What is the role of the school in implementing AI systems?

The education sector is increasingly exploring and implementing AI systems. For example, a system that provides automatic feedback on students' writing assignments to help them learn. The quality of the output from these systems is crucial and can have a major impact on students, teachers and the school. What can affect this quality? And as a school, how do you deal with the results?

In this brAInfood, we take a closer look at elements influencing AI systems in education, what effect they can have on the quality and use and what the role is of schools in this regard.

This brAInfood was developed in collaboration with the Digisprong knowledge centre and the imec-MICT-UGent research group. Want to know more about AI in education? In March 2023, we published a brAInfood on how AI can change the learning environment.

Knowledge Centre Data & Society (December 2024). What is the role of the school in implementing AI systems? Brussels: Knowledge Centre Data & Society.

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1. DATA AND DATA FLOWS IN EDUCATION

A school collects and stores a large amount and variety of **data to optimise the educational process**, such as:

- attendance records,
- exam results,
- student council reports,
- student tracking system reports.

In addition to these more obvious data points, schools often **store other types of data**, either consciously or unconsciously. Examples include:

- school incidents,
- attendance of parents at parent–teacher conferences,
- students' home addresses,
- information about their vaccinations,
- the amount of hot meals.

The **government also holds data centrally**, such as on the socio-economic background of the student population (OKI score) or the proportion of non-native newcomers.

A school usually collects this data for good reason, because it helps everything run smoothly. But there is usually **no good reason to keep this data (for a long time)**. Many problems that arise with AI systems are due to what data is and is not collected and kept. An important question a school should ask is whether it is necessary to use all this data in an AI system.

Therefore, before considering integrating an AI system, a school must first think about their **data housekeeping.** One way to do this is by making an **inventory** of both personal data (in the case of the GDPR obligation) and non-personal data collected, reflecting each time on whether it is really necessary to collect that data. This reflection is also called **data minimisation.**

> **"Is it really necessary to collect this data?"**

It is also important to consider the **data impurities** that make interpretation difficult for both humans and machines. Even within the education system, a lot of the data is 'messy'. For example, some schools have multiple institution numbers based on historical mergers. This potentially affects analyses based on a school's institution number.

Besides the diversity and 'messiness' of the data collected, it is also important to identify the journey that this data takes: the **data flows**. What data is shared with whom and where does it go? When is data finally deleted and how is that decision made? Some of these agreements are included in **legal frameworks** (e.g. GDPR), but the rest are simply about **habits**. For example, what information is shared when students change schools, and what information is or is not shared or stored on digital platforms (e.g. Smartschool or Google Classroom)?

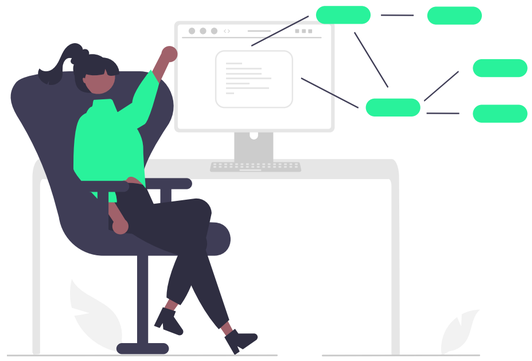
2. DATA PROCESSING WITH AI: A GOOD IDEA?

Schools need to consider whether the problem at hand would benefit from an AI solution. With the recent hype around AI, you might think that AI is the only answer, but often this is not the case. AI, like other technologies, has **its strengths and weaknesses**. It is important to stress that the more complex the problem and the more difficult it is for humans to formulate an answer, the less 'powerful' AI will be. In such cases, AI will often also make mistakes that are very difficult to detect.

If you choose to use an AI system anyway, it is important to **reflect on how that system came about** and what the **underlying goals** were of its development.

TIP

Discuss with the system's vendor what the underlying goals are and ensure these goals are compatible with the aims and context of the school and/or classroom. If a provider has designed its system primarily to enable students to work more independently, it may not work well with a diverse student body that requires a personalised approach from the teacher. There is a clear **risk of invisibly changing the school's identity** by implementing systems that do not have the same aims.



3. IS AI ALWAYS RIGHT?

Because AI systems rely on data, they are **highly dependent on the quantity and quality of data** used to train and improve them. Without sufficient data, an AI system cannot learn and function effectively. The less data, the more errors can creep into an AI system's output. The quality of that data is also very important. Poor or biased data can lead to an inaccurate or biased output. With data minimisation in mind, each school will need to perform a **balancing act**, looking at **what qualitative data the AI system needs to be efficient and well used**. If there is not enough qualitative data, then an AI system is probably not the best idea. It is also important to consider whether the training data is **representative** of the context or situation in which the AI system will be used.

In education, however, this is not always clear and a perfect fit is not always possible. This is because not all relevant learning activities leave a digital trail, nor is digital technology used in all teaching. As a result, the insights from an AI system are not always correct or meaningful. The **critical eye and human input of a teacher or education professional** remains crucial in assessing and using the output of AI systems.

> **"The critical eye of a teacher or education professional remains crucial to assess the output of the AI system."**

Finally, it is also important to check that the **output of an AI system is consistent**. Sometimes AI systems give different outputs, even though the inputs are similar. This may indicate that there is another unknown parameter playing a role in the output.

To assess all this, it is important that AI systems are **transparent and can be explained**. This means that it should be clear to a user how an AI system works and how it arrives at a particular output.

4. WHAT IS THE ROLE OF THE SCHOOL?

Many factors influence the output of an AI system. Often, AI system vendors are in control and ensure a certain output. However, **the school and the user** themselves also have an important role to play, such as by **minimising data and optimising data quality**. It is important to create **(more) awareness** among schools and teachers about this, as well as to have the **necessary skills to analyse and interpret the output** of AI systems.

As a school, it is also best to commit to a **shared vision on AI**, an **appropriate ICT strategy** and a supportive ICT policy. The efforts within the school community and the educational umbrella organisation, as well as the 'ICT-beleidsplanner' (policy planner on IT) and 'de visietekst Verantwoorde AI in het Vlaamse Onderwijs' (the vision text on Responsible AI in Flemish education) from the knowledge centre Digisprong, help schools develop a policy or vision around the use of AI systems. Developing a vision is essential, and it is best to think about this as a school **before implementing an AI system**.

TIP

A **vision on the use of AI in schools** ideally includes:

- when the use of an AI system can be justified for the school,
- what data will be collected,
- where this data will come from and what will be done with it (data flows),
- how AI systems will arrive at a particular output (based on which data, calculations and algorithms),
- what the school will do (and not do) with the output of these AI systems.

Do you have any questions or would you like more information on this topic? Please contact info@data-en-maatschappij.ai.

Would you prefer to ask your question directly to one of the authors of this brAInfood? Then you can contact Marco Houben from imec-SMIT, VUB, Katrien Alen from Digisprong and Marijn Martens from imec-MICT-UGent.

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