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Report of Knowledge Hackathon 29 January 2025

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Note
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Kennishackathon: Evidence-informed evaluatie van EdTech (3E)

Report of Knowledge

The Knowledge Hackathon: Evidence-informed Evaluation of EdTech (3E), organised by Npuls, has brought together EdTech companies, researchers, and educators to explore better ways to evaluate educational technologies. In the Netherlands, both educational institutions and EdTech providers face challenges in selecting and improving tools due to a lack of clear, evidence-based guidance. The Dutch 3E Framework aims to foster evidence-informed decision-making throughout the entire lifecycle of EdTech tools.

A key takeaway from the hackathon is the need for shared responsibility across the EdTech ecosystem. Developers should actively collaborate with educators to ensure their tools meet real educational needs, while institutions are encouraged to move beyond marketing promises and focus on usability, learning outcomes, and user feedback. Policy makers play an important role in shaping a culture that balances innovation with accountability.

Npuls, as a driving force behind this initiative, emphasizes that evaluation should not be a final checkpoint, but an ongoing process embedded in every stage of EdTech development and use. By fostering collaboration, continuous learning, and a shared commitment to quality, Npuls aims to support the sector in creating more reliable and effective educational technologies, ultimately contributing to better learning outcomes for all.

Knowledge hackathon: Evidence-informed Evaluation of EdTech (3E)

Npuls is building tertiary education in the Netherlands for the future. So learners can continuously enjoy the best education and they can learn without barriers. To contribute to this goal, we actively explore (new) forms of collaboration with EdTech companies and educational institutions.

Educational Technology, or EdTech, refers to digital tools, platforms, and programmes designed to enhance education. When discussing EdTech in the Netherlands, many challenges arise for EdTech companies and institutions regarding technology integration in education. Educational institutions often struggle to choose EdTech tools that align with their needs and goals. Meanwhile, EdTech companies encounter difficulties in evaluating the effectiveness of their

tools and determining whether to improve or scale up. The effectiveness of many EdTech tools remains unclear, and institutions often make investment decisions based on trust, good faith and hype rather than evidence-based insights. To address this issue, we propose the Dutch 3E Framework, which provides an evidence-informed approach to evaluating the effectiveness of EdTech tools. The primary aim of the Dutch 3E Framework is to foster a culture where evidence-informed decision-making is integral to all EdTech-related processes.

Npuls organised a knowledge hackathon on the 29th of January, to unite researchers and EdTech companies in discussing challenges and ideas about the framework. During this event, participants engaged in group discussions to define and apply evidence when measuring EdTech effectiveness and explored various stakeholder perspectives within the EdTech ecosystem. In this article, we will share the insights gained from the event.

Measuring the effectiveness of an EdTech tool: evidence and evaluation

When developing a framework for evidence-informed evaluation of EdTech tools, we first explored the question: what is 'evidence'? What are its limitations in measuring the effectiveness of EdTech tools? In this paragraph, we delve into the term 'evidence', the strength of evidence in evaluating EdTech tools, the various types of data to consider when measuring effectiveness, and the role of student and teacher feedback in the evidence collected from EdTech tools.

> "Before chasing data, ask yourself: who is this evidence for, and what outcomes are we really trying to measure?"
>
> **Participant of the Knowledge Hackathon**

What counts as evidence?

When measuring the effectiveness of an EdTech tool, it is essential to define the various types of evidence that could be utilised. Evidence relies on the research aim, the target group, and the research tool used. Different stakeholders, including researchers, university administrators, individual students, and teaching staff, may utilise distinct types of evidence to measure the effect. Key research methodologies to consider include: follow-up measurements, peer-reviewed publications, theoretical literature support, validated tests for implied outcomes (construct alignment), randomised controlled trials (RCTs). The outcomes used as evidence may encompass correlations with grades, student well-being, usefulness and usability, and positive perceptions, such as those indicated by the Technology Acceptance Model (TAM). Furthermore, adoption levels can be assessed using individual usage rates and Net Promoter Scores (NPS) [1,2].

Evaluating the strength of evidence

Ensuring valid and unbiased evidence requires specificity regarding various aspects of the evidence. This includes the context of the research, the demographics of the respondents, their experiences with the specific EdTech tool, and any other confounding variables. The strength of research depends on various factors, such as sample size, the recency of publication, the number of respondents, effect size, and research design.

Types of data for measuring effectiveness

When considering different types of data for measuring the effectiveness of an EdTech tool, both quantitative and qualitative data should be prioritised. The preferred approach depends on the tool's maturity, purpose, and implementation phase. The educational program's context and the cognitive goals of using the EdTech tool often lend themselves to quantitative measurement, while qualitative data can help assess teaching preferences, student happiness, and user experience with the tool.

Quantitative data can determine overall effectiveness, enabling comparisons across groups and measuring expected versus actual outcomes. Frameworks like the Technology Acceptance Model (TAM) and efficacy studies assist in evaluating these elements. A balance between quantitative and qualitative data should be preserved to reflect factors such as user satisfaction, ease of use, and overall benefits.

The role of feedback from students and teaching staff

Understanding the perception of impact among target groups is crucial for evaluating the effectiveness of an EdTech tool. Listening to the perspectives of students and teaching staff in tertiary education in the Netherlands offers valuable insights into its effectiveness. Feedback from students and teaching staff serves as supporting evidence and can influence interpretations of the tool's success. This feedback is especially vital when incorporating EdTech tools into education. Its importance grows with a larger pool of responses and when providing a business case for the tool. Initial feedback from students and teaching staff on the tool is particularly beneficial for shaping its features and enhancing its design.

While feedback from students and teaching staff is important, it should not be the sole determinant of an EdTech tool's effectiveness. Effectiveness should be measured as a combination of factors and must always consider the potential bias of including usability (convenience), effectiveness (learning outcomes), and user satisfaction (enjoyment) in the evidence. Learning experiences differ for each individual; therefore, multiple evaluation metrics should be used to gain a comprehensive understanding of an EdTech tool's success.

Stakeholders' perspectives on adopting evidence-informed evaluation practices for EdTech tools.
When adopting a framework for evidence-informed evaluation of EdTech tools, we discuss a transformation in the ecosystem of EdTech tool development, procurement, usage, and improvement. For widespread adoption of this framework, we must consider the entire life-cycle of EdTech tools, from the initial idea to implementation by educational professionals. A complete paradigm shift in the way we work is needed. In this paragraph, we will explore the perspectives of the key stakeholders influencing this ecosystem. The four stakeholders we will discuss are EdTech companies, educational institutions, policymakers/government, and Npuls. Each plays a different role, holds a unique position, and carries specific responsibilities in adopting an evidence-informed evaluation framework.

> "Collaboration and co-creation with all stakeholders is key to turning this framework into action."
>
> **Participant of the Knowledge Hackathon**

EdTech companies

For EdTech companies to advance the transformation of the ecosystem, they must embrace an open and reflective mindset. These companies are responsible for creating create human-centered tools that contribute positively to education.

To create an ecosystem that prioritises developing an effective evidence-based tool, EdTech companies should begin at the ideation stage. Collaborating with institutions to generate evidence not only helps demonstrate the credibility of their products, but also provides insights to further improve them.

EdTech companies could benefit from working in co-creation with students and teaching staff in tertiary education in the Netherlands to establish a two-way learning process. Companies can benefit from feedback from students and teaching staff, while students and teaching staff can benefit from utilizing the tool and having a say in their needs and desires during the development stages.

Educational institutions

Educational institutions in the Netherlands play a significant role in selecting and implementing EdTech tools that fulfill their educational purposes. However, they often encounter challenges in finding EdTech tools that align with their specific educational needs. To address these challenges, it is essential to understand the effectiveness of a tool and the contexts in which they work best.

An evaluation framework can help determine evidence about what is expected to work, for whom and under what conditions. Institutes and EdTech companies can follow the guidelines mentioned in the framework to collect evidence about the effectiveness of EdTech tools. This promotes a much-required cultural shift about where evidence drives technological integration in education.

However, this is easier said than done; adopting a framework still requires significant steps. It is expected that an evaluation framework will help raise awareness about the importance of integrating effectiveness research as a crucial factor in decision-making when selecting new tools. Additionally, the framework establishes a foundation for collaboration between educational institutions and EdTech companies, allowing them to contribute to fostering research on the effectiveness of EdTech tools, as well as collecting, analysing, and applying evidence to inform decisions regarding EdTech.

Policy and government

Policymakers and the government in the Netherlands and Europe also play an essential role in shaping EdTech adoption through national and international regulations and legislation that establish basic requirements for ensuring minimum quality standards in EdTech.

It is essential to keep a very close eye on public values, particularly regarding big tech, at all times. While developing regulatory frameworks is important, simplicity should be prioritised to avoid excessive complexity. Additionally, we must ensure that the framework and its conditions also remain feasible for small businesses and startups. The goal is not to create a framework that primarily benefits big tech, but to enhance the quality of EdTech tools.

Npuls

Npuls emphasizes the importance of establishing an evaluation framework to raise awareness about evidence-based decision-making, promote collaboration between institutions and companies, and enhance technology integration in tertiary education in the Netherlands. Acting as the initial driver for change, Npuls nurtures a flexible and innovation-driven ecosystem for educational technology development. A vital part of this role is facilitating the development and adoption of the Framework by providing resources and enabling the ecosystem necessary for its success.

A major challenge is funding and incentives for EdTech startups, which struggle to balance short-term financial needs with long-term scalability. Financial support is also crucial for research and stakeholder collaboration.

Funding for pilot research and finding testbeds to evaluate new solutions is critical yet costly for EdTech companies. Npuls can facilitate sustainable partnerships between educational institutions in the Netherlands and EdTech companies by stimulating co-creation projects between institutions and companies, and establishing formal testbeds for companies to test their tools.

Beyond funding, Npuls plays a key role in embedding innovation within Dutch educational institutions. One way to strengthen this role in the adoption of evidence-informed evaluation of EdTech is by creating an open-source repository that documents all pilot projects. This initiative ensures that valuable insights and experiences from various educational settings are accessible and can be leveraged for future advancements.

By fostering collaboration, providing resources, and promoting initiatives like 3E, Npuls enhances the EdTech ecosystem in tertiary education in the Netherlands. This encourages a cultural shift where institutions and companies collectively make evidence-informed decisions regarding educational technology.

Conclusion

Developing a framework for evidence-informed evaluation of EdTech presents valuable opportunities to enhance education and drive innovation in tertiary education in the Netherlands. However, achieving this requires strong collaboration between EdTech companies, educational institutions, policy makers, government, and Npuls. This collaboration not only fosters trust and transparency, but also paves the way for meaningful advancements.

By working closely together, we can create a culture in which EdTech tools are developed, selected and used based on evidence rather than assumptions. With Npuls as a driving force, we have a great opportunity to make significant progress in shaping a robust, evidence-informed EdTech ecosystem in tertiary education in the Netherlands that supports long-term innovation and impact.

Bronnen

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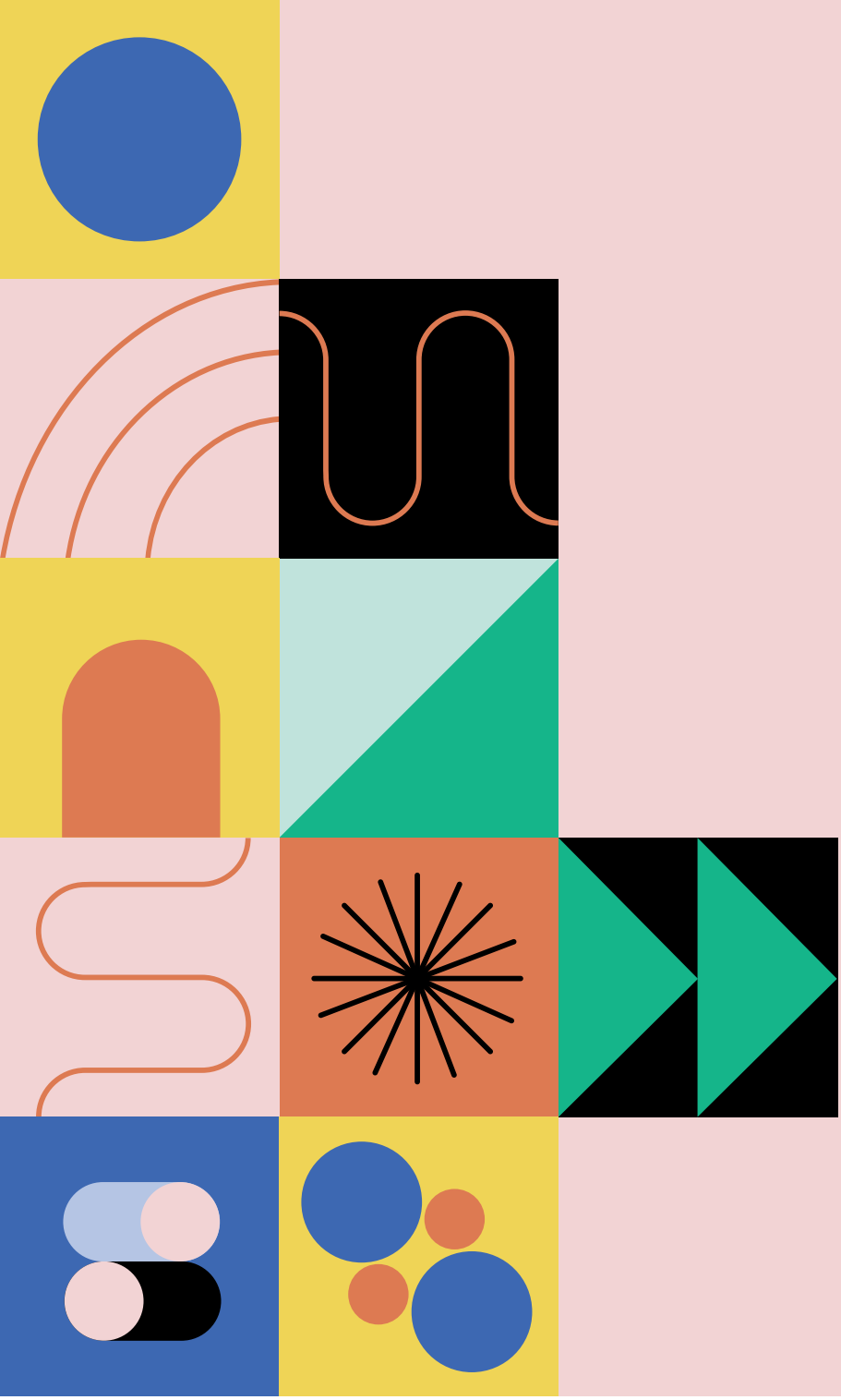

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