation for Economic Cooperation and Development, 2016). Creativity which leads to innovation is the bedrock of competitive advantage and company or organisational growth (Dimnwobi et al., 2016; Mehta et al., 2014).

Robinson and Aronica point out that mass public education systems began to exist in the middle of the nineteenth century as part of the industrial revolution of that time. New ideas and institutions emerged and the need for organised systems of education grew. The education system was subsequently structured to meet the needs of the industrial economy of the time to produce the types of workers the "new" economy needed. Industrial principles such as conformity, compliance and

linearity informed not only curriculum development but became structural features of the schooling system (Robinson & Aronica, 2016).

Ramlackhan et al state that within this market-driven environment, education policies insist on the “standardisation of learning through norms, curricular approaches and assessments, all of which drive what happens in schools and systems to demonstrate effectiveness. The professionalism of teachers is sidelined, and the teacher becomes a performative worker” (Ramlackhan et al., 2024). The main goals of the enlargement of the education system in 1950s to 1970s America were politically and economically motivated i.e. to supply skilled professionals in particular sectors considered critical to the national interest (Astin, 1977). This system has largely remained the same for the past century across the globe. (Care et al., 2017; Craft, 2001).

This market-driven approach to education may help explain the gap between what our education system produces and the demands of the market. As markets evolve rapidly, the education system's inability to adapt has led to a misalignment between the two. In England, neoliberal marketisation policies have pressured teachers to prioritise performance targets over meaningful learning, often neglecting at-risk students and fostering distrust among learners who feel unsupported and concerns persist around grade repetition, which limits at-risk students' progression into suitable educational or vocational pathways. Educators report stress from being “forced down a pursuit of excellence road,” focusing on exam outcomes rather than holistic educational support (Savvides et al, 2021).

Marketisation in higher education, driven by neoliberalism and global capitalism, has led institutions worldwide to adopt profit-oriented practices, transforming education into a transactional exchange. Particularly in the Global South, critics argue this approach exacerbates educational inequalities, promotes intellectual capital flow to the Global North, and undermines quality, calling for a reimagined marketisation that aligns with decolonisation goals to address these disparities (Maringe & Chiramba, 2020). Carey et al state that implementing critical learning faces challenges in schools, especially within neoliberal frameworks that pressure educators to limit definitions of learning. The emphasis on measurable outcomes through standardised

testing drives school leaders to support programs focused on meeting these market-driven performance metrics, often at the expense of broader educational goals (Carey et al, 2020).

Thus, in today's rapidly evolving economic and social landscape, traditional education systems often stifle creativity by focusing on preparing students for an outdated workforce. However, the modern economy demands adaptability, innovation, and creative thinking, preparing students for careers that are yet to be defined and will continue to evolve rapidly. Patrick posits that, "one place to begin might be to focus on education as the development of the self, not in accordance with economic imperatives but in accordance with wellbeing and individual flourishing as core aims of education. If education is considered as a transformation of the self of the learner, we may ask what are the processes of teaching and learning that will support individual intellectual, psychological, emotional, and social flourishing?" (Patrick, 2013). This is aligned with the focus on prioritising human competencies such as creativity and complex problem solving advocated for as essential to 4IR human capacity development (Schwab, 2019; Ramlackhan et al., 2024).

Lee et al (2018) describe the "structure" of the fourth industrial revolution market environment as a distributed network of person-to-person connections where every point has equal power (Lee et al., 2018). This is vastly different to the previous industrial revolution economic architecture. Pitso adds the phenomenon of human and machine interactive creativity or "super creativity" as characterising further evolution of the economic structures (Pitso, 2019). It can be said that no one knows for sure what the fourth industrial revolution economic structure will look like, but we need to be asking ourselves the question of what this means in terms of how we re-think not only the curriculum but the education and skills ecosystem at a macro level and the structure of our public schooling system.

The development of cyber-physical systems, a defining characteristic of 4IR, will need experts from multidisciplinary fields. Interdisciplinary study is recommended and knowledge sharing between the humanities and sciences is proposed to bridge task based and human centered approaches. Other barriers to growth in the fourth

industrial revolution are today's siloed educational institutions and the prestige attached to degrees, as opposed to celebrating practical, skills-based knowledge gained from the educational process. Our present industrial revolution emphasises the critical importance of "adaptability in learning and thinking", rendering the current educational systems largely irrelevant. A call is made for urgent "ethical, intercultural and critical thinking" to encourage meaningful use and integration of the fast-growing new technologies (Yusuf et al., 2020). Yusuf et al also advocate for an "educational design framework" for 4IR that is "less risk averse". Education needs to be redesigned as developing human capacity through empowering youth with creative and innovative capabilities, and not just transferring knowledge or content (Lin, 2011).

2.5. Defining creativity

The systematic study of creativity commenced in the mid-1900s, with the discipline of psychology establishing the four traditions - psychoanalytic, cognitive, behaviourist and humanistic - within which creativity was examined (Rhyhammer & Brolin, 1999). There was a resurgence of interest in the 1950s with Guilford's examination of intelligence and divergent thinking (Guilford, 1950). A significant rise in interest in the field took place in the first decade of the 21st century due to the realisation of the lack of this competency being produced from school systems in western education and the increasing need for creative thinking in the modern work and life environment (Craft, 2001; Cremin, 2015; Lin, 2011).

The concepts of creativity, innovation, and entrepreneurship are interpreted differently across various disciplines and traditions of thought. In economic contexts, terms like "entrepreneurship" and "enterprise" are prevalent, whereas "innovation" is more commonly used in sociology.(Audretsch et al., 2019, Penaluna & Penaluna, 2021). Although business, education, and psychology are among the most frequent publishers on creativity, the concept is also central in fields like physics, which demands creative thinking, and in the conceptualisation of artificial intelligence. However, while terms such as entrepreneurship and innovation are sometimes used interchangeably with creativity, they are distinct: individuals may be highly creative without necessarily being entrepreneurial. This complexity has made defining

creativity challenging for researchers, as it remains a multi-faceted and context-dependent concept (Beghetto & Kaufman, 2007; Nakano & Wechsler, 2018).

The existence of creativity theory is often attributed to the work of Guilford and Torrence, who worked extensively on testing and measuring creativity (Al-Ababneh, 2020). Creativity research in the second half of the twentieth century was characterised by a recognition of social structures and their influence on creativity (Rhyammar & Brolin, 1999), Rhyammar & Brolin state that, “whereas earlier there had been a strong emphasis on inner determinants when it came to describing or explaining creativity, during the 1980s and 1990s there was an ever-increasing interest in regarding the human capacity for producing new and original ideas and products within a social context, whereby considerably greater account was taken of environmental factors than before” (Ryhammar & Brolin, 1999). Glaveanu claims that historically, creativity has been viewed through an individual lens, often attributed either to “special” individuals (the He-paradigm) or seen as an innate quality within each person independently (the I-paradigm). In recent decades, there has been an increasing recognition of the role that social influences play in shaping creativity (Glaveanu, 2010).

The literature refers to the “standard definition of creativity”, a definition containing two components that emerged from numerous creativity researchers in different forms from around the mid-1900s. This definition essentially defines creativity as requiring both originality or novelty and effectiveness. Effectiveness can also mean usefulness or value. While this definition points to criteria for creativity, it does not provide guidance on how these are determined and who adjudicates the adjudicators (Runco & Jaeger, 2012). Al-Ababneh concurs that creativity is generally perceived as “the production of useful ideas or problem solutions”. He highlights however that there is no consensus on where creativity is situated in processes, products or people (Al-Ababneh, 2020).

In 2004, Plucker et al. urged for a clearer and more unified definition of creativity to support researchers and practitioners across various fields (Plucker et al., 2004). Their review of creativity in academic journals across disciplines laid the groundwork for a contextualised definition, which they argued was necessary for a more accurate

understanding (Puryear & Lamb, 2020). A review of this work in 2020 has provided one of the most comprehensive “snapshots of creativity conceptions” over the previous ten years and showed that progress in more explicit definitions had been made (Puryear & Lamb, 2020). More recent work has suggested further updates to the definition should include the concepts of “authenticity” and “intentionality” in addition to originality and effectiveness to account for artificial intelligence (AI). AI could be capable of originality and effectiveness, and it is proposed that the additional two traits would differentiate between human and artificial creativity (Runco, 2023).

In contrast, a study in the UK showed that, in the context of education, some teachers’ preference was not to have creativity defined as they felt it would limit learner’s options to demonstrate a variety of creative responses (Fryer, 1996). Richards argues that the shift in creativity research towards viewing creativity as a skill accessible to everyone brings new attention to the concept of ordinary, day-to-day creative activities. This shift, he believes, will unlock significant opportunities for creative development across society (Richards, 2023).

Everyday creativity is one of the Four Cs in the four-c model of creativity developed by Kauffman and Bhegetto. In their model, creativity is divided into four levels: mini-c creativity, which is personal and meaningful only to the individual; little-c creativity, demonstrated in daily decision-making and imaginative expression; Pro-c creativity, requiring professional expertise and domain-specific tools; and Big-c creativity, which results in groundbreaking contributions that significantly influence a field or culture. This framework shows how creativity spans from personal, everyday acts to

transformative innovations (Beghetto & Kaufman, 2007; Ivcevic & Grandinetti, 2024; Kaufman & Beghetto, 2009).

In addition to the general parameters of novelty and usefulness described above, creativity has been described as a process of connecting the dots or coming up with a new concept by merging existing ideas (Joo et al., 2013; Tsai, 2012).

2.6. Context and constraints

As can be seen from the above, definitions of creativity vary greatly. One of the reasons for this is that when discussing creativity, context matters. Different cultures and communities have diverse views and understandings of creativity. The processes by which creativity is approached and the outcomes, utility and purpose of creativity vary depending on multiple factors including culture, community and context. Cabra and Guerrero state that culture is critical in the creativity discussion because it defines "appropriateness", and advocate for the study of creativity to be done with a culturally sensitive approach in an increasingly globalised world (Cabra & Guerrero, 2022). Their exploration of the cultural and socio-economic differences informing creativity across different regions found that contexts have a bearing on how people foster their creative capability.

Creative products or outputs are evaluated in different ways and provide solutions appropriate to the context of the problems they address. This must be taken into consideration when investigating creativity or when initiating creative methods and practices. Lubart et al agree that culture informs the definition of creativity and its theoretical framing. There is, however, evidence of consensus on key areas of creativity across cultures. They assert that "creativity as a process uses culturally impregnated materials (ideas, signs, objects, values etc.) to create new and meaningful artefacts that contribute to culture itself (both the macro culture of entire groups or nations and the micro-culture of local actors and interactions)" (Lubart et al., 2019). Creativity needs to be nurtured by "mobilising culture and tradition" as a precursor to any type of innovation being enabled (Yusuf, 2009).

Shao et al. explore the contrasting views of creativity in Western and Eastern cultures. Western cultures are typically individualistic, prioritising personal goals over group interests, while Eastern cultures are collectivist, emphasising the importance of aligning with collective values and fitting in rather than focusing on individual uniqueness (Shao et al., 2019). In practice, these differences lead to different processing of creativity. Research suggests that in Western cultures where individuality is a dominant trait, there is a stronger concentration on flexible, analytical thinking, which encourages the development of more innovative solutions (Xie & Paik, 2019). In Eastern collectivist cultures, greater emphasis is placed on the appropriateness or practicality of ideas, which encourages careful, continuous thinking and leads to more effective solutions (Adair & Xiong, 2018). Shao concurs stating that, "the emphasis on novel or groundbreaking outcomes fits better with the Western or individualist belief system, which is based on the ideals of individuality, freedom, and democracy. In contrast, the focus on usefulness reflects a strong reliance on tradition, and Eastern or collectivist societies, which are firmly grounded in the ideals of interdependence, cooperation, collectivity, and authoritarianism, have evolved a distinct perspective on the inherent meaning of uniqueness, originality, and/or novelty" (Shao et al., 2019).

Meintjes and Grosser view creative thinking as a primarily individual skill, suggesting that it may not align with the Ubuntu philosophy[1], which prioritises communal values over individual achievement in South Africa (Meintjes & Grosser, 2010). Feather feels the reason for the perceived low levels of creativity in the South African school environment may point to the lack of a shared understanding of what creative thinking is and should encompass (Feather, 2003). Numerous studies have shown that a teacher's attitude towards creativity, along with their educational background, cultural environment, and personal values, influence how much creativity is fostered in their students (Cheng, 2010; Craft, 2001; Craft & Jeffrey, 2008; Lin, 2011; Mpofu et al., 2006).

[1] Human-heartedness, compassion; the qualities embodying the values and virtues of essential humanity, or of Africanness. Ubuntu, meaning **humanity** in some Bantu languages, such as Zulu, describes a set of closely related Bantu African-origin value systems that emphasise the interconnectedness of individuals with their surrounding societal and physical worlds (Dictionary of South African English, 2023)

The instruments and methods used for Meintjies and Grosser's study were Western in origin, conceptualisation and format and assessments were done in English. This dependence on Western psychometric models is due largely to the fact that there are "no explicit indigenous psychological theories of creativity" to frame research and a more critical position on using Western concepts and measures should be taken to achieve a more balanced perspective (Mpofu et al., 2006). Studies in this area are mainly conducted by scholars in the United States and other English-speaking nations, though contributions are also being made by academics from parts of Asia and Europe (Hernandez-Torrano & Ibrayeva, 2020; Andiliou & Murphy, 2010).

African views of creativity encompass both individual traits, such as thinking styles, personality, and motivation, as well as environmental factors and their interaction. Research indicates that African perspectives often highlight the integration of personal and communal values, with a deep connection to the environment being central to creative expression (Mans, 2012; Mpofu et al., 2006). Rather than aligning purely with "Western" or "Eastern" models, this view may represent a distinct, "African" conceptualisation rooted in the philosophy of ubuntu and shared cultural and linguistic foundations, particularly among groups within the Bantu language family. Whilst African views on creativity are not uniform across the continent's 54 diverse nations, a significant grouping of Africans coalesces around ubuntu, forming a cohesive perspective on creativity that distinctly reflects African values.

Mpofu et al. (2006, 2012) suggest that many aspects of African creativity align with a holistic or systemic view of society, where individual and collective elements, as well as environmental factors, are interwoven in shaping creative expression. African perspectives on creativity reflect a strong interconnection between individual expression and community welfare, with creativity often serving essential roles in preserving and adapting cultural practices. Rather than being solely about personal achievement, creativity in these contexts is closely tied to fulfilling roles that support and enhance the social fabric, addressing both the immediate and future needs of the community (Mpofu et al, 2006; Mpofu et al, 2012).

This approach views creative acts as both a continuation of tradition and an

adaptable response to social and environmental changes, prioritising contributions that align with communal values. Individuals pursue creative endeavours that resonate with them on a personal level, while these practices also yield benefits for the broader community. By supporting social cohesion, cultural preservation, and resilience, creativity is seen as integral to the communal ecosystem.
This understanding aligns with a systemic view, where the individual's contributions are recognised as enhancing the collective well-being and fostering an ongoing exchange with the surrounding environment. This worldview is essential for rethinking social and economic systems in the context of the Fourth Industrial Revolution. Creativity, deeply rooted in culture and belief systems, is viewed through both traditional and modern lenses in Africa. However, these perspectives are often overlooked in current creative education frameworks (Mans, 2012). Mans argues that the imposition of Eurocentric models led to a conformity that undermined confidence in African approaches to problem-solving and innovation (Mans, 2012).

Studies have investigated how socio-cultural issues, including trauma and adversity, affect personal and collective creative ability. A study involving Black, White, Asian, and Latinx students in the U.S. found that cultural background and past hardships did not significantly hinder creative self-assurance or the development of a creative identity (Thomson & Jaque, 2023). Ethnic groups that have been more exposed to trauma such as war or minorities who have experienced long-term oppressive social conditions are therefore not at a disadvantage in terms of their creative confidence or the level of belief they have in their creative abilities. Studies conducted on groups considered to be experiencing "developmental adversity" and with children who have experienced neglect or abuse also show that personal creative ability is not affected by hardship and difficulty or ethnic identity (Damian & Simonton, 2015; Thomson & Jaque, 2019, 2023). A study involving 252 Israeli adults, most of whom had experienced war, revealed that frequent exposure to traumatic events was linked to increased levels of creative self-efficacy and emotional creativity. This suggests that individuals facing higher trauma levels may develop greater confidence in their creative abilities, which supports positive post-traumatic growth and helps mitigate negative mental health symptoms associated with trauma (Orkibi & Ram-Vlasov, 2019). Participating in creative pursuits has proven effective in boosting wellbeing and creates and supports opportunities to diminish inequalities (J. Kaufman, 2018).

Creativity and imagination were identified as considerable elements contributing to restoration and supporting resilience in individuals dealing with trauma (Rubinstein & Lahad, 2023).

The association between creativity and constraints is complicated (Caniëls & Rietzschel, 2015) and the effect of constraints on creativity varies across individuals, tasks, and situations, making it difficult to pinpoint a universal approach. However, success can be maximised by understanding these elements, experimenting with diverse constraints, and challenging existing assumptions (Tromp & Sternberg, 2022). When it comes to market creativity, one literature stream maintains that poverty enables creativity in the open market, while another suggests that poverty limits creative capacity. As both a catalyst and inhibitor of market creativity, “the relationship between poverty and market creativity varies across the stages of business development,” with the early startup stages of businesses being associated with high levels of creativity (Doering, 2016).

2.7. Creative education theory

Creativity was initially associated with individual genius and highly talented individuals, but the growth of psychometric research and the development of multi-dimensional theories of intelligence have resulted in more focus on creativity in education (Lin, 2011). Extensive research on creativity exists in Western and Eastern contexts, examining how cultural understandings are incorporated into teaching methods. However, there is limited research on African perspectives on creativity within this framework (Craft, 2001; Mans, 2012; Mpofu et al., 2012). While there is a growing global focus on recognising creativity’s educational value, multiple tensions remain. These include defining creativity, balancing its role in economic productivity versus individual fulfilment, establishing methods for assessing creativity, and addressing policy and accountability challenges (Cheng, 2010; Choe, 2012; Craft et al., 2014; Cremin, 2015). There is growing recognition that effective creativity pedagogy must consider factors like gender, culture, and broader social contexts (Ab Kadir, 2017; Craft, 2001; Craft et al., 2014). Research shows that the practical integration of creativity into teaching and learning depends significantly on the specific creativity theory that informs the pedagogical approach (Craft, 2001). It thus stands to reason that clear definitions and theories, and clear outcomes for

creativity in the skills ecosystem, are required for any type of impactful teaching and learning in this area. Craft summarises the five most common approaches to creativity internationally including: “the creative cycle, single strategy approaches, multi-strategy approaches, system approaches and those emphasising overall pedagogic criteria” (Craft, 2001). Each of these approaches draws from a specific field of creativity research. Table 1 below gives an overview of these approaches.

	Teaching Approach	Characteristics	Field of Study or Influence	Implementation
1	**Creative Cycle Approach**	Based on stages of preparation, incubation, inspiration, and verification	Guilford (1973), Kessler (2000)	Being open to the unknown, bridge differences, hold tensions of form & freedom, safety & risk, creative play & imagination
2	**Single-Strategy Approach**	Lateral thinking, possibility thinking	De Bono (1995), Craft (2000)	Approach learning across the curriculum with a “what if” attitude, questioning approach
3	**Multi-Strategy Approaches**	Adequate space & time, overt supportive climate	Shallcross (1981)	Enable the child to grow in personal confidence without personal scrutiny, at their own rate, support differences
4	**System Approaches**	Modification of classrooms to support children’s creativity	Edwards & Springate (1995)	Working at own pace, creative physical spaces, rich resource materials, an atmosphere of innovation (noise, mess, freedom), experiences (field trips, classroom guests)
5	**Overall Pedagogic Criteria Approaches**	Four features at play for teachers & learners: relevance, ownership, control, innovation	Woods (1990, 1993, 1995), Jeffrey (1997)	Innovative approach by teacher with ownership and control over the process by teacher and learner

Table 2: Summary of the five most common approaches to creativity education (Craft, 2001). Authors’ own summary

Educators have many possibilities at their disposal to prioritise creativity in the classroom. The implementation of creative teaching and learning requires clarification of what the desired outcomes are, and which strategies and processes should be employed while taking the individual learner and the social context into account (Craft, 2001). Lin provides a theoretical outline of creative pedagogy that comprises three interconnected parts, i.e. creative teaching (using novel approaches to make learning more exciting and appealing), teaching for creativity (identifying learners’ creative abilities and supporting them) and creative learning (playfulness,

possibility thinking, resourceful context, exploration, curiosity) (Lin,2009, 2011), illustrated in Figure 5.

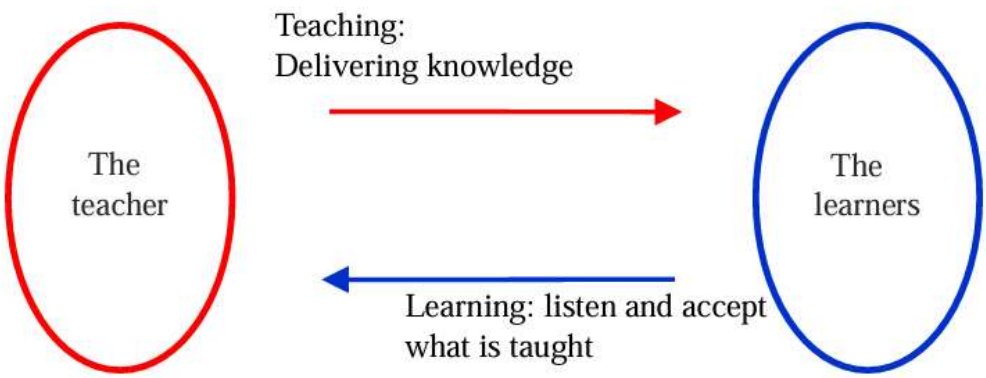


Figure 4: Conventional Teaching and Learning Process (Lin, 2011)

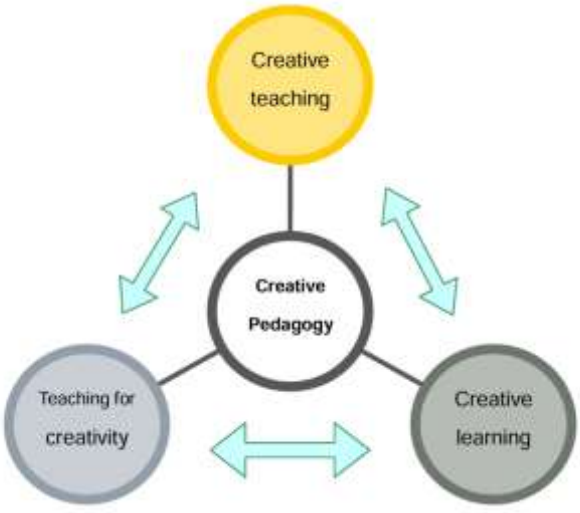


Fig 5: The Three Elements of Creative Pedagogy (Lin 2009)

Amoak proposes adding a fourth leg to Lin's widely accepted model of creative pedagogy. This fourth element is training for creative pedagogy. Amoak states that "Lin had argued for a context-specific practice of creative pedagogy. Consequently, in the Ghanaian (and for that matter, African) context…. It is paramount to ground

creative pedagogical practice starting from the education and training of teachers" (Amoak, 2021).

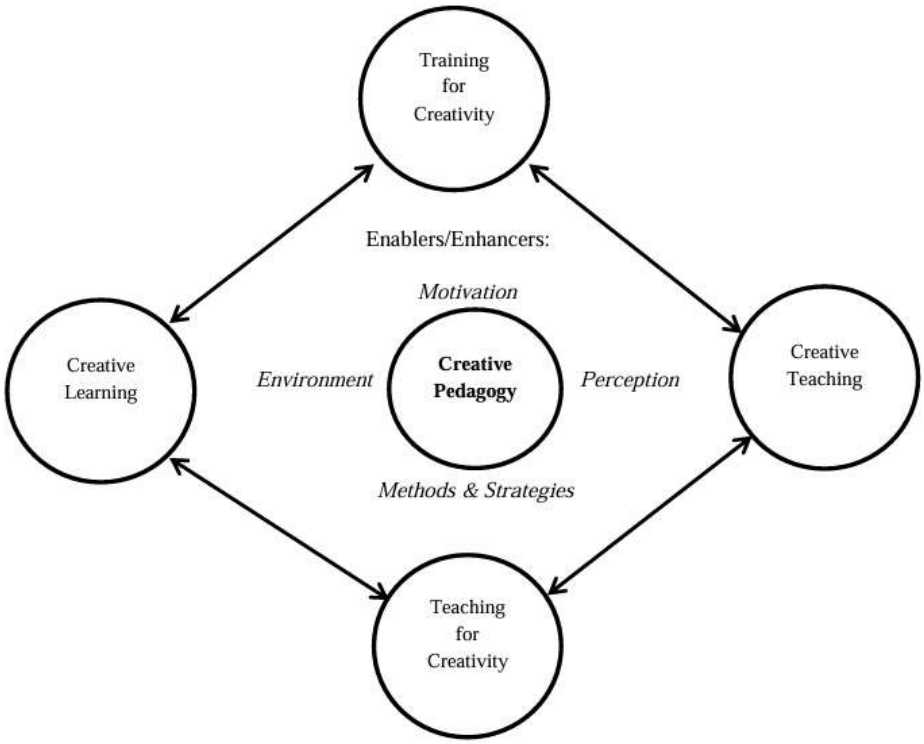


Fig 6: The Four Elements of Creative Pedagogy (Amoak, 2021)

There is an increasing recognition that creative teaching methods should not solely concentrate on either teachers or learners, but rather on the dynamic between them. Glaveanu et al advance three paradigms on creative pedagogy; the He-paradigm (the paradigm of the creative genius), popular in the early years of creative pedagogy, the I-paradigm (the paradigm of the creative individual), advanced in the era of psychometric testing and advancement of creative education in the West from the 1950s, and the We-paradigm (the paradigm of creative collaboration), an inclusive approach recognising the systemic and societal nature of creativity within and outside of formal learning environments (Glăveanu et al., 2015).

Further perspectives from the global South should have the potential of enhancing the We-paradigm by adding a perspective that addresses issues arising from colonialism, racism, oppression and marginalisation (Glăveanu et al., 2015; Sierra, 2010). Proper framing of creativity in education should begin with the rethinking of current paradigms and the ingrained systems of personal and collective development

for example, a study of creative pedagogy in Columbia asks the question of how to incorporate the indigenous notion of “buen vivir – a system of knowledge and living based on the communion of humans and nature and on the spatial-temporal-harmonious totality of existence”. The We-paradigm provides a point of departure from which researchers and educators can engage in context-specific creative pedagogical development for objectives such as these (Glăveanu et al., 2015).

Gcabashe advocates for a “learner-centred pedagogy” which uses instruction techniques such as discussions, brainstorming, case studies, field trips and flipped learning as facilitators for advancing creative thinking skills (Gcabashe, 2024). An exploratory study on creative pedagogy in Ghana concurs that learner-centred teaching promotes creativity. This study also shows that the importance of the school environment, including issues such as smaller class sizes and circular seating arrangements, as well as a “permissive culture that allows students to think and explore outside the box in Ghanaian schools”, promoting creative development (Adom et al., 2021). In their exploration of a theoretical framework for a creative curriculum to support entrepreneurship education in African Higher Education institutions (HEIs), Ezepue et al stress that the discourse surrounding creativity, as well as associated ideas like analytical thinking and innovative problem-solving, is crucial for shaping an educational framework that supports creative and entrepreneurial development. They emphasise that Africa lags in the development of appropriate creative pedagogy to support the relevant skilling of youth for the current socio-economic setting and that additional study is required to develop context-specific creative pedagogies for the continent (Ezepue & Ezepue, 2008).

There is currently no coordinated effort to develop a creative education pedagogy for South Africa, although there is an increasing number of calls for such a process to be undertaken (Mokou, 2022; Mpedi, 2024). Oyekunle’s case study of creative education in the Western Cape Province recommends a focus on changing the curriculum for relevance at a national level, cross-departmental cooperation between the departments of Education and Arts and Culture to set up a body to deliver effective creative education nationally and “train the trainer” programmes for teachers to foster creative education in the country (Oyekunle, 2015). Many scholars of education in Africa advocate for an Afrocentric approach to education policies in

South Africa. The legacy of colonialism and apartheid has left “modern” ways of teaching leaning towards Western approaches with very little recognition of indigenous knowledge systems in education (Gcabashe, 2024; Jansen, 2003). Generally, there are four paradigms outlined in curriculum development literature. The first is as a “syllabus or body of knowledge to be transmitted”. This is a teacher-centric approach where students are inactive recipients of knowledge and are assessed on reproducing this knowledge. The second paradigm is referred to as “curriculum as product”, where the curriculum is essentially a plan to achieve certain ends with results that can be determined and competencies developed in learners relevant to what the current economy or society demands. This model potentially excludes learners and reduces teachers to “practitioners”. The third paradigm is “curriculum as process” where the interaction of learners, teachers and knowledge defines the curriculum. Curriculum in this case is what takes place in the classroom and is guided by the ability to think critically, encourage conversations and evaluate the processes taking place in the classroom. Curriculum as “praxis” is the fourth paradigm and builds on the process model. Here curriculum develops through action and reflection and the awareness of the interests it serves e.g. collective human well-being. A commitment to a context and action comes into view in this last paradigm (Palupi, 2018; M. K. Smith, 2000).

A general view of the South African education system shows that the paradigm that is currently applied leans towards the first two of these four models, focusing on knowledge transmission and outcomes, or product-based results. However, merely trying to integrate a creative pedagogy into these two models, without a critical reflection on how they inform current approaches to teaching and learning will not be sufficient; attention also needs to be given to factors such as an Afro-centric view and decolonisation.

Since 1995, South Africa has engaged with the issue of curriculum reform and the need to adequately prepare learners for the 21st century (Gcabashe, 2024; Jansen, 2003). However, even though South Africa’s curriculum is considered “future ready”, containing an adequate focus on creative thinking (Department of Basic Education, 2023; Eadie et al., 2021), there appears to be a lack of implementation of explicit creativity teaching and learning in South African schools. It could be the disconnect

between thorough interrogation and reflection concerning our overall curriculum paradigms and ad hoc addition of 21st-century skills imperatives that causes this breakdown between theory and practice of creativity and creative thinking in our education system. Several studies underscore that while the South African curriculum may be designed to promote creativity, various implementation challenges—ranging from insufficient teacher training to systemic resource constraints—impede its effectiveness in cultivating creative thinking among learners (Magagula et al., 2022; Hardman, 2024; Jansen, 2022; Mabunda, 2023).Dei advocates for “advancing new ideas grounded in our indigenous systems of thought and cultural perspectives to be able to think through new educational possibilities for the future” (Dei, 2020)

Incorporating creativity into curricula has been a priority in both Western countries including the USA, France, UK, Germany and Sweden, as well as in Asian countries including China, Hong Kong, Japan, South Korea, Taiwan and Singapore (Lin, 2011). In contrast, an overt focus on research and the teaching of creativity in the South African skills ecosystem is limited. A study of how creativity was taught in information systems programmes at South African universities found that teaching creativity was neglected and that there was no generally accepted framework within which creative teaching and learning takes place (Turpin et al., 2015). Recent literature highlights a persistent gap in the development of creative thinking competencies among South African teachers. Ndebele et al. (2024) argue that the country’s initial teacher education programs have not evolved sufficiently to meet the demands of modern, future-oriented education. They advocate for a transformative overhaul of teacher training to promote pedagogies that support creativity and adaptability in the classroom. Complementing this view, Arek-Bawa and Reddy (2024) propose a digitally driven framework for teacher education, noting that the current system lacks the integration of innovative teaching practices needed to prepare educators for the complexities of the Fourth Industrial Revolution. These findings suggest that without systemic reform, South Africa's teacher education will continue to hinder the cultivation of creative and critical thinking skills essential for both educators and learners (Ndebele et al., 2024; Orek-Bawa & Reddy, 2024). It seems that the heightened focus, increased budgets and attention placed on improving education did not adequately reflect on the “nature” of the curriculum and

how it connects to the “process of change”, and research shows that teacher approaches and mindsets have not shifted as required by new and more innovative curriculum (Pandey & Moorad, 2003).

At the same time, the use of learner-centred pedagogy in some South African schools has been found, in some cases, to be effective in promoting creative thinking and problem-solving skills (Gcabashe, 2024). Learner-centred pedagogy refers to using processes and creating environments where learners are actively engaged in the process of learning, involving peer-to-peer learning, constructing meaning and knowledge, discussion and debate, the use of case studies, self-discovery of knowledge and encouraging imagination (du Plessis, 2020; Gcabashe, 2024; Morris & Chapman, 2019). Training at the circuit and district levels by business studies curriculum and the introduction of professional development courses in learner-centred pedagogy in this subject to ensure “deep learning” and that “learners acquire the skills needed for the 21st-century business environment” are recommended (Gcabashe, 2024; Mabaso, 2020). In contrast to Gcabashe’s study, which found that teachers were engaging in learner-centred teaching approaches, Mabaso’s research found that teachers lacked knowledge of deep learning design, struggled to integrate the relevant information and communication technologies into their subject and were largely uninformed about the 21st-century skills needed for learners in today’s fourth industrial revolution business landscape (Mabaso, 2020).

Overall, there is not a consistent, mandated approach to implementing a creative pedagogy in the South African skills system. Consequently, implementation and outcomes are inconsistent and dependent upon individual educators within the system and their levels of understanding and exposure to the nature of these critical skills and appropriate models for teaching. Van Eck states that “creative methods and tools have been largely ignored in higher education” in South Africa, and that very few studies on actual creative pedagogy have been undertaken (van Eck, 2018).

For example, Turpin et al argue that although creativity is crucial for the work of an information systems (IS) professional, the integration of creativity into IS curricula has not been adequately studied and may often be overlooked (Turpin et al., 2015).

Van Eck's study on creative pedagogy in ICT education at the tertiary level advocates for a supervisor or mentor-type role for lecturers to facilitate discussions and conversations concerning solving "practical and real-world problems", as well as integrating creative tools for simulation of real-world contexts for students. Here, the three key elements required to implement creative pedagogy are "co-construction" (student participation in curriculum forming), "student ownership" (a focus on ensuring an enabling environment that promotes student decision-making that gives students management and ownership of their learning) and "high expectations" (fostering high expectations of students' creative skills and their ability to deliver) (van Eck, 2018). Turpin et al concur that subjecting students to "real-world, complex and authentic problems" where they must apply and incorporate domain expertise in a creative way is the best approach to foster creativity (Turpin et al., 2015).

Multiple studies reference the constraints that South African teachers experience in teaching subjects for the 21st century by incorporating learner-centered approaches and preparing appropriate lessons to promote creativity and problem-solving (Spaull, 2013; Spaull & Kotze, 2015; du Plessis, 2020; Joubert et al, 2020). These constraints include ever-growing administrative workload, deficiency of teaching resources, large class sizes and congested classrooms and inadequate lesson time, and the time and pedagogic space to promote active learning (Green & Condy, 2016; Magagula et al., 2022). A lack of training for teachers in teaching approaches and appropriate assessment tools for critical thinking and creativity also inhibits progress in learner-centered and process-orientated learning (Hardman, 2024; Jansen, 2022; Mabunda, 2023).

Teachers have a significant impact on how learners view their creative ability. Teachers' beliefs about creativity thus either foster or limit the creative development of learners (Beghetto, 2006). A UK study of teachers' perceptions of creativity found that teachers' definitions of creativity differed from that of researchers and in general teachers found it difficult to explain creativity in particular terminology. The same study concluded that teachers generally found creative characteristics in learners to be disruptive and non-conformist and therefore less desirable in the classroom. Most teachers who participated did not see the development of learners' creativity as their responsibility, choosing to focus rather on general social skills. This study also

showed that teachers' perceptions of creativity had not changed in the twenty years between this study and a previous one conducted to assess teachers' beliefs about creativity (Kettler et al., 2018). Similarly, a study of 144 student teachers in Korea found that teachers held skills such as kindness and friendliness in more regard than skills such as creativity and risk-taking (Tan, 2003). Across these studies, however, teachers all agreed that the need for creativity and creative skills was urgent and important.

For creativity to be effectively supported in schools, policymakers need to develop policies to promote creative teaching and learning. Policy imperatives to support and nurture creativity in education should include developing sharper definitions of creativity in education, restructuring curricula to allow enough time and encourage interdisciplinary learning, supporting research on effective approaches to fostering creativity and looking at new methods of assessment (Collard & Looney, 2014). There is, however, a tension between the "needs of policy" and the "nature of creativity" (Runco & Jaeger, 2012). This shows in policy in some instances as creativity being ill-defined or absent completely, and where it is defined, in problems with practice where creativity departs from conventional, established structures or culture (Henriksen et al., 2018).

At a high level, South Africa's national system of innovation, guided by the 2022 Science, Technology and Innovation Decadal Plan and the 2019 White Paper on Science, Technology and Innovation, acknowledges the role of creativity and appropriate alignment of the skills ecosystem to foster this ability in its citizens (Department of Science, Technology & Innovation, 2019 & 2022). Similarly, the country's 4IR Diagnostic report places significant emphasis on creativity, critical thinking and problem solving as essential competency skills to be prioritised throughout the skills ecosystem to enable South Africa's adaptation to and participation in the future of work (Presidential Commission on the Fourth Industrial Revolution, 2020). The National Digital Skills Strategy highlights creativity as a critical focus (Department of Digital Communications & Technology, 2020). However, policies such as these mention creativity but assume that the practice of creative teaching and learning will be implemented. There is no clear pedagogy, directive for creativity to be prioritised or educational framework provided to

mainstream this critical skill.

One of the impacts of many definitions and context-specific understanding of creativity is that the measurement or assessment of creativity is challenging. Sternberg states, “any test of creativity will be limited in the range of people to which it can be applied, no matter how much translation and adjustment is done. The test itself simply will not be relevant in every instance and potentially may lead to misleading conclusions” (Sternberg, 2022). Being bound to an assessment-based system forces educators to select pedagogical approaches that will suit this required outcome, shunning more student-centred approaches. Ramlackhan et al state that “critical thinking and problem-based collaborative approaches to learning that centre learners’ capacities and interests may be replaced with more structured and individualised learning methods because of the consequences of high-stakes testing” (Ramlackhan et al., 2024). A tension exists in the context of increasing focus on and implementation of creative teaching and learning in a system that is still heavily vested in performance and accountability in many countries, requiring an alignment of creativity policies and policies for performance criteria and targets (Craft & Jeffrey, 2008).

According to Papageorgiou and Kokshagina, the challenge today “is to turn teachers into advanced knowledge workers with professional autonomy yet working in collaborative cultures”. Effective teaching for creativity and relevant real-world impact requires that the content is changed and the boundaries between subject matter are erased for interdisciplinary collaboration with exposure to real-world situations as part of the learning experience. In imagining the future of education for creativity and innovation, they highlight the transitions required to address the evolving demands of the future workforce and equip both educators and learners to adapt to the shifting landscape of learning (Papageorgiou & Kokshagina, 2022).

Table 3 summarises the key shifts envisaged for education for creativity and innovation.

Element	Traditional Education	Future-Ready Learning Landscape
Pillars of learning		
Students	Passive and interim information recipients	Active and lifelong learners

Element	Traditional Education	Future-Ready Learning Landscape
Teachers	Lecturer and subject expert	Various roles: coach, mentor, facilitator, curator, practitioner, learning designer; continuous upskilling
Subject matter	Discipline-centred	Multidisciplinary, problem-based and challenge-driven
Spaces	Classrooms and lecture halls with fixed seating	Flexible spaces and the real world
Learning journey		
Style	Individual and independent	Team-based and collaborative
Process	Linear	Iterative, exploratory and experimental
Physical material & equipment	Backboards and textbooks	Arts and crafts
Digital technologies	One-directional	Interactive
Learning results		
Outputs	Written material	Written material, physical prototypes and action
Outcomes	Standardised knowledge acquisition	Personalised knowledge, skills and attributes
Impact	Institutional	Societal
Evaluation	One-dimensional	Multidimensional

Table 3: Overview of key shifts for creativity and innovation education

(Papageorgiou & Kokshagina, 2022)

The table describes changes from the traditional education approaches of knowledge transmission, linear learning processes and standardised testing to the teacher as a facilitator of learning, collaborative and interactive learning processes, diverse outputs and outcomes and multidimensional testing.

2.8. The Skills Ecosystem Concept

A skills ecosystem refers to a complex and evolving network of interconnected actors and institutions that collaboratively influence how skills are developed, supplied, demanded, and utilised within a particular sector or geographic area. This network, comprising stakeholders with differing roles, interests, and resources, functions similarly to a natural ecosystem, where continuous interaction and mutual dependence shape outcomes (Lundgren & Meijer, 2025).

Originally introduced by Finegold and Soskice (1988) in their analysis of the UK labour market, the concept gained traction for highlighting the systemic factors contributing to either low- or high-skill symmetries. Their work was later extended through research into high-skill, self-sustaining ecosystems in California. Although

early scholarship emphasised the conditions that foster high-skill systems, more recent policy discussions have shifted toward the transformation of ecosystems that support low and intermediate skills. This framework has since been adapted to various national and comparative contexts, including the UK, Germany, and Australia (Buchanan et al., 2016).

A skills ecosystem is characterised by both a complex network of interconnected actors and dynamic processes that collectively drive continuous economic and system evolution. Central to this concept are four fundamental components: the development, supply, demand, and deployment of skills, which interact in a mutually dependent manner to sustain the ecosystem's functionality (Lundgren & Meijer, 2023; Ramsarup et al., 2023). Finegold (1988) identifies key features that underpin such ecosystems, including their role as catalysts that stimulate growth, the provision of essential resources that nourish the system, the presence of a supportive environment, and a strong capacity for adaptation in response to changing conditions. The ecosystem engages a diverse array of stakeholders encompassing policymakers, educational institutions, industry representatives, and social partners such as trade unions and employer associations, along with regional and national governance bodies, all of whom contribute to its development and governance (Lundgren & Meijer, 2023). Furthermore, the skills ecosystem is inherently dynamic, reflecting the ongoing interplay and co-evolution of skill levels across low, intermediate, and high segments, ensuring the system remains responsive and resilient (Ramsarup et al., 2023).

The concept of skills ecosystems provides a comprehensive framework for reshaping education systems to better respond to complex social and economic realities. Unlike earlier approaches that focused narrowly on aligning education with labour market needs, skills ecosystems acknowledge that challenges like unemployment, skills mismatches, and inequity are shaped by a range of demographic, institutional, and economic factors (Lundgren & Meijer, 2025). This

perspective addresses these issues more holistically, aiming to enhance competitiveness, resilience, and social inclusion (Ramsarup et al., 2023).

A major contribution of this approach is its shift away from a supply-dominated mindset, which overemphasises vocational training while often overlooking skill demand, utilisation, and innovation (Lundgren & Meijer, 2025; Buchanan, 2017; Ramsarup et al., 2023). Instead, it promotes multi-sectoral collaboration, bridging education, labour, and industry, while also encouraging coordination across various levels of government (Lundgren & Meijer, 2025; Hytonen, 2023). Successful implementation depends on partnerships and collective action, which remain a major challenge for regional development.

Skills ecosystems also emphasise the importance of adapting strategies to specific regional or local contexts, acknowledging that place-based needs vary and require tailored solutions (Ramsarup et al., 2023; Buchanan, 2017). The definition of skills is expanded to include cognitive, emotional, and interpersonal dimensions, encouraging curricula to integrate transferable skills like communication, creativity, and problem-solving (Care & Anderson, 2016; Alzahrani et al., 2025).

For these broader skills to be meaningfully cultivated, education systems must undergo systemic reform—shifting curricula away from rote learning toward application-based knowledge, transforming pedagogy, and modernising assessment methods (Care & Anderson, 2016). Additionally, continuous learning becomes vital in the face of global trends such as digitalisation and the green economy. Skills ecosystems support infrastructure for lifelong learning and encourage self-directed learning throughout life (Lundgren & Meijer, 2025; Hytonen, 2023).

These ecosystems also value informal learning and recognise alternative credentialing methods, such as microcredentials, that acknowledge skills gained outside formal institutions (Lundgren & Meijer, 2025; Ramsarup et al., 2023; Hytonen, 2023). Furthermore, the model supports just transitions by promoting

inclusive vocational education aimed not only at productivity but also at personal growth and environmental responsibility (Ramsarup et al., 2023).

Governance and strategic planning are central to the ecosystem approach. National strategies that are responsive, evidence-based, and rooted in quality assurance and strong public-private partnerships are seen as essential to reforming skills systems (Alzahrani et al., 2025). The use of technology, including AI and digital tools, plays a crucial role in facilitating learning, skills recognition, and labour mobility (Hytonen, 2023). Skills ecosystems also contribute to regional development by aligning training with local priorities, fostering innovation, and engaging communities to drive inclusive growth (Hytonen, 2023).

In the context of multisectoral skills needs, a rapidly changing socio-political and technological environment, and the challenging nature of creativity led education, a skills ecosystem approach seems essential when developing strategies to integrate creativity into the South African skills landscape.

2.9. Future possibilities for creative education

Artificial intelligence (AI) has become a significant theme of fascination for creativity researchers, particularly since ChatGPT launched in November 2022. The research into AI's impact on and facilitation of human creativity is nascent, and the next few years will see enquiry into the application of AI for different uses and how these tools can be intentionally used to enhance human creativity and innovation (Ivcevic & Grandinetti, 2024). Brito refers to the onset of the era of "super creativity", where there is a synergy between "the mind, the man and the machines". He is referring to the relationship between the creative individual, creative thinking and artificial intelligence providing the potential to exponentially scale the possibilities for creativity (Silvio Manuel Brito, 2020).

While intelligent technologies will add significantly to creatively solving challenges, human interaction is still required for resource investment, testing of the accuracy of machine-generated solutions and the integration of the creative solutions into multifaceted sociocultural truths to facilitate the adoption of such solutions (Pitso, 2020). This means that for artificial intelligence to produce and implement practical

creative solutions, humans must still be present and involved. Pitso, however, highlights that the relationship between humans and technology must evolve from passive to intellectual interactions and that mindsets need to be addressed in the education context to prepare for this eventuality, paving the way for super creativity (Pitso, 2020). The continuing growth of intelligent technologies is going to impact creativity and creativity in education significantly in years to come and underscores the importance of mainstreaming creativity in education as a matter of urgency in order to manage and keep pace with super creativity.

In summary, large-scale global geopolitical, social and economic shifts, as well as 4IR, require an urgent response from our education systems. A critical part of the shift to prepare learners for the changing world of work and life is an intentional focus on mainstreaming creativity in education. There is a global attempt to test new ways and approaches to learning and an acknowledgement of the importance of creativity as an essential skill.

Creativity is an indispensable foundational element of economic development and the competitiveness of nations. The concepts of creativity and innovation are intrinsically linked, with innovation completely dependent on creativity as a first step. Much of the literature investigates the subject of creative education from Western and Eastern perspectives, with little focus on a local interpretation of the required solutions. Creativity research highlights that cultural and contextual differences heavily impact how creativity is understood and effected within national educational systems.

In addition to context specific approaches, constraints such as trauma, poverty, cultural and generational conservatism, bias against change and other environmental factors do not affect creative self-efficacy negatively. Constraints are seen as inspiring creativity and creativity can contribute to resolving trauma and other constraints within the school system.

There are some tested approaches to pedagogy for creativity, especially in recent years, however, these have not been explicitly prioritised in the South African

context. Creativity is embedded within the curriculum as an overarching principle, but it seems that teachers are unable to effectively extract, package and teach creativity from this broad guideline. South Africa is perceived to have a lack of creative thinking capacity in teaching and insufficient output in terms of students who can think creatively.

Most of the studies conducted to both understand creativity and to measure teachers' and learners' creative capacity to date have been through a western lens. Contextualising our understanding of creativity may position us uniquely to contribute significantly to new models and ideas required for the new environment we are living in. In order to adequately respond to the fourth industrial revolution, the social and cultural factors influencing approaches to and experiences of creativity in the education system as experienced at multiple levels by educators, learners and ecosystem managers need to be investigated.

In the words of James Kaufman, "Investing in creativity is rarely a short-term solution. But, over time, people who are happier, more engaged with life, interacting with diverse groups, and more tolerant of others will be the ones who can bring us closer to the world that many of us might imagine only as a fantasy. Creativity represents a solid starting point for the future" (Kaufman, 2018) .

Chapter 3

Methodology

This research aims to understand how creativity is perceived, interpreted, taught, and applied in the skills ecosystem, as well as to examine the factors influencing creative thinking in South African youth. I explore this through three lenses: from the perspective of the youth (high school and post school age from public and private schools), skills ecosystem managers (workplace human capacity development experts, education system managers and policy makers) and educators (teachers at various levels of the skills ecosystem). The objective is to gain an in-depth insight into the phenomenon of creativity and creative thinking in our local context from these different perspectives of the skills ecosystem to both generate new ideas for further research, as well as to develop a praxis model for use related to the Presidential Commission for 4IR's work in the alignment of the skills ecosystem for the 4IR era in South Africa. Key recommendations from the Presidential Commission's report included investing in human capacity and taking a systemic view of the skills ecosystem, with specific proposals with regards to including "competency skills" or core skills such as creative thinking, critical thinking, and complex problem-solving as focus areas in a realignment of the skills system for relevance in a 4IR era (Presidential Commission on the Fourth Industrial Revolution, 2020). This research aims to bring practical proposals via a praxis model that can enable tangible outcomes toward prioritising creative thinking and innovation in the national skills ecosystem.

3.1. Research planning and overview

The research design was originally intended to be ethnographic in nature as groups of youth would be observed in classroom and creative thinking sessions. Due to the ongoing lockdown levels in 2021 caused by the COVID19 pandemic, schools and other places of learning were closed for significant amounts of time in 2020 and into 2021. This led to challenges in obtaining access to local schools as planned during this period and a reluctance on the part of educators once institutions opened again to commit time to something outside of their immediate and urgent need to catch up on missed work. The study was thus adjusted to accommodate a broader context than how creativity and creative thinking are experienced, learned and taught in

schools only.

The context was broadened to the wider skills ecosystem in South Africa. The skills ecosystem I refer to includes learning from Early Childhood Development through the Basic Education System, post-school training of various kinds and the workplace. The Presidential Commission on the Fourth Industrial Revolution's Report (2020) looked at human capacity development by taking a systems view of the skills ecosystem to identify the challenges and bottlenecks in this system and propose interventions for development. My approach in looking at the issue of creativity as a critical skill took a similar direction by focusing on the understanding and experience of creativity capacity development across this skills ecosystem to get a broad holistic view of the subject matter as experienced at various points within the ecosystem. According to Hsiao, "systems thinking is based on a holistic view of the system and environmental interaction. It emphasises that a system is an inseparable whole. In other words, it ponders on and defines issues from the macro perspective." (Hsiao, 2014)

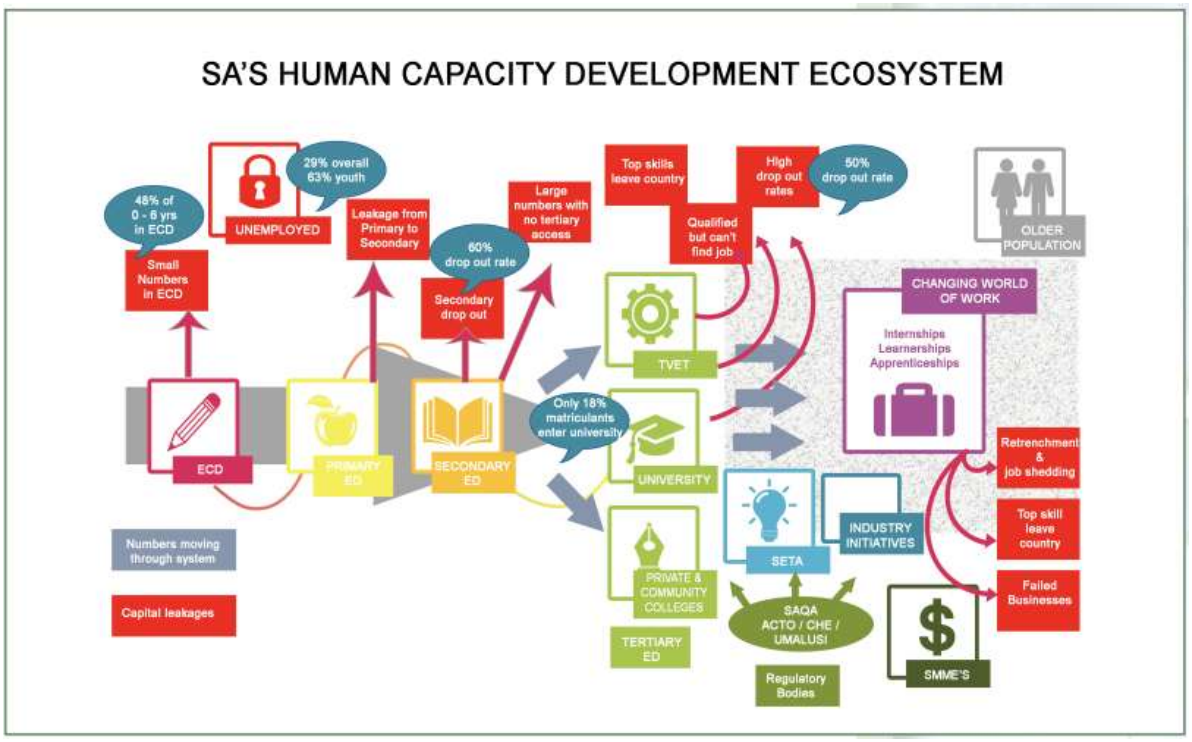


Fig 7 - SA's Human Capacity Development Ecosystem (Diagnostic Report of the Presidential Commission on the Fourth Industrial Revolution, March 2020)

In October 2018, South Africa's President directed that the Minister of Communications and Digital Technologies drive and steer the 4th Industrial Revolution trajectory in South Africa. The President subsequently announced in the State of Nation Address (SONA) 2018 that the Department of Communications and Digital Technologies would establish a Presidential Commission on the 4th Industrial Revolution (PC4IR) which would provide the Government with a template of how to approach the digital revolution. 700 applications were whittled down to 33 names with the President as the Chairperson. In the words of President Ramaphosa, "the establishment of the PC4IR is driven by the spirit of collaboration between the government, academia, private sector, labour and civil organisations which is a key ingredient for successful navigation of the digital transformation process" (Presidential Commission on the Fourth Industrial Revolution, 2020).

This group developed a diagnostic report that was tabled to the President on 7 November 2019. Additionally, PC4IR provided guidance to the government during the January 2019 Cabinet Lekgotla while still in the process of developing the report. The PC4IR divided its work into eight work-streams, one of which was the workstream looking at Human Capacity Development and the Future of Work. This work stream was tasked with looking at how the fourth industrial revolution would impact the future of work with a specific focus on the skills ecosystem and what would be required to both catch South Africa up where we have human capacity development backlogs and deficits, as well as where this technology-driven revolution could assist to fast track our development, particularly that of our large youth demographic.

As one of the PC4IR Commissioners, I chaired the work stream on Human Capacity Development and the Future of Work. From the outset of the work, faced with the enormous task of determining what South Africa's approach should be to ensure that our greatest resource, our people, are not left sidelined by the technological revolution, we settled on a systems approach. It was necessary to look at the skills ecosystem in its entirety and identify where the human capacity leakages were and try to determine where and how technology could enable our human capacity in the reality of our current context. At the same time, we had to hold the global realities and standards in balance to come up with a uniquely South African view while

remaining firmly connected to the larger global ecosystem.

The diagram provided as Figure 7 was developed alongside one-on-one interviews with those responsible for the entities represented in the diagram to try to comprehend the gaps, assets and deficiencies of the system so that solutions to scale a 4IR approach could be proposed within this context. The diagram depicts a systems view of the skills ecosystem from Early Childhood Development to the world of work and beyond and identifies the key stakeholders in the system at these various points. The flow of learners through the system is shown, as well as the points at which there are human capacity leakages. Although simplified, and not reflecting the full complexity and scale of every element of the ecosystem, the mapping shows high losses of human capacity in the primary, secondary and tertiary levels of the education system, inadequate monitoring of overall ecosystem flows and leakages and significant disconnects between segments of the ecosystem.

The final report made proposals relevant to different tiers of the ecosystem and attempted to stress the critical importance of coordination as many of the current issues stem from failures to connect the dots between components of the skills ecosystem. The report thus proposed placing a coordination mechanism to drive human capacity development for 4IR at the Human Resource Development Council (HRDC), a body developed with this function in mind (Presidential Commission on the Fourth Industrial Revolution, 2020).

My approach in this dissertation is to use the same systems view and to try to ascertain the state of, and approach to, creativity and creative teaching and learning from practitioners in different parts of this skills ecosystem. Using this point of departure, I identified three lenses through which to investigate the subject.

3.1.1. Skills ecosystem managers (individuals tasked with working within the skills ecosystem at a managerial level – those responsible for devising policy, implementing large scale ecosystem initiatives and /or developing curricula). These individuals are in the formal education system, government, and the corporate workplace environments.

3.1.2. Youth (young people under the age of 35 from various socio-economic

backgrounds and with varied education and workplace experiences within the skills ecosystem). In South Africa, the age range for the youth demographic is 18 – 35 years.

3.1.3. Educators (teachers and lecturers from school, university, early childhood development and workplace contexts). The common denominator is that these individuals are all involved in teaching and imparting skills at some point in the ecosystem.

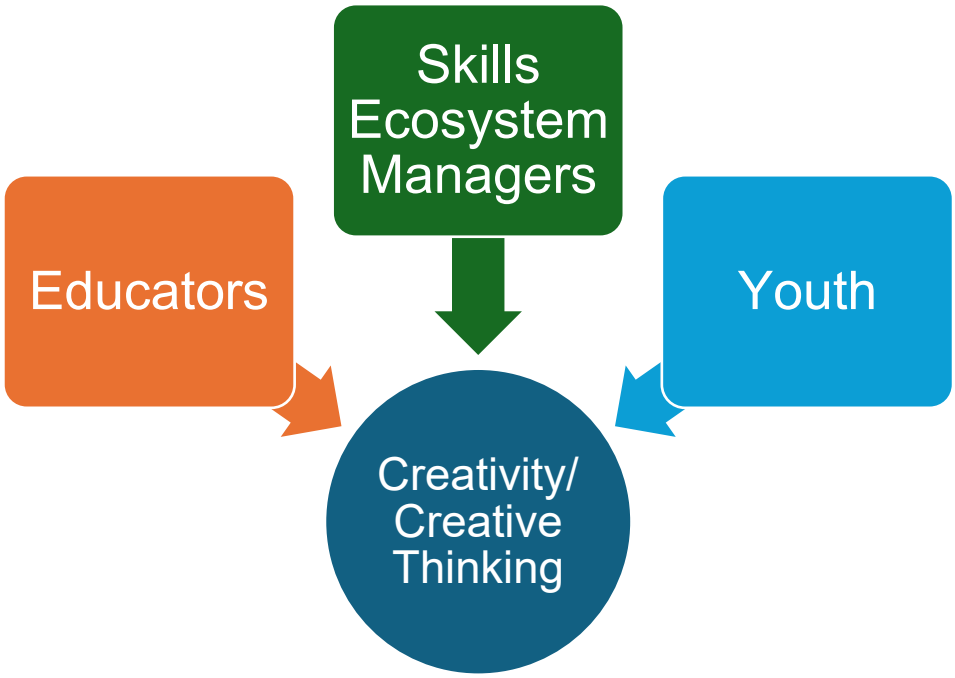


Fig 8: Three Lenses from Which to Understand How Creativity Is Learned, Taught and Experienced Within the Skills Ecosystem.

3.2. Research design

Research of this nature is best served by a qualitative approach, which takes account of subjectivity and supports research processes that are tailored to the unique context and needs of each specific setting and researcher. Broadly, the aim of qualitative research is to discover meaning in the data and draw out themes which are organised around recurring and consistent commonalities (Flick, 2007). Terre Blanche et al. refer to qualitative research as not controlling and isolating variables, but rather “harnessing and extending the power of ordinary language and expression

to help us understand the social world we live in" (Blanche et al., 2006). "Giving voice" to these informants in the data collection phase and representing their voices prominently in the reporting phase of the study allows us to unearth new ideas instead of only confirming existing ones (Gioia et al., 2013).

This study is best classified as *exploratory qualitative research*, rather than grounded theory. While elements of grounded theory—such as inductive reasoning and the search for patterns—inform parts of the analysis, the primary objective of this research is not to develop a new theory, but rather to explore and deepen understanding of a relatively under-researched phenomenon: the role and perception of creativity in South African education systems.

Qualitative studies often seek to understand and interpret social phenomena, human behavior, or subjective experiences, making inductive reasoning a suitable choice for data analysis and theory development. Inductive reasoning refers to generating conclusions about the generally observed themes from the knowledge about specific things observed in the qualitative research process (Woo et al., 2017). I used an inductive approach in which I aimed to investigate and gain deeper insight into a relatively overlooked topic: how creativity is understood and integrated within South Africa's education systems. The systematic analysis of the data allowed me to identify emerging themes and concepts that can form the basis of generating deeper insights into the topic .

Exploratory qualitative research is used when a topic is not yet fully understood, lacks a strong theoretical framework, or requires contextualised insights from those directly involved. According to Stebbins (2001), exploratory research is appropriate when researchers seek to develop preliminary understanding, generate new questions, or uncover the dimensions of a phenomenon. It often precedes more structured or theory-driven studies and aims to provide rich, nuanced, and contextually grounded insights.

Inductive reasoning can also be used to refine or expand existing theories or frameworks; additional or alternative explanations can be identified from the data that augment existing knowledge. Gioia argues that a traditional research approach to advance knowledge which is grounded in existing ideas, defines and potentially

limits what we can know (Gioia et al., 2013). The fourth industrial revolution and the required approach to education and skills in this context is a new field of study with an unprecedented historical context, and thus an approach to remaining open to new concepts and theory development is important.

In this study, the exploratory approach allows for open-ended inquiry, flexibility in data collection and analysis, and responsiveness to emerging themes. The research prioritises depth over breadth, with the aim of capturing participants' lived experiences, personal interpretations, and socially constructed meanings surrounding creativity in education. This aligns with the interpretive paradigm, which values multiple perspectives and seeks to understand phenomena as they are experienced by individuals in specific social contexts (Creswell & Poth, 2018; Merriam & Tisdell, 2016).

By engaging with educators, policy advisors, and stakeholders, the study illuminates gaps between policy intention and implementation, and reveals how creativity is conceptualised and enacted (or not) within current educational frameworks. This insight is foundational for future research and possible policy innovation, making the exploratory qualitative approach both appropriate and necessary.

By making potential researcher bias explicit, the risk of interpretive distortion is proactively managed, as the researcher's preconceptions are acknowledged and accounted for from the outset of the research process. On a personal level, I am deeply vested in this subject. I served on the Presidential Commission for the Fourth Industrial Revolution and currently sit on the National Advisory Council for Innovation, where I focus specifically on creativity as a critical skill for the future of work. My interest in and commitment to the field are further underscored by my professional practice and formal training in the creative industries.

Given this background, my personal experience is a significant contextual factor in the research. However, rather than viewing this as a source of bias alone, it is also positioned as a source of insight. As Maxwell (2012) and Merriam (2009) argue, a researcher's prior knowledge and experience can be valuable assets—offering hypotheses, interpretive depth, and additional validity checks. My engagement with the subject has been consciously leveraged to shape meaningful research

questions, engage ethically with participants, and interpret data with empathy and understanding.

To mitigate potential bias, I adopted an interpretive research approach, which allows for a critical and reflective stance toward my own subjectivity. This involves ongoing reflexivity—continually questioning how my views and experiences might influence the research process, data interpretation, and reporting. I also incorporated triangulation strategies and peer debriefing to ensure analytical robustness.

Using an interpretive lens, I seek to understand the phenomenon of creativity in education through the lived experiences and perceptions of those directly involved. This approach emphasises the co-construction of meaning and acknowledges the existence of multiple realities. In line with Henning et al. (2004), this research pursues a deep, descriptive analysis that values context, participant voice, and the intentional realities that shape social phenomena. The approach is aligned with Patton's (2015) view that existing understandings must be set aside or re-examined so that new meanings can emerge.

In summary, while my positionality provides a rich contextual foundation, I have embedded reflexivity and methodological safeguards throughout the research process to ensure that my involvement enhances rather than compromises the study's credibility and trustworthiness.

To support a systems-oriented perspective and maintain a macro-level understanding of the phenomenon, I adopted an exploratory qualitative research design. This approach is particularly suited to areas where limited prior research exists and where the goal is to uncover patterns, generate insights, and identify key themes rather than to test existing theories (Stebbins, 2001; Marshall & Rossman, 2016). In line with this, I drew on multiple sources of data to explore the research questions from various vantage points. By including individual interviews, focus groups, and expert consultations, I was able to obtain a richer and more nuanced understanding of the subject.

Using triangulation of data sources allowed for deeper contextualisation and increased credibility of the findings (Creswell & Poth, 2018). Throughout the process, data collection and preliminary analysis occurred in an iterative fashion. For instance, while interviews were being conducted with participants under the first lens of inquiry, early insights informed the design of questions under the second lens. This reflexive process is characteristic of qualitative exploration, where emergent findings can shape ongoing data collection (Merriam & Tisdell, 2016).

I incorporated interviews with professionals in creative education and innovation to broaden the scope and validate emerging patterns. These perspectives helped refine the insights gained and contributed to the development of a more comprehensive understanding of creativity's role and perception within South African education systems.

3.3. Sampling

The original research design was re-worked to include focus groups with youth, as well as semi-structured interviews with teachers, skills ecosystem managers and workplace human resource practitioners to describe and analyse the patterns of their experiences, perceptions and understanding of creativity and creative thinking in the South African skills ecosystem.

The sampling for the study was purposeful, also referred to as purposive sampling (Merriam, 2009). This type of sampling allows the selection of data rich cases with the possibility of obtaining insight and in-depth understanding of the subject being studied (Patton, 2015).

I wanted to explore the opinions, viewpoints, and experiences of creativity and creative thinking using three different perspectives or lenses i.e. the perspectives of South African youth, Skills Ecosystem managers and Educators and thus used the following sampling approach:

3.3.1. The perspective of South African youth

I conducted three focus groups with youth based both in Gauteng (2 groups) and the Western Cape (1 group). Two of the focus groups comprised of youth who had

grown up in townships and completed their schooling in low fee schools, and one comprised of youth who were either currently in private schools and/or university. The youth in the last group who were in university had all completed schooling in private schools or Model C schools. The sample thus included youth from across the socio-economic spectrum with diverse experiences in the skills ecosystem. The groups were culturally diverse including Coloured, Black and White youth[2]. Some of the youth were known to me via the local community context and others were not known to me. The first focus group comprised seven youth from various townships in Gauteng. The second focus group comprised eight youth from townships and rural communities in the Western Cape. The third focus group comprised six youth from suburbs in Gauteng.

3.3.2. The perspectives of skills ecosystem managers

I conducted interviews with ten skills ecosystem managers from diverse positions in the skills ecosystem. This included national policy makers responsible for the TVET system and the national Digital Skills strategy, individuals working specifically on creativity within the basic education system, a university curriculum expert, an ECD specialist practitioner, a human resource expert in workplace human capacity development, a workplace creativity and innovation coach and an individual responsible for innovation for one of South Africa's largest cities. This provided a broad perspective on how the issue of creativity is viewed from diverse perspectives and application contexts within the skills ecosystem from basic education through to the workplace, specifically from the view of people who are responsible for the implementation of learning and innovation at a managerial and policy development/implementation level.

3.3.3. The Perspectives of educators

I conducted interviews with ten educators including those working in the ECD sector, the basic education system as well as in post-school institutions such as universities and colleges. The educators represented a broad spectrum from pre to post school teaching contexts. This gave me insights into how the teaching and learning of

[2] These terms denote the racial classifications given to South Africans during apartheid and still used today for purposes of identification for redress.

creativity and creative thinking is experienced by educators and what their challenges and their approaches are.

Category	Research Participant	Context / Position
Skills Ecosystem Manager		
	Skills Ecosystem Manager 1	General Manager, TVET Colleges nationally
	Skills Ecosystem Manager 2	Director of Innovation for major SA City
	Skills Ecosystem Manager 3	Director of national project with Department of Basic Education (creative education policy)
	Skills Ecosystem Manager 4	Creativity Coach for large private sector companies
	Skills Ecosystem Manager 5	Human Resources Practitioner in private sector
	Skills Ecosystem Manager 6	University Director: Skills for the Future of Work
	Skills Ecosystem Manager 7	NGO Director: ECD interventions in townships
	Skills Ecosystem Manager 8	Manager: National Digital & Future Skills Strategy (national government)
	Skills Ecosystem Manager 9	Manager: ECD Training at TVET College
	Skills Ecosystem Manager 10	Future of Work & Innovation Expert, UN Agency for Skills Development
Educator		
	Educator 1	ECD & Primary School Educator
	Educator 2	Tertiary Level Educator
	Educator 3	Primary School Educator
	Educator 4	Primary School Educator
	Educator 5	Primary School Educator
	Educator 6	Primary School Educator
	Educator 7	High School Educator
	Educator 8	High School Educator
	Educator 9	Tertiary Level Educator
	Educator 10	Tertiary Level Educator
Youth		
	Youth 1	Post school, in internship, attended low-fee township school
	Youth 2	Post school, in internship, attended low-fee township school
	Youth 3	Post school, in internship, attended low-fee township school
	Youth 4	Post school, in internship, attended low-fee township school
	Youth 5	Post school, in internship, attended low-fee township school
	Youth 6	Post school, in internship, attended low-fee township school
	Youth 7	Post school, in internship, attended low-fee township school
	Youth 8	Post school, in internship, attended public school
	Youth 9	Post school, in internship, attended public school
	Youth 10	Post school, in internship, attended public school
	Youth 11	Post school, in internship, attended public school
	Youth 12	Post school, in internship, attended public school
	Youth 13	Post school, in internship, attended public school
	Youth 14	Post school, in internship, attended public school

Category	Research Participant	Context / Position
	Youth 15	Post school, in internship, attended public school
	Youth 16	In school, private school
	Youth 17	In school, private school
	Youth 18	In school, private school
	Youth 19	Post school, studying full time, attended private school
	Youth 20	Post school, studying full time, attended private school
	Youth 21	Post school, studying full time, attended private school

Table 4: Summary of Sampling

3.4. Research instruments and data collection

Exploratory qualitative research is well-suited to investigating complex and relatively under-researched phenomena, as it allows for the flexible use of a variety of data collection methods to generate in-depth, context-rich insights (Stebbins, 2001; Merriam & Tisdell, 2016). This approach emphasises openness to new themes and unexpected findings, making it particularly valuable in contexts where little prior theory exists (Marshall & Rossman, 2016). To capture the multifaceted nature of the subject, data were collected through audio and video recordings, as well as researcher field notes and direct observations. These methods provided a layered understanding of participant perspectives and the broader context in which they are situated. The use of multiple instruments helped to ensure depth, credibility, and contextual relevance in the emerging findings (Creswell & Poth, 2018).

The individual interviews were conducted virtually and were recorded with the permission of the participants (zoom video recording) as well as an audio recording on my phone as a backup. In some cases, the interviews were conducted telephonically, and the audio recorded. Some of the interviews were conducted in person. In addition to the recordings, I took detailed notes during the interview process. To engage with the youth, I conducted three focus groups. These were conducted in person. The focus groups were also audio recorded and I took detailed notes during the sessions.

The instruments used for the study included both one-on-one semi-structured interviews using open-ended questions and focus groups.

Breen (2006) states that “the key difference between one-on-one interviews and focus-group discussions is that the latter is far more appropriate for the generation of new ideas formed within a social context. In contrast, one-to-one interviews ought to probe individual experiences, encouraging self-reflection on issues that could be distorted if social pressure were placed on the individual.”(Breen, 2006)

The decision to use focus group interviews with youth was influenced by my thought process on what I wanted to get out of the research. I wanted to understand the role of creativity and creative thinking in the lives of youth in general, if any, and also gain an insight into their general experiences of creative teaching and learning in the skills environments they had been part of. I aimed to encourage young people to share and compare their experiences on this matter with one another, discover issues of collective value and potentially develop and create ideas. The focus group was the best instrument in this context to facilitate these types of interactions and outcomes. The focus group format also encouraged views to surface as youth were not put on the spot in a one-on-one context and expected to provide information.

The three focus group sessions comprising youth, all of which were held in person, lasted approximately 1 -2 hours and ranged between 6 to 10 participants. The group size provided enough diversity in the data gathered, without being so large that participants did not feel comfortable sharing their thoughts and experiences. Onwuegbuzie et al state that well designed focus groups should not exceed 12 participants to allow for maximum participation and yield of information (Onwuegbuzie et al., 2009). Each group met for a single session that was moderated by myself as the facilitator. The groups met in a comfortable, informal environment where they could be relaxed. The discussion was started by welcoming the participants and clearly stating the process and an open-ended question, with my role as facilitator explained.

Each group was internally homogenous, but there were differences between the three groups in terms of their backgrounds in the skills ecosystem and their orientation to and experience of creativity and creative thinking. The outcome I wanted to achieve from the educators and skills ecosystem managers was to explore and understand their personal and professional experiences and understanding of

creativity in the contexts of their skills ecosystem roles. This required personal reflection on the issue and an in-depth perspective on their work in this field. Interviews also allow some flexibility and follow-up for clarity for a thorough understanding of the subject matter. The decision was to both understand their views and allow flexibility for the participants in the one-on-one interviews to generate ideas should they wish to. Articulation of the required outcomes assisted me in developing the questions relevant to both the individual interviews and the focus groups.

At the same time, there can be bias on the part of the interviewer or even inaccuracy (Drew et al., 2014). Human observation, similarly, is flexible but participants' awareness of the researcher's presence can influence their behaviour (Drew et al., 2014). In all three instances of the focus groups, I was known to some of the participants. In order to mitigate potential bias, several strategies were employed, including acknowledging the pre-existing relationship and setting clear expectations for unbiased responses, ensuring anonymity in data collection, and maintaining a professional tone throughout the session. I focused on probing questions to elicit more authentic responses, and a careful review of recordings helped maintain objectivity in data interpretation. These methods help ensure the integrity of the research process despite prior familiarity with participants.

The questions were designed to start with more general observations and move to the specific problem areas within my study topic. Breen suggests that the focus group moderator should allocate a substantial amount of time at the beginning of the discussion to exploring participants' experiences, prompting them to share, compare, and debate their viewpoints. Only in the final third of the session should the moderator begin to focus on the key research questions that need answering (Breen, 2006). In line with this, I used a 'warm-up' strategy, providing participants with some context or background on the current situation that led to the main question and introduced the process to assure participants of confidentiality and encourage free participation and discussion. Social desirability bias, the tendency for individuals to shape their responses based on what they believe is socially acceptable, complicates the interpretation of research findings. By acknowledging that social desirability bias is an inherent factor and outlining strategies such as how the study

is introduced, building rapport with participants, and framing our questions to minimise bias, the impact of social desirability bias can be reduced (Bergen & Labonte, 2020)

Within-group saturation is essential, but not enough on its own to achieve overall data or theoretical saturation; for these to occur, saturation must be reached both within individual groups and across all groups involved in the study (Onwuegbuzie et al., 2009). The data gathered from the three focus groups, despite their non-homogeneity, was strikingly similar, and saturation point was reached both within and across the groups.

3.5. Data analysis

The data gathered for each of the three lenses were first examined individually per set. Following this, an analysis was done to determine the points of intersection and the commonly held views across the three lenses, as well as points of departure and uniquely held views for each of the three lenses. Patterns and clusters of similar data were then analysed with a view to how they could inform a praxis model. Figure 9 describes the grid through which the data has been analysed.

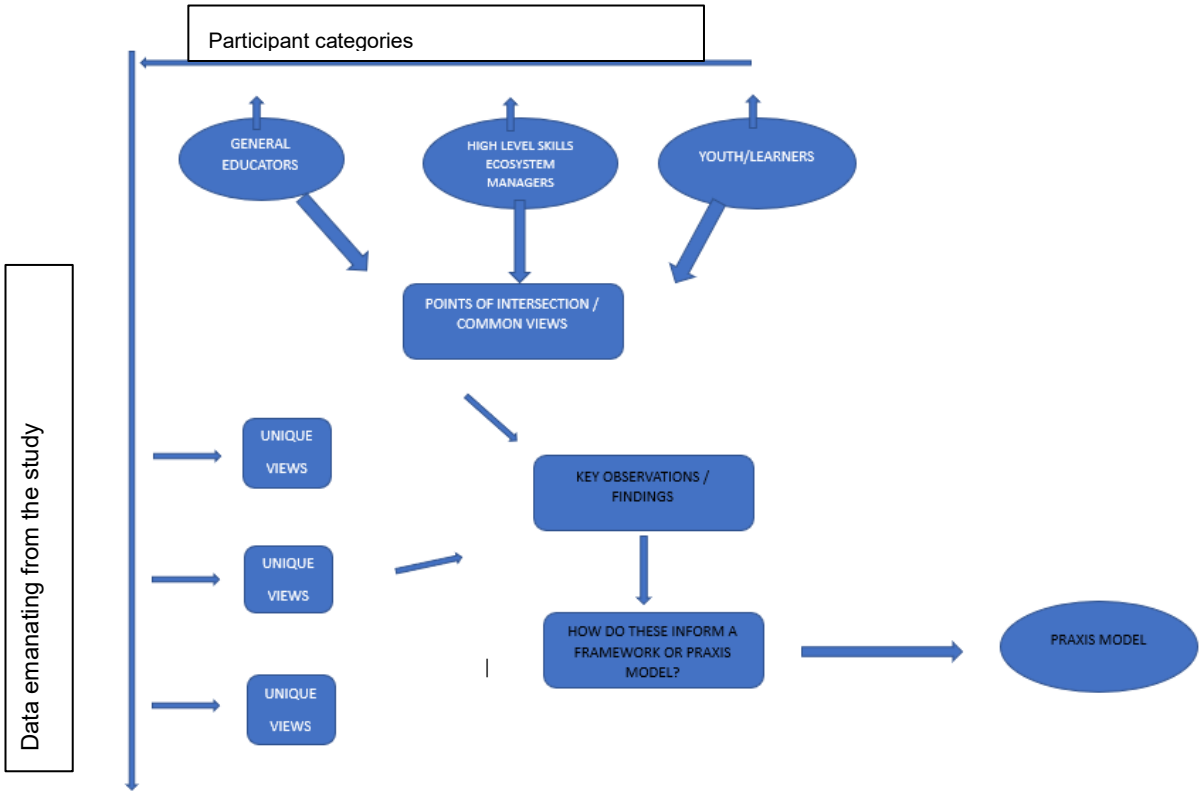


Fig 9: Data Analysis Framework

In exploratory qualitative research, coding is guided by an inductive and flexible approach aimed at uncovering patterns, themes, and insights from relatively under-researched phenomena. Unlike structured methodologies such as grounded theory, exploratory coding is open-ended and data-driven, allowing researchers to stay close to participants' language and experiences (Merriam & Tisdell, 2016; Stebbins, 2001). Codes are not predetermined but emerge from the data through a process of constant interaction with transcripts, field notes, and observations. This iterative process ensures that insights gained during early analysis inform ongoing data collection, allowing researchers to refine their focus and questions as new meanings surface (Saldaña, 2021).

Moreover, coding in exploratory studies places strong emphasis on context sensitivity and reflexivity. Researchers are encouraged to consider not only what is being said but also the cultural, institutional, or social context in which data is produced (Lincoln & Guba, 1985). The use of analytic memos and reflective journaling further supports transparency and acknowledges the researcher's influence on the interpretation of findings (Berger, 2015). The goal is not to develop formal theory, but rather to construct rich thematic narratives that provide deep, meaningful insights into the phenomenon under investigation (Braun & Clarke, 2006). This makes exploratory qualitative research particularly valuable for complex, evolving fields where theoretical frameworks are still emerging.

Seidel refers to qualitative data analysis as an "interactive process" or "noticing, collecting and thinking" (Seidel, 1998). Shank describes the process as being one of "being in conversation with your data, with questions including 'what are you telling me?', 'are you hiding anything' or 'how do you explain that contradiction' (Shank, 2006).

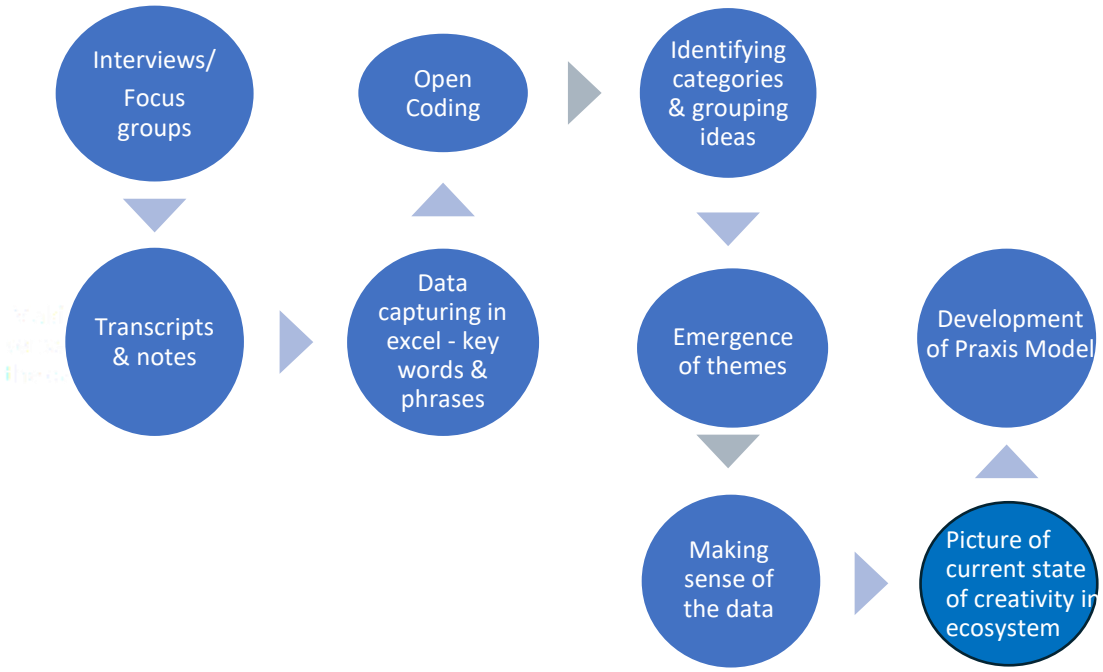


Figure 10: High Level View of The Data Collection & Analysis Process

The first phase of data collection involved interviews with skills ecosystem managers, complemented by focus groups with youth participants. Data sources included detailed interview transcripts, extensive notes, and observations from both interviews and focus groups. The data were examined with the intent of exploring participants' perspectives on creativity and creative thinking, seeking to uncover patterns and themes without imposing predefined concepts.

In line with exploratory qualitative research, the analysis was inductive and iterative, emphasising openness to new ideas and meanings emerging directly from the data. I adopted a line-by-line coding approach, which entails carefully examining each sentence or phrase to identify significant expressions or concepts relevant to creativity. This close reading fosters an "intimacy" with the data and helps avoid premature closure or bias (Urquhart, 2017). The purpose was to remain receptive to participants' viewpoints and the contextual nuances shaping their understandings.

To organise and manage the data, transcripts were transferred into Excel sheets—separate documents for each interview group—allowing systematic sorting and comparison of similar codes. Through repeated review, initial codes were refined into

broader categories reflecting common ideas or concerns. As exploratory qualitative research prioritises understanding over theory-building, this step focused on identifying and grouping recurring themes that illustrate how creativity is perceived and experienced in the skills ecosystem.

For example, from the skills ecosystem managers' interviews, thirteen categories emerged (see Table 4), later distilled into six key themes (see Table 5), including the urgency of creativity-skilling, systems thinking, and the role of culture. These themes provide a rich descriptive framework to understand the multifaceted influences on creativity in this context.

OPEN CODING THEMES	EMERGING CATEGORIES	NO OF CODES
Assessment, Pedagogy, Challenges in school environment, Training of teachers is inadequate, Enabling environment for teachers and learners, Innovation, Workplace approaches, Workplace challenges, Lack of leadership, No foresight or planning at national level, Cultural contexts matter, Trauma has an impact, Defining Creativity, An African view of creativity, Barriers to entry in schools, International models, Urgency, Leaners are challenged	1.Assessment of creativity as a skill is challenging	24
	2.Pedagogical approaches aren't clear or agreed upon	51
	3.Innovation	25
	4.What is Creativity?	44
	5.Competency of educators is questionable	16
	6.Barriers to integration of creativity into the system	13
	7.Is creativity a critical skill?	16
	8.Creating an enabling environment for creativity to flourish	15
	9.Systems view	72
	10.Competency of learners	10
	11.Workplace and economic considerations	50
	12.Culture and Spirituality	10
	13.An African perspective	14

Table 5: Summary of open coding and emerging categories for skills ecosystem managers

	KEY THEMES EMERGING FROM INTERVIEW GROUP 1 – HIGH LEVEL SKILLS ECOSYSTEM MANAGERS
1.	Urgency of appropriate skilling in creativity and creative thinking
2.	The need to define & understand creativity and its related concepts
3.	Systems thinking & leadership
4.	The impact of environment & culture
5.	Challenges to creativity being integrated into the skills ecosystem
6.	Educational frameworks for creative teaching & learning

Table 6: Key themes emerging from interview group 1 – high level skills ecosystem managers

The subsequent phases of analysis applied a similar coding and thematic grouping approach to youth focus groups and educator interviews. Focus groups provided an opportunity to observe not only what participants expressed but also how social interactions influenced the expression of ideas—an important dimension in exploratory qualitative studies (Breen, 2006). Data saturation was assessed by comparing themes across the three focus groups, confirming the robustness of the findings (Onwuegbuzie et al., 2009).

Youth focus group data revealed themes such as the intrinsic link between identity, culture, and creativity, and the impact of social media and constrained environments on creative expression (Tables 6 and 7).

OPEN CODING THEMES	EMERGING CATEGORIES	NO OF CODES
Identity is key to creativity or vice versa, ubuntu, Creating something that doesn't exist, Not being limited by what you have, Doing your own thing with no judgement- freedom, Collaboration is needed for creativity, marginal creativity in different sectors, Constraints promote creativity, Poverty mindset limits creativity, social media curates our experiences, controls how we think, School felt limiting, Lack of resources in schools, Traditional	1. Creativity is linked to your cultural identity, ancestors and bloodline	30
	2. System doesn't match our African worldview	13
	3. Trauma, mental health challenges, trauma, violent environments	22
	4. Social media stifles creativity	12
	5. Creativity means freedom and no limits	20
	6. School system stifled creativity	88
	7. Critical thinking is not encouraged	10

education path not relevant	8. Relevance of education system to the world of work	13
	9. Collaboration and problem solving characterizes creativity	25
	10. Poverty impacts creative ability	15

Table 7: Summary of open coding and emerging categories for youth

	KEY THEMES EMERGING FROM INTERVIEW GROUP 2 – YOUTH
1.	Creativity is defined in the context of freedom, defying limitations and differentiating oneself from others
2.	Identity formation, culture and creativity are intrinsically linked for young people
3.	The impact of social media on creative ability
4.	Trauma, poverty and constrained environments impact creative ability in youth
5.	The approach in the school system does not support creative teaching and learning

Table 8: Key themes emerging from interview group 2 – youth

Educator interviews underscored challenges in curriculum, training, and systemic support for creativity (Tables 8 and 9).

OPEN CODING THEMES	EMERGING CATEGORIES	NO OF CODES
Incremental innovation, sense of belonging or place, thinking outside the box, problem solving, multiple perspectives & solutions, curriculum is too demanding, limited teaching resources, time constraints on curriculum, educators lack training, no systemic view of learning in ecosystem, trauma, poverty, pedagogy, extra mural activities, approaches to teaching & learning, creativity needs time, creativity sets you apart in the workplace, critical skill, preparing students for the future of work, prioritisation of creative thinking, international best practice, constraints, culture and environment, individuality and diversity, creativity and spirituality, culture is risk averse, ideal environment for creativity	1. Creativity and innovation are linked and must be thought of on a continuum	10
	2. The current curriculum is problematic and doesn't allow for creative teaching and learning	32
	3. Class sizes throughout ecosystem are problematic	5
	4. Teacher/lecturer training is inadequate for this type of teaching and learning	17
	5. Lack of systemic view of the process of educating in the skills ecosystem	20
	6. Children/students lack initiative	7

	7. Approaches to teaching and learning that foster could foster creativity	37
	8. Inadequate resources to support creative teaching and learning	7
	9. Creative thinking is critical and must be prioritised	28
	10. Culture and environment are critical factors in creative thinking being fostered and supported	38

Table 9: Summary of open coding and emerging categories for educators

	KEY THEMES EMERGING FROM INTERVIEW GROUP 3 – EDUCATORS
1.	The need to define & understand creativity and its related concepts
2.	Challenges to creativity being integrated into the skills ecosystem
3.	Educational frameworks for creative teaching & learning
4.	Urgency of appropriate skilling in creativity and creative thinking
5.	The impact of environment & culture on creative skills

Table 10: Key themes emerging from interview group 3 – educators

This exploratory, inductive analysis allowed for the identification of meaningful themes without forcing the data into rigid theoretical constructs. The emergent themes from all groups were subsequently compared and synthesised to provide a comprehensive picture of the current state and challenges of creativity within the skills ecosystem. These findings will be discussed in detail in Chapter 4.

3.6. Criteria and limitations

The focus groups consisted of youth (high school & post high school), two groups from township contexts who were either in internships or unemployed and one from a context where the youth had attended private or model C schools[3] and were in university. It is important for focus groups that the groups are homogenous in terms of their background but not in terms of their opinions or attitude in order to have robust discussion (Mauldin, 2020). Each of the three focus groups were

[3] Used *attributively*, especially of a formerly 'white' state school which has chosen an administrative structure allowing discretion concerning the admission of pupils (including the option to accept pupils from all ethnic groups), and giving more freedom (under a Board of Governors), but less financial support from the provincial education department; loosely, a non-racial state school (Dictionary of South African English, 2023)

homogenous i.e. within each respective group there were similar backgrounds and experiences. The three focus groups did vary from each other though in that while internally homogenous, each group was different to the other focus groups. This served to support corroboration in the views elicited from the youth on the subject matter.

Mauldin also states that the composition of the group can hinder the desired outcomes due to group dynamics causing opinions to be withheld or even exaggerated and advises the use of a moderator to facilitate the conversation to mitigate this (Mauldin, 2020). I facilitated the groups myself, using broad questions to start the discussion and then allowing the conversation to evolve according to the issues raised in the discussion by merely prompting or asking further questions based on the content that emerged. While focus groups can yield detailed, in-depth data, they also have limitations in that some participants may not feel comfortable to express themselves and where confidentiality cannot be ensured. My addition of the ecosystem stakeholders' and educators' views of the phenomenon provides the opportunity to integrate a different angle into the process. Triangulation by way of analysing diverse data instruments including interviews, field notes and video thick descriptions served to corroborate and determine if and how evidence converges (Suter, 2014). Consistency checks using codes to ensure consistency of data reduction and stakeholder checks where interviewees are asked to authenticate the understandings of the data they provided were also used.

3.7. Ethics

All participants were required to sign an informed consent form which explained clearly the objectives and processes of the research project. Confidentiality and anonymity were guaranteed for all participants. In the case of minors (under 18 yrs.), parental/guardian consent was sought and obtained (Ciuk & Latusek, 2017). Consent to be recorded and/or videoed was explicitly stated in the consent documents, with guarantees that no materials will be used for another purpose than for data collection and analysis.

3.8. Methodology chapter summary

The research explores creativity within South Africa's skills ecosystem through youth, educators, and managers, aiming to develop a praxis model for aligning the skills system with 4IR requirements. It adopts a systems thinking approach to understand creativity across the entire learning and development continuum i.e. a high level view from different perspectives. Individual interviews with educators and skills ecosystem managers, as well as focus groups with youth, were used in an exploratory qualitative theory approach to the study, to attempt to understand how creativity is experienced and understood by the three identified participant groups.

The themes that emerged showed both similar and unique views across the three interview lenses or groups. In many cases, the views were congruent but expressed from varying perspectives, enriching the understanding of concepts related to creativity and how it is experienced by skills ecosystem managers, educators, and youth. Chapter 4 follows with a detailed analysis of the findings.

Chapter 4

Findings

This chapter will articulate the findings from the perspective of each of the three lenses used to investigate the subject - skills ecosystem managers, youth and educators - each in their own section. At the end of each section, a summary of the key findings of each individual lens will be given. Following this, a summary of the key areas of overlap and synergy, as well as unique views and what this means for the development of a praxis model, will be discussed.

4.1. The perspective of skills ecosystem managers

The interviewees in this category comprised nine skills ecosystem managers representing multiple angles of the skills ecosystem: Early Childhood Development (ECD), Basic Education, the Post School Education and Training (PSET) system, workplace, government skills policy environment, innovation experts as well as private sector and NGO creativity practitioners working to engage creative thinking practises in the workplace and education systems.

Six key themes emerged from the data collected from this group:

- The urgency of appropriate skills in creativity and creative thinking
- The need to define and understand creativity and its related concepts
- Systems thinking and leadership
- The impact of environment and culture
- Challenges to creativity being integrated into the skills ecosystem
- Educational frameworks for creative teaching and learning.

These themes are unpacked below.

4.1.1. The urgency of appropriate skills in creativity and creative thinking

There was unanimous agreement that there is an urgent need to prioritise creativity as a critical skill for learners and educators in this group. This agreement was across the diversity of the respondents from government and tertiary ecosystem managers to private sector and civil society representatives. The sentiment was expressed with some degree of intensity and passion from the majority of the respondents with statements such as *“I think it should have been there earlier. I don't know how we*

can survive without that skill" (M1), "I don't think it's something that should even be debated. I think we've gone too long in South Africa without it" (M2) and *"creativity is absolutely vital for building not just a responsive and prepared and, you know, capacitated workforce, but also for building a cohesive, vibrant, energised, diverse, accepting society" (M3).*

The ecosystem manager group was keenly aware of the "times we live in" as expressed by M4: *"it is a critical skill and even much more critical in the times that we live in. It is one of the critical skills that need to be included and really promoted, not just included, but we make sure that we promote it, is to make people ready to operate beyond the boundaries of where they are".*

The private sector ecosystem managers stressed how the world of work is changing with companies no longer paying people for the time they spend on tasks, but for the solutions they bring to complex issues (M5). The role of creativity is viewed as a central requirement to remain relevant in the workplace. A workplace ecosystem manager expressed that strong skills in this area are beneficial internally for organisational strength and benefit their brand externally, stating that*, "strong soft skills translate to a perception of your organisation as reputable, helpful, responsive and responsible promoting customer loyalty and business growth" (M2).*

There was concern that while the value of "soft skills" was well understood in relation to value propositions or tangible beneficial outcomes in the workplace context, this understanding was lacking among education system managers and government policymakers. Although they share a passion for the importance of creative thinking skills, they are less clear on the reasons and specific benefits for prioritising these skills across their systems.

Further concerns expressed by this group were that, despite the clear urgency for creativity to be prioritised as a critical skill, there is more pressure for technology skills and other hard skills to be prioritised*. "In the tech space and in the resource space, there's a thought that the focus needs to be on the skills of the technology skills and stuff, whereas the importance of creativity and all of that is actually central.*

There's a feeling that we must catch up to the level of hard skills before we worry about the soft ones, which is kind of upside down," (M7)

We *"can't limit it to creative industries," (M3)* was another concern by one of the ecosystem managers responsible for national digital skill strategies. She found many in her environment viewed creativity narrowly as something for artists, musicians and the like, and did not see the centrality of creativity as a core skill underpinning our orientation to, and operation within work and life in the era we are living in.

4.1.2. The need to define and understand creativity and its related concepts

One of the points of departure in engaging these individuals was to gauge what their understanding was of creativity i.e. how they viewed the concept. The responses were diverse and varied. Creativity was defined by the respondents in this group under seven broad categories. The importance of agreeing on a definition of creativity was highlighted; *"I think it would be necessary to demystify creative thinking or creativity…....otherwise it will remain this woolly thingy that people don't know how to tackle" (M1)*

The views concerning how creativity is defined can be summarised as follows:

DEFINITION/VIEWS OF CREATIVITY	**QUOTES**
1. Problem solving	*"creativity is being able to challenge conservative ways and at the same time simplify, innovate and provide practical solutions to common and basic problems" (M2)* *"If you're a problem solver, you have to be creative" (M9)* *"Creative thinking equals to being solutions based" (M3)*
2. Expression, imagination, originating new ideas	*"the ability to express one's thoughts in a way that results in bold, innovative and fresh concepts" (M4)* *"an unlimited, un-inhibited approach to daily life where a person enjoys the freedom to express their thoughts and actually bring them to life" (M9)* *"Creativity, is the thought process, the imagination and the conceptualisation, ability to think outside the box and also not only to think outside the box, but to*

	try things outside the box…..not stick to the normal way or prescribed way of doing things" (M8) *"An expression of something that never existed before" (M5)* *"The process of how you come up with new ideas" (M1)*
3. Connection	*"the ability to make connections between ideas as a fundamental part of creativity" (M8)* *"capacity to see connections and relationships between things and how combining things in different ways might then create new results" (M6)*
4. Curiosity	*"it's about curiosity…..in our context and in the kind of education system that we are mostly engaged in, curiosity is deadened rather than awakened" (M7)* *"curiosity is defined as going beyond the first obvious answers and looking for more answers" (M2)* *"curiosity has to be at the start of being creative" (M10)*
5. Resilience	*"Part of creativity is about resilience and the capacity to fail and to try again, to try something, to feel like it's not working, and to try something else. Often uncreative people are people who settle for the first option or people who accept an option that is delivered to them and that becomes whatever it is that they're going to do" (M4)* *"Somebody who is adaptable, who is able to come up with different ways of approaching things than are the obvious first things that come to them" (M9)*
6. Diversity	*"The other thing about creativity is the willingness to accept diversity. You can only see those myriads of options if you are able to open your mind to something that is maybe not that you're not used to or that is different from what you are, the way you think, or maybe culturally diverse. It's in that openness that you then find these new combinations of things that allow for creativity to happen. Anything that is about fundamentalism or about believing that there's one way to go is going to deaden creativity, essentially" (M3)*
7. Spiritual	*"Something that is divine that comes from a place of divine creation which is then placed inside of us. It is expression of what is already inside of us" (M6)* *"And then obviously I believe as well then from a spiritual input point of view, there's also that input" (M7)*

Table 11: Summary of skills ecosystem managers' definitions of creativity

As can be seen from Table 11, the concept of creativity is complex and diverse.

However, none of the respondents had any trouble articulating what they thought creativity was. The general view of creativity, mentioned by more than half of the ecosystems managers interviewed, fell under items 1 and 2 in Table 10; that creativity is related to expression, imagination, originating new ideas and problem-solving. Items 3 to 7 reflect the views of creativity of interviewees who were more experienced in practising creativity teaching and/or learning. These definitions encompass the ideas of connection, curiosity, resilience and diversity. The category with the least mentions was that of creativity being linked to spirituality (item 7).

A concern was expressed regarding the terminology of “soft skills” by someone working in the skills ecosystem with teaching and integrating “soft skills” into education practice. *“..... I'm in the industry. I disagree with it because I don't think it's soft skills,” (M1).* This was in reference to the terminology being used to lump a whole range of skills together, making these skills seem less important than the “hard skills” such as technical and digital skills. Despite this, the feeling was that there was not much hope of changing this terminology. *“I don't think we going to get away from the concept of soft skills because that's the generic, that's the layman's term. (M4).*

An interesting finding is that there was consensus among the respondents that creativity and innovation are interlinked; innovation cannot take place without creativity having taken place first. The general understanding of innovation was that it is the process of taking creativity forward to practical implementation of some kind that solves a specific problem: *“innovation, is the realisation of the creative process - practical application of that solution to actually solve the problem. There are many creative ideas out there yet few have radically changed our world because people usually stop at the creative part and never get to implement their ideas - this is where innovation takes place or dies, at the action part. (M2)*

Innovation thus involves action. Some of the ecosystem managers agreed that action seems to be lacking at a national level leading to low national innovation outputs*; “we have a lot of South Africa input into the national system of innovation, towards creativity and innovation. But as a country our output is very low to that effect” (M7)*

Creativity experts in the group felt that it would be very difficult to be innovative if you haven't been able to unpack your creativity and that innovation can only go as far as what you have unpacked and what you can imagine. The centrality and importance of creativity as a skill is again underscored in these responses. One respondent stated that *“you can be creative, but it's not necessarily innovation. I find myself really now more inclined to assist with driving output of creativity and innovation. We need to raise an army of innovators that solve national challenges.” (M7)*

A high value was placed by this group of respondents on the utility of innovation, or the need for creativity to lead to innovation that is directly useful in solving our challenges. Comments such as *“the combination between creativity and innovation should have the focus of problem solving” (M10); “creativity for the sake of creativity, or innovation for the sake of innovation…. would be inconsequential or meaningless - if the two come together to problem solve in terms of a necessity, a human necessity, therein lies its real value” (M8);* and *”Innovation is where you can actually take that idea and it and take it to market and get a return, so the idea becomes implemented to create either income or market space” (M1)* are indicative of this sentiment.

An interesting observation is that the immediate response of some government policy managers to the concept of innovation is to link it to activities such as establishing 4IR centres in their colleges and digital skills programmes. The presence of these centres and programmes does not in and of itself guarantee that innovation is taking place or that there are innovation outputs, yet the perception is that these ecosystem managers are being highly innovative or giving innovation a prime role through these activities. The concept of innovation as being a process that has its roots in creative ability and creative thinking across a variety of domains was clearly not a general understanding*; “I don't think you can really talk about innovation in this day and age without speaking of it in the context of digital skills, ICT skills” (M2).*

Some of the respondents felt that we are highly innovative in South Africa due to the constraints imposed by poverty, infrastructure challenges and challenges of access

to resources; *“the innovation that you would see a lot of is something like forks being used for TV aerials or shopping carts turned into things for scrap metal collecting…..” (M8)*

4.1.3. Systems thinking and leadership

A lot of the data collected for the ecosystem managers group refers to systems issues, systems thinking and often lamenting the gaps and lack of a systems view when it comes to creative thinking skills. This is to be expected from this group as their primary orientation is towards managing systems and processes within the skills ecosystem:

“Now we really need to have that big push for the dots to be joined, basically for the connections to be made and for a kind of cohesive approach” (M7).

“How do we get all of the different role players, government and the corporate sector and the education sector and communities at large and artistic community, et cetera, to really understand the need for this cohesiveness and to all participate in making it happen?” (M.9)

A clear finding is that there is a disconnect between the various tiers of the skills ecosystem, from ECD through to the workplace, with regards to the approach to, and implementation of, these skills. This is not only evident in regard to creative thinking skills, but as a general constraint within this ecosystem. Each component of the ecosystem is insular and siloed, making traversing the system a disjointed and often inefficient experience. As one ecosystem manager put it, *“we inherit students from the basic education system. So methodologies are fed through from there, and ways of thinking are entrenched already in a student and how they think about learning.” (M1)*

Respondents agreed that a systems approach is urgently needed; *“we have brilliant people. We could solve many of our problems, I think, if we create the system for it to just flow properly” (M5)*. The lack of focus on creative thinking is a systemic problem; *“it starts in the school system. And I believe that the foundation is not being laid properly in the school system” (M6)*. This lack of focus on a system for the

implementation of creative skills is a definite sense of frustration for the managers interviewed. They feel that they are left to solve the challenge on their own; *"there's this whole idea that we have to kind of come up with our own systems, our own answers, our own results of things, because we can't afford the way that other people do them already" (M9)*. Because of the focus on South Africa needing to catch up with technical skills only, there is not a systemic prioritisation of creative skills; "*the limitation is that there's an effort to try to catch up on hard skills, the sense that we need to catch up on those and not necessarily a focus on or an awareness of the need for actual thinking skills" (M3).*

Further system limitations that were highlighted are the lack of ECD centres and early childhood learning*; "an enormous number of South African children fall outside the system before entering formal schooling:"* and*:" that is when the problems start" (M2).* This is exacerbated by the lack of trained ECD teachers, as expressed by (M10*); "the majority of our earlier provision is through untrained, well meaning people without any resources at all, essentially creating a kind of a babysitting service as opposed to really a learning environment".*

Table 12 outlines the ecosystem points emphasised by the skills ecosystem managers as ideal places to insert creative thinking in a focused and intentional way in the skills ecosystem.

ECOSYSTEM POINT	**MOTIVATION/QUOTE**
Vocational system i.e. TVET, Community Colleges	*"Certainly in vocational education, I think it provides a good opportunity for creative thinking. It's not as rigid as academia where you're dealing with facts and so forth" (M1)*
ECD	*"I think the whole concept around creative thinking, it should be from a pre-primary" (M4)* *"need to start as early as possible" (M10)* *"we should have high quality professional work happening in those spaces and that teachers should be really well resourced to facilitate the best kinds of experiences for learners of that age" M4)*
Occupationally related at universities	*"cluster of creative skills that are occupationally related. I think those are the obvious ones" (M2)*

	"think in the professional education streams, in universities, the new crops of qualifications are taking this into account" (M9)
Integrated into curriculum as an approach/ as a specific topic at primary school and high school	*"The way we instruct, but also then there must be activities within the curriculum and that can even be to matric level and then you can choose if you want to do it as a career then it becomes a full-time offering that you're focusing on" (M8)* *"part of how we (it's what and also how) engage with learners" (M3)* *"it's not only in the content, but it's the way in which, it's the attitude of teachers or the people involved" (M1)* *"in the teaching of curriculum, you can introduce creative thinking, you can introduce innovation" (M7)* *"A module as part of Learnership Programmes through the SETA's • In schools especially Grade 7 and Grade 12 as part of their curriculum" (M9)*
Within workplace organisations	*"Within an organisation: • Onboarding Training for new employees • Continual Learning Programme for Employees (a module that is mandatory for all employees to complete)" M5)* *"short course that is social innovation because we decided that being clever with technology does not mean that you are innovative or know how to drive those processes. So we've got a formal course that we integrate in our programs to stimulate creative thinking" (M8)*

Table 12: Points of intervention in the skills ecosystem – skills ecosystem managers' views.

Several systems and organisations were mentioned that exist within and around the skills ecosystem that could be explored to support creativity and innovation. For example, accelerators and incubators have been set up to fill the gaps in the skills environment; *"there's specifically the last several years more on needs, unemployed youth and where there are skills gaps in the market, how do we establish accelerators and incubators to fill that gap – for creativity" (M9).*

It was also mentioned that national skills frameworks, such as the national digital skills framework, should incorporate an intentional focus on creativity and creative

thinking as a skill*; "I would agree that the way of thinking like the digital skills framework, that one should think along those lines" (M3).*

South Africa's national system of innovation was raised with the focus on interrogating this system in the context of how it fosters support for creativity and creative thinking. This respondent, a professional in the innovation space, felt that while there are clear inputs by the government into this system, the outputs do not match this. He stated that; *"you would find that South Africa ranks higher than others (in the Global Innovation Index), probably in the 40s, which is good, telling us that there's a lot of input into the innovation ecosystem. We have so much input, but our efficiency in turning that into output is really lacking and it's not there. There is red tape and those factors, it's really a significant factor. It is very difficult to navigate the South African national system of innovation. I think we have a national system of innovation that flies way up here but it doesn't get to the people" (M5).*

The lack of leadership and systemic thinking by leaders was lamented by most of the interviewees. Reference was made to leadership on all levels including government and the private sector. Several respondents espoused the view that there is an aversion to risk in private sector companies in South Africa; *"it has also to do with a risk appetite of organizations, willingness to fail in some cases, because that's the nature of innovation. I definitely think it limits us" (M1); "in larger companies, I think there's definitely a bigger aversion to risk here" (M4)*

Similarly, there was general consensus by the majority of participants that; *"South Africa is a little bit behind, and I think it's more about the leadership than anything" (M2).* The country's leadership was described as *"timid" (M5)* and *"trying to kind of adopt best practices that they've seen elsewhere, and then that takes time to catch up…..not on the throbbing pulse of things" (M3)*. It was raised that there is *"definitely a lack of understanding by leadership. And some of that might be that they're trying to follow rather than lead internationally" (M7).* Leadership at a national level was highlighted, as stated by (M10); *"I won't start with the education system as such. I'm starting with the leadership of this country".*

There was a view, though, that because we do not have the answers, this could put us in a good position to redesign a system that works for us, as we do have pockets of excellence locally: *"and that is probably where we have the advantage, is that we definitely don't think we have the answers. [However] we've got to be thinking more systemically to connect these different elements. We've done pilots, we've got examples of how excellence can happen. There's no longterm foresight" (M5).*

Multistakeholder partnerships were mentioned by participants as key factors at a systemic level that can assist us to implement appropriate skilling. There is often, however, resistance to open innovation and collaboration; *"what I think could solve at least the problem partially is our entities, companies, you name it are still very closed and not driving innovation - open innovation, meaning co creation. So if a company puts out a challenge there and people respond to it's really a very nice process of co creation. So once you have an idea from that process I explained and you've implemented it and it adds value, then can we only say innovation has happened. Multistakeholder partnerships becomes one of the key factors which help us to be able to implement" (M5).*

The role of the arts in engendering creative thinking ability also emerged as a theme. Participants felt that art should be central to ECD learning (M10), as well as integrated into our basic education system. M9 mentioned pilot projects being done in "*art across the curriculum*", where art is linked to the mathematics and science learning process.

4.1.4. The impact of environment and culture

The ecosystem managers had a very positive view of Africa and how much innovation is taking place in Africa. There was a shared sentiment that Africa is going to lead. Some even felt that our exclusion from current systems, and that we lag in issues related to technological advancement and its impact, helps us as we have to come up with our own systems that are Afro-centric and serve us better. This was an interesting perspective as the optimism was unanimous with regard to our potential to innovate and rise to the challenges we face; *"there is a huge amount of innovative thinking in Africa….. and we have to come up with our own ideas of things, our own way of doing things. (M5)*

The feeling here was that we see creativity when there is a need, or a solution required in a community context. It was also expressed that creativity that leads to innovation is often thought about more in the context of how it can benefit the community, or the group as opposed to what the individual benefit would be. For example; *"so it was constantly very much a giving thing…..for the community. As opposed to I want to be a famous artist" (M6),* expressing that even artistic creative output is considered in this way. Another interesting way it was expressed was that individual creativity is often constrained because of poverty; *"but I think it's (creativity is) heightened in the Ubuntu setting". (M10).* This implies that the dominant worldview of doing things for the benefit of others impacts on how and when creativity is exercised.

One of the sentiments that emerged was that collaboration is essential for creativity. This is a strength in an environment where ubuntu is at the foundation of worldview. The importance of identity as a foundational factor in an individual's ability to be creative was also highlighted. This identity stems largely from cultural identity; *"if you don't know who you are, how do you create?" (M7).*

Culture and the traditional views of parents were highlighted as constraints to creativity in youth. Ecosystem managers felt that an older generation of parents and caregivers were more concerned about continuing traditional ways of doing things than innovating for new solutions; *"parents don't understand the need for different thinking. The role of parents is huge in expression of creativity, because parents are the foundational simulators of imagination" (M7); "Simple personal bias, if not challenged can limit an individual's critical and creative ability to come up with an innovation solutions to a long standing problem. The idea that something has been passed down from generation to generation means I just have to continue the tradition and not apply my mind on how we can do it better." (M4)*

The inability of some parents and caregivers to understand the current times and the educational needs required to meet our urgent skills demands, but rather maintain the status quo, extends to teachers and educators as well. The same personal biases, societal norms and cultural traditions inform their mindsets towards

education; "*age definitely is a factor - you teach how you've been taught…there's a kind of a valuing of a particular knowledge system or way of experiencing something over everything else. And that, to me, also can be detrimental to creativity" (M2).* This implies a generational gap between where we come from and what is required now.

An interesting view that surfaced from several interviewees was the impact of constraints such as poverty and trauma on the ability to be creative. The view extended to constrained environments limiting creative ability, and that limited exposure to multiple environments was also an inhibiting factor to creative ability. About half of the interviewees felt that background and exposure to opportunities directly influenced the ability to be creative; "*a huge part of it in my view is exposure - being exposed to very different environments and contexts. The exposure is very limited, resources are very limited, and I think that hampers it" (M1); "what you have seen, what you haven't seen, what you have experienced, what you haven't experienced impacts creative ability." (M7)*
In contrast, many of the interviewees highlighted that constraints or a constrained environment promotes creativity, rather than inhibits it; *"when you're in a constrained environment, it necessitates creativity" (M1); "We've had sanctions….. and the poverty, we were forced into a space where we couldn't get certain things, we didn't have access to things, and were forced to make things happen in another way" (M7).*

4.1.5. Educational frameworks for creative teaching and learning

4.1.5.1. Assessment

The ability to assess competence in creativity or creative ability as a skill was an overwhelming concern of skills ecosystem managers. It was felt that there is a lot of subjectivity in measuring and assessing "soft skills" and it would be difficult to develop a baseline. Other questions revolved around the depth of testing and keeping testing to practical assessments and tasks. What emerged clearly from the data was that there is a lack of an articulation for what creativity is and no clear framework with which to implement assessment; *"we do not necessarily as yet have a much more comprehensive framework beyond the normal NQF (National Qualifications Framework)" (M6); "if it's clear what it is, you know, what are the underlying competencies so that everyone can speak the same language and it*

becomes concrete. If you can define it you can measure it. If you haven't defined it, then it's very difficult to measure whether you're making progress" (M1); "One must standardise the measuring tool to truly evaluate its improvement or impact." (M4)

The other line of thought was that there are already basic tools such as psychometric assessments, ISO related innovation procedures and measurements that could be used as assessment tools. The fact that the overt integration of creativity as a skill has not yet been achieved a systemic level, providing a framework for assessment, is obvious from this data. The current approach, if it exists at all, is ad hoc.

4.1.5.2. Pedagogy

A clear pedagogical approach precedes successful creative teaching and learning. The themes that emerged from the data in this regard are that different teaching methods and approaches are required, educators need to be mandated to think differently, context informed and experiential learning should take precedence over rote learning methods, and there should be a move away from an examination-based system. The need for practical teaching and learning and experiential learning was highlighted by many of the interviewees. Many felt this could be implemented via project-based learning, working on solving practical tasks; *"so we're talking about what is a methodology that can help experiential learning. Then they must try it, then they must test it, practise it" (M1); "they need to be able to analyse, interpret, evaluate, explain, self-regulate, be open minded and come to the best problem solving method to any issue provided." (M4)*

Teaching methodologies were also highlighted. The understanding of multiple intelligences, using approaches that are not only language based, incorporating different arts-based approaches and finding ways to engage the diversity in the class were mentioned as approaches to stimulating and promoting creativity; *"if we are just trying to teach creativity through more sort of language-based work, we're going to lose a whole lot of people who potentially are powerful creative thinkers" (M8); "generally our school programme doesn't look at all the different intelligences that may exist. We focus on the very few." (M5)*

Pedagogy should focus on the fact that the curriculum and syllabus should be flexible and focus on the individual areas of interest of learners; *"syllabus is going to come and go, curriculum is going to come and go, but those things are fundamental and will always be there. And if we've got it, we can match any system that comes through." (M7)*

4.1.5.3. Creating an environment conducive to creative teaching and learning

The concept of creating an environment that fosters creativity was raised by all the respondents. The key concepts that emerged regarding creating a conducive environment for creativity to be advanced were as follows.

First, creating environments where people can fail and feel free to take risks. The interview group broadly felt that our learning environments do not encourage risk-taking and stigmatise failure (M5), even suggesting that failure is "punished" in our school and work environments (M1). Our learning environment is *"a very hierarchical or directed kind of teaching methodology or work environment where there's no space for people to try and fail and try again or bring their own particular perspective to something….you are immediately stamping out creativity" (M6); "you have to create an environment where people are able to fail without consequence" (M5);"you need an environment where people are able to take risks and not be punished for those risks" (M9).*

Second, creating collaborative and diverse environments. A dominant view from the interviewees was that environments that allow for a diversity of views are essential for creativity. This encompassed criteria such as *"seeing everybody as equals and seeing everybody as coming with their own knowledge and perspectives which are valuable in and of themselves" (M3)*; in other words, valuing individuals and their perspectives - and ensuring *that "whoever is facilitating this space…… can't feel like they have all the answers" (M5).* This view was also expressed as creating an *"environment that encourages a lot of communication, collaboration, a lot of horizontal communication, not just top-down command and control," (10)* and *"letting people work together freely and encourage a lot of cross pollination of thoughts and ideas" (M2).*

The emphasis on collaboration focussed on the fact that an individual cannot necessarily be creative alone; *“creativity happens best in communication, not just in your own head” (M8).*

Third, creating environments where there is space and time to be creative. Ecosystem managers from the education system and workplace all expressed that creativity required a sense of “letting go” or minimum control. M9 called this a *“state of unknowing”,* where people can be comfortable *“not always being certain of outcomes but allowing for a space in which a direction can be taken or engagement can happen.”* M3 emphasised that the *“environment where there's space and time given to just thinking or just taking time away from the necessary tasks” (M3).*

This was expressed by ECD managers and those in ecosystems involving younger children as an environment where there is space for playfulness and for self-learning. This included opportunities for children to explore, be outside, play and imagine through make-believe story telling; *“whether it be exploring an ant hill or exploring on top of a mountain, these are the things that will just unlock what's inside of you. We need holistic development of a child of who they are, letting them explore with colours, letting them explore with make believe storytelling” (M7).*

Fourth, professionalising creativity learning and teaching. The professionalisation of creativity and creative thinking teaching practice could provide solutions: *“the environment needs to be more dynamic, it needs to be more robust, it needs to be advancing in many ways, keeping abreast of what's happening out there in the real world, in the world of work” (M1).* South Africa does not have a specific framework for creativity and does not benchmark creativity and creative thinking and there was a view that this needs to happen across the skills development ecosystem; *“I think it has to be embodied in the professional qualifications for those who are beginning to train” (M3).* This view referred to focusing on teachers in their training programmes at universities and colleges to imbue an understanding of how to teach creativity at various levels of the education system.

4.1.5.4. The state of and approach to creativity in the skills ecosystem

Respondents agreed that, in the workplace, the basic education and Post School Education & Training (PSET) skills ecosystems, there is a feeling that employees and/or youth are not capable of innovation*; "you will be surprised, people do not always think that employees are capable of being innovative" (M2).*

Again, there was unanimity on the critical need for creativity and innovation in the workplace. Workplace skills ecosystem managers interviewed were very articulate regarding the need for creative skills and the reasons underpinning their importance stating things such as; *"for the future of work, probably it will be more required because I think in the work context there's increasingly less standardized processes and more a scope for new ideas" (M4),* and recognising that the current work environment pays more for solution providers than workers who have simply clocked their hours. As one respondent put it, *"we need to have what we call 'solutionists', solvers of problems" (M4).*

It seems that an approach to developing the skill of creativity in a structured and focused way is lacking. The focus on these skills is dependent entirely on the organisational leadership in workplace environments and individual educators within the system who may feel more passionately about these skills and make an effort to include this focus in their teaching approach. Respondents felt that in more compliance-orientated workplace environments, you would not find innovation as the priority focus would be on how to comply.

Additionally, there was a sector-specific dynamic that came into the discussion. Some sectors value creativity more than others, while some are considered to need such thinking less, for example in accounting and law*; "it depends on the kind of organisation and your leadership - because it's a company-specific, sector-specific thing. In my experience, it's related to the culture of the organisation and the thinking of leadership -whether they value innovation or not, and whether they see the need for innovation and whether they think the employees are capable, awareness that need to be brought to many organisations" (M2).*

Innovation has become a buzzword. As stated by M5, *“I come across expos and boards and I see it as almost this romanticizing, this word innovation. It's a cool word, people use it and speak about it, but when you ask questions so what are you doing about it”; “basically people aren't allotting the time to because it's not as important in their minds” (M8).* The lack of focus on creative thinking skills in learning and teaching was attributed to not having enough resources to spend time on such skills when there is a pressing need to get “more important” things done and a serious lack of qualified practitioners in South Africa that can train workplace, basic education and PSET kills ecosystem personnel in the understanding of creative thinking skills and the outputs in innovation this yields (M3). There is an existing ecosystem globally that can provide some point of reference for these skills teaching and learning processes. Concern was however expressed that in South Africa we too easily mimic or follow trends that exist elsewhere without interrogating homegrown solutions. It was felt that when we do this, we *“tend to lag behind” (M6).* Pockets of excellence however do exist, but the general feeling was that this is limited, and we are thus not in a position as a country where innovation can be scaled. Ecosystem managers with specialist skills in creativity and innovation pointed out that creativity and innovation is a highly structured process implemented by qualified practitioners. There are ISO standards associated with the practice of innovation; innovation is something that can be measured and benchmarked. One of the ecosystem managers responsible for innovation in a large city indicated how they had won an award for being the most innovative public sector organisation because the way they set up and structured innovation in the city aligns with the ISO standard. He conceded however that *“it's not scaled, it's not fully functional and I think we have to move to that where innovation can take place at scale” (M5).*

Approaches like these need to be tested and then institutionalised across government and the private sector. The standards inform what an innovation process should look like.

4.1.5.5. Suggested solutions to address the need for creativity in the skills ecosystem

The interviewees commonly suggested several solutions to address the current approach to creative teaching and learning. They highlighted the importance of raising awareness and legitimising creativity as a critical skill by formalising its role within the educational system (M3, M5). It was suggested that innovation is a teachable skill and that fostering creative imagination from a young age is crucial. An innovative proposal included establishing an “Innovation Army,” comprising innovation patrons who operate across various departments, to identify key problems and challenges, and to create a national platform for collaborative problem-solving (M6). Additionally, there was support for developing a dedicated stream of education focused on soft skills and integrating the arts into learning and teaching practices (M6, M9, M4). Interviewees also recommended examining successful models from other countries, such as Germany, Italy, Israel, and Finland, which emphasise vocational training and apprenticeships, to derive applicable insights (M7, M3). Finally, there was a call to prioritise the Technical and Vocational Education and Training (TVET) system in South Africa, with a focus on changing perceptions and expanding its role, given that universities currently serve only a small fraction of students (M10).

4.2. Summary of findings: skills ecosystem managers’ lens

Insights gathered from a small group of skills ecosystem managers point to an urgent need for stronger integration of creativity and creative thinking into skills development strategies, particularly in light of rapid global change and the evolving world of work. Participants in this group expressed concern that current approaches to education and training underplay both the technical and imaginative capacities needed for the future. They emphasised that creativity must have tangible utility—particularly its potential to contribute to solving national challenges—reflecting a commodified view of creativity within the broader skills development system.

Many managers lamented the insufficient focus on technological and technical skills, while also stressing the importance of clearly defining creativity. There was consensus that the term "creativity" remains vague and is often misunderstood or

mystified, which undermines its inclusion in structured educational or policy frameworks. In their view, creativity encompasses a wide array of attributes—including problem-solving, self-expression, emotional connection, cultural diversity, resilience, curiosity, and even spirituality. Some participants voiced concern about the term “soft skills,” arguing that it inappropriately groups together diverse capabilities under a single umbrella, thereby reducing their specificity and strategic importance.

Creativity and innovation were consistently seen as linked, with innovation requiring not just ideas but also action. Without implementation, creativity does not translate into innovation. This group valued the potential of innovation to respond to societal challenges, yet identified significant systemic weaknesses—particularly a lack of systems thinking and effective leadership across the skills ecosystem. These gaps contribute to fragmentation and a lack of coherence between policy, education, training, and economic needs.

There was no consensus among this group about the most strategic intervention points for embedding creativity within the skills ecosystem. Rather, participants tended to emphasise interventions that aligned with their own areas of work. Despite this, there was general agreement that existing “pockets of excellence” could be leveraged more systematically, and that multistakeholder partnerships would be key to achieving systemic change.

Some participants expressed cautious optimism about Africa’s potential to lead in innovation. They argued that the continent’s historical marginalisation from global technological systems could enable the development of Afro-centric and context-specific solutions. This view was tied to philosophies such as ubuntu, where creativity and innovation are community-oriented rather than individualistic. At the same time, structural constraints such as poverty, inequality, and limited exposure to diverse experiences were recognised as barriers to creativity. However, others noted that such constraints often become catalysts for creative problem-solving, with necessity driving innovation.

Cultural identity and collaboration were highlighted as critical enablers of creativity. Participants described creative potential as emerging from strong cultural roots, with community and shared values acting as drivers. In contrast, traditional mindsets—

particularly those held by parents and educators—were seen as limiting. These views, often focused on protecting inherited knowledge or practices, were described as barriers to experimentation and the exploration of new ideas. Additionally, generational differences in understanding education, work, and skills were flagged as a significant source of tension.

Education featured prominently in the discussions. Skills ecosystem managers raised concerns about the lack of clear frameworks for fostering and assessing creativity. Current assessment practices were seen as inconsistent, overly subjective, and misaligned with real-world application. There was strong support for pedagogical reform, particularly toward experiential and project-based learning that nurtures diverse forms of intelligence and learner agency. Learning environments that enable risk-taking, collaboration, and unstructured exploration were seen as essential. Participants also called for the professionalisation of creative teaching, recommending that creativity be integrated into teacher education and ongoing professional development.

While many participants acknowledged creativity and innovation as essential for the future of work, they also pointed to deep challenges in both educational and workplace cultures. Rigid, compliance-driven environments, along with siloed sectoral practices, often prevent innovation from flourishing. Leadership, where present, plays a vital role in shaping cultures that prioritise creativity—but such leadership remains inconsistent across institutions. Some organisations have introduced structured approaches to innovation, including compliance with international standards such as ISO. However, scaling these practices across sectors remains a major hurdle. Concerns were also expressed about an over-reliance on global models and trends, with insufficient support for homegrown solutions tailored to South Africa’s unique context.

Participants offered a range of potential solutions to address these challenges. These included formalising creativity as a core skill within education policy, recognising innovation as teachable, and embedding creative thinking from the early years of schooling. Some proposed bold initiatives such as forming an “Innovation Army” to tackle national problems creatively, or using arts-based education to cultivate imagination and problem-solving. Drawing lessons from international

models—such as Germany's and Finland's vocational education systems—was also seen as a valuable avenue for reform. The need to revitalise and expand the role of South Africa's TVET system was underscored as a critical step toward aligning education with national skills priorities.

Table 13 contains a summary of the findings for high-level skills ecosystem managers and some of the potential praxis model implications related to these findings.

HIGH-LEVEL SKILLS ECOSYSTEM MANAGERS FINDINGS SUMMARY	
POINTS OF CONSENSUS	**PRAXIS MODEL IMPLICATION**
1. Creativity/Creative Thinking is a critical skill and there is a sense of urgency that it needs to be prioritised	Consensus and platform for action to be taken
2. There is an undeniable link between creativity & innovation	Is this understood in Innovation models and processes? If it is de-linked, this may explain the low levels of innovation output in SA
3. The terminology is problematic	Defining creativity specifically as a skill (and as separate from "soft skills")
4. The approach is uncoordinated and haphazard.	A systems view and systems leadership is required
5. No clear value proposition for why creative skills are needed in the education system	Determine the national why. Why should we invest in creativity as a skill
6. Environments that are conducive to creative teaching and learning must be created	Consensus on these and what they are is needed. A basic set of classroom tools is advocated in the 4IR report
7. Significant barriers to integrating creativity into the system include the competency of teachers and learners	Urgent intervention is examining both the way teachers are trained and

	emphasising creative skills explicitly in their training.
8. Assessment of creativity & creative thinking is challenging	Develop a framework to approach assessment
POINTS OF VARIANCE	**PRAXIS MODEL IMPLICATION**
1. Definition of & understanding of what creativity is	Focus on a locally relevant definition or framework for creativity that serves our South African educational and economic growth needs.
2. Where to intervene in the system – at which point	Each individual favoured their focus area within the system. In line with the 4IR report, a focus on the entire system at every point simultaneously is needed. In a phased approach, beginning at the ECD and primary levels is the most appropriate and will foster systems change on the medium term.
3. SA's lagging behind can work in our favour	This is only true if we have a clear plan for using the current upheavals and changes in systems to our strategic advantage, guided by a committed and focused implementation plan.
4. Open innovation and collaboration versus individual creativity	In the definitions of creativity explored in this dissertation, both approaches are encouraged and collectively should produce the required outcomes.

Table 13: High-level skills ecosystem managers findings summary

4.3. The perspective of youth

The interviewees in this category comprised twenty one youth in three different focus groups. Seven youth were post school and currently in internships, having come from low fee township schools. Eight of the youth were post school and currently in internships, having attended government schools in townships and suburbs, including ex model C schools. Three of the youth were currently in school in their final year attending private schools and an online school. Three of the youth were studying fulltime at a tertiary institution. These interviewees attended private schools. Five key themes emerged from the data collected from this group/lens. These were:

- Creativity is defined in the context of freedom, defying limitations and differentiating oneself from others
- Identity formation, culture and creativity are intrinsically linked for young people
- The impact of social media on creative ability
- Trauma, poverty and constrained environments impact creative ability in youth
- The approach in the school system does not support creative teaching and learning

These themes are unpacked in the sections which follow.

4.3.1. Creativity is defined in the context of freedom, defying limitations and differentiating oneself from others

A high number of the youth in the focus groups viewed creativity as the thing that allowed them to express themselves, explore possibilities and go beyond the limitations and boundaries they feel are often imposed on them. The discussion on what creativity is and what it means to them was animated and passionate. Creativity was described as allowing them to create new things that don't exist and express themselves freely; *"[Being creative means] being free, doing your own thing. Not being judged" (Y1); "It's something that is not concrete yet, but comes out from you and to the world basically" (Y2);"It's also not being limited by what you have" (Y3);"The opportunity is there, whether there's nothing or whether there's plenty, you're going to step into it" (Y5).*

This sentiment of creativity as freedom was also articulated as that which enables a person to go beyond the limitations of what they have and to make something out of nothing. The sense of agency and the power to make your own mark on the world is evident in the youths' interpretation of what creativity brings; *"[Creativity is] something that's nobody's done before you do it out of your own - like your own thing" (Y4); "Creativity is being able to use whatever you have at your disposal to make something the way you want it be" (Y5); "So you want to do something 'off the books'. Like there is already stuff that exists but you want to build your own stuff on top of that" (Y6); "It's thinking out of the box..... that people when they see you they say like wow!" (Y7).*

The group that had gone to model C or private schools and were studying at tertiary institutions had an interesting discussion on what the skill of creativity means in the workplace for their futures. They came up with the idea of "marginal creativity" which they defined as *"the distance between the knowledge base to being able to twist the knowledge base to innovate" (Y8).*What was meant by this is that creativity in different career sectors would need to be applied differently and that they had to consider how to think about the skills set they had acquired while studying and apply creativity to use those skills in a way that set them apart in the work place from the next person who has the same skill set: *"Marginal creativity in accounting versus the marginal creativity in art quite widespread. If you need creativity as a workplace skill, what does that mean if you're an accountant? So that's an important point, is that actually you need to know what type of creative skill is relevant and where" (Y8); "You need to be competent to do the job that you're doing, and that's what the studying does. But there needs to be a space for the creativity as well. And then we're going to find the gaps as to if I add this to my arsenal and create this set of skills with the basis of the technical skills, you can differentiate yourself in that way and add value in that way to come up with these solutions" (Y9).*

There was consensus within and between the three youth focus groups that creativity requires other people and external influences. It was described as a process of *"connecting the dots" (Y8).* In this understanding or experience of

creativity the collaborative process did not only mean collaborating with other people, but being influenced by information, experiences, knowledge and your environment: *“Like, you don't need someone else to express yourself creatively, but in expressing yourself creatively, you're drawing on other influences” (Y4); “I don't think creativity necessarily stems from originality. I think that creativity, most of the time, is a new take from another place of influence” (Y7); “I don't think you can be creative on your own. I think that it is almost impossible to not consult a resource, and because of that, it's always collaborative” (Y10); “Having this perspective on things that you have created something from your experience and things that you have learned that has now enabled you to look at things in a different and in an original way that now you have gathered all of this information, gathered all this experience, and now you have shaped your own perspective on something*” (Y5).

Across all three youth focus groups it was felt that creativity informs innovation; the one leads to the other. Problem solving is an outcome of innovation and innovation only happens when there’s been creativity; *“I would say that creativity informs innovation. Also, like, creativity as an expression is not necessarily innovation. So there are different ways you can be creative, but also can inform innovation” (Y11); “So innovation is then taking what creativity made you do or think about and applying it in some way is like innovation the action step” (Y6); “So I think it's a good skill because it doesn't just help in one area of your life. It encourages community as well I think it encourages community and discussions and thinking, problem solving” (Y2)*.

The overarching sense of creativity, as understood by the youth who were interviewed, is one of individuality being empowered by creative ability. This concept is explored further under the next heading, as there were significant insights linked to the concept of identity.

4.3.2. Identity formation, culture and creativity are intrinsically linked for young people

The consensus among the youth interviewed was that a person’s ability to be creative and their perspective on creativity are influenced by their culture and environment. Some felt that there is a generational expectation for a person to

continue certain predetermined paths and that freedom to express oneself, or be creative, is limited by this; *“I think it also got to do with our roots and where we come from. You don't talk back. So it's that type of thing that is instilled in you……There's no debate" (Y19); “In the Black community, you are a prototype of your bloodline's gift. That's where your elders, your angels and your beasts are based so they can give you more creative ideas and creative juices when you are around what they have been mandated to do around you. It says the things the Lord has done are for you and your children's children. So certain practices about your success are kept within the family bloodline” (Y7).*

There is a feeling among the youth that careers, roles and responsibilities have already been decided by the elders for you. Differently put, creativity is linked to your cultural identity, ancestors and bloodline in that it is curtailed by these requirements. This raised the question of whether how we teach and learn takes cultural context into account, and whether there is a system for these new skills, such as creativity and creative thinking, that is intrinsically African in approach. As stated by Y8, *“the system doesn't match our African worldview. Let's go back to who we truly are. If we can go back to who we truly are then the economy is going to be better.”*

Interviewee responses show a tension between wanting to honour your elders and the way things have always been done, while also desperately wanting to be free to do things your own way or do things differently. Y6 stated; “*maybe we are the ones who are dealing with the change now or you know, so it's a lot of weight between the energies - the positive and the negative energy. Are we willing to fight that battle? If there's going to be change, I'm going to have to be willing to fight for it.”* Y13 concurred; “*and that is the frustration because you're trying to build and it keeps on falling and you don't know why”.*

In an often very traditional society, with strong cultural norms and values that haven’t changed significantly over the years, there is a feeling from the youth in this day and age, facing South Africa’s particular set of challenges, that they are stuck between the past and the future. Summarised by Y3, *“I think creativity is like, when it's unfiltered by those things [referring to culture, context and environment], I think that's*

when people can be most creative, because then it's like, there's no rule that you have to only do this or you are restricted by this or this. I think if people are just allowed to think without the context of [things].”

Identity was also a matter of discussion in terms of how having a strong sense of who you are strengthens creative ability. Some youth felt that if they had had a stronger sense of their own personal identity, their desire to fit in would have been less and they would have been free to be more creative. They would have the confidence to express themselves more freely; *“you would be free in everything that you do and you would be more creative. You'll be outside of the box because you know who you are” (Y11); “I was thinking now about….. the copy and paste thing, because for me, I did that. And for me, in that time, I had a desire to fit in because of rejection and because of bullying. Rejection or the lack of knowing my identity made me go into the copy-pasting much more quickly than if I had known who I was” (Y17); “I do think you can be creative on your own because creativity has to form part of your identity. Creativity is part of your identity“ (Y12).*

Another part of culture and context is spirituality. Some of the interviewees expressed the view that creativity was a God-given trait and something that was bigger than themselves; it is an ability residing within you that has to be discovered and nurtured; *“It's not just about me. I am connected to something higher than myself, be that a higher spiritual power, an ancestor, a bloodline” (Y8). “It's a power and it's something that's within you. So when you take it out of you and you and you give it to the world then it's bigger than you” (Y16); “I think we are all creative in a sense because we're made by a creative God” (Y7).*

4.3.3. The impact of social media on creative ability

The issue of social media influencing creative ability arose in all three youth focus groups. Two core themes emerged from the data about social media; the fact that social media stifles creativity and that social media curates our experiences and controls how we think; *“apparently the Chinese, the stuff that they show us [on Tik Tok], our kids, and the stuff that they show their kids are completely different stuff. In China, they would show stuff that makes you think critically. They want to make us people who copy and paste, but their kids are starting to think about stuff” (Y3); “It’s*

[social media] not creating the space for us to imagine and to dream, but to conform to what we see online" (Y8).

Interviewees in this group felt that social media did not assist in growing creative ability but encouraged a "copy and paste" culture; *"You would just do all of the same moves. Record yourself and put it on. You get a million likes or whatever. TikTok is copy and paste" (Y12); "More people with all these platforms have opportunity to be creative. But actually it's doing the opposite. It's not allowing for more creativity" (Y6).*

The knowledge that algorithms were curating the content they consumed did not seem to deter youth from wanting to use social media platforms, but there was an awareness that it did dampen their own ability to think critically and to be creative.

4.3.4. Trauma, poverty and constrained environments impact creative ability in youth

The issue of mental health and how significant the mental health challenges are in schools, among themselves and among their peers was raised. The feeling expressed was that many young people are just trying to survive, and some interviewees felt that being creative was a far-removed concept under these circumstances. On the other hand, it was also expressed that despite mental health challenges, creativity was possible, and even provided some outlet in difficult circumstances. Youth expressed that a creative or non-creative response in environments impacted by trauma, poverty and other constraints possibly came down to the strength of the individual in these environments *"It's getting worse. So, I'd suggest therapy in schools just because I know that everyone deals with a mental battle going on. It blocks you. It does, but you can also be creative with it. I think that it depends on the person and how strong you are. The trauma, it can either break you or make you" (Y1); "I gave them a topic to write about - So what was on their lips so fast? Murder and the trauma, rape and all of those things. Most of the stuff was negative and I wanted it to be like an uplifting thing" (Y6); "….because you're just trying to gain these basic things from the beginning, I think there's very little room for creativity" (Y5).*

All of the interviewees in this group raised the issue of trauma and mental health.

This included those from township schools, private schools, universities, online schools and those in the workplace. The phenomenon was thus not specific to a particular socio-economic grouping, but across all the groups represented in the sample.

Despite these pervasive concerns about poverty, constrained environments and limited resources, many of the interviewees in this group felt that this did not affect their creative ability. Some in fact felt that it enhanced their creative ability as a result of the necessity of coming up with solutions in the face of limited resources; *"I think there are certain situations or environments or circumstances that force you to be creative, even if you may not be" (Y13); "I think in a sense of people who have less access or materials or whatever, there's a need to be creative, because otherwise, what other way are you going to do it?" (Y12); "Constraints breed more creativity because you're kind of forced to find a way where there may be no way, so it pushes you to find solutions. So if you make that your strength, when you do have access, ultimately have access to more to work with, then you are able to use the principles that you learned with little and use those same principles when you have more" (Y9); "I think having everything actually creates boundaries in your mind because everything is kind of handed to you " (Y4).*

Some however felt that poverty did limit their communities' ability to be generous and open minded, and therefore, creative; *"Because they have little, when they do have, they don't share it. It's a selfish thing. They want to keep it in the community. I think also why Africa is so poor is because not so poor, but we have all the natural resources, we have all the stuff, but people are stingy. Like, they want to keep it for themselves because it benefits one person instead of it can be a benefit for the whole community or the whole country" (Y16).*

This presents an interesting inconsistency related to the concept of ubuntu expressed in the data, where group benefit from creativity and innovation was one of the reasons for the urgency and need for a national focus on creativity as a priority.

4.3.5. The approach in the school system does not support creative teaching and learning

Interviewees in this group felt very strongly that school environments were limiting and did not support creative teaching and learning. They argued that schools did not make them feel individually seen and appreciated, and that they had to fit into the box that had already been created for them. There were, however, situations where individual teachers within the system had recognised a talent or encouraged creativity. But, overall, individuality was discouraged and conformity was preferred; *"Personally I didn't enjoy school very much, I didn't wanna do anything educationally so I felt like it limited me also with what I wanted to do" (Y17); "There's a system. You're limited. And they programme your mind in a certain way. They want you to think a certain way and not the way you should think, you know like eish..." (Y9); "I give you the work, you memorize it, you write it in the exam. I give you this and then you must give it back to me at the end of the year" (Y3).*

Many of the youth expressed the view that schools were not equipped to provide creative education opportunities. This problem included a lack of physical facilities and resources. When practical subjects were taught the lack of equipment and resources meant they had to do these subjects without the practical hands-on experiences that they felt would have nurtured more creativity*; "I say equip the schools with the right tools to actually grow in the future president or the future Picasso or something like that" (Y12); "If you look at the rural school, basically, there's almost nothing to help express yourself. We are forced to think alike because what I have experienced is they're taking away the practical side of practical subjects" (Y7).*

Interviewees in this group also felt that they are forced into a pathway or direction that makes them employable and are not allowed to explore their own gifts and talents. This was experienced as a deliberate stifling of creativity. The education system was seen as preparing youth for specific pre-determined roles that have a hierarchy of importance, such as doctors, lawyers and engineers, being given more weight in career choices than nurses or teachers; *"There's a lot of people there that are creative and they actually taking that away from people coz now putting a mindset said that you should be in economics, in business, an accountant, You must*

be a lawyer…." (Y8); "We must not forget they train us to become employable according to the system of everything that has to do with the economy. You know so they neglect the gifts, they focus more on the product that they want" (Y14); "Because we can't just cookie cut the thing of school from the age of six to 18. It doesn't work" (Y9).

Many youths felt that the traditional education path is no longer relevant and that they would not be prepared adequately for university where they would have to think for themselves. They agreed that the curriculum is very limited and that they would not have exposure to important aspects of technology and other changes in the world currently that impact on their potential career opportunities and decisions they need to make for their futures; *"The traditional path of education is no longer a guarantee – you've got so many options now and so many accredited pathways that you don't have to do the traditional route" (Y19); "It just didn't cater to anything that I knew that I was going to do in the future, so I just went to school to get it over and done" (Y10); "Cancel schools? Yes!" (Y11).*

4.4. Summary of findings: youth lens

In this small and non-representative group of youth participants, creativity was commonly described in terms of freedom, self-expression, and the ability to challenge limitations or stand out. Many participants strongly associated creativity with innovation, and there was a recurring theme that creative ability contributes to a sense of personal agency or empowerment. For these individuals, creativity was closely intertwined with identity—both individual and collective—and was seen as an important aspect of self-determination in the context of their communities and cultures.

Participants expressed that creativity offers them a way to navigate the complexity of their lives. A recurring theme was the tension between wanting to honour cultural and generational expectations—such as pleasing elders or family—and the desire to pursue their own creative paths. Many described feeling caught between the weight of the past, the pressures of the present, and the uncertainty of a fast-changing future. Technological change and social media were both seen as having a dual role:

while they can distract or inhibit creativity, they also offer powerful platforms for creative expression and connection.

These reflections suggest that, for many in this group, creativity is experienced not just as a personal trait but as a cultural and social resource. Several participants described how limited access to physical resources does not necessarily restrict creativity; rather, these constraints can become catalysts for imaginative thinking. However, this view was not unanimous. A few respondents noted that the impact of such constraints often depends on the resilience or personal capacity of the individual. Mental health challenges were also highlighted by some participants as significant factors that influence creativity—either by impeding it or, conversely, as a source of inspiration and depth.

A strong critique emerged regarding the formal education system. While not generalisable, the perceptions shared suggest a shared dissatisfaction among this group with how schools support (or fail to support) creative development. Schools were frequently described as rigid, overly focused on outcomes and employability, and not responsive to the evolving needs and potential of young people. Some participants felt that their unique talents and interests were not recognised in the schooling system and that the curriculum lacked relevance in light of the rapid technological and societal shifts shaping the world they are inheriting.

According to these youth, there is a disconnect between what is taught in schools and the creative capacities they believe are needed to thrive. Some expressed concern that education seems designed for a different era, one misaligned with their lived realities and aspirations. While these insights provide a valuable snapshot of how creativity is experienced and understood by a particular group of young people, they should be interpreted with caution and not taken as broadly representative of all South African youth.

Table 14 contains a summary of the findings for youth and some of the potential praxis model implications related to these findings.

YOUTH FINDINGS SUMMARY	
POINTS OF CONSENSUS	**PRAXIS MODEL IMPLICATION**
1. Creativity is defined in the context of freedom, defying limitations and differentiating oneself from others	The position of SA youth is possibly quite specific in that they feel “stuck” between our past and their future. What is the unique SA youth contribution to your future?
2. There is an undeniable link between creativity & innovation	Is this understood in Innovation models and processes? If it is de-linked, this may explain the low levels of innovation output in SA
3. Creative ability seems to give youth a sense of agency or power.	Youth need to be trusted to solve problems and be invited to participate in the design of the systems that impact them
4. Tension between wanting to please elders and do their own thing…. Stuck between the past and present	This is the generation that has inherited the consequences of the previous generation’s actions. Are they invited to bring their own ideas to the table to solve the “stuckness”
5. Identity etc are all soft skills, life skills. The importance of holistic development of youth in the skills ecosystem	Other soft skills such as confidence, communication, the ability to express oneself have a bearing on this critical skill of creativity.
6. Constraints and limited resources are not a deterrent to creativity. They stimulate creativity	Is this empirically true of all youth, or only a few who rise to the occasion? The fact that creativity contributes positively to engage youth in and move them out of challenging mental states, trauma and difficult identity issues is a strong motivation for it to be prioritised in our skills ecosystem at all levels.

POINTS OF VARIANCE	PRAXIS MODEL IMPLICATION
1. Needing structure vs needing freedom	Youth need to be trusted to solve problems and be invited to participate in the design of the systems that impact them
2. Trauma & poverty vs creative freedom	The fact that creativity contributes positively to engaging youth in and moving them out of challenging mental states, trauma and difficult identity issues is a strong motivation for it to be prioritised in our skills ecosystem at all levels.

Table 14: Youth findings summary

4.5. The perspective of educators

The interviewees in this category comprised ten educators currently teaching or lecturing across different levels of the skills ecosystem: Early Childhood Development, Basic Education, and the Post School Education and Training (PSET) system.

Five key themes emerged from the data collected from this group/lens:

- The need to define and understand creativity and its related concepts
- Challenges to creativity being integrated in the skills ecosystem
- Educational frameworks for creative teaching and learning
- Urgency of appropriate skilling in creativity and creative thinking
- The impact of environment and culture on creative skills.

These themes are unpacked in the sections that follow.

4.5.1.The need to define and understand creativity and its related concepts

Educators echoed many of the definitions and understandings of creativity given by the other two interview groups. This included creativity being defined as coming up with new things, building on existing ideas, creating solutions and bringing different perspectives to a situation.

A new definition that came from this group was that creativity enables introspection and empathy. Creativity, in this definition, enables individuals to function optimally within a group or ecosystem because they are able to consider the perspectives of others; *“It’s about creating a connection beyond yourself, creating empathy in a way where you understand someone else or other individuals, and having a mutual type of respect for someone. Creative thinking is something that helps you to unleash that type of skill or that critical aspect of just thinking from a different perspective, taking into consideration someone else's perspective” (E3).*

“If we think about what creativity is, it's that ability to think differently, to think and consider yourself within your system, your ecosystem and within placing yourselves within the mind frames of the individuals who you are lecturing to” (E5).

“Creative thinking is critical for anyone who is going to work with other individuals, whether you are an accountant, whether you are a medical doctor or whether you are an engineer. It helps you to understand yourself, your target market, or your stakeholders, and how you both, or how you all fit in within a specific ecosystem to function together towards mutual understanding” (E4).

Another clear focus of the educator group was arguing that creativity and innovation are clearly linked and should have an outcome that is profitable or meaningful to an end user; *“Creativity falls within four sections. It focuses, firstly on the person, the individual who is being creative. It focuses on the process of thinking creatively. It focuses on the product or the service or the outcome. And then the environment that someone is in. We should teach creativity and innovation as the same thing in a continuum. So creativity is just you having creative ideas to solve a problem. So there's no creativity without a problem. And from an entrepreneurial perspective, innovation is that creative thought once it has viability, feasibility, and profit potential” (E4).*

This group identified five challenges to integrating creativity in the skills ecosystem. Firstly, the curriculum does not allow for creativity and creative thinking to be prioritised.

The educator group emphasised that the current curriculum used in the basic education system is problematic and does not facilitate creative teaching and learning. Common challenges are the fact the curriculum is seen as having too many outcome requirements in too short a space of time. The time constraints limit teaching to rushing to complete the teaching of content that will be tested or assessed. Educators also complained about heavy administrative burdens outside of the classroom time, that prevent them from using their time more creatively with students*; "the curriculum itself doesn't give enough space or an opportunity for creative thinking……not where the content or whatever is created from a learner perspective, but it's more a curriculum driven thing" (E1); "it [the curriculum] limits the learner, even the teachers as well because it's very structured around certain things, not necessarily so that you can get to the innovative space" (E2); "This compact curriculum, there's so much to do, there's so little time. So teachers, they just finish the curriculum. They just finish the work that they are going to assess, they just do what the department expects of them and nothing more" (E5).*
The combination of time constraints and very structured content outcomes does not allow for discretionary time for problem solving by the learners. Some of the educators interviewed agreed that in many instances they would like to let the learners find solutions instead of delivering content and instructions that are rigid and set. One educator commented on this in his own schooling, where no method other than the one the teacher provided was allowed to be used; "*in mathematics there were countless times I was told that the way in which I got to the answer is wrong. Although I always got to the answer, you know, the method is not what they want to mark." (E7).* E9 concurred, stating that, *"They don't give time for children to say what they think about that solution. Give them an opportunity to work it out - to say to the rest of the class, for instance, to teach their peers, how did I get to my solution to my answer? And the other one can say, how did I get to my answer?"*

A university lecturer commented on how the current curriculum that focuses on learners regurgitating knowledge they have been taught somewhat frustrates the learning journey and expectations at tertiary level; *"so when they are coming from the schooling system, when you ease them in, you're sort of integrating them into the university environment wherein there are elements still of memorising and regurgitating. They are still there" (E6).*

The university lecturers interviewed were unanimous in asserting that there was a clear requirement and demand on tertiary level students to think critically and creatively, but that this demand was placed on students well into their second and third years of study. This was summed up by E8 when he asserted that; "*the problem is that you start to engage with elements of creativity late second year if not only in third year. That's when you're expected to think. Yes, they've tested your recall ability, they sort of tested your analytical ability but you genuinely don't provide any meaningful solution up until your third year or your postgrad*. *I think it's late. I think it's a big mistake to assume that the creativity of a first year is worthless."*

Secondly, there is a lack of resources in teaching environments.
A significant feature of the respondents' feedback was the emphasis on the lack of resources in teaching environments. Most of the educators interviewed were from no fee or low fee schools in townships. They felt that, although one can promote creative thinking without tools and props, it was important for children from disadvantaged backgrounds to have access to resources to stimulate their imagination. This included the opportunity to visit interesting places they would not normally be exposed to or play outside in safe environments where they could experience nature or gardening; *"But also make sure that there are enough resources in your class. Give them things to help teachers, objects, items that they don't often see, use words that they don't always use" (E3); "So if teachers don't get something in their hands, how are they going to work? There needs to be resources to stimulate thinking and innovation" (E1); "For instance, if I give my little ones, a small piece of ground outside and say to them, this is your part, whatever you are going to do with it's up to you. But I want to see at the end of six months, at the end of three months, what did you do." (E4).*

Another resource and teaching constraint mentioned by primary, secondary and tertiary educators was class sizes. Where class sizes are too big, the challenge to engage in creative learning, require feedback and engagement from students and to facilitate creativity is severely constrained. Large classes imply lack of educator capacity or resources in schools and universities. Class size impacted on assessment processes and the ability to engage meaningfully with individual

students. E6 stated that, *“with a larger class, it does become rather challenging because of the need to rely on a standardised memorandum. And so I suppose when it comes to the larger classes, what we can do and what we tend to do is then to give them assignments.”* The caveat to this was that students were encouraged to work in groups and engage in peer learning.

Thirdly, a standardised approach, providing continuity in the skills ecosystem regarding creative skills, is lacking.
Outside the formal curriculum, the direction and initiatives a school implements are left to the discretion of the leadership of the institution. At basic and higher education levels each institution determines their operational focus and vision. Interview respondents felt that until creativity and creative thinking becomes a specific policy applied by Departments of Education at both national and provincial levels, it will never be prioritised in the skills ecosystem. Rather, it will remain unequally implemented in schools and universities if and where the prioritised at the institutional level; *“[creativity is] not a departmental directive. It's basically a school and a principal-based thing or a school and a staff thing. We have to put this in the school and to the staff, you know, trustees, and say, listen, it is important”* (E1). E2 agreed; “*I am the leader of the school, and I must create that opportunity and time. I must try to develop; I must try to make things work for those here at the school” (E2).*

Some educators felt that it was not their responsibility to initiate anything. E5 stated that*, “the government must initiate it so that children can be trained in directions where they are contributing to their communities.”* E7 felt that teachers resist anything that requires them to go outside of their comfort zone; *“Everything is focussed on my comfort. How convenient is it for me? How comfortable is it for me? If it doesn’t suit me, then I am not going to do it.”* Some of the respondents felt that the lack of willingness to attempt new approaches was due to educators’ aversion to taking risks and wanting to maintain the status quo they are accustomed to. E10 felt that “*part of the process that's slowing things down to make sure that creativity doesn't happen, is the educators. It is in our own self-interest, to remain the same. The older we get, the less inclined we are towards risk and creative thinking. We want sort of things to remain the same.”* E10 summarised by asserting that, *“until we*

bring in accountability regarding innovation and creativity, we won't have what we need to move forward."

Educators felt that here is a lack of coordinated focus on the Early Childhood Development (ECD) sector of the education system, emphasising that interventions at this stage lay the foundations for later learning. Primary school educators stated that there is a lack of appropriate education at this level, particularly in low fee and no-fee schools where the intake is from local ECD centres, many of which are not formally constituted or implementing any type of curriculum. This disadvantages children from the outset of their school career. As stated by E2; "*whatever is done in ECD, whatever is done in the foundation phase, whatever is done, you know, the first seven years of the child is a crucial time to learn, to teach, to build, to give confidence, to work on that child's character and also on his creative thinking."*

A crucial part of the skills ecosystem that was highlighted by educators, in contrast with the other interview groups, is the role that parents play in the skilling of their children. E4 highlighted that "*there a need for educating parents as well, as much as one has to educate a teacher on this. These are important skills."*

At university level, challenges were identified as the lack of an overt institutional standard for creativity and creative thinking as skills. Individual departments implement according to their own directives. New lecturers do receive orientation before engaging in teaching, but this is not necessarily standardised across the institution. A challenge in the university environment with regard to creativity is the mindset instilled in a school system focussed on rote learning. E8 observed that "*at school level, as in high school, primary school, obviously the curriculum is so set that there's certain things that you need to learn a certain way that regurgitate. At university level, that has to change."* E7 agreed; "*there is an element of 'show me that you know' theory, but beyond that, 'show me that you can apply' theory, 'show me that you can assess and critically analyse' theory."*

The educators expressed that no coherent policies in the workplace, as well as a lack of specific policy or direction from the Education departments, caused this lack of focus, standardisation and prioritisation of teaching and learning creative skills in

the skills ecosystem and in the workplace. Frustration was expressed regarding the lack of attention or urgency in this regard. E10 felt that it was causing South Africa to be left behind as a country; "*For myself, innovation and problem-solving is supposed to take us forward and for that, I think South Africa for the most part is not on the same road - taking us forward with problem solutions" (E10).*
"We are not trying to see how we can fix things and solve our challenges and move forward. What must we do in our education system to develop our children's skills so that they can look after themselves and progress? We aren't trying to see how we can prevent them from falling into the same rut we are in now" (E6).

Fourth, training of educators is inadequate.
The educator group highlighted that there is no specific training related to creativity and creative thinking provided for teachers. This held true for both school and post-school educators. E1 felt that *"creativity should be taught on a tertiary level to the educators, whether you are in any field because it helps you to understand your target audience".* E7 concurred stating that, *"so I would say the training of the teachers leaves a big gap for teachers to be trained how to use those children's creativity or creative thinking or just gives an opportunity to give their views, because mostly it is a lecture style teaching".*

Educators mentioned that there were not any professional development courses that they were aware of that covered this specific area of skills. At tertiary level, educators emphasised that some people might be appointed as lecturers because of experience of working in a specific industry. E8 felt that *"there has to be some type of orientation where it helps you to bridge the gap between industry and the individuals that are sitting in front of you in your class or who you are presenting to".*
According to the educators interviewed, the process of orienting and training lecturers was different at various tertiary institutions and did not necessarily include specific training on facilitating creativity or creative thinking. It is generally left up to the various departments to implement such programmes at their discretion.

Educators felt that there was some level of resistance to change and new ways of teaching. E9 stated that, "*Perspective could act as an inhibitor. If you're in an environment that doesn't embrace change, that automatically means that it will be*

more challenging for people to want to be creative and to think outside of the box, because things have always been done a certain way" (E9). This sentiment was expressed relating to educators at all levels of the skills ecosystem. An example given to mitigate this situation was that in some university departments are making an effort to hire younger lecturers, who would do things in new ways and think differently. E6 disclosed that *"when I'm making something interesting to a class, they would say to me, but isn't this seen as unprofessional?"(E6)* This was in reference to encouraging lecturers to take novel approaches to teaching with a view to facilitating creativity in the classroom. The perspective of keeping things consistent with how they've always been done, and with what is familiar is resistant to bringing in new teaching modes and more relevant and creative approaches.

Some in the educator group felt that current teacher qualifications did not prioritise practical teaching, as the teacher training at education colleges did in previous years. This led to a general decline in the quality of teaching; "*Although the qualifications are much better than the previous one, overall you will find that there's no proper methodology, the foundation on how to do things. The practical way of teaching is not as strong. It's more academic theory" (E7.); "I should also say one would have expected that these young, new, highly university-qualified teachers would have done actually better, not only because they did their degrees while studying as a teacher, but also because of the fact that technology in the classroom changed such a lot" (E10); "Teachers must be creative. I remember during our teachers' course, we used to go out for practicals, and when we gave those lessons, they were highly creative. They will come up with introductions to a specific lesson and keep the kids' attention up until the end" (E8).*

Several educators also mentioned the lack of focus on ECD teacher training as a significant gap in the skills ecosystem. According to the educators interviewed, there is no standardised curriculum and a general lack of teacher quality assurance at this level of the skills ecosystem. Given the critical nature of the interventions at this stage of a child's development to prepare them to enter formal schooling, educators felt this remained a glaring gap that needs to be addressed, as well as a prime opportunity to focus on creativity and creative thinking; *"I think we have neglected it [ECD's] too much and for too long that we say, okay, any person can just go teach*

ECDs, but we should actually just allow the trained ones because they would know how to handle and how to get this creativity more to the forefront." (E6)

Fifth, socio-economic factors impact on creative teaching and learning.
Some educators in the interview group believed that socio-economic factors impact on learners' ability to be creative. E2 stated that, "*Trauma and the circumstances, if it is negative at home, it affects the child and it is usually brushed off as they are too young to understand. Trauma plays a big role in a child's life. It might have been a child that was so creative, but now all of a sudden, well, I'm not doing anything anymore. I'm not answering questions. They shy back and they don't want to take part in activities".*

In contrast, some tertiary level educators found that constraints due to lack of access to resources did not necessarily impact creative ability negatively, although others disagreed. E3 felt that, *"there might be individuals who might not necessarily have completed matric, but they are much more open to thinking creatively because no one has told them the way you are thinking is incorrect according to a textbook or is incorrect according to what academics say. They are more open to thinking creatively. In an environment where there is a lot of resources and support - I think, in a way they become lazy where everything is already provided for them. So why should I come up with a solution if I can just ask someone else?*

In contrast, some felt that socio-economic factors had no bearing on the issue of creativity. Their view was that creativity is inspired on an individual level based on the need to solve immediate personal problems or challenges and impacted by multiple other factors related to context. As stated by E7, "*whether you come from an affluent place or not from an affluent place, what is it that about the world that you see that is a problem to you? I think it's neither the presence or the absence of material wealth but that it is the intensity of the intensity and the personalisation of the problem you need to solve".*

4.5.2. Educational frameworks for creative teaching and learning

Educators became very animated and excited about pedagogy and potential

approaches to teaching and learning creativity. There was an overwhelming advocacy for more practical subjects both in the curriculum and in extra mural activities. Suggestions for the facilitation of creative skills included bringing back practical subjects such as woodwork and handwriting and allowing for time outside, doing activities that stimulate all the senses and giving more time for play and exploration. A common complaint was that there was not enough time for creative activities in the already packed curriculum. Educators also emphasised the importance of allowing learners to solve problems on their own and demonstrate how they reached solutions to their peers; *"The practical subjects are not there anymore and this is why we get the type of child we get now – a child who can't think creatively" (E9); "You must lead the child from the known to the unknown. Leave the facts for later" (E10); "So let them brainstorm rather than giving them all the information. Another thing is to give the opportunities. Allow them to teach their peers how they got to their solution" (E5);* "*Imagination is high in children, and it's one of the building blocks of developing creative ability. But children don't play, are not dreaming. So play, storytelling, things like that. I think that is the best way to teach them creativity, to survive where there's nothing. We should allow the children to take risks, allow them to be themselves, allow them to go all out" (E2); "It [the curriculum] does not give the creative process time, because within that space of time, there's trial and error, there's new discoveries. I think we learned that from a young age. We learn to just do what we are asked all the time, and we don't get time to think and imagine" (E6)*; *"It's about how you do it that shows your creativity. Right? Are you coming up with novel teaching approaches? Are you using music? Are you using cases?" (E1)*

At the tertiary level educators tended to rely on tools such as design thinking, creative journaling and practical implementation tasks to test the creative application of theory. *"Given the large group sizes and different levels of understanding with which students start courses, it is often first important to get them all on the same page via theoretical teaching before engaging their creativity.*" (E3)

An interesting finding in the educator group is that none of the educators interviewed thought that the assessment of creative ability was problematic or challenging. As stated by E1, *"I don't think you need a formal assessment structure to assess*

whether a child is creative or will be creative. You will observe that as you age with a child on a daily basis in that environment where you are at with that particular child". E3 agreed stating that*, "yes, it can be assessed if you know how you going to measure it. You need to pose your questions in such a way that they can determine if that child has a creative mind or do you need to work on his creativity".* Tertiary level educators similarly found assessment of creativity, although slightly more challenging, easily measured in practical ways. As shared by E7, *"you have to look at a practical way of whether they can implement the understanding of theory in such a way which gets to a solution or gets them to come up with a way of linking theory to their practical understanding and their ecosystem in which they function*."

4.5.3. Urgency of appropriate skilling in creativity and creative thinking

Educators were unanimous that there is a high level of effort needed to prioritise creativity in our education system. At every level of the skills ecosystem, they were keenly aware of the critical need to prepare learners for the future of work. There was also recognition that, in the post school environment, work opportunities are no longer guaranteed, and work readiness requires a different approach than in the past. E4 felt that creativity is the only thing that will set learners apart in the work environment: "*creativity is something that is critical within any business environment, especially in a context such as South Africa. What will set you apart from that person who also did exactly the same process, went onto that specific programme that exactly has exactly the same type of solution, what will set you apart?"*

Several educators highlighted the need for integration and application of knowledge, a process dependent on creative ability. As stated by E7, *"Now they are not looking for theory anymore. They want to know how you are going to apply it. It is critical that there is space for creativity and innovation!"* University-level lecturers agreed, with E5 pointing out that, *"I'm interested in more ability to think critically about a specific problem. I'm interested in your ability to practically assess, I'm interested in your ability to look at a problem and see how theory will inform practice*."

Educators highlighted that the proliferation of new technologies such as artificial intelligence (AI) requires learners to have a well-developed creative ability in order to leverage these technologies effectively and appropriately; "*I think if you are a*

creative person, AI is something that is beneficial in the sense that it can assist you when you are trying to come up with solutions. The only thing that will set you apart is if you actually use creative thinking and think beyond what is being supplied to you to say, what will be my value proposition if everyone goes onto, let's say a programme like ChatGPT" (E8).

The critical need for creative thinking ability was not only emphasised as a post-school priority, but as a needed intervention for learners during their school career. E1 highlighted that *"by broadening their exposure and their creative ability, they already then have more scope when they get to high school and what they may or may not think and how they will choose subjects and how they will think about further than if they've just been in the sausage machine, you know, just churn out the usual."*

Educators felt strongly that creativity and innovation was urgently needed due to our country's current situation as we must find solutions to many challenges such as unemployment, energy security, food security, global warming and more. E5 commented that *"It should be part of the curriculum from primary school level right through even tertiary level throughout. And if they think critically, they will certainly be able to navigate right and wrong and even come up with solutions to problems."* E9 concurred, stating that *"If we want to move forward, then we need to be able to solve problems. If you look at where we are in South Africa, we have to be able to create jobs."* E5 felt that *"it is something that is critical within any business environment, especially in a context such as South Africa. If you think about being an entrepreneur, you have to think differently. You have to think about coming up with solutions."*

Despite the consensus that creativity is a critical skill, most educators felt that it was not being prioritised, and often teaching and learning this skill is left to chance. E1 stated that *"for professional development, the levels and the types of training I go for, there's not a lot of that, you know, that [creativity/creative thinking] is not part of the content. It is very limited and it also would be limited to a particular area of teaching which would be more focused probably on technology and ICT. So a lot of the time it does seem to come down to the leadership capacity of the school."* E7 agreed, stating that, "*my view is everything needs to be done, it must be prioritised. If there's*

not a willingness to prioritise something, it will never become a reality. There's a lack of willingness, you know, to prioritise creative thinking within the curriculum".

E4 proposed that prioritising creativity and creative thinking within the skills ecosystem should be approached strategically by locating its inclusion in curricula and teaching processes in its articulated value to learners, institutions and South African society; "*I think it has to be prioritised. And the question of how to prioritise that is to make it accessible in a way where it links with what a problem is by pointing it out as a solution. We have to create the bridge that gets us to creative thinking. How to prioritise it - I think it is to create a link between where you are now and where you want to go. And that link should be very clear for the specific audience that you're working with. [At the moment it is] neglected in a way where it is just being seen as a side part of, almost like a subsection of a subsection".*

4.5.4. The impact of environment and culture on creative skills

There was consensus among the educators that culture, environment and context matter in enabling creativity and creative thinking. Culture was referred to in the context of family, ethnic identity and organisations. For example, someone from an entrepreneurial family would tend to be more likely to take risks, whereas someone from a traditional family of employees would favour a more secure path in a permanent job and possibly be more risk averse; *"I suppose background also makes a very big difference. You know, it's the question of if you have a student that is coming from an entrepreneurial family. I would say without a shadow of a doubt that culture definitely influences creativity" (E8); "I think that the culture around not just entrepreneurship, but creative thinking, there is a culture that is sort of against it. Entrepreneurship as a probable career, a choice, is shunned because you are foregoing the security of the workplace, which, by the way, is not secure anyway. The [South African] culture is still against risk-taking in general, as opposed to, let's say, the USA. In the USA you have to earn the privilege of being called an entrepreneur through failure" (E6).*

A few of the educators referred to a culture of being risk-averse in South Africa, linking it to the pressures from families to graduate and earn an income to support the extended family; *"And I think when you look at the Black population versus*

maybe other more affluent populations, I don't think the typical Black person in South Africa has the time to be thinking creatively of ideas that might not work. I can personally identify. There are demands on the Black professional in terms of giving back as soon as you graduate or start to work" (E7).

Innovation requires risk-taking and being comfortable with failure. Respondents felt that there was very little in our education system that promoted failure as a positive learning experience and supported risk-taking as a high priority. In fact, as asserted by E5, *"Perspective could act as an inhibitor. Because, again, if we're speaking about culture, if you're in an environment that doesn't embrace change, that automatically means that it will be more challenging for people to want to be creative and to think outside of the box, because things have always been done a certain way."*

4.6. Summary of findings: educator lens

Among the small group of educators interviewed, creativity was commonly described as the ability to generate new ideas, solve problems, and foster empathy. Many associated it with innovation and emphasised the importance of creative thinking leading to meaningful or even profitable outcomes. However, participants also noted several systemic barriers to integrating creativity into the South African education system. These perceptions highlight a number of recurring challenges, although they should be interpreted with caution given the limited sample size.

A frequent concern raised was that the current curriculum is perceived as overly rigid and outcomes-driven, which some felt restricted opportunities for creative teaching and learning. Participants described being constrained by large class sizes and administrative burdens, which they believed left little room for fostering creativity in the classroom. There was a shared observation that students often arrive at university having been conditioned to reproduce memorised content, with exposure to creative or critical thinking approaches introduced relatively late in their educational journey.

Several educators pointed to a lack of resources—especially in under-resourced or low-fee schools—as a significant barrier to encouraging creativity. According to

some participants, teachers may not always have access to the tools or materials needed to stimulate learners' imaginations. In addition, the absence of a national or standardised framework for teaching creativity across schools and tertiary institutions was seen as contributing to uneven implementation, with the promotion of creativity often depending on the initiative of individual teachers or institutions.

Educator training also emerged as a theme, with some participants expressing concern that teacher education programmes may not adequately prepare teachers to nurture creativity in their classrooms. Resistance to change among experienced educators was mentioned as a further limiting factor, with a few noting that some teachers prefer traditional, didactic methods over more open-ended or exploratory approaches. Early childhood development (ECD) was identified as an especially underutilised phase for fostering creative capacities, with respondents suggesting that more intentional strategies could be applied from an earlier age.

Despite these challenges, many of the educators expressed enthusiasm for using creative teaching methods. Suggestions included increasing the use of practical subjects, incorporating outdoor learning, and allowing more time for play and exploration. There was a strong interest in creating opportunities for learners to solve problems independently and to share their solutions with others. At the tertiary level, tools such as design thinking and project-based tasks were described as effective in encouraging students to apply theoretical knowledge in creative ways—though it was acknowledged that theory continues to dominate in many higher education settings.

While views on how to assess creativity varied, most of those interviewed did not see it as inherently difficult. Instead, they suggested that creativity could be observed naturally through learners' performance in practical or problem-based tasks, particularly those that connect learning to real-world contexts. Imagination, risk-taking, and play were all identified as qualities that should be more deliberately nurtured across all levels of education.

Participants also discussed broader contextual factors they believed influence creative development. Cultural norms, socio-economic conditions, and family expectations were seen as playing a role. In particular, some respondents described

what they saw as a prevailing risk-averse culture in South Africa—especially among Black professionals—where economic pressures and the need to secure stable employment may discourage experimentation and entrepreneurial thinking. This was linked to an educational culture perceived as not encouraging risk-taking or valuing failure as a learning tool.

Although these reflections offer valuable insight into how a group of educators view creativity in the South African education context, they cannot be generalised to the broader teaching population. The data reflects perceptions rather than empirical consensus, and further research with a larger, more diverse sample would be needed to substantiate these findings and assess their relevance on a systemic scale.

Table 15 contains a summary of the findings for educators and some of the potential praxis model implications related to these findings.

EDUCATOR FINDINGS SUMMARY	
POINTS OF CONSENSUS	**PRAXIS MODEL IMPLICATION**
1. Educators articulated an understanding of creativity related to empathy, teamwork, and understanding others' perspectives i.e. a skills enabling one to position oneself in a multicultural society and changing world of work	Focus on a locally relevant definition or framework for creativity that serves our South African educational and economic growth needs.
2. The current school curriculum doesn't allow for creativity. It in fact limits and inhibits creativity. No space for or focus on the youth's creative ability to solve problems.	The curriculum at ECD, primary and secondary school must be examined in the context of its capacity to promote creativity and creative thinking
3. The resources needed to support creative teaching and learning were identified as time, visits to outside places, a garden, nature – very simple things	Consensus on what resources are needed. A basic set of classroom tools is advocated in the 4IR report.
4. There is no systemic approach to creativity being a focus. It is left to individual educators, schools and institutions	A directive "from the top" is needed for creativity to be prioritised. Accountability must be demanded from educational institutions
5. Training of educators in facilitating creativity and innovation is inadequate.	Urgent intervention is examining both the way teachers are trained and emphasising creative skills explicitly in their training.

6. Educators have many practical ideas on how to integrate creativity into the curriculum	Educator views must be solicited and integrated into curriculum and praxis model design discussions
7. Assessment is not an issue of concern. It is possible and quite simple	Develop a framework to approach assessment
8. There is a sense of urgency to prioritise creativity and innovation at every level of the skills ecosystem. Keen awareness of the changing post-school and post-university environment and the new challenges learners face.	Consensus and platform for action to be taken
POINTS OF VARIANCE	**PRAXIS MODEL IMPLICATION**
1. Constraints limit or promote creativity	The fact that creativity contributes positively to engage youth in and move them out of challenging mental states, trauma and difficult identity issues is a strong motivation for it to be prioritised in our skills ecosystem at all levels.
2. Educators should take initiative vs it must come from the top"	Both are needed, but there is a clear need for a framework or guidelines and policy from the education system, as well as methods of accountability.

Table 15: Educator findings summary

From the data gathered via the three lenses in this study, a clear picture emerges of the thinking about creativity and creative skills in the South African skills ecosystem. The ecosystem managers and educators agree in many respects and similar themes emerged from these two groups. There is general agreement regarding the urgency to prioritise creativity in the skills ecosystem. There is a clear preference for a local, context-specific concept of creativity with a focus on the collective approach focussed on the utility of the outputs of creativity to solve our socio-economic challenges as a society.

Discussions on environment and culture showed that our history, cultural contexts, and in many cases, poverty, trauma, and other socio-economic constraints impact the perceptions of creative capacity in youth. The youth interviewed particularly expressed a yearning to be allowed to be creative and contribute to their own education, as well as the keen impact of poverty, generational cultural expectations,

and trauma on their sense of identity and belonging. Views differed regarding whether constraints serve to stimulate creativity or restrict it.

Themes concerning a systemic view of the skills ecosystem and leadership in prioritising creativity in the system were, as could be expected, emphasised by the skills ecosystem managers group. All three groups highlighted the many challenges in the system to integrating creativity as an explicit focus of teaching and learning, including inadequate teacher training, challenges with the curriculum, no clear pedagogical approach or agreed upon framework for teaching these skills, insufficient resources in many teaching environments and inadequate teacher training.

Table 16 shows the themes that emerged from each group and areas of common understanding.

	COMMONALITY OF THEMES			
	THEME	**SKILLS ECOSYSTEM MANAGERS**	**EDUCATORS**	**YOUTH**
1.	Urgency of appropriate skilling in creativity and creative thinking	√	√	X
2.	The need to define & understand creativity and its related concepts	√	√	√
3.	The impact of environment & culture on creative skills	√	√	√
4.	Systems thinking & leadership	√	X	X
5.	Challenges to creativity being integrated into the skills ecosystem	√	√	√
6.	Educational frameworks for creative teaching & learning are needed	√	√	X

Table 16: Commonality of themes between lenses

Chapter 5

Discussion

5.1. Overview

This study set out to determine how the present and future needs for creative thinking, given South Africa's urgent priorities for economic development and an appropriately skilled workforce, could be advanced in the context of the South African skills ecosystem. The intention is to recognise how creativity and creative thinking are understood, experienced, and implemented by the role players in the South African skills ecosystem and to use these insights to develop a practical model or outline for interventions that are fit for purpose in the South African context to mainstream creativity as a critical ability in the skills ecosystem. Examining the impact of cultural biases in how creative education is approached in South Africa, looking at key social and cultural factors, shared by South Africa's youth, that can guide the implementation of creative education and querying how potential reforms in creative education can be demonstrated through an appropriate praxis model form the basis of the research undertaken and reported in this dissertation.

The intention of this study was additionally to propose a praxis model that could be used to strengthen the implementation possibilities of the Diagnostic Report of the Presidential Commission on the Fourth Industrial Revolution.

This discussion draws on the findings of an exploratory qualitative study designed to deepen understanding of how creativity is perceived, valued, and integrated within South Africa’s education systems. As outlined in the methodology, the intention of this research was not to generate new theory, but rather to investigate an under-explored area through context-rich engagement with educators, policymakers, and stakeholders. While elements of grounded theory—such as inductive analysis and thematic pattern recognition—were employed in analysing the data, the study is best characterised as exploratory in nature. Its strength lies in uncovering how creativity is conceptualised on the ground, highlighting disjuncture between policy and practice, and offering nuanced insights into a phenomenon that has received insufficient scholarly and policy attention. The findings provide a foundation for further research

and future policy experimentation, rather than claiming generalisability or theoretical abstraction.

The following sections discuss the perspectives of skills ecosystem managers, educators and youth, that have emerged from the data:

5.2. Prioritising creativity in the skills ecosystem

The urgency to prioritise creativity as a critical skill with clear pedagogy, definition, and measurable outcomes is affirmed by the data and was expressed by educators and skill ecosystem managers alike. This stems both from an understanding of the changing world of work and the requirements of a 4IR society (Emelyanenko, 2019; Gray, 2016; ILO, 2019; Presidential Commission on the Fourth Industrial Revolution, 2020; Schwab, 2016), and a general acceptance of the outcomes of creativity studies and pedagogical focus over recent years (Care et al., 2017; Craft, 2001; Craft et al., 2014; Cremin, 2015; Mpofu et al., 2012; Robinson & Aronica, 2016). The growing impact of technologies like artificial intelligence (AI) further underscores the need for strong creative skills. Learners must develop these abilities to use such technologies effectively and responsibly.

Educators also stressed the importance of fostering creative thinking not only as a post-school priority but as a vital intervention during students' schooling. They believe creativity and innovation are urgently needed to address pressing national challenges, such as unemployment, energy and food security, and global warming. They acknowledged that while we may not have all the answers, this lack of certainty offers an opportunity to rethink and redesign a system that works for us. They pointed out that, although we have local examples of excellence, what's missing is a more systemic approach to connecting these successful initiatives. While pilots and short-term successes exist, there is a lack of long-term foresight.

5.3. Defining and understanding creativity and innovation in the context of a fourth industrial revolution education system

It is clear from the data that a definition of creativity is elusive, and that creativity is a complex concept, which results in it being more difficult to articulate a framework to ensure that creativity is supported in a skills development context. The lack of clarity

in defining the concept also makes the assessment of creativity in the skills environment difficult. Despite the acknowledgement that creativity is a multi-dimensional concept, encompassing different cognitive, social, and cultural elements, none of the respondents in any of the three groups had any trouble articulating what they thought creativity was. Each group defined creativity within their context. Skills ecosystem managers viewed creativity in more academic terms and tried to define it outside of themselves and its personal implications and effects. The youth understood creativity in more personal terms and how it linked to their identity formation. Educators added a dimension to the definition of how creativity enables introspection and empathy, aiding individuals to perform to greater effect within a group environment because they can consider the perceptions of others. It is obvious that the perspectives of each lens emerge from creating meaning and definition within their contexts and responsibilities. This underlines the need for multiple stakeholders from multiple levels and perspectives as represented in this study; that policy environment, implementers of education and recipients of education are involved in determining a context-specific definition of creativity for the South African skills ecosystem.

The term “soft skills” is generally used to define a broad spectrum of skills including, but not specific to, creativity and creative thinking. This term describes a bucket of skills that include communication, conflict management, relationship building, adaptability, and more. Creativity is included, but not necessarily itemised, as an individual and essential skill with associated strategies to teach, learn and implement creative thinking as a priority within both the workplace and education system. The literature highlights that policy imperatives to support creativity in education should include sharper definitions of the concept (Collard & Looney, 2014) and that lack of definition or absence from policy completely can result in challenges, with practice departing from conventional established structures or culture (Henricksen et al., 2018).

While creativity has been interpreted in multiple ways individually, a unified and shared definition is essential. The findings from this study highlight the need for such a consensus on creativity, which can then inform the creation of an educational framework that facilitates the integration of creativity into the broader ecosystem.

The lack of definition hampers implementation that is clearly understood and defined. This is consistent with the literature, which points out the challenge of defining creativity within most skills ecosystem contexts to create pedagogical and other implementation processes adequately (Craft, 2001; Cremin, 2015; Lin, 2011). While this is a challenge in creativity education globally, a clear leaning towards a context-specific, South African definition and understanding is essential (Cabra & Guerrero, 2022; Lubart, 2010; Mans, 2012; Mpofu et al., 2012; Shao et al., 2019; Xie & Paik, 2019; Yusuf, 2009).

There has not been much research done specifically on an Afro-centric or even South African view of creativity and there is thus not much literature that explores African and South African views of creativity specifically. Investigating our own definitions, required outcomes and implementation of creativity in learning and teaching relevant to our local context allows us to harness our intrinsic understanding of creative solutions and innovation relevant to our unique challenges for the present and future.

The data shows a very practical application of creativity, one which is linked to empathy and ubuntu and a keen awareness of belonging to a nation that needs solutions. Building on Africa's potential to lead in innovation and creativity, specific themes emerged that align with the concept of Ubuntu. There was a strong sense that creativity often arises in response to a need, or a solution required within a community context. Furthermore, it was expressed that creativity, which leads to innovation, is frequently considered in terms of how it can benefit the collective rather than the individual. Another perspective shared was that although individual creativity is often constrained by poverty, creativity is in fact enhanced in the Ubuntu or collective setting. This suggests that the prevalent worldview of acting for greater good influences when and how creativity is expressed, underscoring the deep-rooted cultural orientation towards communal benefit over individual gain.

Cultural identity and collaboration are identified as key enablers of creativity, with identity rooted in cultural heritage being essential to the creative process. Conversely, traditional views held by parents and educators are seen as impediments to fostering creativity in younger generations, due to a focus on

preserving inherited practices over innovation. Additionally, the generational gap in understanding the current educational and skills demands was highlighted as a further constraint. There is a prevailing sentiment among the youth that career paths, roles, and responsibilities have been predetermined by preceding generations. In this view, creativity is perceived as being intertwined with cultural identity, ancestry, and lineage, and is thus constrained by these traditional expectations. This raises a critical question regarding whether current pedagogical approaches adequately account for cultural context and whether there is a systemic framework for developing new skills, such as creativity and creative thinking, that is inherently aligned with both cultural African and more traditional approaches and perspectives.

The literature emphasises that context matters and impacts how creativity is understood and implemented in teaching and learning (Lubart, 2010; Shao et al., 2019; Yusuf, 2009). There are discrepancies in South African studies on the matter depending on the cultural framework of the authors, indicating both the diversity of worldviews within our local context and the need for further focused study in the area of a definition that meets our local needs and requirements (Feather, 2003; Jeffreys & Craft, 2001; Mans, 2012; Meintjes & Grosser, 2010; Mpofu et al., 2012). The data also highlights that a praxis model should focus on developing a framework that is context specific and does not import models from outside. The resulting pedagogies and educational frameworks should emerge from this context-specific foundation (Kadir, 2017; Craft, 2001).

The understanding of innovation and that it is directly linked to creativity as a practical outcome of applied creativity was a common understanding of all the respondents. The literature supports the notion that human creativity drives innovation and progress, both social and economic, in societies. (Munyoki, 2019 Yusuf, 2009; Auh, 2024; Dinwobi et al, 2016; Artige & Lubart, 2020; Bhagavan, 1979; Ndemo & Aiko, 2016).

Young people however, expressed frustration at being steered toward career paths aimed solely at employability, rather than having the freedom to explore their individual talents and passions. They felt that this suppression of creativity was intentional. The education system was criticised for funnelling students into pre-

determined roles, where careers like doctors, lawyers, and engineers were valued more than those like nurses or teachers.

Many felt the conventional education system was outdated and inadequate for university, where independent thinking is essential. They also agreed that the curriculum was too narrow and failed to expose them to critical advancements in technology and global changes that would influence their future career choices. The view that human creativity drives innovation and progress is at odds with the fact that industrialisation leads to mass education and the commodification of teaching, which essentially kills creativity. (Robinson & Aronica, 2016; Care et al, 2017; Craft 2001; Ramlackhan et al, 2024). The youth experience the latter within the skills ecosystem.

If education systems continue to operate within the industrialisation and mass education model that has persisted for over a century, as is the case in South Africa, they will remain entrenched in outdated frameworks. While there may be efforts to align skills outputs with the demands of the new economy, such as fostering creativity, critical thinking, and other competencies outlined by Schwab, alongside digital skills like coding, the risk in the context of the Fourth Industrial Revolution (4IR) is significant (Schwab, 2016). The rapid tempo of technological advancement means that the skills required by the workforce will perpetually lag technological developments.

For example, coding and robotics have been central to educational strategies aimed at preparing students for the 4IR economy. However, within just the past two years, artificial intelligence (AI) has advanced to the point where it is increasingly replacing coders, with generative AI models now capable of performing many basic coding tasks. The exponential progression of AI, coupled with quantum computing, suggests that the skills being prioritised at the school level to produce "tech-savvy" youth will become obsolete within relatively short timeframes, raising concerns about the sustainability of such educational investments.

A more nuanced understanding is provided by Robinson and Aronica, who explain how the literal structure of the industrial economy has directly shaped the structure of

the education system (Robinson & Aronica, 2016). If Robinson and Aronica's view holds true, that the economic structure informs the ultimate configuration of the education system, and that an education system gradually evolves to mirror the structure of the economy it serves, then two scenarios are conceivable in the context of the Fourth Industrial Revolution (4IR). Firstly, some institutions and organisations may lag behind by taking a passive approach, waiting for changes to occur organically. This reactive stance could lead to an increasing disparity between them and those that have already embraced 4IR-driven transformations, leaving them ill-prepared to adapt effectively to the new economic realities. Secondly, schools and other entities could choose to be proactive by intentionally analysing and understanding the structural shifts of the 4IR economy. By implementing the necessary changes early, they can position themselves to thrive in this evolving landscape and better prepare their students for the future. The characteristics of the 4IR economy, as demonstrated in the literature by Lee et al., include a distributed network structure, peer-to-peer connections, an absence of hierarchical organisation, and the removal of grouping by age or gender. Furthermore, 4IR necessitates multi-disciplinary and interdisciplinary approaches, with a diminished emphasis on risk aversion (Lee et al.,2018; Yusuf, 2009; Lin, 2011).

The question arises: should we integrate creativity and creative thinking within the existing educational system, which largely reflects the mass education model of the Third Industrial Revolution? While this approach may prove somewhat effective, the inherent design of the system tends to stifle such thinking by its very nature. This may explain why creativity is neither prioritised nor readily apparent within the current framework. Is it not unreasonable to expect a system, which is increasingly outdated and unfit for purpose, to foster such qualities? Alternatively, we could adopt a macro-level approach, applying creative thinking to critically examine the system's structure and desired outcomes in the context of the Fourth Industrial Revolution (4IR), shaping it in a manner that is context-specific and responsive to the needs of South Africa and the African continent. While it may be considered idealistic to propose that education exists solely for the self-actualisation of individuals rather than to serve economic progress and societal utility, there may be a convergence of the two in the 4IR era. In this new industrial context, human attributes, such as creativity, relational skills, intuition, and other uniquely human qualities, are

becoming increasingly valued once again (Schwab, 2019; Presidential Commission on the Fourth Industrial Revolution, 2020).

The questions posed above are closely tied to the respondents' understanding of innovation. While all groups recognised the connection between creativity and innovation, the educator group emphasised that these concepts are intrinsically linked and should result in outcomes that are either profitable or beneficial to the end user—reflecting the mass education and commoditisation model.

Government policy managers, on the other hand, associated innovation primarily with activities such as establishing 4IR centres in colleges and launching digital skills programmes, demonstrating a similar commoditisation perspective. However, the mere existence of such centres and programmes does not necessarily guarantee that innovation is occurring or that tangible outcomes are being produced. Despite this, there is a prevailing perception that ecosystem managers are highly innovative or prioritising innovation through these initiatives.

The notion of innovation as a process grounded in creative skills and thinking across diverse fields does not seem to be widely understood. This understanding of innovation reveals that the instinct of ecosystem managers is to focus on adapting outputs to meet the demands of the evolving 4IR economy, without critically examining whether the underlying system design is fit for purpose. Moreover, there appears to be an incomplete understanding of the specific requirements of this new economic paradigm.

The literature highlights the direct link between creativity and innovation, emphasising that innovation is dependent on creativity as a first step. Essentially there can be no innovation without creativity and creativity has underpinned every major socio-economic revolution over time. Creativity is thus an important driver of innovation and economic development and competitiveness (Artige & Lubart, 2020; Dimnwobi et al., 2016; Mehta et al., 2014; Yusuf, 2009).

There is a very strong emphasis placed on innovation in South Africa at a policy level and innovation is prioritised in most domains of our society, with inputs into the

innovation system exceeding outputs (Department of Basic Education, 2011; Department of Digital Communications & Technology, 2020; Department of Science Technology & Innovation, 2019; National Advisory Council on Innovation, 2019; World Intellectual Property Organisation (WIPO), 2023). It is thus surprising that creativity is not equally emphasised or prioritised in the discussions on innovation, and although the data showed that respondents clearly understood the link between the two concepts, far more investments and policy directives are made regarding innovation as a stand-alone factor.

The question is evident that perhaps the country's inability to achieve the levels of innovation that have been set as targets by multiple strategy and policy documents is linked to our lack of focus on creativity, a necessary skill underpinning innovation and leading to innovation outputs. This provides possibilities for further research and focus - the question that must be asked is whether innovation output levels are low due to inadequate levels of creativity to begin with, or whether the low output levels are due to other factors. If creativity is prioritised, it follows that innovation will be a natural outcome at all levels of the skills ecosystem from school to work environments.

Further research is necessary to develop a clear value proposition regarding the integration of creativity and creative thinking skills into the South African skills ecosystem. Specifically, what is the value of mainstreaming creativity as a core skill, in terms of both the economic and industrial benefits it could provide, as well as its potential to address the social and human needs of the population? While this study indicates that the importance of these skills is generally understood in relation to the changing nature of work, their application to specific local challenges and their role in positioning South Africa favourably in the global economy have not been fully explored.

Stakeholders within the skills ecosystem must critically evaluate what the literature identifies as market-driven education policies versus learner-driven models. Informed decision-making is required to integrate emerging technologies, societal needs, and evolving workplace demands to shape the desired outcomes of creative education in South Africa (Edgell & Lee, 2023; Gcabashe, 2024; Lin, 2011; Oyekunle, 2015;

Yusuf et al., 2020). A clearly defined value proposition, alongside measurable outcomes, could provide the necessary incentive to mobilise political and systemic will for prioritising creativity in the skills ecosystem. Additionally, further research is required to develop an educational framework that offers guidelines and definitions for this area of study, which can be applied across various levels of the skills ecosystem for coordinated implementation.

5.4. Defining a systemic intervention

There exists a distinct separation between the various stages of the skills development environment, from Early Childhood Development (ECD) through to the workplace, particularly in terms of the methodology and application of creativity. This gap is evident not only with respect to creative thinking skills but also as a broader limitation within the skills ecosystem. Each component of the ecosystem operates in isolation, resulting in a fragmented and often inefficient experience for individuals as they progress through the system. At the ECD, secondary, and tertiary levels, each stage inherits challenges related to the development of creative thinking abilities, primarily due to the lack of investment in creative teaching and learning, alongside the current emphasis on rote learning. There is an urgent need for a systemic approach that fosters linkages across the ecosystem, potentially through a skills pipeline model, to ensure continuity and coherence for both learners and educators. There are no centralised accredited tools, curricula or processes to assist educators to teach these skills at the various levels of the skills ecosystem. The question becomes, at which point in the system should these skills be prioritised and where does one start if taking a systemic view? Responses to this vary from making it a stand-alone process to integrating creative thinking into existing processes and courses. Most agree that it should take place right across the skills ecosystem as an ongoing focus. Skills ecosystem stakeholders showed a clear preference in particular intervention points in the skills ecosystem related to their areas of responsibility and work. The findings thus show that systemic intervention is needed to mainstream or prioritise creativity in our educational approaches and processes. There is a consensus on the urgency for a focus on these skills, but no clear initiative or directive from authorities within the skills ecosystem to implement this.

The cultivation of creativity as a structured competency is lacking, with its promotion often dependent on leadership within workplaces or individual educators who prioritise it. In compliance-driven environments, innovation tends to take a backseat, with the focus being on meeting regulations. Additionally, creativity is valued differently across sectors—fields like accounting and law are often perceived as needing it less. While there are some examples of excellence, they are limited, and the country is not yet equipped to scale innovation effectively. Experts in creativity and innovation argue that the process is highly structured and can be measured, with ISO standards defining how innovation should be implemented. Innovation processes must be tested and institutionalised across both government and the private sector, following established standards.

Participants highlighted multistakeholder partnerships as crucial elements at a systemic level for the effective implementation of relevant skills development. However, there is often resistance to open innovation and collaboration within this context.

Ecosystem managers expressed a highly positive view of Africa's potential for innovation, with a consensus that the continent is poised to lead in this area. Some participants even suggested that Africa's exclusion from current global systems and its lag in technological advancements might be advantageous, as it compels the development of Afro-centric systems that better address local needs. This perspective reflects a unanimous optimism regarding Africa's capacity to innovate and overcome the challenges it faces. Moreover, ecosystem managers noted that an older generation of parents and caregivers tends to prioritise maintaining traditional practices over pursuing innovative solutions, a trend that extends to educators as well. This observation indicates a notable generation gap in attitudes towards innovation.

The literature supports the lack of explicit prioritising and implementation of creative teaching and learning in South Africa (Gouws, 2008; Mabaso, 2020) or focused development of creative pedagogy (van Eck, 2018; Turpin et al., 2015). While there are individual attempts by educators, extracurricular initiatives and leaders in some private sector entities focused on prioritising creativity, the system requires resource

allocation, supporting policy and assessment or measurement for these skills, all of which require a directive and coordination from skills ecosystem managers. No one seems willing to move until decisive systemic intervention occurs or instructions are received from Education and workplace skills authorities.

This deficit is highlighted by the Presidential Commission on the 4th Industrial Revolution's report. The diagnostic report's key finding on human capacity development and the future of work in South Africa highlights the need to align the skills ecosystem by embracing system-wide changes. This alignment aims to ensure that the approaches and content prioritised for a 4IR economy are consistently and cohesively implemented across the entire skills ecosystem. The report also emphasises the importance of developing methods to teach and measure 4IR-relevant skills, such as critical thinking, creative problem-solving, and innovation.(Presidential Commission on the Fourth Industrial Revolution, 2020). Other country-level strategies prioritise creativity but also lack implementation strategies and coordination between siloed elements of the national system. For example, the National System of Innovation, 4IR implementation strategy and National Digital and Future Skills strategies have similar objectives in this regard but have no coordination or connection of outcomes between the entities and no specific implementation guidelines or policy directives (Department of Digital Communications & Technology, 2020; National Advisory Council on Innovation, 2019). The data indicates multiple views on where and how to intervene in the skills ecosystem to mainstream creativity skills and a sense that the current approach to creativity in the ecosystem is uncoordinated and haphazard. It is clear from the study that a multi-stakeholder and multi-generational approach is essential in framing an intervention in the South African skills ecosystem.

An interesting piece of work, commissioned by the Department of Digital Communications and Technology, led to a national framework for digital skills in South Africa (Craffert et al, 2023). It was developed by multiple researchers and institutions to create a framework within which to enact and potentially measure digital skills competency and create a national standard for such skills. Due to the wide-ranging nature of what "digital skills" encompass, a framework provides a point of departure for implementation of these skills across the skills ecosystem. Given the

number of high level policies and strategies already highlighting creativity as an essential skill, a similar framework could be developed with regards to creativity, as a key to guide practical implementation of the multiple polices already developed within the skills ecosystem.

Opportunities exist to streamline and integrate existing high-level policies and frameworks from various sectors that address human capacity development for the Fourth Industrial Revolution (4IR). It is essential to explore whether these can be consolidated into a cohesive overarching policy directive that reflects a systemic approach to the skills outcomes required across multiple sectors, where creativity is identified as a fundamental skill.

The 4IR Presidential Report emphasised the need for the skills ecosystem to align with and respond to the evolving demands of the world of work and the human capacity needs for 4IR. It proposed centralising or coordinating this effort through the Human Resource Development Council, a body established to oversee human capacity development in South Africa and operating under the presidency. This body is well-positioned to coordinate across multiple government departments involved in human capacity development in South Africa.

The Human Resource Development Council could play a pivotal role in mandating and monitoring the integration of creativity throughout the skills ecosystem. However, achieving this will require strong leadership and political will, as government entities currently operate largely in silos.

5.5. Trauma, poverty and other socio-economic constraints affecting creativity

A clear disconnect emerged from the data concerning the impact of trauma, poverty and other cultural and environmental constraints on creativity and creative capacity in individuals. One view held that creativity is often sparked at an individual level, driven by the need to solve immediate personal problems or challenges, shaped or inspired by various difficult or constraining contextual factors. However, a conflicting view held that poverty limits their communities' ability to be generous, open-minded, and therefore creative. Another viewpoint expressed was that while individual creativity may be limited by poverty, it is actually fostered in Ubuntu or collective

settings. This implies that the dominant cultural perspective of prioritising the common good impacts the timing and nature of creative expression, highlighting a profound cultural emphasis on communal benefit rather than personal advantage. This introduces an intriguing inconsistency about the concept of Ubuntu as reflected in the data, where collective benefit derived from creativity and innovation was identified as one of the primary motivations for prioritising creativity at a national level.

From the data, a significant number of the youth feel that adversity and trauma block or limit them from being creative. More than half of the Educators also expressed that constraints emanating from trauma, poverty and conservative generational cultural views inhibit creativity in their classrooms. The ecosystem manager group was split on this view, with half agreeing that poverty and trauma inhibit creativity and the other half feeling that these constraints inspire creativity and innovation.

There was a consensus among educators that culture, environment, and context play significant roles in facilitating creativity and creative thinking. Culture was discussed in terms of family background, ethnic identity, and organisational influences. For instance, individuals from entrepreneurial families are more likely to embrace risk-taking, whereas those from traditional families, which prioritise stable employment, may be more inclined towards secure career paths and exhibit greater risk aversion. Some educators noted a prevalent culture of risk aversion in South Africa, attributing this to familial pressures to achieve academic success and secure employment to support extended family members.

The literature contradicts some of these findings and shows that at an individual level constraints often inspire creativity, and that trauma is not a forecaster of creative self-efficacy in a negative way (Thomson & Jaque, 2019, 2023). Trauma is even linked to higher levels of creative self-efficacy in some studies (Orkibi & Ram-Vlasov, 2019), and creativity facilitates post-traumatic healing and growth and supports opportunities to diminish inequalities and promote resilience (J. Kaufman, 2018; Rubinstein & Lahad, 2023).

The literature thus shows that at an individual level, constraints inspire creativity and will allow youth to better explore and develop self efficacy and promote inclusion and collaboration. This serves as a strong motivation for creativity to be included in the curriculum as an antidote to the high levels of trauma and the impact of poverty on the youth. South Africa's cultural and environmental constraints thus provide even more reasons for the inclusion of creativity as a curriculum focus area in that it will inspire innovation etc, but also provide youth with an environment that potentially allows them to transcend their constraints, contributes to their healing and well-being, and promotes inclusion and collaboration. By implication, a focus on creativity in the learning environment should enhance the learning environment for educators and ultimately skills ecosystem managers through its mitigating effect on the trauma, poverty and other environmental constraints experienced within the skills ecosystem in South Africa.

The literature however also highlights the complexity of the relationship between creativity and constraints, indicating that the differences between individuals, activities and contexts complicate the issue of how constraints affect creativity (Rietzschel, 2015; Tromp & Steinberg, 2022), as well as emphasising different levels of creativity can occur at different stages of the development of a creative idea (Doering, 2016). Further research is required to investigate this in more detail as a focused study area, with an emphasis on the context specific to the South African skills ecosystem.

5.6. Skills ecosystem constraints and limitations for fostering creativity

The current curriculum significantly restricts the practice of creativity and creative thinking. A clear pedagogical approach precedes successful creative teaching and learning and creating a learning environment conducive to creative teaching and learning is essential to successfully prioritise creativity within the skills ecosystem. The creativity theory, relevant definitions of creativity, cultural and context-specific considerations and desired skills ecosystem outcomes should inform the pedagogical approach (Craft, 2001; Lin 2011; Mans, 2012; Cheng, 2010; Cremin, 2015; Craft et al, 2014; Kadir, 2017).

Some of the factors emerging for the study within the ecosystem contributing to creativity being limited include the following:

Overburdened Curriculum - The curriculum is overloaded with outcome requirements that must be met within a limited timeframe, resulting in a rush to complete work for assessments and a heavy administrative burden. This leaves little discretionary time for students to explore and develop their own solutions.

Late Introduction of Creativity - Creative thinking is typically introduced too late, often only formally at the tertiary level.

Resource Constraints - There is a lack of resources in the teaching environment, including visits, excursions, tools and equipment, and safe play environments. Additionally, large class sizes further exacerbate the challenge. This is evident at primary secondary and tertiary levels of education and there is a lack of coordinated focus on Early Childhood Development (ECD).

Standardisation Issues - There is a notable absence of a standardised approach to teaching creative skills within the skills ecosystem. This responsibility is left to individual institutions, and without a specific policy focus at national and provincial levels, creativity remains a low priority. The absence of institutionalised standards for creativity at the university level also contribute to this issue

Inadequate Teacher Training - Teachers often do not venture outside their comfort zones or take risks. Furthermore, the training provided to educators is insufficient.

Fear of risk taking and individuality - The youth highlighted that school environments often restrict and fail to support creative teaching and learning. They expressed that schools did not make them feel individually recognised and valued, instead requiring them to conform to predefined roles and expectations. Although there were instances where individual teachers within the system acknowledged students' talents or encouraged creativity, these were exceptions rather than the norm. Overall, the system tended to discourage individuality and favour conformity.

Despite a consensus on the importance of creativity as a critical skill, most educators believe it is not adequately prioritised and that teaching and learning this skill often occurs by chance. Innovation necessitates risk-taking and comfort with failure, yet

the education system rarely promotes failure as a valuable learning experience or supports risk-taking as a high priority.

Skills ecosystem managers expressed significant concerns regarding the assessment of competence in creativity or creative ability. They noted the substantial subjectivity involved in measuring and evaluating "soft skills," which complicates the establishment of a baseline for assessment. Additional concerns included the depth of testing and the preference for practical assessments and tasks. The data clearly indicate a lack of a well-defined articulation of what constitutes creativity and the absence of a coherent framework for its assessment.

Interestingly, none of the educators interviewed considered the assessment of creative ability to be particularly problematic or challenging. Similarly, while tertiary educators acknowledge that assessing creativity presents some difficulties, they still regard it as measurable through practical approaches. The current assessment-based system will inevitably make this a pressing issue. It highlights how traditional approaches to teaching, which focus primarily on knowledge transfer, are no longer sufficient. There is a need to reframe how teachers are trained, addressing the rigidity of the existing system, which fails to align with the demands of the new era.

The literature outlines multiple pedagogical approaches and highlights the importance of context-specific practice of creative pedagogy (Lin 2011; Amoak 2021; Sierra, 2010), while also emphasising that creative pedagogy should focus on both teachers and learners and the relationship between them (Glaveanu et al., 2015). Many of the limiting factors identified above are supported by the literature as common constraints to developing environments and conditions conducive to creative teaching and learning. These include large class sizes (Gcabashe, 2024; Green & Condy, 2016), risk aversion (Adom et al., 2021; Ezepue & Ezepue, 2008), lack of adequate training for teachers (Oyekunle, 2015), context-specific curriculum (Palupi, 2018; Smith, 2000; Gcabashe, 2024) and standardisation issues (Craft, 2001; Cremin, 2015). An important factor highlighted in the literature is the lack of training for teachers in creative teaching and learning and the inadequate capacity of teachers in the South African skills ecosystem to implement creative teaching and learning. This teaching capacity deficit can be attributed to a lack of knowledge on

the part of teachers (Mabaso, 2020), as well as the lack of studies focusing on creative pedagogy (van Eck, 2018; Turpin et al., 2015), and even the lack of assessment tools for creativity and critical thinking (Lombard & Grosser, 2008). Teacher's mindsets and orientation to creativity also often favour conformity and shun risk taking in the classroom (Kettler et al., 2018; Tan, 2003)

5.7. The future is now

Social media profoundly influences youth creativity, shaping how young people express themselves and interact with creative content. As a result, it becomes essential not only to encourage creative expression but also to help young people understand what it means to be creative in an era increasingly dominated by social media, artificial intelligence (AI), and other technological advancements (Ivcevic & Grandinetti, 2024). The digital age has brought about new forms of creativity that require more than just traditional approaches; it is crucial to teach young people how to navigate this evolving concept of creativity, particularly in a context where AI is reshaping conventional paradigms. This shift has given rise to what can be described as "super-creativity" (Pitso, 2020; Silvio Manuel Brito, 2020), a form of creativity that involves collaboration with AI and other technologies to boost productivity and inspire innovative, boundary-pushing creative processes.

The challenge lies not only in teaching these new modes of creativity but also in ensuring that young people learn how to work alongside machines and leverage AI to enhance their creative potential. This transformation requires an educational approach that integrates digital literacy with creative thinking, allowing students to engage with technologies like AI in meaningful and innovative ways. However, many educators find themselves struggling to keep pace with these rapid technological changes. Teachers often express concerns about their limited understanding of AI, social media, and other emerging technologies, which complicates their ability to prepare students for the future. There is increasing urgency to ensure that educators and students acquire the necessary skills and knowledge to succeed in the fast-evolving digital world, as failing to adapt may hinder effective teaching and learning in this rapidly changing environment.

In addition to fostering creativity, there is a growing recognition of the need for both technical and creative skills in today's knowledge economy. The ability to adapt, think critically, and reflectively has become essential as technology continues to redefine the landscape of education and work. In an era where information and knowledge are readily available, the focus must shift from rote learning to a more dynamic and adaptive approach to education. Instead of focusing solely on transmitting large volumes of information, educators should help students develop skills to interpret, analyse, and creatively apply knowledge.

As information becomes increasingly accessible, the role of educators is evolving. It is no longer sufficient for teachers to act as mere transmitters of knowledge. Instead, they must become facilitators of learning, helping students develop the skills to navigate, filter, and use the wealth of information available to them, particularly through AI enabled tools and processes. This shift requires a more interactive and participatory approach to education, where students are encouraged to question, experiment, and collaborate in problem-solving processes. Such an approach not only prepares students for the challenges of the modern knowledge economy but also equips them with the critical thinking and adaptive skills necessary to thrive in a rapidly changing world (Palupi, 2018; Gcabashe, 2024; Smith, 2000; du Plessis, 2020).

5.8. Limitations of the study and opportunities for future research

While the intention of this study was to get a high level view of how creativity is understood and experienced in the skills ecosystem in South Africa from the perspective of the three selected lenses - skills ecosystem managers, educators and youth - the number of representatives of each lens was limited. Only ten ecosystem managers and educators each and twenty one youth were interviewed, thus limiting the data to a small pool of respondents. There is scope for further research to focus on each of these lenses as individual studies and expand the criteria to different levels of the education system e.g. primary school, high school, tertiary. The inclusion of workplace learning and the ecosystem surrounding this part of the skills ecosystem also provides scope for further focused study in terms of the specific requirements and environment of this skills ecosystem component.

There is also room for further research regarding specific elements of creativity and how it is experienced within the skills ecosystem, some of which emerge in the discussion including the definition and value proposition or outcome of creativity in the South African context, studies investigating a context specific educational framework for creativity for South Africa and more in depth research on the relationship between creativity as a skill and constraints such as poverty, trauma and generational cultural biases in South Africa and their potential impacts. Another area requiring focused research is the clear link between creativity and innovation and whether the lack of focused creativity skilling impacts the level of innovation outputs of the country.

A clear gap highlighted by the study is the lack of a coordinated ecosystem approach in education policy development involving government, industry, education institutions, and social partners. This absence undermines efforts to create a dynamic and responsive skills system capable of addressing the complexities of the South African labour market. Despite the well-established value of the skills ecosystem framework—characterised by multi-stakeholder collaboration, continuous co-evolution of supply and demand, and regionally tailored interventions—South Africa's current skills planning remains fragmented and supply-driven. The findings underscore the critical importance of adopting an ecosystem-based approach to skills planning and education reform, particularly to enable the integration of creativity and transversal competencies across learning systems. Without such a systemic and inclusive strategy, the country risks perpetuating mismatches between education outputs and labour market needs, thereby hindering inclusive development, innovation, and long-term economic resilience.

5.9. Practical implications of the study

The Master of Philosophy in Inclusive Innovation programme is grounded in praxis and the intention of this research was to frame a praxis model that can be used to integrate the critically needed skills of creativity and creative thinking as an explicit focus in the South African skills ecosystem. This praxis model is presented as an attempt to contribute to the national discussion and development of appropriate skills aligned to the needs of a fourth industrial revolution economy.

The South African education system has been the subject of a large volume of research papers exploring the challenges and problems the system experiences. However, few studies have looked at the South African education and skills ecosystem from a systemic point of view i.e. examining the overall education and skills ecosystem and “pipeline” to determine where there are bottlenecks, systems inefficiencies and disconnects, and ensuring cohesive lifelong learning connected to relevant work opportunities, productivity and personal development and fulfilment (Presidential Commission on the Fourth Industrial Revolution, 2020), and indeed even examining the system design and structure itself in relation to the outputs it produces and to what end these are produced.

A simple view of praxis comprising three components i.e. theory, process and product or outcome is taken, along with a leg representing stakeholders. The praxis model proposes an outline or approach underpinned by the theory discussed in this dissertation. The process component and the outcomes or products reflect the findings of the three lenses through which creativity in the South African skills ecosystem was explored. It is clear from the study that a multi-stakeholder and multi-generational approach is essential in framing an intervention in the South African skills ecosystem.

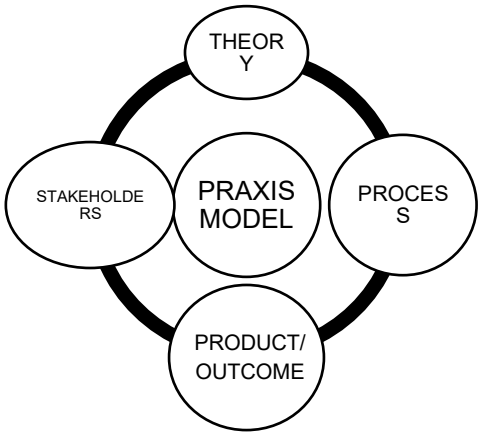


Figure 11: Outline Of Praxis Model

The praxis model is attached as Appendix A.

6. Conclusion

This study does not aim to develop a new theoretical framework but instead seeks to enrich understanding of the role and treatment of creativity in South Africa's education systems—a domain that remains marginal in both academic literature and national policy discourse. Through an exploratory qualitative approach, the research surfaces the perspectives and lived experiences of key actors within the system, providing insight into how creativity is interpreted, prioritised, and operationalised (or sidelined) in educational practice. The contribution of the study lies in its ability to illuminate gaps, challenge assumptions, and identify opportunities for more holistic, inclusive, and future-oriented educational strategies. As such, its value rests in opening space for dialogue, inquiry, and innovation, laying groundwork for more theory-driven or evaluative research to follow.

This study provides insight into the fact that creativity skills are a desired intervention in the skills ecosystem and are recognised as critical to stimulate innovation and provide appropriate skills for South Africa's workforce in a 4IR economy, as well as for the country's economic progress and development. The study also highlights important deficits in the approach to prioritising creativity in the skills ecosystem including the lack of a coordinated process to determine context specific definitions, value propositions and frameworks for the mainstreaming of creativity in the ecosystem. The design of the mass education system as it exists potentially commodifies teaching and learning and stifles creative education, requiring examination of the system itself and its appropriateness.

It appears that a systemic approach is required to address the skills ecosystem in its entirety, beginning with a clear understanding of its purpose and desired outcomes. This involves examining how the ecosystem aligns with the economic and social needs of the country and how it meets the demands of the Fourth Industrial Revolution (4IR). It is crucial to assess whether creativity can be effectively developed within the current education system, which is heavily oriented towards commoditisation.

A comprehensive analysis should map how each component of the education system connects with the next and identify the critical pathways needed to cultivate creativity and creative thinking from Early Childhood Development (ECD) through to higher education and into the workplace. Based on in-depth research into the specific constraints and socio-economic and cultural contexts of our country, a robust theory and pedagogy for creative education should be developed. This process must incorporate multi-generational and multi-stakeholder perspectives, reflecting the three lenses examined in this study. Significant emphasis must be placed on teacher education and training, ensuring that educators are aligned with the broader objectives of preparing students for the future.

A shift in mindset across the ecosystem is essential. A systemic intervention, mandated from high levels within the skills ecosystem, must drive the integration of creativity as a central requirement. This will facilitate the implementation of creativity throughout the skills ecosystem, aligning it with the broader educational and developmental goals. The alignment also needs to factor in the effects of rapidly advancing technology, particularly AI, and the impact of social media and the multiple digital environments learners experience, on creativity.

A praxis model is proposed, and presented in Appendix A, to include processes informed by the data, underpinned by theoretical models, and including stakeholders representing skills ecosystem partners and managers, educators and importantly, youth themselves in a multi-generational and multi stakeholder process to produce a framework to guide implementation of creativity and creative thinking across the skills ecosystem as a critical and urgent skill. Several areas for further research emerge from the study that could assist in developing and informing the final frameworks developed for the implementation of these skills across the South African skills ecosystem.

APPENDIX A:

PRAXIS MODEL

This model provides a structured approach to developing a framework for integrating creativity into the South African skills ecosystem, ensuring that all stakeholders play an active role in shaping educational practices and outcome. The model is based on the following:

1) Theory or guiding principles that have been drawn from the research
2) Stakeholders identified as critical based on the research data
3) Process informed by the data emerging from the research
4) Product/Outcome comprising a framework for the integration of creativity in the South African skills ecosystem.

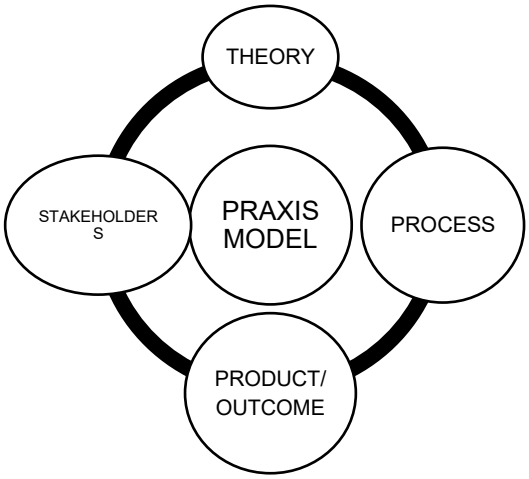
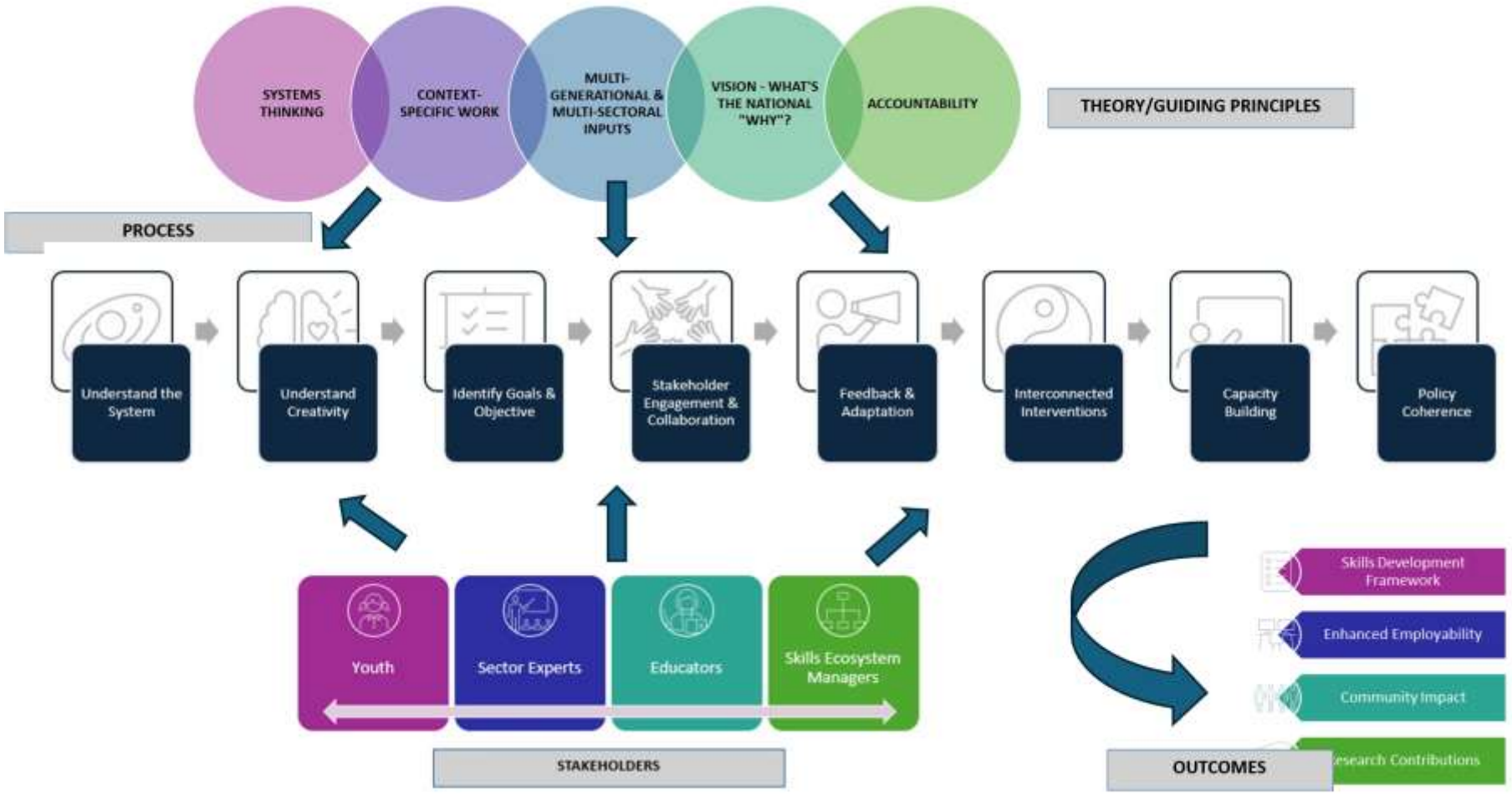


Fig 11. Components of the praxis model

A detailed diagram of the praxis model follows below, as well as a narrative explanation of the various components of the model.

A summary of the data that has informed the thinking for this model emerging from the research is included as an addendum.

PRAXIS MODEL FOR INTEGRATION OF CREATIVITY AS A CRITICAL SKILL IN THE SA SKILLS



ADOPTING A STRATEGY FOR CREATIVITY AND INNOVATION LEARNING APPROACHES IN THE SKILLS ECOSYSTEM

A: THE PROBLEM

1) **Problem Statement**

- **The problem**

  SA urgently needs to prepare its growing youth population and existing workforce for the future of work. We currently lag in the global innovation space and have one of the highest unemployment rates in the world, with serious socio-economic challenges accompanying this reality.

- **The effects of the problem**
  - Lack of participation in the global 4IR economy and a continuing decline in economic growth as a result
  - Growing youth unemployment, with the increasing risk of social unrest
  - An education system that falls short in addressing the demands of the evolving 4IR socio-economic landscape.

B: THE SOLUTION

- Mainstreaming creativity and creative thinking in the skills ecosystem at all levels to stimulate innovation and create a problem solving revolution driven by youth and the South African workforce.
- Scale innovation by prioritising creative teaching and learning to capacitate our youth with the necessary skills they require to thrive in the adaptive and evolving work circumstances we live in.

C: THE FRAME

- Develop a framework for integrating creativity and creative thinking in the skills ecosystem that is based on responding to the real needs of the system components, and grounded in the country's 4IR strategy, the National

Development Plan and current processes underway to align the skills ecosystem.

D: THEORY/GUIDING PRINCIPLES

1) **Systems Thinking**

- Apply a Systems Thinking approach for prioritising and integrating creativity in the South African skills ecosystem
- By applying a system's thinking approach, South Africa can create a more holistic and effective strategy for prioritising and integrating creativity as a critical skill in its skills ecosystem. This approach acknowledges the complex interactions and interdependencies within the system, leading to more sustainable and impactful interventions, and allows for interrogation of the relevance of the system in its current format and approach.

2) **Context-specific work**

- Ensure that the solutions and processes suggested align with a local and culturally appropriate worldview.
- Resist duplicating existing western models without interrogating their efficacy and impact in the medium and long term. This does not preclude using existing models that do provide a useful point of departure.

3) **Multi-generational & Multi-sectoral Engagements**

- Focus on discussion and collaborations that include youth voices, as well as educator and skills ecosystem managers from different generations
- Focus on getting inputs from industry experts from multiple industry sectors to ensure an interdisciplinary approach in devising a framework that is relevant to the world of work.

4) **Vision**

- What is the national "why"?"
- Articulate why we should invest in creativity as a skill in a way that shows the value to the skills ecosystem stakeholders.

5) **Accountability**

- Both teacher and management initiative are needed, but there is a clear need for a framework or guidelines and policy from the education system, as well as methods of accountability.
- A directive “from the top” is needed for creativity to be prioritised. Accountability must be demanded from educational institutions.

E: THE PROCESS

1) Understanding the System

- Map out the interconnected elements of the South African skills ecosystem, including education, industry, government policies, and cultural considerations.
- Identify feedback cycles, time-lags, and influence touchpoints within the system that impact the integration of creativity as a critical skill.
  (Most of this work has already been done in the 4IR report)
- Map all the organisations/individuals who are working in the field of creativity nationally
- Interrogate whether the current system is fit for purpose for the required outcomes

2) Understanding Creativity

- Define and understand what creativity is and how it links to innovation
- What are the insights from research that can point to a definition that is local and commonly held across ecosystem stakeholders
- Focus on a locally relevant and context-specific definition that serves South African needs and outcomes.

3) Identifying Goals and Objectives

- Define clear goals for integrating creativity into the skills ecosystem, such as enhancing innovation, fostering economic growth, and promoting cultural diversity.
- Ensure that these goals align with broader national development objectives. (Link to NDP, 4IR Strategy etc.)

- What is our National Value Proposition?

4) Stakeholder Engagement and Collaboration

- Engage with a wide range of stakeholders, including government, education providers, industry associations, businesses, and creative communities.
- Foster collaboration and co-creation among stakeholders to develop shared visions and strategies for integrating creativity into skills development.
- This needs to be a bottom up approach i.e. youth driven, teacher driven. Can be incentivised by ecosystem managers

5) Feedback and Adaptation

- Establish mechanisms for collecting feedback from stakeholders and monitoring the impact of creativity initiatives.
- Use this feedback to adapt policies, programmes, and approaches to better align with the needs of the skills ecosystem.

6) Interconnected Interventions

- Implement a set of interconnected interventions that target different parts of the skills ecosystem, such as curriculum development, teacher training, and industry partnerships.
- Ensure that these interventions reinforce each other and contribute to the overall goal of integrating creativity.

7) Capacity Building

- Build the capacity of educators, trainers, and policymakers to understand and promote creativity in the skills ecosystem.
- Provide training and support to help them integrate creative approaches into their work.

8) Policy Coherence

- Ensure that policies related to education, skills development, and creativity are coherent and aligned with each other.
- Address any conflicting or outdated policies that may hinder the integration of creativity.

F: STAKEHOLDERS

1) **Youth**
- Engaged as primary beneficiaries, their perspectives will shape the relevance of skills taught.

2) **Educators**
- Instructors and trainers responsible for implementing the creativity-focused curriculum.

3) **Industry Representatives**
- Employers and leaders from various sectors to ensure skills align with market needs.

4) **Skills ecosystem Managers/Policymakers**
- Government officials and organisations that develop educational policies and funding mechanisms.

5) **Community Organisations**
- NGOs and community groups that can facilitate

Engagement Strategies include regular workshops, feedback sessions, and collaborative projects to ensure all voices are heard and included in the design and implementation process.

G: OUTCOME/PRODUCT

1) **Creative Skills Development Framework**

- A comprehensive framework that guides the implementation of creative thinking skills across the education and skills ecosystem.

2) **Enhanced Employability**

- Youth equipped with creativity and critical thinking skills that meet the demands of the modern workforce, leading to improved job prospects and career development.

3) **Community Impact**

- Increased engagement and collaboration among community stakeholders, fostering a culture of creativity and innovation at local levels.

4) **Research Contributions**

- Ongoing research and documentation of best practices, challenges, and successes to inform future policy and practice.

The products of the process would include:

- A curriculum that incorporates creativity as a core skill through project-based learning, interdisciplinary approaches, and real-world problem-solving.
- Training programmes for educators on fostering creativity in the classroom, including hands-on workshops and mentoring opportunities.
- Assessment tools that evaluate knowledge and also creativity and problem-solving skills, ensuring that outcomes align with industry needs.
- A continuous improvement mechanism where stakeholders can provide feedback on curriculum effectiveness and necessary adjustment.

ADDENDUM 1: CONSOLIDATED SUMMARY OF FINDINGS & PRAXIS MODEL IMPLICATIONS

CONSOLIDATED SUMMARY OF FINDINGS AND PRAXIS MODEL IMPLICATIONS				
THEME	**ECOSYSTEM MANAGER LENS**	**EDUCATOR LENS**	**YOUTH LENS**	**PRAXIS MODEL IMPLICATION**
Prioritisation of creativity skills	Creativity/Creative Thinking is a critical skill and there is a compelling need for immediate attention and action regarding this matter. There is no clear value proposition for why creative skills are needed in the education system	There is a sense of urgency to prioritise creativity and innovation at every level of the skills ecosystem. Keen awareness of the changing post-school and post-university environment and the new challenges learners face.	Not expressed as urgency but as a longing to be allowed to express themselves and not feel so limited by the skills ecosystem	Consensus and platform for action to be taken Determine the national "why?" Articulate why we should invest in creativity as a skill in a way that shows the value.
Definition of & understanding of what creativity is	Terminology is problematic There is an undeniable link between creativity and innovation Open innovation and collaboration vs individual creativity	Educators articulated an understanding of creativity related to empathy, teamwork, and understanding others' perspectives i.e. a skills enabling one to position oneself in a multicultural community and changing world of work	Creativity is defined in the context of freedom, defying limitations and differentiating oneself from others There is an undeniable link between creativity & innovation	Focus on a locally relevant definition or framework for creativity that serves our South African educational and economic growth needs. The position of SA youth is possibly quite specific in that they feel "stuck" between our past and their future. What is the unique SA youth contribution to our future? Is the creativity/innovation link understood in Innovation models and processes? If it is

CONSOLIDATED SUMMARY OF FINDINGS AND PRAXIS MODEL IMPLICATIONS				
THEME	**ECOSYSTEM MANAGER LENS**	**EDUCATOR LENS**	**YOUTH LENS**	**PRAXIS MODEL IMPLICATION**
			Creative ability seems to give youth a sense of agency or power.	de-linked, this may explain the low levels of innovation output in SA Youth need to be trusted to solve problems and be invited to participate in the design of the systems that impact them Defining creativity specifically as a skills (and as separate from “soft skills”)
A systems view, leadership, and accountability	The approach to creativity in the ecosystem is uncoordinated and haphazard Multiple views on where to intervene in the system to mainstream these skills SA’s lagging behind other countries in 4IR skills can work in our favour	There is no systemic approach to creativity being a focus. It is left to individual educators, schools, and institutions Educators should take initiative vs it must come from the top”	Identity etc. are all soft skills. The importance of holistic development of youth in the skills ecosystem.	A systems view and systems leadership is required Each individual favoured their focus area within the system. In line with the 4IR report, a focus on the entire system at every point simultaneously is needed. In a phased approach, beginning at the ECD and primary levels is the most appropriate and will foster systems change on the medium term. Lagging behind favouring us is only true if we have a clear plan for using the current upheavals and changes in systems to our strategic advantage, guided by a

CONSOLIDATED SUMMARY OF FINDINGS AND PRAXIS MODEL IMPLICATIONS				
THEME	**ECOSYSTEM MANAGER LENS**	**EDUCATOR LENS**	**YOUTH LENS**	**PRAXIS MODEL IMPLICATION**
				committed and focused implementation plan. Other soft skills such as confidence, communication, and the ability to express oneself, have a bearing on these critical skills of creative ability. Holistic development of youth is essential. A directive “from the top” is needed for creativity to be prioritised. Accountability must be demanded from educational institutions. Both teacher and management initiative are needed, but there is a clear need for a framework or guidelines and policy from the education system, as well as methods of accountability.
Challenges to creativity being integrated into the skills ecosystem	Surroundings that support and facilitate creative teaching and learning must be created	The current school curriculum doesn’t allow for creativity. It in fact limits and inhibits creativity. No space for or focus on the		Consensus on resources and what they are is needed. A basic set of classroom tools is advocated in the 4IR report

CONSOLIDATED SUMMARY OF FINDINGS AND PRAXIS MODEL IMPLICATIONS				
THEME	**ECOSYSTEM MANAGER LENS**	**EDUCATOR LENS**	**YOUTH LENS**	**PRAXIS MODEL IMPLICATION**
	Significant barriers to integrating creativity into the system include the competency of teachers and learners	youth's creative ability to solve problems. The resources needed to support creative teaching and learning were identified as time, visits to outside places, a garden, nature – very simple things Training of educators in facilitating creativity and innovation is inadequate. Educators have many practical ideas on how to integrate creativity into the curriculum		Urgent intervention in examining both the way teachers are trained and emphasising creative skills explicitly in their training. The curriculum at ECD, primary and secondary school must be examined in the context of its capacity to promote creativity and creative thinking Educator views must be solicited and integrated into curriculum and praxis model design discussions
Educational frameworks for creative teaching & learning are needed	Assessment of creative ability is challenging	Assessment is not an issue of concern. It is possible and quite simple The current school curriculum doesn't allow for creativity. It in fact limits and inhibits creativity. No space for or focus on the		Develop a framework to approach assessment The curriculum at ECD, primary and secondary school must be examined in the context of its capacity to promote creativity and creative thinking

CONSOLIDATED SUMMARY OF FINDINGS AND PRAXIS MODEL IMPLICATIONS				
THEME	**ECOSYSTEM MANAGER LENS**	**EDUCATOR LENS**	**YOUTH LENS**	**PRAXIS MODEL IMPLICATION**
		youth's creative ability to solve problems.		Educator views must be solicited and integrated into curriculum and praxis model design discussions
The impact of environment & culture on creative skills		Constraints limit or promote creativity	Tension between wanting to please elders and do their own thing…. Stuck between the past and present Constraints and limited resources are not a deterrent to creativity. They stimulate creativity	The fact that creativity contributes positively to engage youth in and move them out of challenging mental states, trauma and difficult identity issues is a strong motivation for it to be prioritised in our skills ecosystem at all levels.

Table 17. Consolidated summary of findings and praxis model implications

APPENDIX B:

Interview Protocols

SECTION A: Interview Protocol for Youth/Learners

Introduction:
Thank you for agreeing to participate in this interview. I'd like to ask you a few questions about creativity. There are no right or wrong answers, and your honest responses will be very helpful.

Questions:

1. Personal Definition of Creativity - What do you think it means to be creative?
2. Self-Assessment of Creativity - Do you think you are a creative person? Explain.
3. Problem-Solving Example - Tell me about a time when you had to solve a problem and how you did it.
4. Preferred Creative Activities - Tell me about the creative things you like to do.
5. Creativity at School - What creative things do you do at school?
6. Creativity in Other Settings - What creative things do you do at home or with your friends?
7. Social Preferences in Creative Activities - Who do you like to do creative activities with, or do you prefer to do them by yourself?
8. Do you think creativity is important in the context of your future and career planning?
9. Do you see creativity around you in your community? What kinds of creative activities or projects are most common, and do you feel part of them?
10. Who or what inspires you to be creative? This could be people, places, activities, or anything else that sparks your imagination.
11. Do you feel that being creative makes your school experience better? In what ways does creativity make learning easier or more enjoyable?
12. Do you ever feel limited or discouraged from being creative at school or at home? What are some of the things that make it hard to be creative?

13. How do you use technology (like apps, online platforms, or digital tools) to be creative? Are there any tools or platforms you'd like to learn more about to boost your creativity?

SECTION B: Interview Protocol for Educators and Ecosystem Managers

Introduction:
Thank you for taking part in this interview. Today's discussion will focus on your views on creativity and your experiences with it in educational settings. Your insights will be invaluable.

Questions:

1. Personal Definition of Creativity - What do you think it means to be creative?
2. Self-Assessment of Creativity - Do you think you are a creative person? Explain.
3. Problem-Solving Example -Tell me about a time when you had to solve a problem and how you did it.
4. What creative activities do you facilitate or engage in within the school and your teaching practice?
5. What do you think works well in schools in terms of how creativity and creative thinking are implemented?
6. What do you think are some obstacles or limitations in terms of how creativity and creative thinking are implemented in our schools?
7. How do you think Western biases influence the experience and teaching of creativity in our schools?
8. What types of support (e.g., funding, resources, policy guidelines) does your school or organisation give/receive for fostering creativity? Do you feel this support is sufficient?
9. How well do you think the current curriculum allows for the integration of creativity and creative thinking? Are there areas in the curriculum where you feel creativity is underrepresented or overlooked?

10. What kind of training or professional development do you receive (if any) that helps you teach or incorporate creativity into your work? Do you feel equipped to foster creativity effectively in your students or environment?
11. How is creativity assessed or recognised in your institution? Do you believe that the assessment methods used are effective in capturing students' creative abilities?
12. How do national education policies influence the ways creativity is taught and valued in schools? Are there policy-level changes you feel would better support creative learning?
13. Do you think all students have equal access to creative opportunities in your school or organisation? Are there specific barriers for certain groups (e.g., based on socio-economic background, geography) in accessing these opportunities?
14. How do global models of creative education impact your school's approach? Are there particular international approaches to teaching creativity that you believe would benefit South African students?
15. What role do community or industry partnerships play in enhancing creative education? Are there partnerships you would like to see developed to better support creative learning?
16. These questions should encourage educators and ecosystem managers to reflect on the broader systemic and structural influences on creative education beyond their own experiences.

Conclusion:
Thank you very much for sharing your thoughts and experiences. Your responses will provide valuable insights into the role of creativity in education. If you have any additional comments or questions, feel free to share them now.

Notes for Interviewer:
Ensure that each participant understands the questions and feels comfortable sharing.
Probe gently for further details if answers are brief.
Record the interview responses with consent for accurate data analysis later.

APPENDIX C:

Consent Forms

Graduate School of BUSINESS
UNIVERSITY OF CAPE TOWN

MASTER OF PHILOSOPHY IN INCLUSIVE INNOVATION

INTERVIEW CONSENT FORM:

Participant name: .....

I volunteer to participate in a research project conducted by Beth Arendse as partial fulfilment of the requirements for the MPhil Degree at the Graduate School of Business. I understand that the research is designed to gather information about African Creative Futures – advancing the present and future needs for creative thinking in the context of South Africa's urgent priorities for economic development and an appropriately skilled workforce – the context of the skills ecosystem, and that I will be one of approximately 50 of people being interviewed for this research.

Background and purpose of the research

The aim of the research is to explore the social and cultural factors influencing creativity and creative thinking in South Africa from the perspective of teachers, learners, skills ecosystem managers and workplace leaders in order to understand possible approaches to mainstreaming and elevating creativity in the skills ecosystem as an urgent priority to prepare our youth adequately for the future of work and a changing economy. Creative future skills will be essential for Africa and South Africa, for continuing economic development and the ability to adequately respond to the changing socio-political environments emerging in the fourth industrial evolution era. This work will explore the opportunities for developing future skills in the context of South Africa's current planning for the 4IR. The outcome of this study will provide a model for the wider application of future skills development in South Africa's skills ecosystem, and in the context of continuing planning for the 4IR.

The primary question that my research will seek to answer is:

How can the present and future needs for creative thinking, given South Africa's urgent priorities for economic development and an appropriately skilled workforce, be advanced in the context of the South African skills ecosystem (school & workplace)?

Following from this, secondary research questions are:
- are Western biases currently detracting from the quality and outcomes of creative education in South Africa, and how?
- what are key social and cultural factors, shared by South Africa's youth, that can guide the implementation of creative education?
- how can potential reforms in creative education be demonstrated through an appropriate praxis model?

Ethics approval

Ethical consent for the study has been approved by the *UCT Commerce Faculty Ethics in Research Committee*.

Participation and confidentiality

I understand that my participation in this research is voluntary, that I will not be compensated and that I may withdraw at any time.

The interview will take approximately 30 – 45 minutes to complete and will be audio and/or video recorded.

I understand that I will not be identified by name in any reports using information obtained from this interview and that my confidentiality as a participant in this study will remain secure. Subsequent uses of records and data will be subject to standard data use policies which protect the anonymity of individuals and institutions.

Graduate School of BUSINESS
UNIVERSITY OF CAPE TOWN

Consent

I consent to participate in this interview, based on the terms outlined above and subject to the following additional condition of my own (if any).

Signed by interviewee Date

.....

Signed by Student Date

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