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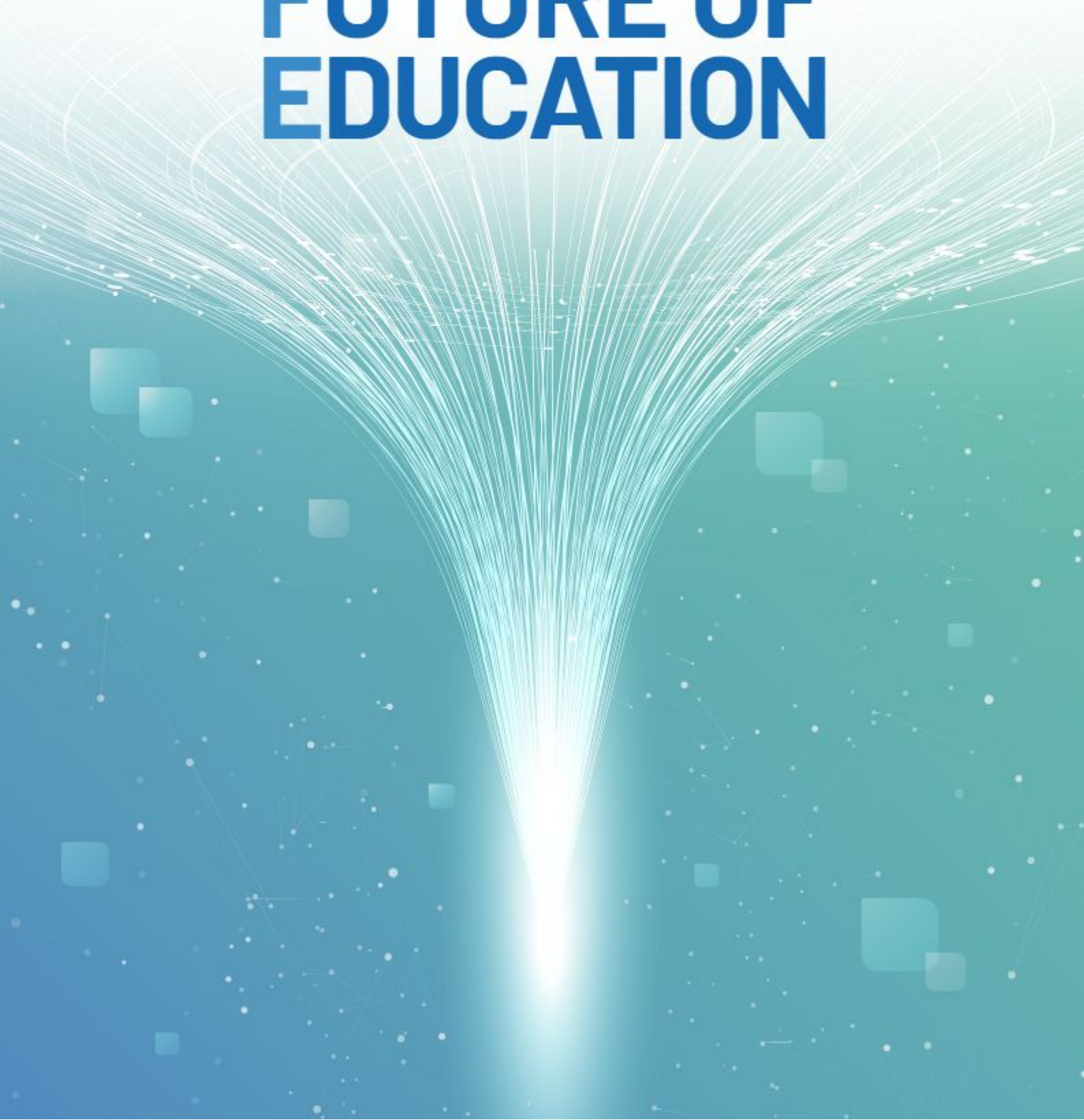
TECHNOLOGY ROADMAP FOR THE FUTURE OF EDUCATION

The National Institute of Education (NIE) at Nanyang Technological University (NTU), Singapore is one of the world's top education institutes, renowned for its excellence in teacher education and educational research. Nested within one of the world's top-ranked research-intensive universities, NIE is also Singapore's national teacher education institute and an integral part of the nation's education system. The institute plays a key role in the initial preparation of Singapore teachers and the provision of professional development and leadership programmes and courses for educators and other professionals in Singapore, from the region and across the globe.

In today's digital era, technology is evolving rapidly with advancements such as Artificial Intelligence (AI), Augmented and Virtual Reality (vvAR/VR), automation and analytics for education. The launch of the NIE Technology Roadmap for the Future of Education (TRFE) initiative under the NIE Strategic Plan 2025 aims to accelerate the institute's upward trajectory towards its vision of leading the future of education by leveraging technology to inspire learning, transform teaching and advance research.

The TRFE encompasses four digital thrusts:

- Innovate, design and facilitate teaching with emerging technologies to inspire next-generation educators.
- Enhance learning experiences that cater to different profiles.
- Enhance research support to improve the impact on policy and practice.
- Advance systems and processes to enhance productivity.

The TRFE aligns with the NIE Strategic Vision 2025 and its theme of 'A Future-ready NIE: Transformation, Growth and Sustainability', focusing on transformative innovations that will inspire the next generation of educators and learners.

It is with great excitement that I welcome these new innovations and transformations that will enrich and redefine the learning experience, transform teaching practices and advance research at NIE.

As we embark on this journey of innovation with the many possibilities that lie ahead, NIE will harness the power of technology to inspire curiosity, ignite passion and lead the future of education.

Christine

Professor Christine Goh
President's Chair Professor of Education (Linguistics & Language Education)
NIE Director

NIE 2025 **STRATEGIC VISION**

NIE VISION
An Institute of Distinction:
Leading the Future of Education

NIE MISSION
Inspiring Learning, Transforming
Teaching, Advancing Research

NIE CORE VALUES
Integrity, Professionalism, Collegiality,
Valuing Diversity, Embracing Change

KEY STRATEGIES

A FUTURE-READY NIE: TRANSFORMATION, GROWTH & SUSTAINABILITY

AREA 1

Programmes & Research

Harnessing NIE's evergreen strengths, distinctive capabilities and growth areas to empower educators and other professionals for the future.

Leading transformative pedagogies and practices with experimentation and research.

Implementing the NIE research strategy and strengthening the research-practice-policy nexus.

2

Partnerships & Networks

Boosting NIE's influence, impact and visibility locally and globally.

Deepening affiliations with regional and international partners.

Strengthening alumni relations towards a lifelong NIE engagement.

3

People & Institutional Capacity

Strengthening a culture of trust and care, and a growth-and-solutions mindset.

Strengthening enablers for NIE as an employer of choice.

Striving for and supporting sustained excellence in programmes, research and administration.

KEY STRATEGIC ENABLERS

Innovative Pedagogies

Vibrant Research Ecosystem

Transformative Assessment

Well-engaged Stakeholders

A Strong Global Academic Reputation

Holistic Talent Development

Leadership Excellence & Advancement

An Enabled, Immersive & Sustainable Campus

OUR DIGITAL VISION

'Leading the future of education, enabled by digital technologies guided by sound pedagogical practices.'

OPERATING CONTEXT

- **NEW LEARNING TRENDS**
- **TECHNOLOGY ADVANCEMENT**
- **NEW WORKING NORM**

STAKEHOLDERS

- **LEARNER**
- **RESEARCHER**
- **FACULTY**
- **STAFF**

DIGITAL THRUSTS

INNOVATE, DESIGN AND FACILITATE TEACHING WITH EMERGING TECHNOLOGIES TO INSPIRE NEXT-GENERATION EDUCATORS

ENHANCE LEARNING EXPERIENCES THAT CATER TO DIFFERENT PROFILES

ENHANCE RESEARCH SUPPORT TO IMPROVE THE IMPACT ON POLICY & PRACTICE

ADVANCE SYSTEMS AND PROCESSES TO ENHANCE PRODUCTIVITY

DIGITAL ENABLERS

BUILDING A FUTURE READY & AGILE WORKFORCE

DEPLOYING FLEXIBLE INFRASTRUCTURE & APPLICATIONS

BUILDING A SAFE & RESILIENT COMPUTING ENVIRONMENT

DIGITAL **THRUSTS**

INNOVATE, DESIGN AND FACILITATE TEACHING WITH EMERGING TECHNOLOGIES TO INSPIRE NEXT-GENERATION EDUCATORS

NIE will implement initiatives that advance teaching practice through the use of technology. An innovative culture will be fostered through progressive and iterative approaches afforded by technology. Data-informed practices will be employed to enhance the effectiveness of learning resources and assessment design.

Faculty should:

1. Leverage technologies to design meaningful learning experiences, environments and assessments for subject learning and 21st Century Competencies (21CC).

2. Leverage innovative ways to transform teaching with technologies through iterative refinement (state-of-the-art or transformational pedagogies).

3. Excel in data-informed feedback to improve teaching practice and assessment design.

4. Curate and create learning resources and knowledge to integrate into practice.

ENHANCE LEARNING EXPERIENCES THAT CATER TO DIFFERENT PROFILES

NIE will use education technologies to support and improve student learning practices, and faculty can integrate technologies to improve learning experiences and outcomes. Specific areas include the use of technology for personalised learning as well as the levelling up of learners' literacy and competency in emerging technologies such as AI.

Learners should:

1. Excel in personalised and adaptive e-learning and blended learning environments.

2. Be conversant in e-assessment platforms for self-regulated and reflective learning.

3. Be proficient in learning through rich digital resources (engaged in learning through creating and curating rich digital resources).

4. Be effective in the use of technologies in pedagogies and practices.

ENHANCE RESEARCH SUPPORT TO IMPROVE THE IMPACT ON POLICY & PRACTICE

NIE will prioritise the use of technology to bolster research experiences and opportunities for faculty and learners at NIE. Initiatives will be introduced to support research needs and enhance the research process for high-quality output. In addition, it focuses on broadening access to resources and support, providing the NIE community with the necessary tools for their research.

Faculty should:

1. Be supported by interoperable technologies and digital services to increase efficiency in developing, conducting and sharing research data and output and improve insights and decision support.

2. Be supported by technologies to research innovative ways of teaching, e.g. technology-mediated teaching, to enhance teaching and learning.

3. Be supported by technologies to engage in the future research process.

Researchers should:

1. Be assisted by technologies to streamline their research processes, including consideration of the entire research cycle from research instrument, data collection, data storage, processing and sharing.

2. Be supported by technology to perform research administration duties in an efficient manner (digitalisation should ease the load, taking over basic functions).

3. Be supported by data management platforms to facilitate data collection, storage, processing, sharing and analysis.

ADVANCE SYSTEMS AND PROCESSES TO ENHANCE PRODUCTIVITY

NIE will enhance systems for improved productivity, positively affecting all stakeholders. User experience will improve through digitalisation and automation of existing systems and processes. Regular feedback and reviews will aid in adapting to the new hybrid work environment, leveraging technology to increase mobility and collaboration.

All Stakeholders should:

1. Experience end-to-end seamless digital interactions with well-designed NIE applications with an intuitive User Interface (UI) & great User Experience Interface (UX).

2. Be better supported through an enhanced service management platform.

3. Have smooth access to NIE digital resources such as Wi-Fi, library materials, data storage, printing, and maker spaces.

4. Be supported with the most relevant communication, collaboration, file-sharing tools, and appropriate resources to stay connected as remote work continues to be the new norm.

5. Be engaged to provide continual feedback on the Institute systems and processes which directly impact workplace productivity.

All NIE Faculty & Staff should:

1. See a stronger partnership with IT specialists for rapid development and delivery of software solutions to bring greater value to the respective stakeholders.

2. Develop meaningful strategic collaborations in a secure, reliable and efficient manner, leveraging suitable technologies that facilitate timely communication and secured sharing of documents and data.

3. Host hybrid classes and events by leveraging end-to-end event management technologies supported by a unified NIE customer relations database.

4. Establish lifelong alumni partnerships leveraging digital marketing strategies to communicate NIE updates and offers, and host hybrid network sessions easily.

DIGITAL **ENABLERS**

BUILDING A FUTURE READY & AGILE WORKFORCE

NIE is committed to developing an agile workforce with a growth mindset that can effectively navigate the constantly evolving global landscape, which includes factors such as globalisation and workforce mobility, as well as keep up with the rapid advancements in technology and information systems. Thus, NIE seeks to equip its faculty and staff with the necessary skills and tools to tackle future challenges and seize opportunities.

DEPLOYING FLEXIBLE INFRASTRUCTURE & APPLICATIONS

In the evolving educational and technology landscapes, NIE will transform its IT infrastructure and learning spaces to support innovative teaching and both synchronous and asynchronous learning. The focus will be on using data effectively via technology platforms and creating future-ready learning spaces to cater to diverse teaching and learning needs.

BUILDING A SAFE & RESILIENT COMPUTING ENVIRONMENT

Acknowledging the fast-changing cyber landscape, this enabler details initiatives for a secure, resilient computing environment amidst digital transformation. While new technologies enhance efficiency, cyber hygiene and security strategies remain crucial for holistic governance. The Institute will continue adopting best practices with the University and international communities.

LEADING THE FUTURE OF EDUCATION, ENABLED BY DIGITAL TECHNOLOGIES GUIDED BY SOUND PEDAGOGICAL PRACTICES.

UBIQUITOUS DATA CULTURE

Facilitate a **ubiquitous data culture** where faculty and staff make use of advanced data analytics.

COMPREHENSIVE DIGITAL ENABLEMENT

Provide the tools, training and frameworks across data, automation and AI to **elevate the digital competencies of NIE's faculty and staff.**

SEAMLESS PHYSICAL AND VIRTUAL INTERACTIONS

Provide tools and infrastructure that facilitate seamless transitions between **physical and virtual interactions.**

BROAD USE OF LEARNING ANALYTICS FOR FORMATIVE ASSESSMENT AND FEEDBACK

Provide timely insights for faculty and students as well as to support innovation in classroom intervention for personalised learning.

VIRTUAL ASSISTANTS AS TEACHING AND LEARNING COMPANIONS

Introduce **virtual assistants as teaching and learning companions** and for the **synthesis of NIE research**, bridging theory and practice.

SCALING OF AUTOMATION TO IMPROVE PRODUCTIVITY

Scale the use of automation for administrative tasks that intersect with university-wide and NIE applications.

DIGITAL SANDBOX FOR IDEATION AND COLLABORATION

Facilitate **ideation, collaboration and the showcasing of NIE's pedagogical innovations.**