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JOHANNESBURG  
BUSINESS SCHOOL



## **Charting the Future: Digital Technologies and the Transition of South Africa's Education System**

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# CONTENT

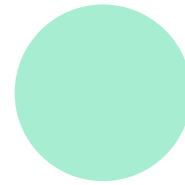
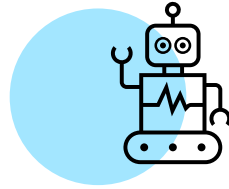
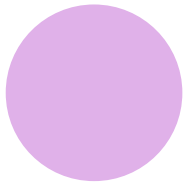


## INTRODUCTION

Context

Aim of study

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## INTRODUCTION

## THEORETICAL FRAMEWORK

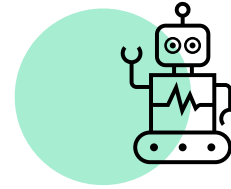
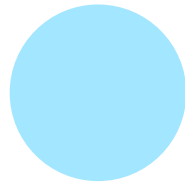
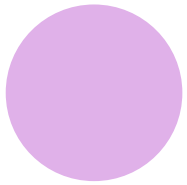
Context

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Multi-Level Perspective

Research Questions

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## INTRODUCTION

- ☐ Context
- ☐ Aim of study

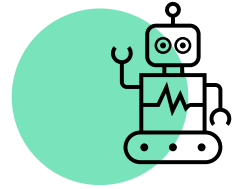
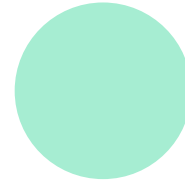
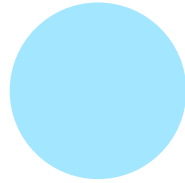
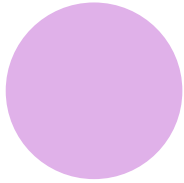
## THEORETICAL FRAMEWORK

- ☐ Multi-Level Perspective
- ☐ Research Questions

## METHODOLOGY

- ☐ Systematic Lit review

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## INTRODUCTION

- Context
- Aim of study

## THEORETICAL FRAMEWORK

- Multi-Level Perspective
- Research Questions

## METHODOLOGY

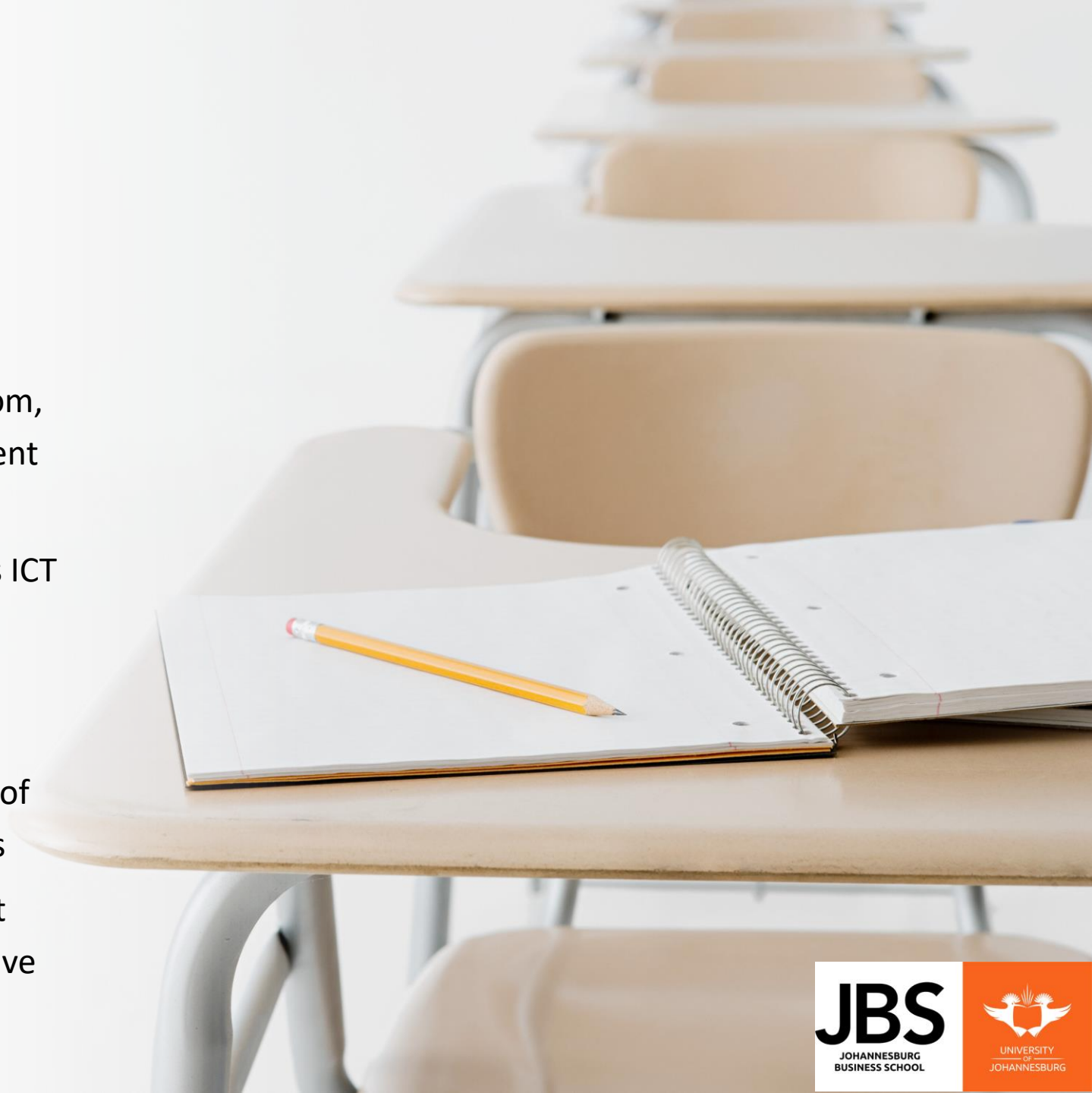
- Systematic Lit review

## FINDINGS

- RQ1 – Landscape
- RQ2 – Regime
- RQ3 – Niche
- Conceptual Framework

# 1. INTRODUCTION

- ❑ Shift/Transformation in the Education system – Integration of technology
- ❑ Online-learning - alternative to traditional classroom, empowering educators to deliver curriculum content remotely
- ❑ Online teaching & Learning tools- Literature favors ICT as the primary technology (Graham et al., 2020; Mhlanga & Moloi, 2020; Shava, 2020; Xulu, 2024)
- ❑ ICT has benefits, but its implementation often emphasizes technological features at the expense of addressing fundamental educational requirements
- ❑ The focus tends to lean towards delivering content rather than encouraging student engagement, active learning, and knowledge retention.





# 1. INTRODUCTION



METVERSE



HOLOGRAPHY



VR/AR/MR

# 1. INTRODUCTION – AIM OF STUDY



- ❑ This study aims to understand the transition of South Africa's education system due to the disruption of emerging digital technologies.
- ❑ Develop a conceptual framework of how the transition looks like
- ❑ Use of transition theories



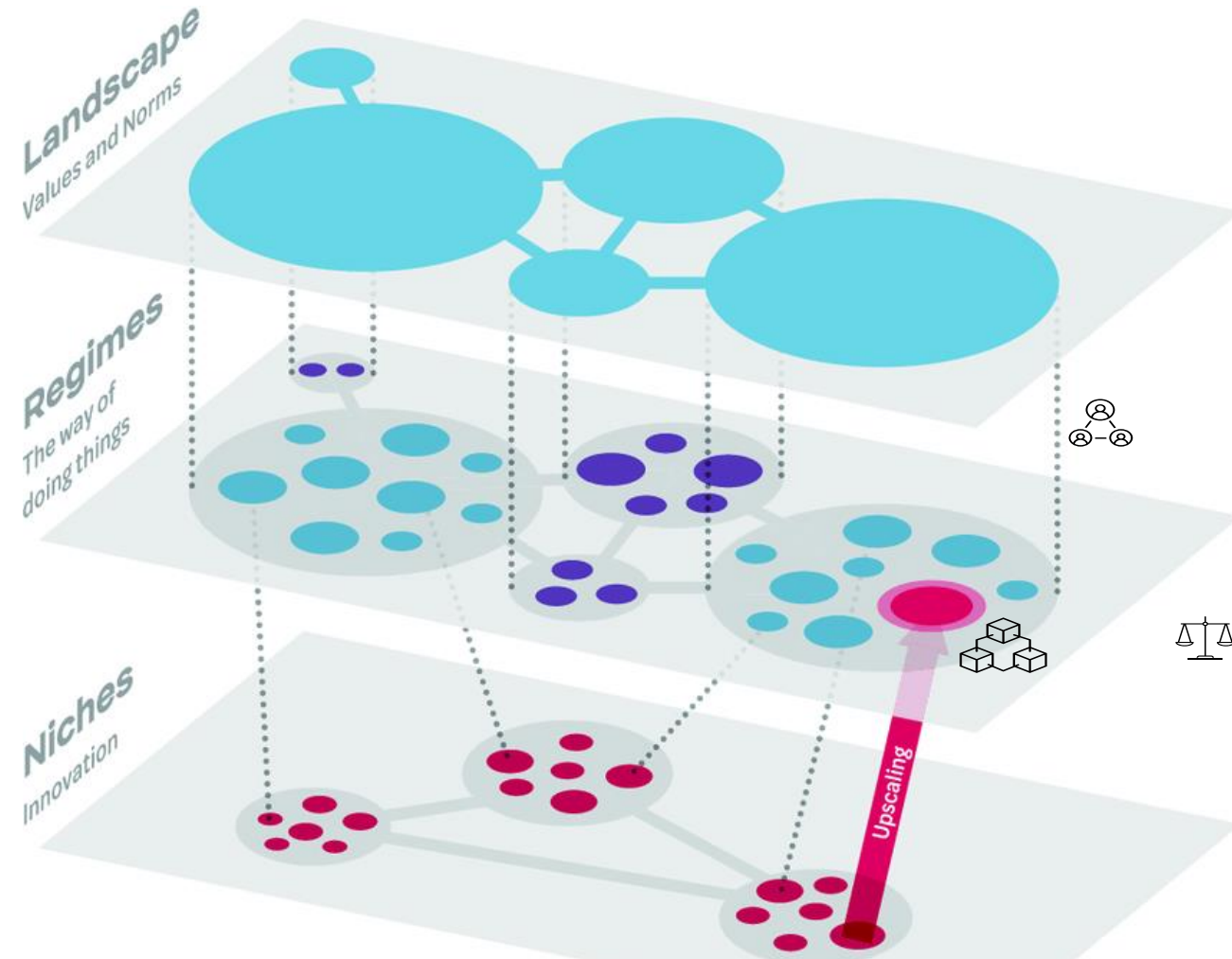
# 2. THEORETICAL FRAMEWORK – MULTI-LEVEL PERSPECTIVE

The MLP is used to analyze transitions or fundamental changes in socio-technical system such as education.

**Landscape:** developments such as wars, economic crises, pandemics, climate change. It is above the influence of actors e.g. Covid 19 pandemic (Zoom) and the war in Ukraine (energy system)

**Regimes:** existing systems, consisting of **actors** such as incumbent organizations, current **rules and regulations**, current **technologies**, defining the “way of doing things at the moment,”

**Niches:** protected spaces, where experimentation with novel technologies, practices, and policies, takes place. It is the locus for radical innovations, entrepreneurial start-ups (developing new technologies), face uphill struggles against entrenched systems (i.e. regimes)



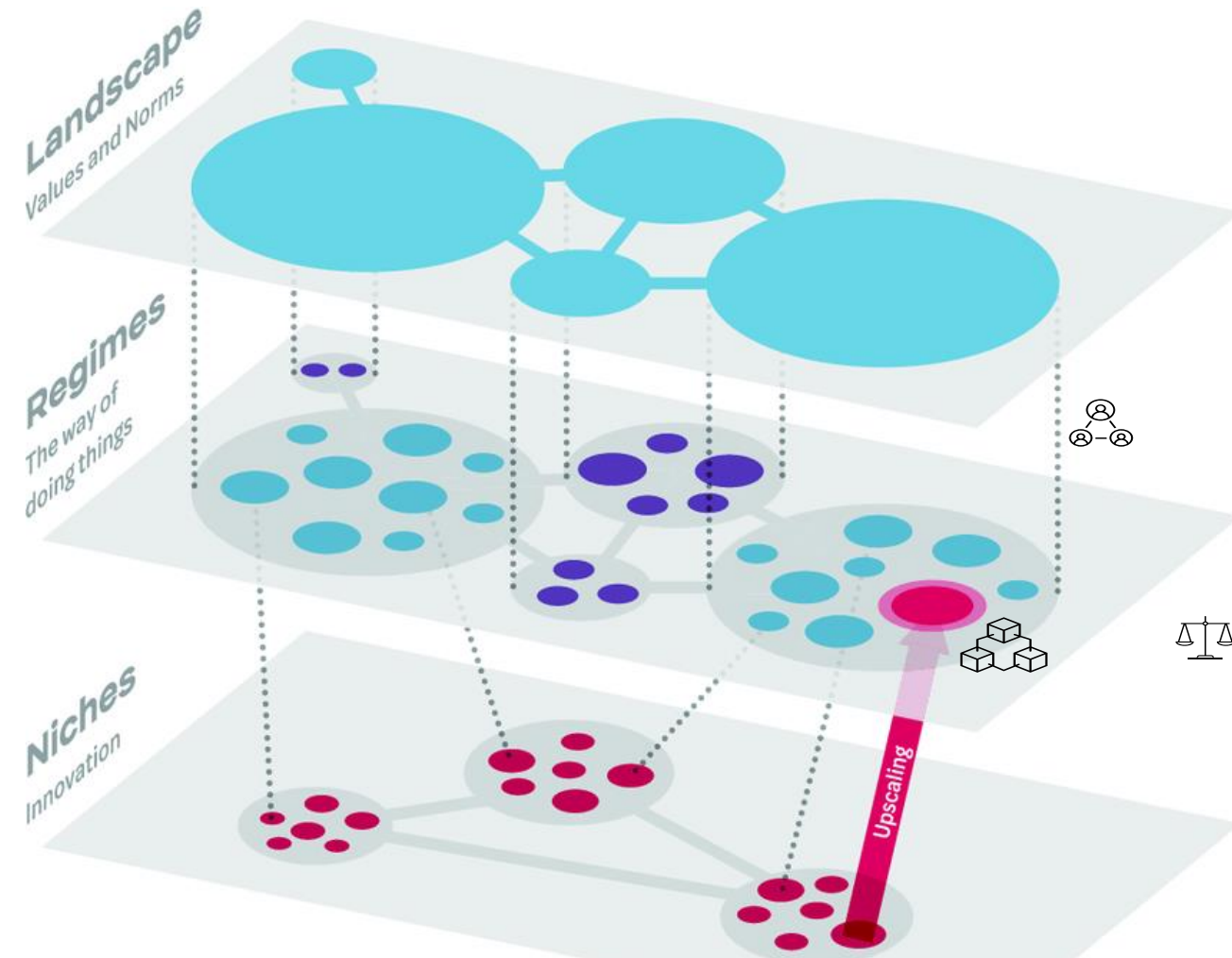
Source: Garcia et al. (2020)

## 2. THEORETICAL FRAMEWORK – MULTI-LEVEL PERSPECTIVE

**Research Question 2:** The Landscape level - Which landscape developments and external factors are applying pressure on the current South Africa's education regime, contributing to its destabilization?

**Research Question 1:** The Regime level – Who are the current actors and what are the technologies, and regulations within the existing South African education system regime?

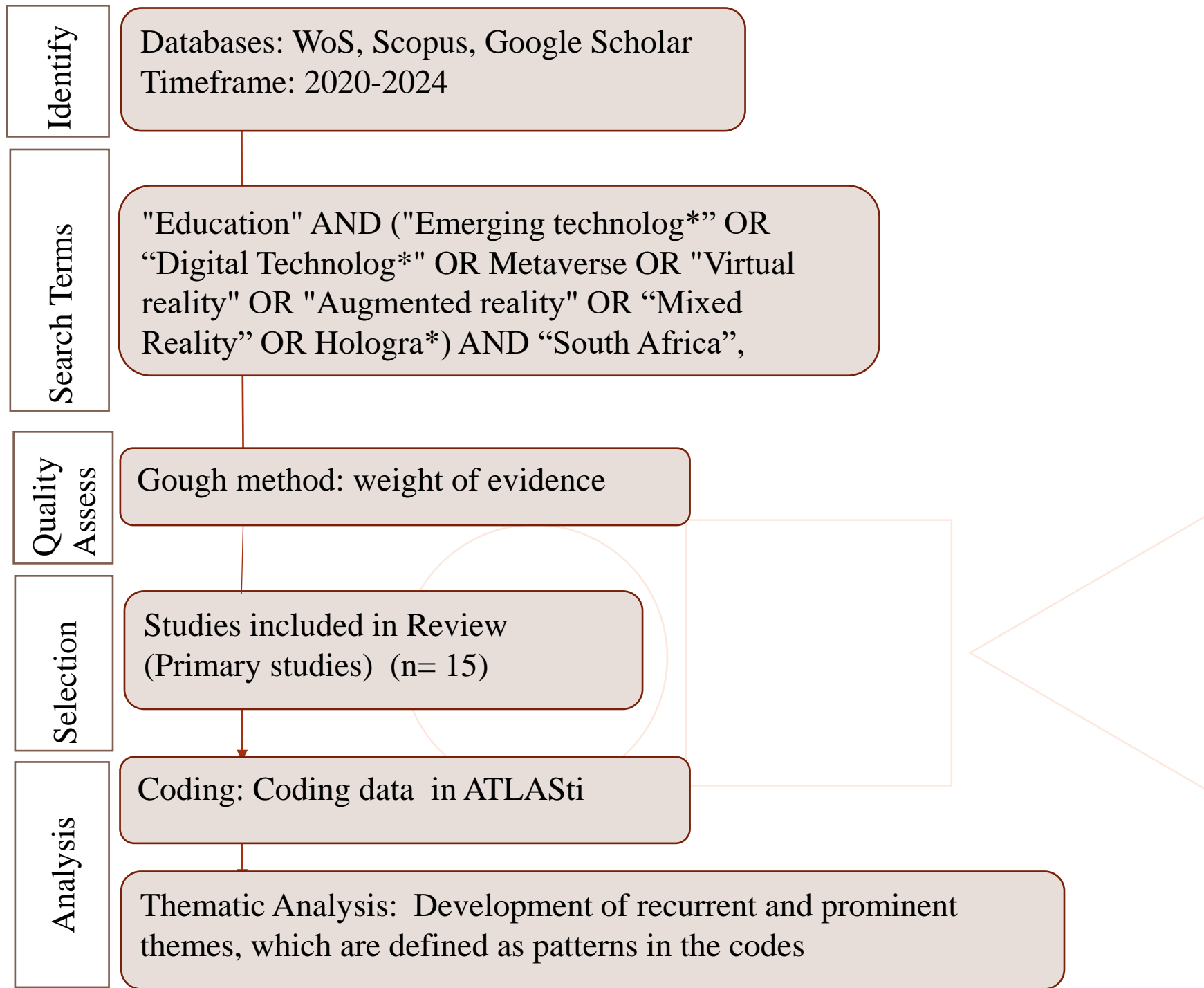
**Research Question 3:** The Niche Level - What technologies are present at the niche level, and what challenges do they face in diffusing into the mainstream?



Source: Garcia et al. (2020)



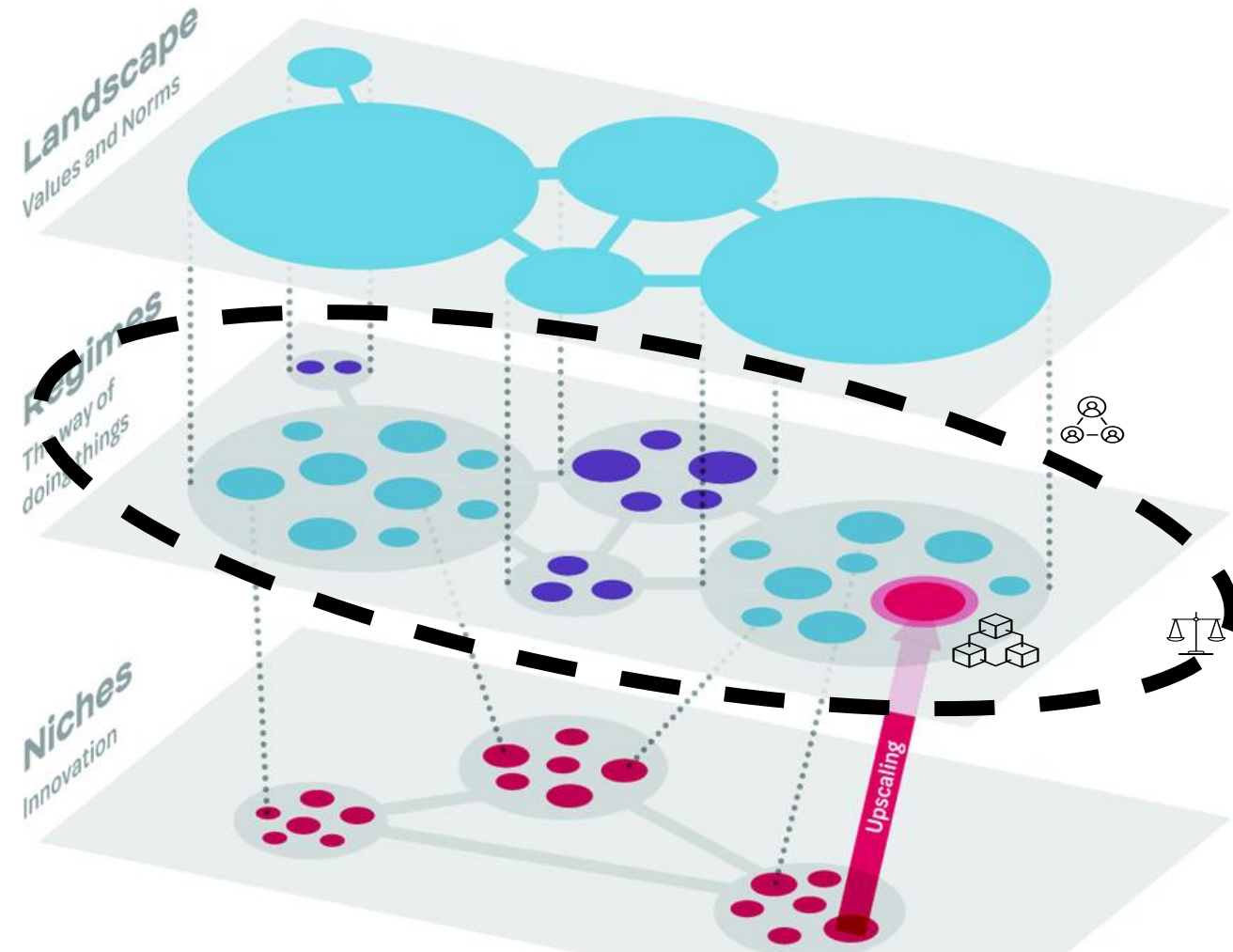
# 3. Methodology





# 4. FINDINGS

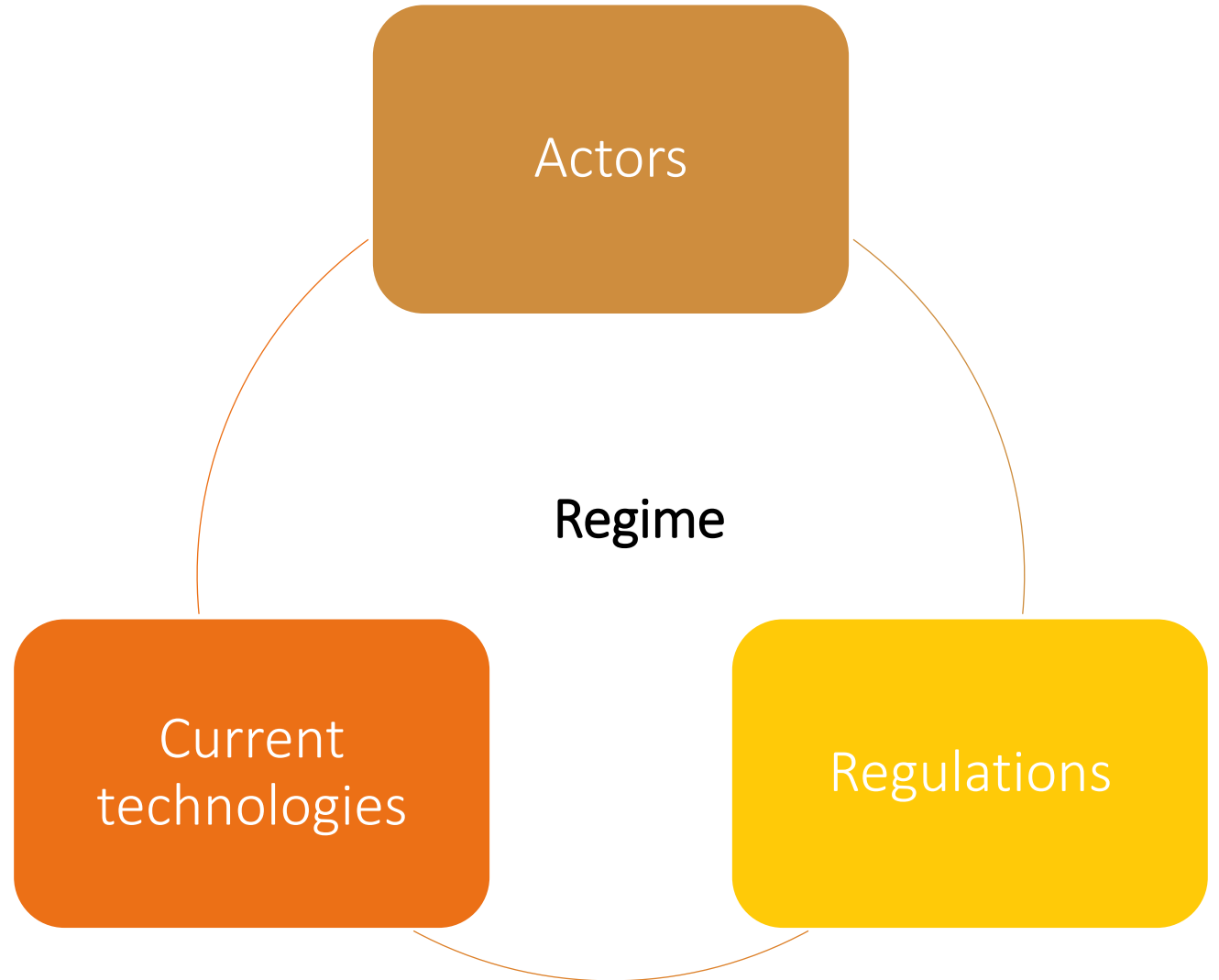
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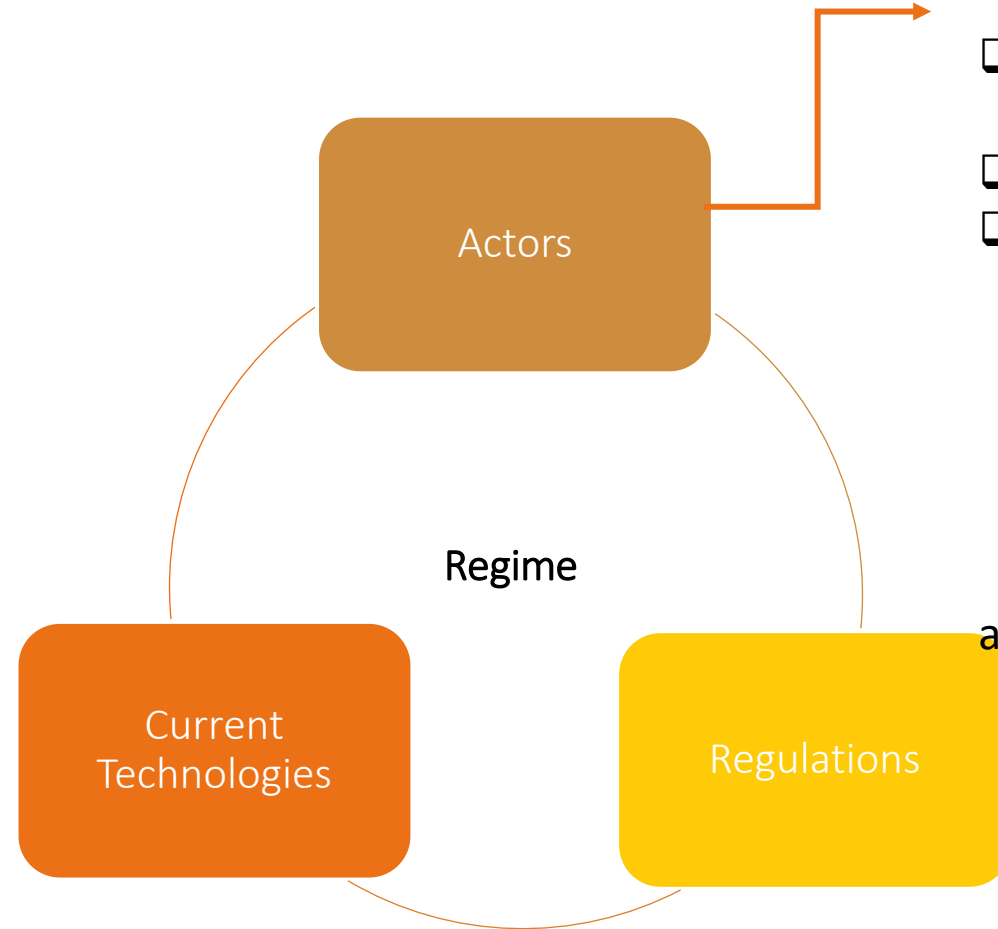
# 4. FINDINGS

**Research Question 1: *The Regime level – Who are the current actors and what are the technologies, and regulations within the existing South Africa’s education system ?***



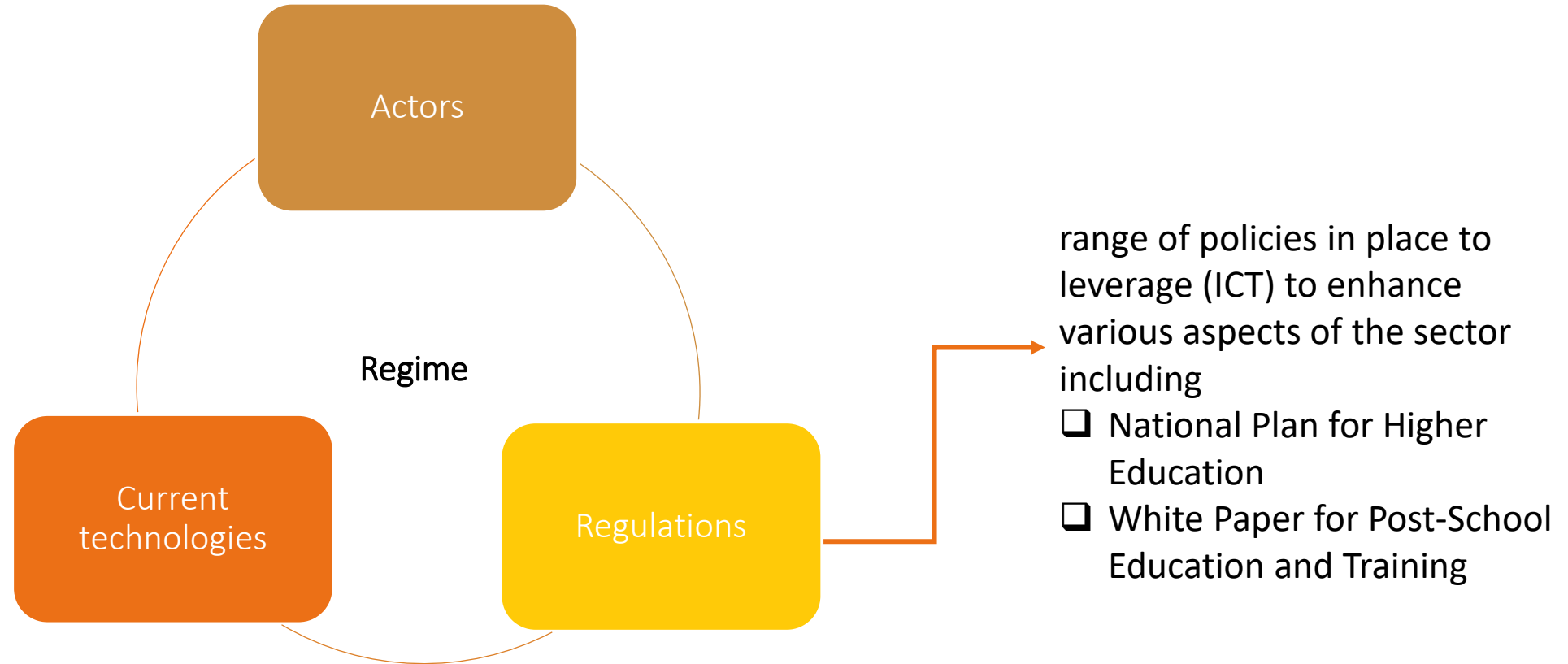


# 4. FINDINGS



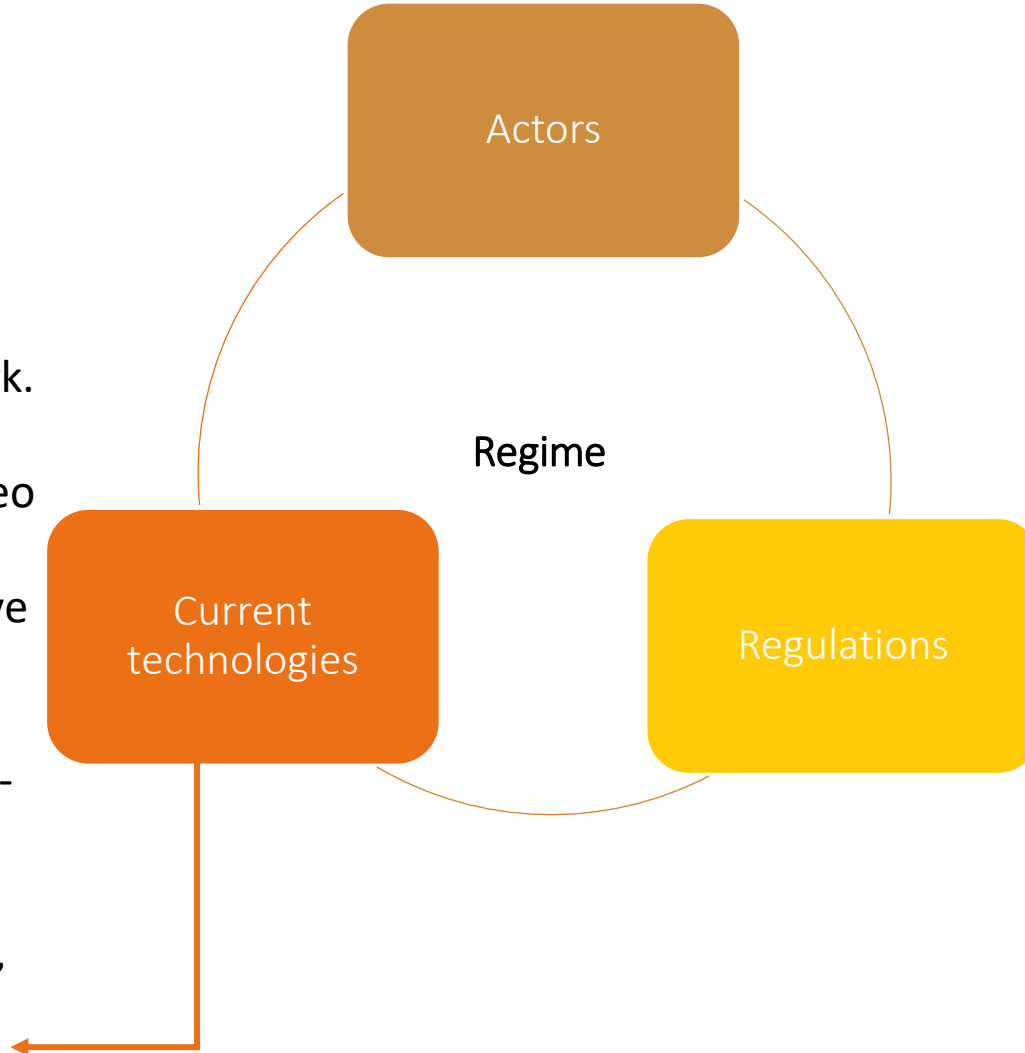
- Schools (public and private primary and secondary)
- Higher Education institutions (public and private universities, TVETs)
- Teachers, Students, Communities
- The Government (Department of Basic Education (DBE), which manages primary and secondary schooling, and the Department of Higher Education and Training (DHET), tasked with overseeing tertiary education and vocational training. Role: entities overseeing policy, funding, addressing educational matters.

# 4. FINDINGS



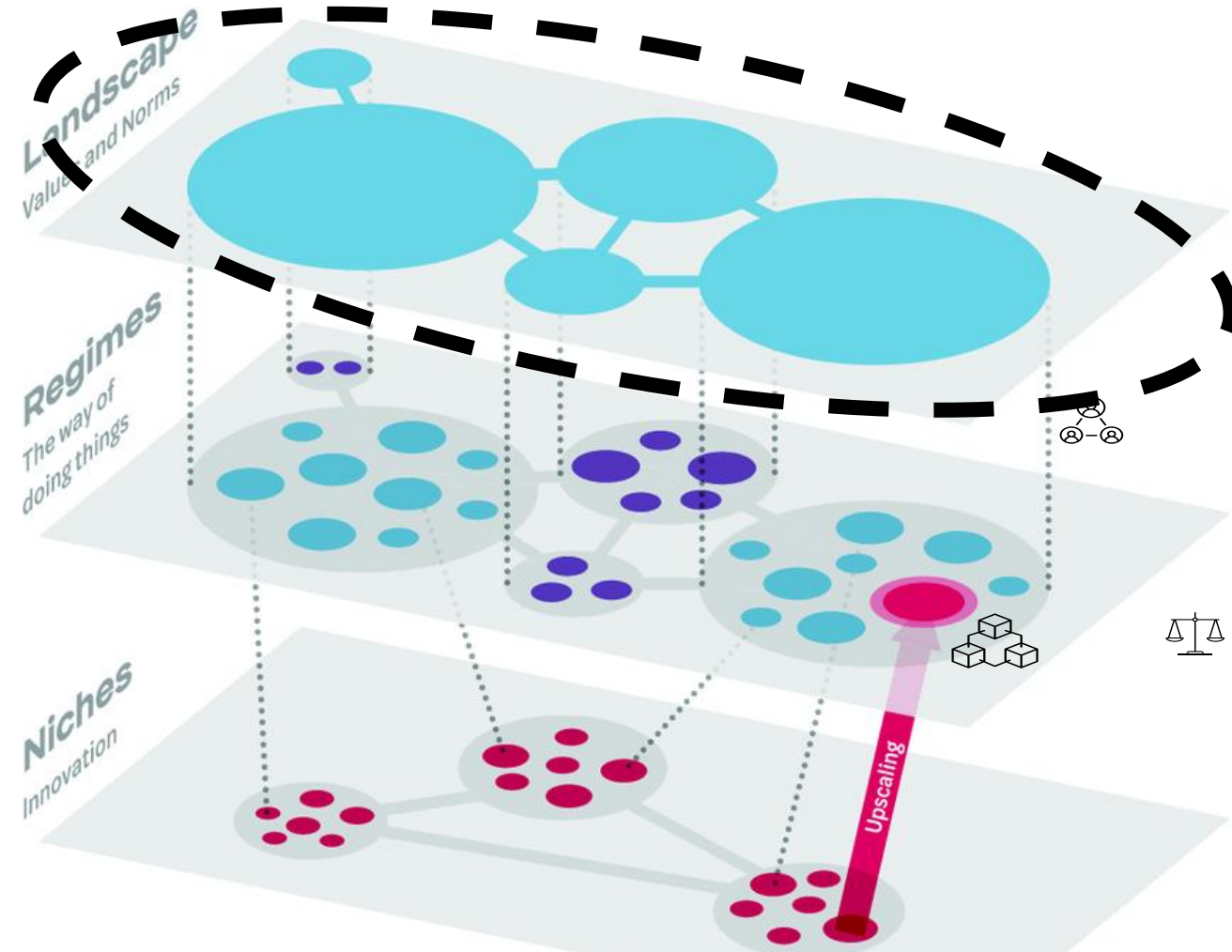
# 4. FINDINGS

- ❑ modalities - face-to-face, e-learning and hybrid (face-to-face and e-learning).
- ❑ e-learning modality, South Africa exclusively relies on ICT as its technological framework. (computers, tablets, E-Learning platforms, video conferencing, online resources, administrative systems managing records
- ❑ primary and secondary - television and radio
- ❑ At the tertiary level, Microsoft Teams, Zoom, WhatsApp, Learning Management Systems (LMS)



# 4. FINDINGS

**Research Question 2:** The Landscape level - Which landscape developments and external factors are applying pressure on the current South Africa's education regime, contributing to its destabilization?



Source: Garcia et al. (2020)

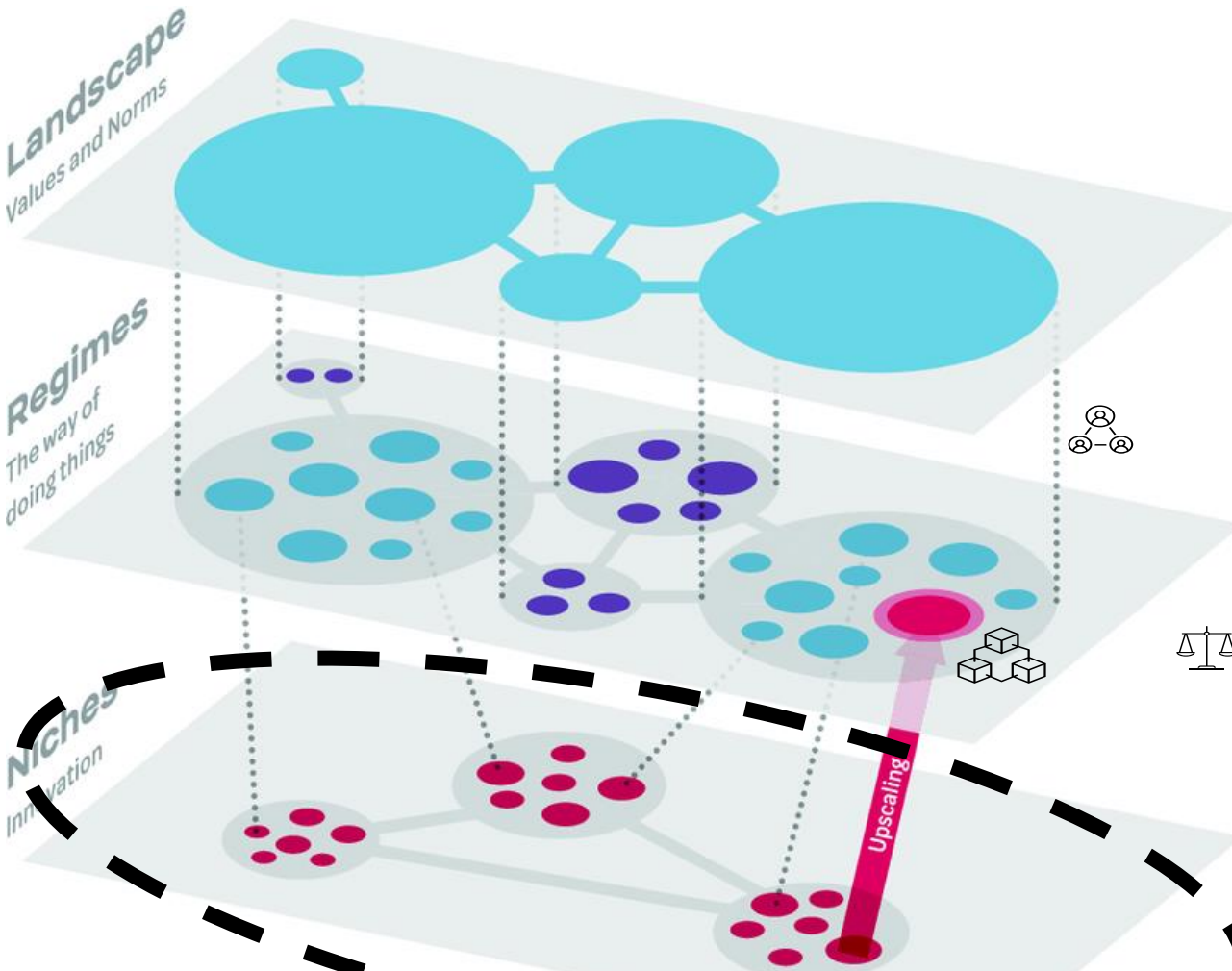
# 4. FINDINGS

## Research Question 2: The Landscape level - Which landscape developments and external factors are applying pressure on the current education regime, contributing to its destabilization?

- ❑ COVID-19 –a catalyst for the widespread adoption of digital technologies
- ❑ Growing demand for education. In the 2020 academic year, the University of Johannesburg received [200,000 applications](#) for first-year students but could only accommodate [10,000](#) (SABCnews, 2020). Similarly, in 2024, Wits University reported receiving [140,000 applications](#) for first-year students but could only accommodate [6,000](#) (Wits University, 2024). This highlights the need for e-learning to address the limitations of physical classroom space and meet the demand for education.
- ❑ e-learning modality is not without challenges, literature highlights student’s lack of engagement and social interaction in online learning, online learning lacks real-time face-to-face interaction
- ❑ These challenges further contribute to **the destabilization** of the current educational socio-technical regime and therefore create opportunities for **niche technologies** to gain prominence in the mainstream.

# 4. FINDINGS

**Research Question 3: The Niche Level** - What technologies are present at the niche level, and what challenges do they face in diffusing into the mainstream?



Source: Garcia et al. (2020)





# Metaverse

- ❑ The Metaverse is a term that describes a shared online virtual space where users (through Avatars) can interact with a computer-generated virtual environment and other fellow users in real-time, while also enabling them to create and customize avatars (De Felis et al., 2023; Thango, 2024).
- ❑ Can be used for exams - simulate real-world scenarios where students can practice their skills in a safe environment, decrease exam writing costs, immersive environments that foster active learning.

# Virtual and Augmented Reality



- ❑ VR envelops the user in a fully artificial virtual environment, AR is a digital overlay over the real world, while MR integrates the two so that interaction with both the digital world and the real world is possible. (Galiska et al., 2023).
- ❑ Metaverse allows for interaction with the digital world and fellow users (through Avatars), while XR only allows interaction with the virtual world.
- ❑ XR offers students immersive digital experiences, enhances psychological presence, behavioral interactivity, and student engagement. Research suggests a correlation between learning effectiveness and the degree of immersion





- ❑ Unlike standard video calls, where people appear as flat images, holograms provide a sense of physical presence
- ❑ In education, simultaneous teaching across multiple schools, enhances accessibility to education
- ❑ Encourages collaboration among students and educators from different locations.
- ❑ Holographic technology provides a dynamic and interactive learning experience, engaging students in a way that traditional methods cannot

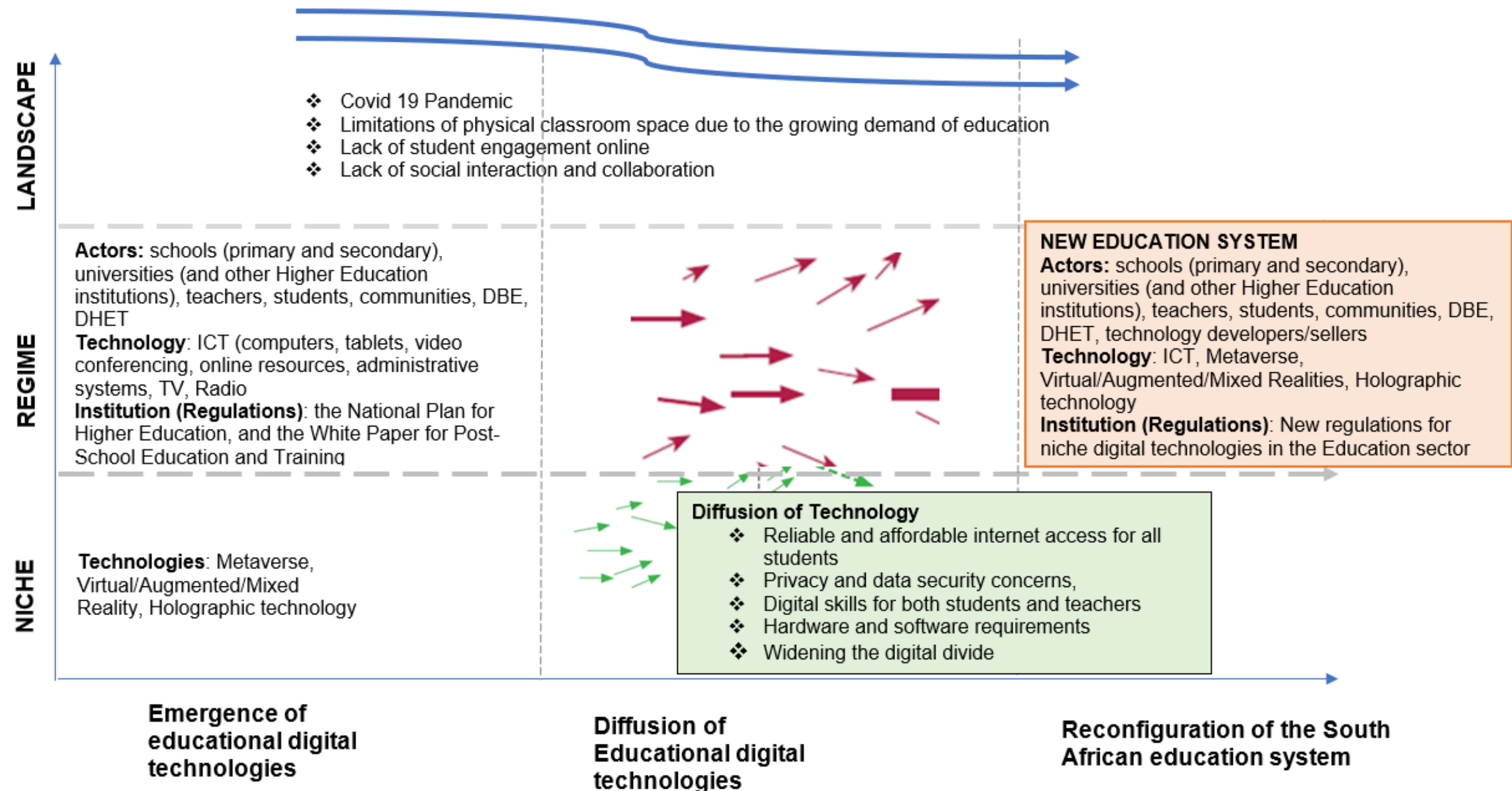
# 4. FINDINGS

## Challenges in diffusion

There are a number of challenges specifically in the South African context that hinder the diffusion of the Metaverse and XR in the education sector.

- ❑ reliable and affordable internet access for all students – invest in digital infrastructure (e.g. internet and access)
- ❑ privacy and data security concerns (policy support for adoption)
- ❑ Digital skills required to engage with the Metaverse for both students and teachers (digital skills training)
- ❑ Hardware and software requirements, specifically for students from low-income backgrounds (provide subsidies for hardware and software)
- ❑ Students' use of the technology which may include nausea, addiction and reduced physical connection.

Once these can be overcome, these technologies that sit at the Niche level, have the potential to transform the current Education socio-technical regime into a new one, where students are highly engaged.







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**The End**

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