



المركز الوطني  
للتعليم الإلكتروني  
National eLearning Center

# **National Framework for Artificial Intelligence in Digital Learning (AIDL)** in the Kingdom of Saudi Arabia

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المركز الوطني  
للتعليم الإلكتروني  
National eLearning Center

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# Glossary of key terms

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## Adaptive Learning

Creating a personalised learning experience for each learner through employing sophisticated data-driven technology to anticipate types of learning pathways, content, and resources the learner needs at a specific point in time to attain certain competencies.

## AI-Powered Learning Platforms

Educational platforms that seamlessly integrate AI technologies to automate tasks, personalise learning paths, and provide real-time feedback to enhance student engagement and achievement.

## AI-Powered Tutoring Systems

Personalised learning systems that employ AI algorithms to provide tailored instruction and support to learners, particularly those encountering difficulties with specific concepts or topics.

## AI-Based Early Warning Systems

AI-powered systems that analyse student data to identify potential academic or social issues that may impact student wellbeing, allowing educators to proactively intervene and address concerns.

## AI-Powered personalised Feedback

Feedback generated using AI algorithms to complement educator feedback and provide learners with personalised and constructive insights on their learning.

## AI Bias Detection and Mitigation

Proactive measures to identify and address biases embedded in AI tools and systems, ensuring fairness and equitable access to educational opportunities for all learners.

## Bias Audits

Thorough examinations of AI tools and systems to identify potential biases in data sets, algorithms, and decision-making processes, ensuring fairness and equity in educational outcomes.

## Blended Learning

One of the eLearning modes that combines regular learning and distance learning within the credit hours.

## Digital learning

Using educational, information and communication technologies to enhance the efficiency and control the quality of learning and training modalities.

## Distance Learning

One of the learning modes in which electronic means and technologies are used in the learning process and the management of its interaction. It is characterized by a separation between the educator and the learner, between the learners themselves, or between learners and learning resources, and the separation is either in the spatial dimension outside the learning institution and/or in the temporal dimension of the learning time.

## Diversity and Inclusion in Data Sets

The practice of ensuring that AI algorithms are trained on diverse and representative data sets that reflect the demographics of the student population, mitigating the risk of perpetuating biases.

## Educational technology (edtech)

Any technology (including AI) that is used in education. Also a broad area of study and practice that involves the design, development, implementation, and evaluation of such tools in any educational context.

## Fairness-Aware Algorithms

Machine learning algorithms that are specifically designed to minimise bias and promote fairness in decision-making, ensuring that AI-generated outcomes are equitable for all learners.

## Human Oversight and Review

Maintaining human oversight and review of AI-generated decisions to prevent bias from perpetuating and to ensure that learners receive fair and equitable treatment.

## Large Language Models (LLMs)

Sophisticated data-driven structures created through processing massive amounts of written material. This enables them to recognise, predict, or generate text or other content. These models, when fine-tuned, can follow the complex rules of language and help with tasks like writing, answering questions, and translating between languages.

## Machine learning

A subset of AI approaches involving the development of models trained on data. It enables systems to learn, adapt, and make decisions without explicit programming, often used for pattern recognition, classification and prediction.

## Regular Technology Review

Continuous evaluation and updating of AI tools and technologies used in learning to ensure their effectiveness, alignment with pedagogical goals, and adherence to ethical and regulatory standards.

## Technology Enhanced Learning

One of the eLearning modes that uses the technology and its applications to support the learning process.



## About The National eLearning Center (NeLC)

The National eLearning Center was established as an independent entity by the Council of Ministers decision No. (35) in 1439 H. The NeLC aims to enhance trust in online learning, facilitate equitable access to relevant lifelong online learning, and lead sustainable innovation in online learning to provide trusted online learning for all.





# Introduction

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Digital learning refers to the utilisation of educational, information, and communication technologies to enhance the efficiency and control the quality of learning and training modalities. This approach involves various models of learning including Technology Enhanced Learning, Blended Learning, and Distance Learning.

In the fast growing landscape of Saudi Arabia, Artificial Intelligence (AI) is emerging as a critical catalyst in various sectors. Within digital education, Saudi Arabia recognises AI's potential to revolutionise learning paradigms. This includes enabling AI's potential in enhancing the digital learning process, customising tools to suit learner needs, and supporting teachers through digital tools. The use of AI in digital learning across Saudi Arabia can be seen across multiple levels of complexity and implementation:

- **Prompt based GenAI:** Initial AI use in education for task streamlining by educators such as creating learning materials, and hands-on interaction from learners for generating explanations, creative ideas, images or other media.
- **Tailored AI applications:** AI tools developed for education, varying in level of integration from advanced to nominal AI integration, requiring customised adoption.
- **System level integration:** Advanced integration of AI with entire educational systems, facilitating independent learning and potential shifts in educational paradigms. This integration requires a robust infrastructure, including AI foundational models pre-trained appropriately, software for deploying these AI models, data centers as well as educational databases that can be leveraged.

Each level reflects a progressive deepening of AI integration, requiring careful evaluation and strategic implementation in educational settings. Since AI is still an emerging technology, it also brings inherent risks and uncertainties. This necessitates ongoing dialog with all stakeholders, evaluation and adaptation of strategies. To responsibly harness this potential, and mitigate the risks, an AI specific guidance for implementation is important for Saudi Arabia's educational institutions. Understanding this need in the context of Saudi Arabia's educational landscape, NeLC has developed an Artificial Intelligence in Digital Learning Framework. The foundation for NeLC building this Framework stems from its expertise and national mandate to elevate digital learning. This ensures the responsible integration of AI, which empowers learners and educators alike, ensuring a future marked by innovation, adaptability, and continuous improvement.

# About the Framework

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## A. Purpose of the Framework

The Framework aims to serve a dual purpose: to act as a practical 'how-to' guide for implementing AI and to provide a strategic roadmap that outlines the development, deployment, management, and evaluation of AI in the context of digital learning. It encompasses a suite of guidelines that includes protocols, standards, and practices, all tailored to the unique requirements of all educational sectors. It is structured to deliver concrete steps and methodologies for AI integration, ensuring that schools, universities, and training institutions can navigate the transition to AI effectively and to implement ethical and responsible use.

## B. Target Audience

The Framework aims to help education policy makers, public and private education system administrators as well as individuals to enable a successful planning, developing and implementing of AI in digital learning. It is built to work across all forms of learning covering K-12, Higher Education, TVET as well as Life-long learning segments.

## C. Basis for Framework Development

The Framework is developed based on NeLC's existing Online Learning Evaluation Framework covering critical elements across the entire teaching - learning process. It aligns with the Saudi Digital and Artificial Intelligence Authority's (SDAIA) principles and the National Strategy for Data and AI, emphasising skills development, regulatory frameworks, and fostering research and innovation. It also takes relevant inputs from UNESCO's guidelines on AI use in education as well as the United Nations Sustainable Development Goal 4, reflecting a commitment to quality learning within a global context.

## D. Definition of AI and its use in Digital Learning

The idea of AI is broad, ranging from traditional adaptive learning technologies to cutting-edge Generative AI (GenAI). NeLC aligns with SDAIA's broader definition of AI as a suite of technologies enabling machines or systems to sense, understand, act, and learn. The end goal of such systems is the ability to interact with humans and/or other machines.

Recently GenAI has emerged as the most prominent tool in its use across multiple facets of our lives, including education. UNESCO in its 'Guidance for generative AI in education and research (2023)' defines GenAI as – 'An artificial intelligence (AI) technology that automatically generates content in response to prompts written in natural-language conversational interfaces. GenAI is trained using data collected from web pages, social media conversations and other online media. It generates its content by statistically analysing the distributions of words, pixels or other elements in the data that it has ingested and identifying and repeating common patterns'.

Specifically, AI in Digital Learning refers to the application of machine learning, data analytics, and intelligent algorithms to enhance the learning process. This includes everything from personalised learning experiences, where educational content is tailored to individual student's needs, to the automation of administrative tasks, thereby allowing educators more time to focus on teaching and less on logistical aspects.

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**\*Note:** This framework is developed to be an evolving document and will undergo updates again in the next 6 to 8 months.



# Dimensions of AIDL Framework

This Framework covers nine dimensions including 22 sub-dimensions that educational institutes will need to consider when adopting AI in digital learning. It underlines key principles, which are critical to ensuring responsible use of AI across all forms of learning. Every dimension outlined in the Framework is developed to direct the activities of various educational institutions to effectively benefit from AI integration.



# 01

## Leadership



Institutional leadership serves as the cornerstone of effective AI integration in digital learning. By establishing a clear strategic direction, implementing robust policies, fostering a supportive governance structure, and developing a comprehensive implementation roadmap, educational institutions can harness the transformative power of AI while safeguarding ethical considerations and ensuring equitable access for all learners.

### 1.1

#### AI Policy

AI policy is a set of guidelines that outlines the organisation's expectations for AI use in digital learning, ensuring ethical and responsible AI practices. An AI policy serves as the foundation for ethical AI implementation within the organisation, addressing critical issues such as data privacy, security, fairness, and transparency. It provides a framework for developing, deploying, and using AI tools and applications in the educational context, ensuring alignment with legal, ethical, and societal norms.

#### Policy development

Develop key policy statements that outline the ethical, legal, and procedural guidelines for the use of AI that are aligned with all National policies, e.g. NeLC, MOE, SDAIA etc.

#### Legal compliance

Ensure that AI policies and practices adhere to all applicable data privacy regulations, intellectual property laws, and AI ethics guidelines.

#### Fairness and equity

Promote AI use that is free from bias, discrimination, and unfair treatment, ensuring equal opportunities for all learners.

#### Responsibility in leadership

Cultivate a culture that ensures responsibility and transparency in AI development, deployment, and decision-making.

#### Continuous improvement

Regularly review and update AI policies to reflect evolving technological advancements and ethical considerations.

Guidelines

## 1.2

### AI Strategy

AI Strategy is a comprehensive plan that outlines the organisation's overarching vision, goals, and initiatives for AI implementation in digital learning. It serves as the roadmap for the organisation's journey with AI in Digital Learning, providing a clear understanding of its aspirations, objectives, and the tactical steps required to achieve them.

#### AI needs assessment

Engage with stakeholders across the organisation, including educators, administrators, learners, and parents, to identify specific areas where AI can add value, address existing challenges, and enhance educational outcomes.

#### Adoption methods

Identify which method/s are best for AI at your institution. AI can be adopted in several ways ranging from training all staff on directly using LLM-based platforms themselves, developing custom AI workflows and custom AI applications for the institution's specific needs.

#### Goals, Objectives and Initiatives

Set clear, relevant, and time-bound goals and objectives that provide tangible targets for AI implementation, enabling effective progress tracking and evaluation. These goals and objectives are supported by relevant initiatives to implement AI.

#### Strategic alignment

Ensure that AI initiatives are closely aligned with the organisation's digital education goals.

#### Sustainable integration

Plan for the long-term integration of AI into the organisation's learning practices, ensuring ongoing support, and training.

#### Adaptability and agility

Given the rapid pace of technological change, establish mechanisms for strategy and policy to remain agile and responsive to emerging technologies and methodologies.

## 1.3

### Governance

Governance is the processes and structures that are in place to oversee and manage the AI implementation in digital learning to ensure long-term success and sustainability.

#### Guidelines

#### **Governance structure**

Define clear roles, responsibilities, and decision-making processes for AI implementation, ensuring reporting, transparency, and adherence to ethical principles.

#### **Dedicated AI leadership team**

Appoint a cross-functional team of leaders with diverse expertise to oversee and drive the organisation's AI initiatives, ensuring alignment with the overall strategic direction.

#### **Risk management procedures**

Implement a comprehensive framework with specific indicators for identifying, assessing, and mitigating potential risks associated with AI implementation, such as bias, data security breaches, algorithmic errors, and ethical violations.

#### **Clear accountability mechanisms**

Establish clear processes for identifying, addressing, and assigning responsibility for AI-related issues, ensuring accountability for AI implementation and ethical practices. This may involve incident reporting procedures, investigations, and disciplinary measures.

## 1.4

### Implementation Roadmap

Implementation Roadmap is a detailed plan that outlines the steps that the organisation will take to implement its AI strategy.

#### Guidelines

#### **Phased approach**

Implement AI initiatives in a phased manner, starting with pilot projects and gradually scaling up to full-scale implementation based on evaluation results and lessons learned.

#### **Iterative**

Adopt an iterative approach to implementation, continuously evaluating progress, gathering feedback, and adapting strategies as needed to optimise AI integration.

#### **Flexibility**

Maintain flexibility in the implementation roadmap to accommodate unforeseen challenges, emerging technologies, and evolving learning needs.

#### **Capacity building**

Identify digital infrastructure and training needs to enable the AI implementation plan. Ensure alignment with relevant stakeholders from across Saudi Arabia to manage dependencies. Teachers/faculty training needs for AI will also need to be identified and planned for (in line with identified AI competencies).

# 02

## Curriculum Design and Content Development



Curriculum design and content development play a crucial role in shaping the learning experience and ensuring that learners acquire the necessary knowledge and skills. AI can be leveraged to enhance curriculum design and content development by providing personalised learning experiences, automating repetitive tasks, and recommending relevant learning resources.

### 2.1

#### Customisable Learning Materials

Customisable learning materials are learning resources that can be tailored to meet the individual needs and preferences of learners. AI can facilitate the creation of customisable learning materials by analysing student data, identifying patterns, and generating personalised content.

##### **Adaptive learning and automated differentiation**

Utilise AI algorithms to align learning materials based on student performance, providing personalised learning paths. AI tools also help to automatically differentiate instruction, providing appropriate support and challenges for learners of varying abilities.

##### **Personalised and dynamic content**

AI can be used to develop engaging and interactive learning activities dynamically tailored to individual student needs and contexts. For example, learners can have the ability to repeat AI-based learning activities, with each attempt being a different experience from the last.

##### **Streamlined content development**

Provide GenAI systems with relevant curriculum source material to seamlessly and rapidly produce rich content for learning environments including podcasts, explainer videos, quizzes and AI chatbot activities.

##### **Culturally responsive learning environments**

Leverage GenAI to produce learning environments that are culturally adapted to learners. This can be achieved, for example, through generating images, videos and AI simulations that reflect the unique appearance, language, and cultural context of learners.

##### **Teacher-led design**

Maintain the role of educators in designing and overseeing the use of customisable learning materials, ensuring alignment with pedagogical principles and learning objectives. AI should augment, not replace, the educator's expertise in crafting personalised learning experiences.

Guidelines



**Expert verification**

Ensure there is a layer of expert verification of AI-generated outputs. Treat AI-generated content as a first draft and establish processes and systems for subject matter experts to verify and approve the content before incorporating materials into a curriculum.

**Adaptation to unique learner needs**

AI can be used to create learning materials suited to struggling students or those with particular challenges. It can be used to simplify content, break down language barriers, or offer different learning modalities to suit individual challenges.

## 2.2

**Resource Recommendation Engines**

Resource recommendation engines are AI-powered systems that suggest relevant learning resources to both educators and learners. It provides educators with a curated selection of high-quality learning materials, saving time and effort in searching and evaluating resources. For learners, these engines can recommend resources aligned with their interests, learning goals, and current level of understanding. By providing personalised recommendations, AI can help educators and learners to find the most appropriate and effective learning materials.

**AI-powered resource libraries**

Integrate AI capabilities into textbooks, online learning modules, support materials and other resources to recommend additional resources, personalised practice problems, and interactive simulations based on the topic being covered. (E.g. AI-driven content portals as a centralised hub for accessing high-quality educational resources.)

**Relevance of content**

Ensure that recommended resources are relevant to the topic, accurate in content, and aligned with educational standards. This means carefully evaluating the quality and credibility of recommended resources.

**Flagging mechanisms**

Include mechanisms for users to report incorrect, inaccurate or inappropriate results, thereby further improving the AI model's capabilities.

# 03

## Teaching and Learning



AI systems are being integrated into classrooms to enhance the teaching and learning experience for each student. AI can personalise learning, automate repetitive tasks, and provide real-time feedback, enabling educators to focus on more individualised instruction and support.

### 3.1

#### Classroom AI Integration

Classroom AI integration refers to the implementation of AI tools and technologies to enhance the teaching and learning process. AI can be integrated into classrooms in various ways to personalise learning, automate repetitive tasks, provide real-time feedback, and as AI-assisted grading tools.

##### Data-driven approach

Analyse student data to inform the creation of personalised learning materials, ensuring relevance and effectiveness. This includes collecting data on student performance, learning preferences, and engagement levels to inform the design and adaptation of learning materials.

##### Connecting learners

Use AI algorithms to connect learners with peers working on similar topics, facilitating collaborative learning and resource sharing – both for virtual and in-person collaboration opportunities. AI can help learners find potential collaborators based on their interests, expertise, and learning goals.

##### AI peers

Especially for virtual or self-study learning environments where it may not be possible to interact with peers on demand, students can enjoy safe spaces to participate in collaborative and constructivist learning by engaging with AI peers via simulated group discussions, debates and more.

##### AI-powered tutoring systems

Implement AI-driven tutoring systems to provide personalised instruction and support to learners, especially those struggling with specific concepts.

##### Inclusive / Assistive Technologies

For students with special needs, institutes may include AI driven assistive technologies in classroom delivery such as speech-to-text for students with writing difficulties or AI-powered hearing aids for those with hearing impairments.

##### Educator oversight

Maintain the role of educators in directing and overseeing the use of AI in classrooms, ensuring pedagogical soundness and alignment with educational standards.

Guidelines

## 3.2

### AI Support in Teaching Process

The application of AI tools in assisting educators with material generation, lesson planning, and content curation, tailored to diverse student learning styles. This sub-dimension focuses on how AI can streamline and enhance the teaching process. AI tools can automatically generate learning materials, assist in creating comprehensive and diverse lesson plans, and curate content to meet the varied learning preferences of students, thus improving overall instructional efficacy.

#### Guidelines

#### Lesson planning

Educators may use AI tools to help them analyse individual student performance data and generate lesson plans that target specific learning gaps, suggest creative approaches for engagement and differentiation and to adjust teaching strategies to suit varied learning challenges and needs.

#### Digital administrative support

Set up AI automations to help teachers manage routine administrative tasks and allow them to focus on direct teaching and student interaction. Such support can be offered in critical areas such as monitoring online attendance, student performance reporting, engagement with parents or other key stakeholders (where applicable) through digital platforms.

#### Facilitation and Mentoring

AI presents the opportunity for learners to study independently through AI-generated learning content, thus allowing educators the chance to act as observer, facilitator and personal mentor instead of being restricted to classroom instructor.

# 04

## Assessment and Performance Monitoring



Assessment and performance monitoring are essential components of the learning process, enabling educators to track student progress and identify areas where additional support is needed. AI can be used to automate assessment and performance monitoring tasks, providing educators insights to inform instructional decisions and interventions in a timely manner.

### 4.1

#### Student Performance Monitoring

It refers to the systematic process of collecting and analysing data on student learning outcomes to identify progress and areas for improvement. This can provide educators with a real-time view of student progress, enabling them to identify struggling learners and provide targeted support.

#### Guidelines

##### Student-centered approach

Use AI to coach students around their learning and performance. Ensure that these AI-powered coaching and performance monitoring tools are aligned with student learning goals.

##### Real-time analysis

Integrate AI-powered learning analytics platforms to collect and analyse student performance data, providing educators with real-time insights into student progress and patterns.

##### Early warning systems

Implement AI-based early warning systems to identify learners who are at risk of falling behind, allowing educators to provide timely support and intervention.

##### Dashboards

Provide learners with access to AI-powered personalised learning dashboards that track their progress towards learning objectives and provide insights into their strengths and weaknesses.

## 4.2

### Automated and Dynamic Assessment Tools

AI is leveraged to develop diverse assessments, including automated generation of question banks, facilitating personalised feedback, and streamlining the grading process for educators. Automated assessment tools use AI to score and provide feedback on student work, including essays, maths problems, and coding projects. AI-powered tools can provide detailed feedback on student responses, identifying areas of strength and weakness. This can free up educators' time for more personalised instruction and support.

#### Accuracy and fairness

Ensure that automated assessment tools are accurate and fair, providing learners with reliable feedback on their work.

#### Recognise AI limits and strengths in assessment

Even with human verification and checks, AI is better at some forms of assessment than others. It's important to recognise these, and preferably limit AI for assessment in low-stakes or formative assessments rather than high-stakes assessments, given the margin for error.

#### Grading tools

Implement AI-powered grading tools to automate the evaluation of writing assignments, providing learners with timely feedback on their grammar, style of writing, and content, or evaluate student responses to maths problems, providing learners with immediate feedback and correcting errors. Again, this should be implemented alongside a layer of expert human verification.

#### AI simulations as formative assessment

Rather than solely relying on traditional quizzing approaches to formative assessment, learning designers may explore creating conversational AI simulations that allow learners to apply their learning and receive feedback through dynamic scenario-based interactions.



# 05

## Ethics and Responsible AI Use



As AI continues to reshape the learning landscape, ensuring ethical and responsible AI practices are paramount to safeguard student privacy, mitigate potential biases, and promote equity and fairness in digital learning experiences.

### 5.1

#### Institutional AI Ethics Guidelines

This refers to the principles that govern the ethical design, development, deployment, and use of AI technologies within educational institutions in legal, inclusive, and equitable ways that are aligned with learning values and goals. Developers and institutions implementing AI applications should adhere to national ethical considerations (prescribed by SDAIA, NeLC etc., as applicable) highlighting how AI-based applications are fair, transparent, and accountable. Considerations around the impact of AI on student engagement, learning outcomes, and the role of the educator should also be included.

#### Guidelines

##### Principles

Create a charter of ethical principles to be applied to any AI in learning project or application, in conformity with national and international ethics principles for AI use in digital learning.

##### Ethics first

Institute an “Ethics by Design” approach when developing tools or applications to be used in educational institutions, i.e. programmers and designers must be thinking about baking ethics into the tool from the very beginning.

##### Safety

Prioritise safety of learners and staff, including safeguarding against biases and ensuring the confidentiality of personal data.

##### Fairness

Guarantee fairness and equity in AI applications, ensuring they do not perpetuate inequalities.

##### Understandability

AI systems and their decision-making processes should be understandable to users.

##### Transparency and ‘Explainability’ (Explainable AI)

Be transparent about how automated assessment tools work and provide learners with explanations of their scores and feedback.

## 5.2

### AI Ethics Training and Awareness

Institutions should increase awareness about the complexity of AI and the underlying data ethics and adopt processes that enable ethical decision-making that involve all stakeholders.

#### Guidelines

##### **Informed**

Promote responsible, effective and informed use of AI in teaching and learning by developing educators' and students' deeper understanding of AI and its implications for teaching and learning.

##### **Awareness**

Commit to ongoing awareness, learning, and dialogue on AI and data ethics of all stakeholders in any given context.

# 06

## Technology Standards, Security and Data Privacy



The integration of AI technologies in learning introduces complex challenges in terms of compatibility, accessibility, and security. Compatibility is required to ensure that diverse AI systems and tools can work together smoothly within learning contexts, while robust security standards protect sensitive data from breaches and misuse. A commitment to inclusion and accessibility is also essential, ensuring that AI-based solutions are created and implemented in a way that accommodates all learners.

### 6.1

#### Institutional IT Standards

IT standards, benchmarks and principles provide a framework for implementing AI technologies in learning contexts. AI implementations require particular attention to safety, data protection, as well as making sure systems are aligned with the institution's educational goals. Additionally, ensuring that systems are accessible to all users, including those with disabilities is of paramount importance. Tools should be designed and developed to be used by the widest range of learners.

#### Use of data

Establishing requirements and guidance for the use of the logged data is important for adaptive instructional systems.

#### Inclusion and equity

As stated in The Software & Information Industry Association (SIIA) principles for the future of implementing AI technologies in a purpose-driven, transparent, and equitable manner are significant. Prioritising inclusion, and educational equity when implementing AI technologies in K-12 and colleges and universities is critical.

### 6.2

#### Cross-Platform Compatibility

Systems should use standard data formats, communication protocols, and APIs to facilitate compatibility, ensuring that AI tools can integrate into the existing technological ecosystem and enhancing the overall learning experience.

#### Compliance

Providers should comply wherever possible with key standards such as xAPI to log interaction data, LTI to invoke and communicate with other systems.

#### Design

Systems should be designed for content and data exchange. Interoperability is required to ensure that diverse AI systems and tools can work together seamlessly within and across educational settings.

#### Standard data formats

Using standardised data formats to ensure that the data generated or processed by AI tools are easily understood and utilised by various platforms. Which facilitate interoperability and data exchange between different platforms.

Guidelines

Guidelines

## 6.3

### **Security and data privacy management, ownership and safeguarding**

Security protocols and data privacy management practices should protect sensitive educational and personal data throughout the entire data lifecycle. This includes ensuring that issues of integrity and bias in AI algorithms are considered, data leakage is avoided, and data are appropriately anonymised making sure that sensitive information cannot be inferred from shared data or from model outputs.

#### **Informed decision making**

All stakeholders should be aware of how their data is processed and make informed decisions, and different stakeholders should have different access control on the same data.

#### **Security and data protection**

It is crucial for AI in Digital Learning systems that operate over the web to ensure secure data exchanges and protect against common web vulnerabilities. For any system that processes educational data, it is mandatory to establish strict data protection protocols, consent mechanisms, and the right to data portability and erasure.

#### **Regulatory compliance**

Organisations should comply with Personal Data Protection Law (PDPL) issued by SDAIA and put mechanisms in place to ensure safety in implementation settings, extending the scope of compliance to applications that even indirectly use AI including when AI approaches are not hosted by the educational institution itself.

# 07

## Student Support



Ensuring learners are equipped with the right skills to use AI-driven educational tools as well as making accessible and inclusive tools towards all.

### 7.1

#### AI Curriculum for Learners

AI Curriculum for Learners refers to the integration of AI concepts and skills into the relevant curriculum. This involves providing learners with the knowledge and skills they need to understand, use, and critically evaluate AI technologies.

Integrating AI into the curriculum empowers learners to become informed and responsible citizens in an increasingly AI-driven world. AI education can range from introducing basic AI concepts in K12 to exploring more advanced topics in higher education and continuous learning settings. This integration allows the learners to gain a comprehensive understanding of AI's capabilities, limitations, and ethical implications.

#### Hands-on and experiential AI learning

Emphasise hands-on and experiential learning approaches, allowing learners to apply AI concepts and gain exposure to AI tools through activities, experiments, and projects - aligned to identified AI competencies.

#### Critical thinking and ethical considerations

Foster critical thinking skills, enabling learners to evaluate AI's potential benefits and risks, as well as its ethical implications for society.

#### Continuous updates

Due to the rapid/continuous development in the field of AI, the curriculum should be regularly updated to reflect new advancements, technologies, and ethical considerations.

Guidelines



## 7.2

### Student wellbeing

Student wellbeing refers to the holistic physical, mental, and emotional health of learners in the context of the AI educational environment.

#### Guidelines

#### Wellbeing centered approach

Prioritise student wellbeing and ensure that AI applications are designed and implemented with the best interests of learners in mind - connected to mental care, lifelong health-care approaches.

#### Privacy and security

Protect student data privacy and ensure that AI systems are designed with robust security measures to safeguard sensitive information, according to national and international legislations.

#### Clear purpose

Ensure clear deployment of AI technologies in classroom settings. Provide learners and parents / guardians with clear explanations of AI-powered tools and their purposes.

## 7.3

### Accessible and inclusive

Accessible and inclusive AI learning refers to the design and implementation of AI-driven digital learning tools and resources that cater to the needs of all learners, including those with disabilities and diverse backgrounds.

Accessibility and inclusion are paramount in AI learning to ensure that all learners have the opportunity to learn and benefit from AI technologies.

#### Guidelines

#### Accessibility for all

Ensure that AI-powered digital tools and resources are accessible to all learners, professionals and their families, regardless of their physical abilities, sensory impairments, or cognitive differences.

#### Inclusive design and development

Consider diverse learner needs and preferences during the design and development of AI-powered digital learning tools, ensuring that they are inclusive and equitable for all.

#### Universal accessibility standards

Adhere to universal accessibility standards and guidelines to ensure that AI-powered digital learning tools meet the needs of all learners and other relevant stakeholders.

#### Continuous evaluation and improvement

Regularly evaluate the accessibility and inclusivity of AI-powered digital learning tools and make ongoing improvements to address any barriers or gaps in access.

# 08

## Professional Development



In the ever-evolving learning landscape, equipping educators with the necessary skills and knowledge to effectively utilise AI tools is crucial for fostering a dynamic and innovative learning environment. AI skills training and the establishment of supportive networks empower educators to confidently integrate AI into their teaching practices, enhance student engagement, and personalise learning experiences. By investing in professional development opportunities, educational institutions can create a culture of continuous learning and ensure that educators remain at the forefront of AI-driven pedagogical advancements.

### 8.1

#### AI Skills Training for Educators

AI skills training for educators refers to the provision of training and resources to help educators develop the skills and knowledge necessary to effectively use AI tools in their classrooms and professional practice. It should encompass a comprehensive approach that includes hands-on experience, theoretical understanding, and pedagogical considerations.

##### Needs-driven approach

Tailor AI skills training to address the specific needs and interests of educators, considering their current knowledge level, teaching context, and desired outcomes.

##### Active learning strategies

Utilise active learning strategies, such as hands-on activities, simulations, and peer collaboration, to engage educators and promote deeper understanding of AI concepts.

##### Pedagogical integration

Focus on integrating AI skills training with pedagogical considerations, ensuring that educators learn how to effectively use AI to enhance student learning and engagement.

##### Continuous learning opportunities

Foster a culture of continuous learning by providing ongoing AI skills training opportunities for educators to stay up to date with the latest advancements and adapt to evolving AI technologies.

Guidelines

## 8.2

### Community of Practice (CoPs)

Community of Practice (CoPs) for AI adoption refer to the establishment of communities and platforms that provide educators with ongoing support and guidance as they integrate AI tools and technologies into their teaching practices.

#### Guidelines

#### **Accessibility and inclusivity**

Ensure that support networks for AI adoption are accessible and inclusive to all educators, regardless of their location, technology proficiency, or experience with AI.

#### **Diverse perspectives and expertise**

Foster a supportive environment where educators from diverse backgrounds and with varying AI knowledge levels can share perspectives, learn from each other, and collectively address challenges.

#### **Collaboration and knowledge sharing**

Encourage collaboration and knowledge sharing among educators within support networks to promote the collective growth and adoption of AI in digital learning.

#### **Ongoing support and mentorship**

Provide ongoing support and mentorship opportunities for educators, ensuring that they have access to resources and guidance throughout their journey of AI integration.

# 09

## Evaluation and Continuous Improvement



As AI integration continues to reshape the learning landscape, it is crucial to establish a comprehensive monitoring and evaluation mechanism to assess the effectiveness and impact of AI-powered teaching and learning strategies. This mechanism should encompass rigorous research methodologies, data-driven decision-making, and proactive bias detection and mitigation measures. By systematically evaluating the impact of AI on student learning outcomes, addressing potential biases, and fostering a culture of continuous improvement, educational institutions can ensure that AI is harnessed responsibly and ethically to optimise teaching practices and enhance student success.

### 9.1

#### Impact Assessment

AI impact assessment refers to the systematic evaluation of the impact of AI tools and technologies on teaching and learning outcomes.

It involves carefully designing and conducting research studies to measure the effectiveness of AI-enabled teaching and learning strategies as well as tools and content. AI impact assessment should be ongoing and iterative to ensure that AI is being used effectively and responsibly in education.

#### Guidelines

##### Evidence based

Base decisions about AI adoption and implementation on evidence-based findings from impact assessments, ensuring that AI is used effectively and responsibly.

##### Continuous improvement

Use AI impact assessment findings to drive continuous improvement in AI-enabled teaching and learning strategies, ensuring that AI is used to maximise its positive impact on student outcomes.

### 9.2

#### Regular Technology Review

Regular technology review refers to the periodic evaluation of AI tools and technologies used in learning to ensure their effectiveness, relevance, and alignment with educational goals.

These reviews are essential for ensuring that AI is being used effectively and responsibly in digital learning.

#### Guidelines

##### Alignment with pedagogical goals

Ensure that AI tools and technologies are carefully evaluated and selected based on their alignment with pedagogical goals and their ability to enhance student learning outcomes. (periodically)

##### Ethics validation

Continuously assess AI tools and technologies for potential ethical implications, ensuring that they are used fairly, responsibly, and in compliance with data privacy regulations.

##### Adaptability and innovation

Foster a culture of adaptability and innovation in the use of AI in digital learning, embracing new advancements and exploring emerging AI solutions that can further enhance teaching and learning experiences.

