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VISION PAPER

RESPONSIBLE AI IN FLEMISH EDUCATION

A collaborative process from development to use

KENNISCENTRUM
DIGISPRONG

Kenniscentrum
Data & Maatschappij

COLOPHON

This vision paper was developed by the Kenniscentrum Digisprong and the Kenniscentrum Data & Maatschappij, in collaboration with an advisory board of actors in education.

In order to develop this vision text, all members of the advisory board were heard. In this way, the advisory board supports this position on responsible AI in education. In the process of the vision text, the greatest common denominator was sought in terms of vision on responsible AI. Of course, this also means that the vision text does not include the specific positions of each organisation represented and that each organisation that has participated in the advisory board can therefore in the future develop its own vision of responsible AI in Flemish education which deviates from this vision text.

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The digital version of this vision paper can be found on digisprong.be.

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1.

WHY THIS VISION PAPER?

Bringing education more into line with the needs of learners, providing feedback faster, automating administrative tasks to some extent: these are just a few of the things that artificial intelligence (AI) makes possible. But if AI is not developed and used responsibly, the technology can have a negative impact on the learning process, the privacy of users and the professional autonomy of teachers.

Therefore, in order to deploy and use AI responsibly in education, we need to find a balance between the opportunities afforded to us by the technology and the negative impact it can have.

This vision paper provides a stimulus for this but does not exist in isolation. It is digitalisation in education that makes responsible AI possible. That is why it is important that you look at the paper in the light of that broader digitalisation process and that you take into account the conditions that are needed to digitise education in a good way. The Flemish Education Council, in Dutch: de 'Vlaamse Onderwijsraad' (Vlor), among others, describes these conditions in its guidance 'Onderwijs aan het roer van digitalisering in onderwijs' (Education at the helm of digitalisation in education).

1.1 STRUCTURE AND OBJECTIVES

In this vision paper:

- we define what we understand by responsible AI in education
- we provide the basic requirements that responsible AI must meet and develop them into guidelines for education

Equally, these are 2 of the 4 objectives that we want to achieve with the paper.

The other 2 objectives which we want to achieve are:

- laying a foundation for responsible AI applications in education
- creating a common language

This paper is a framework that we will develop further in order to achieve responsible AI in Flemish education. Because it is a framework, we deliberately speak in general terms about 'education', 'developers', 'learners' and 'responsible AI' and do not go into further detail.

1.2 TARGET GROUP

The vision paper is written by and for education. But a large part of the paper is also important for developers of AI applications and other stakeholders. The vision paper invites them to read the paper and, together with education, to develop responsible AI applications for Flemish education.

1.3 ESTABLISHMENT

This vision paper was written by the Kenniscentrum Digisprong and the Kenniscentrum Data en Maatschappij, with input from an advisory board of delegates from education. It explains our vision for responsible AI in Flemish education. The paper builds on European and Flemish AI policy. We also received input from interviews with education and AI experts and from various stakeholders who participated in workshops on AI applications.

Based on interviews with the experts, we were able to draw up an overview of AI developments in education, as well as a list of ethical questions. Thanks to the participants in the workshops, we obtained a clear view of:

- all the parties involved in AI applications
- the positive and negative effects of AI applications
- the values that the participants consider important
- the basic requirements for developers and users – also including education – of AI applications

2.

WHAT IS RESPONSIBLE AI?

Responsible AI in education is only possible if all the parties involved take responsibility as humans at every stage of the life cycle of AI applications and for all kinds of AI applications in education.

2.1 WHAT IS AI?

We use the definition of AI formulated by Unicef and used by the Council of Europe. It emphasises that humans must be critical of AI and puts the fact that AI operates completely independently into perspective.

"AI refers to machine-based systems that can, given a set of human-defined objectives, make predictions, recommendations, or decisions that influence real or virtual environments. AI systems interact with us and act on our environment, either directly or indirectly. Often, they appear to operate autonomously, and can adapt their behaviour by learning about the context."

2.2 DIFFERENT KINDS OF AI APPLICATIONS IN EDUCATION

The definition above includes various kinds of AI applications that are available for education.

We distinguish AI applications that:

- **teach and support learners**
  For example, with tutor systems or by learning languages and providing feedback.

- **support education professionals such as teachers**
  For example, by helping to assess tests or suggest teaching aids.
- **support the educational organisation**
  For example, by supporting the planning of the organisation and helping to develop education at school.

Appendix 6.3 provides a classification of AI applications for education.

2.3 TAKING RESPONSIBILITY AS HUMANS

Responsible AI means that all parties involved must take responsibility for the different kinds of AI applications available for education.

Responsible AI is not about the technology that has a responsibility but about the responsibility that humans take for AI (Dignum, 2021). Those humans can be developers who take action to make an AI application safer or to better explain the decisions of an AI application.

They can also be school boards or school directors who buy an AI application that must meet specific safety standards or teachers who are well versed in AI. They can also be governments that support the development of responsible AI. In short: in order to be able to speak of responsible AI, humans must take responsibility, taking into account human values and ethical principles (see section 4.A.3.).

2.4 TAKING RESPONSIBILITY AT EVERY STAGE OF THE LIFE CYCLE

Responsible AI therefore means that different (groups of) humans take responsibility at the different stages of the life cycle of AI applications. Developers have a great responsibility to develop AI responsibly. Doing so requires collaboration between developers and education from the beginning of the development process. Collaboration between all those involved (teachers, learners, parents, etc.) is also necessary within the school to ensure responsible AI use.

3.

BASIC REQUIREMENTS FOR RESPONSIBLE AI

AI in education must fulfil 7 basic requirements. Developers, schools, authorities and other parties involved must adhere to these when developing, purchasing or using AI, for example.

1. The learning process of the learner is paramount

Responsible AI puts the learner at the centre from a pedagogical-didactical and social-emotional perspective. The professional autonomy of the teacher is thus ensured. This condition also recognises that **everyone involved in the learning process has an important role to play.** Teachers, learners, parents and others: all those involved bear their own responsibility and shape the learning process **in interaction with one another.**

2. AI is not an end in itself

It is a possible means of achieving educational goals and must have added value for education.

3. AI applications in education are trustworthy

AI only really has added value if we can trust the technology. Trustworthy AI meets 7 key requirements[1]:

- **Human autonomy and oversight**
  Encompasses fundamental rights, children's rights, human actions and human oversight.

1 See the 'Requirements of Trustworthy AI' in the document 'Ethics Guidelines for Trustworthy AI' (AI HLEG, 2019) for a detailed description of the requirements (pages 19 to 25).

- **Transparency**
  Encompasses traceability, explainability and communication.
- **Diversity, non-discrimination and fairness**
  Encompasses accessibility, universal design, avoidance of unfair bias and stakeholder participation. This way, anyone can use AI, regardless of their age, gender, abilities or characteristics. Here, particular attention is paid to learners with special educational needs.
- **Societal and environmental well-being**
  Encompasses sustainability, environmental friendliness, social and societal impact, and democracy.
- **Privacy and data governance**
  Encompasses respect for the privacy, quality and integrity of data and access to data. Developers and users make this concrete by complying with the General Data Protection Regulation (GDPR).
- **Technical robustness and safety**
  Encompasses resilience to attack, security, overall security, accuracy, reliability and reproducibility.
- **Accountability**
  This includes auditability, minimisation and reporting of negative impact, trade-offs and redress.

The 7 key requirements help educators and technology providers to properly assess the impact of AI applications, address the potential risks and reap the benefits of all AI applications used in education. In this way, they help steer the development, roll-out and use of trustworthy AI applications.

4. AI applications in education are based on shared values

An important task of education: to prioritise values such as the right to high-quality education for all, the professional autonomy of teachers and the privacy of users. The advent of AI and the growing reliance on commercial technology companies may put those values under pressure. By establishing a framework of values (see p. 12) for responsible AI, we create a common language that allows us to talk to developers about the impact of their technologies on education.

5. Responsible AI is a continuous process

Responsible AI means that education, developers and all other parties involved must apply moral values and ethical frameworks (p. 10 and 13). This is a continuous process and an integral component of policy that is used to develop, purchase, use and assess AI, among other things. It is important that education and developers work well together.

6. Education has a support network that is AI-ready and AI-resilient

AI can only be responsible if education can rely on its network in which knowledge and other resources are shared.

7. Professionalisation and responsible AI go hand in hand

Responsible AI requires digital literacy, for example from teachers who use AI in their lessons, from employees who use AI to assign rooms, from class councils that use AI to detect possible learning difficulties more quickly and from learners who scrutinise the answer to their question to a text-writing AI and understand why AI made a decision.

Continuous professionalisation (in the field of AI) must be self-evident in order to keep up with the rapid evolution of technology.

4.

GUIDELINES FOR RESPONSIBLE AI

As we said in the introduction: responsible AI in education is about finding a balance between the opportunities afforded to us by the technology and the negative impact that it can have. This is a task for education, developers, government and other relevant stakeholders. The 7 basic requirements are important in finding that balance.
In order to be able to purchase, use and build a policy around AI applications as education, we provide guidelines. They are a first draft of the basic requirements and will be further refined in consultation with everyone involved in this paper.

4.1 SEE RESPONSIBLE AI AS A PROCESS AND INCORPORATE IT INTO YOUR POLICY FOR EDUCATION AND IT

In this way, you give direction to the way in which education takes responsibility for AI, taking into account human values and ethical principles.

As a school and as an AI developer, you can go through 6 steps:

1. Define what you want to achieve.
2. Ask yourself whether you should achieve this with AI or if other means are better suited.
3. Apply moral values, ethical frameworks and regulations.
4. Work together with all parties involved.
5. Take shared responsibility.
6. Assess your AI applications regularly.

1. Define what you want to achieve

As a school, you need to determine why you want to use a digital application. You need assessment criteria to be able to decide whether a digital application is, for example, cost-effective or effective enough to improve learning outcomes. If you want to purchase an application, assessment criteria will help you be well prepared for the discussion with the developer.

This step also applies to the developer: make sure your application supports the educational objectives. First, in consultation with the teaching profession, determine which objectives you want to achieve and for what you want your application to cater.

2. Ask yourself whether you should achieve this with AI or if other means are better suited

These days, there are always new technologies in the spotlight. AI is one of them. As a result of this increased attention, there is a chance that you will choose an AI application instead of other, better alternatives. Weighing all these alternatives against each other will help you to justify your choice of application. As a school, you do this for the purchase of an application, as a developer for the development of a new application.

3. Apply moral values, ethical frameworks and regulations

Developers and schools often look at moral values, ethical frameworks such as the key conditions for trustworthy AI and legal requirements such as the GDPR only after they have developed or purchased the application. The great risk of this is that the AI application can no longer be adapted or has to be adapted at additional expense that was not taken into account.

It is therefore important that as a developer or a school, you are familiar with these moral values, ethical frameworks and legal requirements. As a developer, you must apply them when you are developing your AI applications. As a school, you must be sure that they have been applied correctly before you purchase an AI application. Because as a school, you always remain responsible, for example for the personal data you process.

We will explain a bit more about the moral values and ethical frameworks.

Moral values
Moral values are the basis of the underlying ideals which you find important and valuable as a person or group. Every school has its own values that help to determine how its education is shaped. You

have values on different levels, ranging from personal to universal. Universal values are values such as human rights and fundamental rights. There are also values which we consider important as a society, such as the quality of our education.

In education, there are shared philosophical and pedagogical values. And you also have the personal values of education professionals, learners and parents. Examples of shared values in education are the key requirements for trustworthy AI that we have already described, the values guide for digitalisation in education and the reference framework for quality in education of the Flemish inspectorate.

Ethical frameworks
Ethical frameworks such as the basic requirements for responsible AI, the 'ethics guidelines for trustworthy AI' and the 'ethical guidelines on the use of artificial intelligence (AI) and data in teaching and learning for educators' help form the ethical framework for AI. They tell us what we must do.

To move from that 'what' to 'how' we can do that, as a school, for example you can use the exploratory questions from the 'ethical guidelines on the use of artificial intelligence (AI) and data in teaching and learning for educators'. If you need to fully assess an AI application legally or ethically, you can use the 'assessment list for trustworthy Artificial Intelligence (ALTAI) for self-assessment', as well as the European AI Regulation.

4. Work together with all the parties involved

As a developer, it is important that you work with all the parties involved to develop your AI applications. As a school, you also need to work together with relevant stakeholders to purchase AI applications and establish your policy. You certainly need to listen to the teachers and learners because they are the parties most closely involved in the process. They can provide surprising input. By working with all the parties involved, you also increase trust in AI applications.

As a school, you can ask developers to collaborate with stakeholders such as teachers during the development process. You can also ask everyone if they think the application is a good idea and if they have any objections which need to be taken into account. Do not forget to involve the parents as well. They also need to understand what you do with an AI application at school and what impact it has on their child.

Because often it is not the AI application where things go wrong, but the way in which you integrate it into your processes. By taking this into account in advance, you avoid getting off to a false start.

To steer this cooperation with all parties involved in the right direction, you can use different methods such as the Guidance Ethics Approach, the pupil participation model, design thinking and design for values.

5. Take joint responsibility

Education, developers, government and other stakeholders: the responsibility for responsible AI lies with all of us. How those responsibilities are allocated depends on the expertise and capabilities of each party involved. In order to achieve responsible AI, these differences in expertise and capabilities must be taken into account.

Developers
Take, for example, the basic requirement 'the learning process of the learner is paramount'. To achieve this, you as a developer have the responsibility to achieve this technically together with education and to provide a clear explanation of how you arrived at the algorithms behind the decisions. Therefore, use the pedagogical-didactical knowledge of education to your advantage.

Government and education providers
The government can help education to develop a secure technical infrastructure. And the pedagogical guidance services can help schools to become even better at independently implementing a high-quality school policy.

Educational institution
Education itself also has major responsibilities. As an educational institution, you must read the technical documentation and privacy conditions, draw up service and processing agreements with the developers, take measures to ensure human oversight of AI applications and take into account that you will become dependent on the developer. You are also responsible for using the AI application in a didactically correct manner.

6. Assess your AI applications regularly

Because the world is constantly changing, AI applications will also be constantly developing. Therefore, plan assessment times in advance to assess, for example, the effect of the applications on learning and teaching. For example, before 1 September, or at the end of the school year, check the comments you have received about AI applications.

And plan a time to check whether the applications are still accurate enough and whether teachers are still using them as they should. For example, ask yourself the questions: Does the application still meet our criteria? Does it still do what it says it does?

4.2 LAY THE FOUNDATIONS FOR A NETWORK THAT IS AI-READY AND AI-RESILIENT

Responsible AI in education goes beyond the installation of an application. Many schools use the same or similar applications, assess them in the same way and seek the same solutions to problems. It would be a shame for every school to repeat that process. A network that gathers the lessons learned from all the schools can lower the threshold for a responsible approach to AI.

As a school, for example, you can collaborate with other schools and share good practice with them. The government can develop a range of tools and training courses to help education professionals get started with responsible AI. As a developer, you can already collaborate with education during the development phase of an AI application.

4.3 ENSURE THAT DIGITAL LITERACY IS UP TO STANDARD

Learners and education professionals such as teachers play an important role in the success of AI. Therefore, they need to have the right digital skills. The 'Ethical guidelines on the use of artificial intelligence (AI) and data in teaching and learning for educators' contains a list of possible indicators of the skills that education professionals need in order to use AI responsibly.

Continuous professionalisation (in the field of AI) must be a natural part of the training and job of the teaching staff in order to keep up with the rapid evolution of technology.

Learners also need to be adequately prepared to participate in a technology-rich society. This is not only a task for education, but also for the developers of AI applications. They must ensure that users can use their applications correctly and with sufficient insight.

5.

NEXT STEPS

This vision paper is a first step in the creation of a Flemish education policy on responsible AI in education. In order to truly speak of responsible AI, the guidelines in this paper must be further elaborated. That is why we will take further steps and develop concrete actions through a concrete policy on responsible AI in Flemish education. This policy will take into account the responsibilities of all parties involved in Flemish education. Therefore, we also want to continue the positive cooperation with the advisory board.

6.

APPENDICES

6.1 COMPOSITION OF THE ADVISORY BOARD

We submitted this vision paper with input from an advisory board. The following organisations participated:

- Kenniscentrum Digisprong
- Kenniscentrum Data en Maatschappij
- GO! Onderwijs van de Vlaamse Gemeenschap
- Katholiek Onderwijs Vlaanderen
- Provinciaal Onderwijs Vlaanderen
- Federatie van Onafhankelijke Pluralistische Emancipatorische Methodescholen/Overleg Kleine Onderwijsverstrekkers
- Gezinsbond
- De Vlaamse Scholierenkoepel
- Vlaamse ICT-coördinatorenliga (VICLI)
- Onderwijsvereniging van Steden en Gemeenten
- Secretariaat Vlaamse Onderwijsraad
- Christelijke Onderwijscentrale (COC)
- Christelijk Onderwijzersverbond (COV)
- Sociaal-Economische Raad voor Vlaanderen (SERV)
- Groep Educatieve en Wetenschappelijke Uitgevers (GEWU)
- An independent teacher

6.2 METHODOLOGY

From March to October 2023, we conducted 6 interviews with education and AI experts and we organised 'guidance ethics' workshops with several developers (Microsoft Reading Progress, MyT-Learning). We also used the results of 5 other guidance ethics workshops about a new AI functionality in Smartschool. The participants in those 5 workshops were AI developers, learners, parents and education professionals, including teachers, directors, ICT coordinators and other school employees.

6.3 EXAMPLES OF AI IN EDUCATION

W. Holmes and I. Tuomi provide a good and up-to-date classification of AI applications for education. They made a subdivision into applications which are not yet in use (*), have been researched (* *) and are already commercially available (* * *).

AIMED AT LEARNERS	
Intelligent tutor systems (ITS)	* * *
AI-assisted apps (e.g. maths, text to speech and language acquisition)	* * *
AI-assisted simulations (e.g. play-based learning, VR and AR)	* * *
AI that helps learners with special educational needs	* * *
Automatic text writing (AEW)	* * *
Chatbots	* * */* *
Automatic formative assessment (AFA)	* * */* *
Orchestration of learning networks	* * */* *
Dialogue-based tutor systems (DBTS)	* * *
Learning platforms for inquiry-based learning (ELE)	* *
AI-assisted lifelong learning assistant	*

AIMED AT TEACHERS	
Detection of plagiarism	* * *
Smart collection of learning resources	* * *
Classroom monitoring	* * *
Summative automated assessment	* * */* *
AI learning assistant (with assessment assistant)	* * */*
Classroom management	* *

AIMED AT EDUCATION	
Admissions (e.g. selection of learners)	* * *
Course planning, source planning and timetables	* * *
Safety at school	* * *
Identification of drop-outs and 'at risk' pupils	* * *
E-proctoring	* * *

Source: Holmes, W., & Tuomi, I. (2022). State of the art and practice in AI in education. *European Journal of Education*, 57, 542– 570. https://doi.org/10.1111/ejed.12533

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