student

Predict student's academic performance based on previous knowledge

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Context of use: Education
Level of education: Bachelor

Technology Impact Cycle Tool

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Impact on society

What impact is expected from your technology?

What is exactly the problem? Is it really a problem? Are you sure?

The problem is that educational institutions face challenges in predicting and improving student performance. I find it indeed as a real problem with significant consequences.

Are you sure that this technology is solving the RIGHT problem?

Predictive analytics technology aims to solve the problem of identifying at-risk students and improving their academic outcomes

How is this technology going to solve the problem?

This technology uses data analysis and machine learning models to predict student performance. By analyzing historical data, it identifies students at risk and provides timely interventions.

What negative effects do you expect from this technology?

There might be a risk of overreliance on predictive models, potentially overlooking individual factors.

In what way is this technology contributing to a world you want to live in?

This technology contributes to a world where education is more accessible and supportive.

Now that you have thought hard about the impact of this technology on society (by filling out the questions above), what improvements would you like to make to the technology? List them below.

Improve the transparency of the predictive models to build trust among students and educators.Provide resources and support based on the predictions to actively help students succeed.

Hateful and criminal actors

What can bad actors do with your technology?

This category is not applicable for this technology.

Privacy

Are you considering the privacy & personal data of the users of your technology?

Does the technology register personal data? If yes, what personal data?

Yes, the technology may register personal data such as student grades, attendance records, family status.

Do you think the technology invades the privacy of the stakeholders? If yes, in what way?

It could invade privacy if not used responsible.Invasive aspects include tracking and analyzing students' personal and academic data without their informed consent.

Is the technology is compliant with prevailing privacy and data protection law? Can you indicate why?

The main privacy should be adhered to include informed consent, data minimalization, using data only for its intended purpose, data security.

Does the technology mitigate privacy and data protection risks/ concerns (privacy by design)? Please indicate how.

Invasion of privacy is not allowed without informed consent to data protection laws.

In which way can you imagine a future impact of the collection of personal data?

The collection of personal data can lead to a more effective educational experience for students. It can help identify at risk students and provide targeted interventions.

Now that you have thought hard about privacy and data protection, what improvements would you like to make? List them below.

create report for studetns and parents in order to explain how their data is used

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Human values

How does the technology affect your human values?

This category is only partial filled.

How is the identity of the (intended) users affected by the technology?

When used responsibly, predictive analytics can contibute to students well-being by reducing academic stress

How does the technology influence the users' autonomy?

The primary goal is to enhance academic outcomes

What is the effect of the technology on the health and/or well-being of users?

The primary goal is to enhance academic outcomes

Now that you have thought hard about the impact of your technology on human values, what improvements would you like to make to the technology? List them below.

This question has not been answered yet.

Stakeholders

Have you considered all stakeholders?

This category is only partial filled.

Who are the main users/targetgroups/stakeholders for this technology? Think about the intended context by answering these questions.

Name of the stakeholder
Antonio Simeonov

How is this stakeholder affected?
He is a second year student

Did you consult the stakeholder?
Yes

Are you going to take this stakeholder into account?
Yes

Did you consider all stakeholders, even the ones that might not be a user or target group, but still might be of interest?
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Now that you have thought hard about all stakeholders, what improvements would you like to make? List them below.
This question has not been answered yet.

Data

Is data in your technology properly used?

This category is only partial filled.

Are you familiar with the fundamental shortcomings and pitfalls of data and do you take this sufficiently into account in the technology?
There could be biases, inaccuracies which can lead to unfair predictions

How does the technology organize continuous improvement when it comes to the use of data?
Continuous improvement is essential.

How will the technology keep the insights that it identifies with data sustainable over time?
Retraining models, trying to make a flexible technology

In what way do you consider the fact that data is collected from the users?
Users are informed about data being collected.

Now that you have thought hard about the impact of data on this technology, what improvements would you like to make? List them below.
This question has not been answered yet.

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Inclusivity

Is your technology fair for everyone?

This category is only partial filled.

Will everyone have access to the technology?
Students and teachers of which records we have

Does this technology have a built-in bias?
I know that historical data, could lead to risk of bias

Does this technology make automatic decisions and how do you account for them?
Yes, but users know the limitations of the technology.

Is everyone benefitting from the technology or only a a small group? Do you see this as a problem? Why/why not?
A small group of students in schools for now. Hopefully, it could be reached by more people in the future.

Does the team that creates the technology represent the diversity of our society?
This question has not been answered yet.

Now that you have thought hard about the inclusivity of the technology, what improvements would you like to make? List them below.
bias mitigation, accessibility

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Transparency

Are you transparent about how your technology works?

This category is only partial filled.

Is it explained to the users/stakeholders how the technology works and how the business model works?

There are clear explanations of functionality and why those methods were chosen.

If the technology makes an (algorithmic) decision, is it explained to the users/stakeholders how the decision was reached?

Yes

Is it possible to file a complaint or ask questions/get answers about this technology?

Not for now.

Is the technology (company) clear about possible negative consequences or shortcomings of the technology?

This question has not been answered yet.

Now that you have thought hard about the transparency of this technology, what improvements would you like to make? List them below.

improve clarity of documentation

Sustainability

Is your technology environmentally sustainable?

This category is not applicable for this technology.

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Future

Did you consider future impact?

This category is only partial filled.

What could possibly happen with this technology in the future?
I hope that the technology will be used in the future, since students are always going to be stressed about their academic performance.

Sketch a or some future scenario (s) (20-50 years up front) regarding the technology with the help of storytelling. Start with at least one utopian scenario.
Hopefully, the technology will be used, students will reduce their stress rates, improve their grades. The application is going to be accessible by a lot more people.

Sketch a or some future scenario (s) (20-50 years up front) regarding the technology with the help of storytelling. Start with at least one dystopian scenario.
Students are aiming only for grades and not so much on performance.

Would you like to live in one of this scenario's? Why? Why not?
I would prefer to live in the first scenario, since I believe that technology can be used for good.

What happens if the technology (which you have thought of as ethically well-considered) is bought or taken over by another party?
The application is made in order to help students and teachers, so if it is used responsibly, there would be no problems.

Impact Improvement: Now that you have thought hard about the future impact of the technology, what improvements would you like to make? List them below.
This question has not been answered yet.