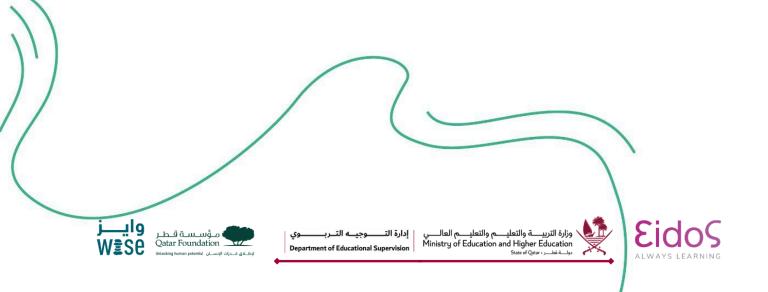صوت المتعلمين
LEARNERS' VOICE

White Paper
Navigating Learning Futures:
Youth Perspectives and AI Integration in
Qatar's Education

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▶ **Introduction**

In the last few months, AI has become one of the main topics in newspapers, in decision-making processes, in conversations with friends, and even in the government's agendas. Even though advancements in technology have always been an important topic when thinking about the future and how it is changing, AI brought a whole new set of questions and challenges, but also opportunities for the different spheres of our lives. The future is changing faster and faster and it is hard to keep up and to understand what is happening before we are invaded by technology. However, that does not mean we should avoid using technology, ignore it, or even pretend it is not there, just because it brings us to unknown territory. It is of most importance that we discuss AI and that we work together to find the best ways possible to cohabit in this technology- and AI-driven world.

What is AI?

We heard about AI in the news, in articles, and even in schools and workplaces. But does everyone know what Artificial Intelligence is and why it is so revolutionary? AI is like giving machines a touch of brainpower. It's a smart tech that allows computers to learn and think on their own, somewhat like how humans do. We say machines *"learn"* because AI works based on mathematical and statistical models that generate patterns from the data they process. Let us give you an example, it is something like teaching a robot to recognize elements or living beings by showing it lots of pictures and data instead of giving it a long list of rules (*"A cat has pointy ears"*, *"A cat has a tail"*, etc.). All this makes AI more adaptable than a regular computer program.

What makes AI stand out from other technological advancements is its self-improving capacity and its autonomy. While normal tech follows strict instructions, AI gets better at tasks over time by learning from different situations. It's not just about telling the machine what to do; it's about letting it figure things out and get clever on its own.

The Impact of AI on Education

This incredibly astonishing technology is revolutionizing our day-to-day lives, including the way we work, the way we learn, and the way we handle information in general. Even though AI and the rapid technological advancements in general impact many spheres of our society and our world, today we will focus on how it impacts education.

The education system has the goal to prepare young people for the future. More specifically, the *Qatar National Vision 2030* states that Qatar's educational system has to respond *"to the current and future needs of the labour market"* (p. 16). This raises the question of how best we can equip our graduates with the skills, knowledge, and adaptability necessary to thrive in this ever-evolving environment. The traditional model of teaching and learning, which has remained relatively unchanged for centuries, is now under scrutiny. Because of that, it is essential to embark on a journey of rethinking our education systems, to serve its purpose.

Even though in the last few years we have been seeing changes in the classrooms and the education systems, AI presents a very particular challenge. In the beginning of formal education and

up until the twentieth century, the classrooms looked something like this: Students sat in rigid and individual desks, looking to the front of the classroom where the teacher would present the content using the chalkboard and books. Nowadays, this disposition is changing, and AI is fastening this process. What AI brings to education is a change in where the knowledge is and where the content can be found. With the advancements of the internet this was already starting to happen, AI just brought it to a whole new level. Technologies can not only inform about almost everything, but with AI it can also create things. In the last decade, teachers moved from being "content givers" to being "guides towards the content". Today, the idea of teacher guiding is of most importance. With AI disrupting classrooms, teachers have the fundamental role of guiding their students so they can correctly use these technologies. The question that comes up is: How can we expect teachers to guide their students to an AI-nurtured learning process if they don't have a deep and full understanding of all the new technologies that come to the scene every day?

However, the worst thing that can happen is to cower and not face the reality that is in front of us: AI has infiltrated and will continue infiltrating education whether we want it or not. We think that the best thing we can do is for teachers to guide and accompany their students so that when they use AI (which they will do even if it is permitted or not) they know how to do it with consciousness and critical thinking. It is important to talk about what AI is, how it works, where it gets information from, its potential, limitations, and challenges for teaching and learning, etcetera. The framework surrounding these conversations should focus on the values of honesty and responsible use. It is most important to have a critical approach to have a profound understanding of the social and ethical implications of using this technology.

Closing remarks

As young people, we believe that AI will have an impact on education, whether we want it to or not. We also believe that we have the opportunity to decide whether we will stand with our arms crossed and wait for AI to have a negative impact; or we can see AI as an opportunity to empower students, improve our learning processes and embrace change so that the impact of AI in education is positive. We acknowledge that changing an education system has its challenges, but we believe that by working collaboratively and listening to all the stakeholders, especially the young voices, we will fundamentally change education for the better.

To conclude this section, we want to invite you to imagine a landscape in which AI becomes an invaluable ally, revolutionizing education through personalized learning, enhanced efficiency, and cutting-edge instructional support. Here we ask you: How might education systems be taken to new realms of efficiency and effectiveness, and embrace a future where artificial intelligence becomes the cornerstone of personalized, dynamic learning experiences?

▶ Policy recommendations

As previously stated, we firmly believe that embracing the possibilities of AI can have a positive impact on education. To achieve this, it is crucial to approach the change critically and consider how best to utilize this technology. Below, we provide five policy recommendations that we believe will foster a constructive integration of education and AI. The aim is to equip young people in schools and higher education institutions with the skills to thrive in this technology and AI-driven world.

1. Enhancing the Curricula with AI

Currently, many education curriculums worldwide are outdated and fail to meet the demands of the 21st century, neglecting the current technological advancements. One of the critical elements of infusing AI into education is enhancing the curricula with this technology. We must not conceive AI as a *"nice to have"*, but rather as a key *"must have"* element that should be integrated into all subjects, with a holistic approach and various applications based on the situation and the learning objective.

First and foremost, it is imperative to include the core elements of AI in different subjects, as part of project-based learning. For instance, lessons on Python, and JavaScript, would enable students to create AI-specific apps or projects for lessons such as Biology or Mathematics, or even use generative AI to teach these subjects. Moreover, computational thinking is a key element that can address real-life problems and obstacles in several subjects. By implementing such a strategy, we can significantly enhance the digital literacy and technical competencies of students, which are crucial for future employment prospects. In pursuit of this objective, the South Korean government has launched a countrywide initiative that offers schools many AI tools, computer programs and other resources. This allows students to gain hands-on experience with AI.

Besides talking about AI, and its core elements, we need to include AI tools as part of the curricula and the learning process. How can these tools support, and even improve, the learning experience of students? Platforms such as ChatGPT, Photomath, Grammarly, and SmallTalk2me, can be great tools to add to the classroom to help students review, improve, and become critical of their work and assignments.

AI-infused curricula promote students' engagement in authentic situations, encouraging critical thinking, complex problem-solving, and analytical skills. By interacting with AI-driven tools, students learn to tackle complex challenges and develop innovative solutions. AI tools can automate routine tasks, granting students more time to improve their creativity. Collaborative projects that integrate AI technologies foster a culture of innovation among young people by encouraging teamwork and idea exchange.

To make a strategic and wise use of AI, we need to, first and foremost, teach students to master their prompt engineering skills. Gaining and improving these skills is crucial as it will expand the possibilities of what can AI do for us. As of now, we use tools such as ChatGPT as mere search

engines (like Google), but if we train people with the proper skills, AI can do much more. Teaching prompting engineering has a huge impact in many spheres, both in the short and long term, as it prepares students for higher education and the job market.

On a deeper and philosophical level, as prompt engineering involves crafting instructions for AI systems, understanding this process is essential for promoting ethical AI development. Educating students in prompt engineering helps instil a sense of responsibility and awareness about the ethical implications of AI. This knowledge is vital to ensure that future AI applications are developed with ethical considerations in mind. By teaching how to *'prompt'*, we empower a broader segment of the population to engage with and contribute to the development of AI. This inclusivity is essential for preventing the concentration of AI expertise in a select few and ensuring a more equitable distribution of AI knowledge.

Prompt engineering can also empower students' socio-emotional skills, as this process encourages a deeper understanding of both the capabilities and limitations of AI, fostering critical thinking skills that are valuable in various aspects of life. Students can explore innovative ways to utilize AI in problem-solving, creating new solutions and applications, which also ensures students' adaptability to evolving technologies. This creativity is vital for driving innovation and pushing the boundaries of what AI can achieve.

This is not a static, or one-time process, because AI is constantly evolving, which means this will be a process of constant evaluation and iteration. We need to periodically determine which AI concepts are appropriate and needed in the classroom, based on the age gap, subjects, and how they connect to the real world.

2. *AI to support and enhance the teaching profession*

AI can be a very good ally for teachers as it can assist them to be more efficient, but also more creative. On one hand, AI can pitch in with tedious tasks like grading, scheduling, etc. AI tools can be the dream assistant teachers don't usually have. There are tasks that technology in general can carry out, saving teachers a lot of time that they can spend on rethinking their classes and exploring new ideas to bring to their students.

This brings us to another aspect in which AI can be of help to teachers. AI can have a place in the teaching task as inspiration to create out-of-the-box ideas for activities, classes, assessments, etc. AI tools like ChatGPT can be a great place for teachers to reinvent themselves and their classes to make them more student-centred and to boost a more significant learning process. A perfect example can be to ask ChatGPT to craft quizzes online for students who aren't sure if they understood the lesson. It can make multiple tests and the teachers can choose the one they like the most.

When using these AI tools, it is very important to know how to use them to get the answers you need. And for that, we think it is of most importance to train teachers. As we mentioned in the opening remarks, AI infiltrated the classrooms, and teachers are faced with the challenge of having to work with AI whether they want to or not. Moving past the fact that AI is there and it is not possible to ignore it, we need to move forward and give the teachers the necessary tools to be able

to guide their students in the learning process contextualized in this AI-driven world. For that, we recommend a series of actions.

First, we think it is very important to offer training programs, mentorship programs, workshops, and lectures with specialists who can give their insights on the topics surrounding AI and Education, with specific topics such as prompt engineering. This will help teachers to be well-informed and up-to-date with the latest AI advancements, resources, and tools. Another recommendation is to create a platform and/or a newsletter that can sum up and share the latest news, resources and tools on the topic.

Giving the teachers the tools to empower their teaching toolkit to prepare students with future-resilient skills, is a key element for a successful introduction of AI in education. This would also be aligned with the aims of Qatar to develop a highly skilled workforce with 85% of teachers receiving professional development by 2030. To strengthen our argument that sustains the importance of training teachers so they can use AI in the preparation of their classes and classrooms, we want to show you an example: In the UK, they launched the "National Center for Computing Education" to provide and enhance the teachers' knowledge in AI and computer science.

3. AI is a tool for more inclusive and personalized learning journeys

Each student is different and has specific needs, interests, and challenges. Even one student's needs can change over time. This means that Education can not be *"one size fits all"*, and sometimes, when creating one average learning journey for everyone, we leave students out of the equation. This need to align education programmes to the students' needs, is something that was identified in the *Qatar National Development Strategy*. For that, the target is to *"strengthen institutional capacity to cater to diverse student needs"* (p. 135).

AI is an amazing tool that can, as mentioned earlier, assist teachers in creating more personalized learning journeys for their students, paying special attention to their needs. We recommend the utilization of AI-based programs as tutors that help students learn specific skills and knowledge, by addressing individual student needs, understanding their strengths and weaknesses, and assisting with diverse learning styles. There are multiple platforms such as DreamBox, Smart Sparrow, and more, that can be added to schools through the development of partnerships with these organizations.

Another strategy that can involve AI is the creation of e-libraries through e-books, with platforms such as EbookMaker, which can create and recommend books according to students' needs and preferences. On the other hand, another strategy is the integration of AI with gamification strategies. This combination results in a more personalized, adaptive, and engaging experience for students than gamification on its own. This fusion enables the creation of highly customized and responsive experiences that cater to individual students' preferences, behaviours, and learning styles, ultimately increasing their engagement and learning outcomes.

AI is not only a great opportunity to build personalized learning, but also a more inclusive one. It can play a key role in creating a more meaningful experience for students with disabilities, paying special attention to their needs while also sharing the classroom with their peers

and friends. The result would be an enhanced diversity of the learning environment and the fostering of a sense of community within the classroom.

4. *Partnerships and Collaboration with the Private Sector*

We all agree that the education system aims to prepare students for their professional and personal futures. This is why it is so important to bring AI into the scene to learn how to use it and to develop skills for an ever-changing world. At this point, we believe that to achieve this goal, we must include collaboration and partnerships with the private sector. On one hand, implementing this policy can help to rethink the curriculum so it is more industry-relevant. Partnerships with the private sector can help align academic programs with the evolving needs of industries. By collaborating with employers, higher education institutions can gain insights into the skills and knowledge required in the job market. This enables them to design more meaningful curricula, and better prepare students for the workforce. By creating a more situated, contextualized, and reality-based learning path, the higher the chances are that the students will be better prepared for what is ahead of them. Inviting real companies to be part of the education of their possible future employees is beneficial for the students because they will be better equipped and it is also beneficial for the industries because the graduates will have the skills they are looking for.

This collaboration can occur in the form of internships and projects, especially AI-based projects, which can encourage entrepreneurship and innovation. To give an example of this, in Germany, partnerships between industry leaders and universities were tied and showed great success, such as "AI innovation centres" where students would work on real-life projects. Creating these collaborations would support Qatar's goal of having 80% student engagement by 2030 and implement "initiatives to foster student exposure to work environments" (*Qatar National Development Strategy*, p. 136).

In addition, creating partnerships and collaborations with the private sector can increase the innovation and technology of higher education. Private companies often have access to cutting-edge technology and innovative practices. Collaborating with them can help universities incorporate new technologies, digital tools, and data-driven approaches into their educational programs, making them more engaging and relevant. These technologies have the power to improve teaching and are also beneficial for the students as a preparation for their future jobs.

Beyond what we just stated, we believe that enhancing the development of future-resistant skills in students and teaching future generations how to interact with advancing technologies, such as AI, in favour of positive impacts in our everyday lives, can have a positive impact on the long run. If education equips students with the necessary skills to adapt and take advantage of the rapidly advancing technologies, then they will be able to put that into practice in their future jobs,

On top of that, enhancing the development of an equipped generation will contribute to economic development which is a very important part of the aims of Qatar for 2030.

5. *Investing in AI for Socioeconomic Development*

We understand Artificial Intelligence as a disruptive technology with the potential for social and economic growth, by aligning itself with several elements of Qatar's 2030 vision. Uncertainties exist and there is no guarantee of success by 2030. However, this does not mean that we do not need to take a step forward and invest in AI.

Forward-thinking policies that prioritize AI can not only drive economic growth but also provide the nation's youth with the skills and opportunities they need to thrive in a rapidly evolving global landscape. AI drives innovation by providing a foundation for the development of cutting-edge technologies and solutions. By investing in AI research and development, Qatar can foster a vibrant innovation ecosystem that encourages youth entrepreneurship and empowers them to create, own and lead in the technology sector.

This strategic focus on AI can showcase Qatar's commitment to technological advancement. This not only attracts international talent but also establishes the nation as a competitive player in the global AI landscape, creating opportunities for collaboration and knowledge exchange.

▶ Safety and Privacy

As we already mentioned, AI will have a deep impact on various facets of our lives, one of them being Education, our learning journeys as students and the teaching profession for educators. As we navigate the transformative power of AI in educational settings, it becomes imperative to navigate the delicate balance between innovation and safeguarding individual privacy and safety. These aspects necessitate a thoughtful and proactive approach to privacy and safety regulation. As AI systems amass and analyze vast amounts of personal data to tailor educational experiences, the need for robust regulations becomes paramount. We believe the government and specialized institutions must develop a comprehensive regulation strategy that both protects individuals in educational contexts and fosters the responsible evolution of AI technologies, ensuring a harmonious integration that maximizes benefits while minimizing risks.

▶ Summary

This white paper serves as a call to action in the face of the inevitable integration of Artificial Intelligence (AI) into Education in Qatar. Recognising the profound changes that AI will bring, our stance is one of proactive engagement rather than passive acceptance or ignorance.

The *Qatar National Vision 2030* states that education should provide students with the learning experiences "to develop to their full potential, preparing them for success in a changing world with increasingly complex technical requirements" (p. 13). In an IA-driven world, it seems appropriate to integrate these new technologies into education to achieve this goal.

We recognise the profound impact that AI is having on the traditional education model. Teachers, once content providers, are now guides guiding students through an ever-evolving technological landscape. The challenge is to prepare educators to adequately fulfil this critical role.

As the education system transforms, we emphasize the importance of not avoiding the reality that AI is becoming an integral part of education. Rather than resisting, we advocate an informed, aware and critical approach. Teachers need to be equipped not only with technological knowledge but also with an understanding of the social and ethical implications of AI.

Looking to the future, we invite stakeholders to envision an educational landscape where AI becomes an invaluable ally. This vision includes enhanced curricula with AI, personalized learning, a supported teaching profession, partnerships with the private sector and strategic investment. We ask readers to consider how education systems can be driven to new levels of efficiency and effectiveness, embracing a future where AI becomes the cornerstone of dynamic learning experiences.

Finally, we highlight the role of collaboration and inclusivity in this transformative journey. By working together and listening to diverse voices, especially those of the younger generation, we believe that education can be fundamentally changed for the better. By embracing AI as an opportunity to empower students, empower teachers, enhance learning, and create positive change, we are paving the way for a future where education in Qatar is resilient, adaptive and future-proof in the face of technological evolution.

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