Education Futures in the Making: The Construction and Role of Expert Groups in Estonia's AI Leap

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Abstract
In February 2025, the Estonian government launched the educational innovation programme AI Leap (TI-Hüpe), a state–industry partnership aimed at introducing generative AI into upper-secondary education. Initially conceived to provide all teachers and students in grades 10 and 11 with access to OpenAI ChatGPT Edu, the programme was soon developed with a large-scale teacher training component. The initiative was explicitly framed as a continuation of the 1990s Tiger Leap, a national programme that equipped schools with computers and internet access and that has become central in the narrative of Estonia's transformation from a post-Soviet state into a digital forerunner. This study explores how the expert group behind the early stages of the AI Leap were formed and how their work contributed to legitimising particular visions of education futures. Theoretically, the paper draws on the concepts of education futures and sociotechnical vanguards to analyse how visions of what constitutes legitimate knowledge and expertise shape the conditions for educational transformation. Education futures are understood here as practices of anticipation through which actors seek to render the future governable in the present, while sociotechnical vanguards refer to collectives of experts that mobilise social and material resources to steer change in particular directions. The analysis is based on twelve semi-structured interviews with actors involved in AI Leap, including government officials, researchers, consultants, and school leaders, as well as contextual material from media and official documents.
The findings indicate that the formation of the expert group responsible for implementing the AI Leap was contingent and network-based rather than the result of formal institutional procedures. The group was dominated by representatives with a background in psychology and neuroscience rather than, as in previous educational reforms in Estonia, by entrepreneurs from the private sector. This configuration shaped what counted as legitimate expertise within the programme, privileging scientific and evidence-oriented approaches over other forms of knowledge. The analysis further shows how this sociotechnical vanguard was embedded within a broader network of policy actors, technologies and institutions through which particular postdigital education futures were stabilised and promoted. AI was framed as an already present and disruptive condition that could neither be ignored nor blindly trusted, positioning governance and pedagogical steering as necessary responses. While generative AI was widely used by students, pedagogical responses remain unsettled, giving rise to what the paper describes as proto-habits, where established practices and anticipated futures coexist.

Keywords
AI in education, expert groups, Estonia, education futures, sociotechnical vanguard

Introduction

In February 2025, the President of Estonia Alar Karis launched an educational innovation programme called AI Leap (in Estonian *TI-Hüpe*). At its inception, the initiative was presented as a state-industry partnership with the aim of introducing Generative AI into the Estonian upper secondary education, chiefly, grade 10 and 11. While initially the programme was to meant to provide all students and teachers with a customised version of ChatGPT for education (OpenAI, 2024), in the months that followed the launch of the initiative, the partnership was extended to include Gemini, Google's AI assistant. Alongside the provision of the access to ChatGPT and Gemini, the AI Leap created and later started the implementation of a non-compulsory online massive teacher training programme to support 10 and 11 grade teachers to incorporate Generative AI into their own practice and being able to support their students.
The name of the programme – AI Leap – makes an explicit reference to and builds on the legacy of Estonia's 1990s Tiger Leap programme, whose main aim was to equip all schools in the country with computers and internet

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access as well as ICT training for teachers and students (Velmet, 2020). This "second leap" is presented in official government communication as a continuation of Estonia's success story as a forerunner in educational innovation and technology (e-Estonia, 2025; TI-Hüpe, 2025). Previous research has highlighted the integration of AI and other digital technologies as an important part of nation branding and international competition (Bareis & Katzenbach, 2022; Forsman et al., 2023), and the role of expert communities acting as pioneers especially in promoting techno-optimist narratives (Hartong et al., 2024; Hepp, 2020; Hilgartner, 2015).
Drawing on interviews with stakeholders involved in the AI Leap (e.g. government officials, researchers, consultants, and school leaders), as well as official government information and media coverage, this paper explores how the expert group responsible for the early implementation of the AI Leap was constructed and embedded within a broader sociotechnical network of policy actors, industry partners and educational institutions. It examines how this network functions as a site in which visions of the future of education, namely, "education futures" are produced through particular assumptions about legitimate forms of knowledge, expertise and action. By examining how education futures are constructed in the present, the study also makes visible alternative pathways for education and thereby contributes to networked learning scholarship on the construction of hopeful futures (Dohn et al., 2026).

More specifically, the analysis is guided by the following questions:
1 How was the expert group responsible for the early implementation of the AI Leap formed?
2 What assumptions about legitimate knowledge and expertise are reflected in this process?
3 What consequences does this view of knowledge have for the broader sociotechnical network of Estonian education and the education futures that become possible within it?

Theoretical Framework and Key Concepts

Education futures refer to vision of what schools, education and learning might look like in future in the context of societal transformation (Macgilchrist et al., 2024; Facer & Sprague, 2024). While often couched in the language of technological innovation and heavily relying on scientific progress, education futures are also a product of our collective capacity rooted in imagination, which opens to possibilities for alternative visions of education (Delanty, 2024; Forsler et al., 2025). Rather than treating education futures as abstract visions, they can be understood as ongoing social practices of imagining and shaping change, brought into being through anticipatory practices. In this sense, education futures operate in the present, as they mobilise resources and may come to have real effects despite depicting situations that have not yet happened, or that might never materialise. Thus, the performative power of anticipatory work lies in how it shapes what becomes thinkable and actionable in the broader context of social reality (Jasanoff, 2015; Taylor, 2003).
While education futures are often shared and promoted on the discursive level through narratives and stories (Ross, 2022), they are also materialised and enacted through programmes, tools, and events that can be seen as *production sites of future work*. In this paper, we focus on one of such sites, namely, the aforementioned Estonian AI Leap programme. In analysing the programme, we focus specifically on a group of experts underpinning the early stages of its development, conceptualized here as a *sociotechnical vanguard*. This term was introduced by Hilgartner (2015: 34) to refer to smaller collectives that "formulate and act intentionally" towards certain futures. Such vanguards take on the task of mobilising social and material resources to steer the trajectory of change in certain directions rather than others, although, it is wort mentioning, they are indeed not the only actors operating within the collective imaginative space producing futures.
As recent scholarship within networked learning has argued, critical research should not only describe such dominant futures but also use these descriptions as a starting point for articulating and discussing alternative learning futures (Dohn et al., 2026). One way of opening up such alternative futures is to examine how sociotechnical vanguards are positioned and operate within broader networks of educational actors, starting with a short discussion of the network metaphor. As shown by Fawns and Ross (2021), a network denotes a stable and often standardised system. These characteristics are partly at odds with the idea of open connections but at the same time highlight how the possibility of such openness is conditioned by specific social, material and institutional arrangements. From this point of departure, it is not "clear that stability and similarity are always what we should aim for, in working for a more socially just and equitable future for learning" (Fawns & Ross, in Networked Learning Editorial Collective 2021: 351). This, in turn, point to the importance of attending to the local conditions under which actors can become meaningful participants in networks

Against this backdrop, sociotechnical vanguards can be understood as operating within, and being shaped by, these networked conditions rather than acting as autonomous drivers of change. Multiple and sometimes competing aspirations co-exist in the production of education futures, and the agency of the vanguard is formed through processes of alignment and negotiation within specific networks (Bardone & Opermann, 2025). By examining the formation of a sociotechnical vanguards (situated within a larger network), this study shows how education futures are made and promoted through such negotiations, rather than through the implementation of singular visions or technological solutions.

Methodology

The study is based on material from twelve semi-structured interviews with actors who in some ways have been involved in the shaping and development of the AI leap, including government officials, digital experts, researchers, and educational professionals. These actors are understood here as experts, defined by Bogner and Menz (2009, p. 72) as a person who "dispose of, or are believed to dispose of, particular competences, and who consequently have a social status, or exercise a function, which places them in a position where they may be able to gain general acceptance for their action orientations and situation definitions". The interviews can therefore be regarded as *expert interviews* (ibid.), focusing on actors whose positions and competences enable them to influence how education futures are envisioned and enacted.

The media coverage of the AI leap is used as a contextual material, to identify relevant actors and to inform the construction of an interview guide. This guide also developed over time as we sought to involve the participants in the analytical process by sharing preliminary interpretations from previous interviews and the development of the program as reported in the media. In practical terms, the interviews also aimed to reconstruct the process behind AI Leap, including the composition of working groups, organisational structures, and decision-making procedures. The resulting material therefore comprises both the experts' anticipatory visions and factual information about the institutional and procedural dimensions of the programme. All interviews were automatically transcribed and analysed with particular attention to the tensions and frictions between different visions of the future within the expert groups.

Given the specificity of the case and the relatively small number of individuals involved, complete anonymity cannot be fully guaranteed. Participants are, however, not mentioned by name and all interviews focus exclusively on their professional roles and activities. Informed consent was obtained from all participants, and data were handled in accordance with standard research ethics protocols. No information of a personal or sensitive nature is included in the analysis.

Preliminary findings

The preliminary analysis of the interview material focuses on the processes through which the AI Leap programme and its expert groups took shape, and on how these processes have contributed to the articulation of education futures. The material suggests that the formation of the expert groups was, to some extent, contingent and situational rather than the result of a pre-defined strategy. Individuals were brought together from different institutional backgrounds and professional domains, often through existing networks and policy routines rather than through a clear design or shared vision. This heterogeneity has shaped both the scope of the programme and the kinds of futures it makes imaginable.

The following sections addresses the three research questions stated above. The first concerns the formation of an expert group to carry out the AI leap program and how this process relates to earlier developmental programs in Estonia. The second section discusses what kinds of expertise that dominate in this group, and what assumptions about legitimate forms of knowledge that this reflects. The third and final theme discusses what consequences this orientation has for the broader sociotechnical network of education in Estonia and the education futures that become possible within it. Together, these themes highlight the diverging and sometimes conflicting imaginaries that underpin the making of education futures in the context of the AI Leap, and their implications for networked learning scholarship.

The Formation of a Sociotechnical Vanguard

One aspect that kept re-occurring across the interviews with the main actors involved is that the initiative was launched suddenly, and this motivated a rapid recruitment of a pool of experts that could oversee its implementation. This constant struggle with time is, historically speaking, in line with an image of Estonia as a

startup nation quickly adapting to the rapid social transformations, where both digital technology and education play a pivotal role (Velmet, 2020). In its recent history, the most telling example is the aforementioned Tiger Leap programme in the 1990s, which provided schools with computers and trained both teachers and students in digital competence (Runnel et al, 2009). Such investments in digital competence created favourable conditions for the growth of technology companies and have played in to the image of Estonia as a tech-savvy "innovator society" (Forsman et. al, 2023; Hartong, 2024). The reference to the Tiger Leap is also acknowledged by the members of the vanguard, where some see it as an attempt to repeat the success behind this initiative by borrowing not just the name but also how it is organized as a foundation and, partially what actors that are involved:

> Of course, it comes directly out of the Tiger Leap because some people are the same, and the idea is the same, the Tiger Leap it was also a foundation… So, they copied many aspects of it and basically the logic is that "look how well that worked out - now it will also work out!".

The Tiger Leap project, as well as other digitalization initiatives, were possible because of the reform work carried out in Estonia after regaining independence from the Soviet Union in the 1990s, when they had to build new state registers and systems for collecting citizen data from scratch because nothing of this kind was in place (Forsler, 2025). This recent experience of state infrastructure building, combined with the small size of the country, have made Estonia a country in which reforms can be implemented rapidly and with relatively little bureaucratic resistance. However, as showed by Hartong (2024) in her mapping of how Estonian EdTech intermediaries are connected via policy and networking events, this also means that decision-making processes often rely on personal networks and proximity rather than on formal institutional procedures. Several interviewees described the composition of the group as a consequence of existing networks and collaborations rather than the result of a deliberate attempt to design a representative or disciplinary balance**.** One of the participants describes the composition of the group as a visible result of a process going on "behind the scenes", which is compared to mushrooms as the over ground component of an underground network:

> I think public policy is like mushrooms. There is a huge mycelium underneath and then at some point, you see a mushroom, and you think "Wow, this is a miracle of life! Where did this come from?" It appears as one person had this idea, and did it from beginning to end, but ultimately, it is just a lot of connections.

Another participant stressed the short time frames as a reason for not having a more transparent and organised process, stating:

> We don't have that much time to prepare it [the organization and of the AI leap] because it was announced that it must start in September, so this means that basically, we didn't have time to organize worldwide gatherings where everybody could have a chance to say something /…/ We needed to continue quick and fast, doing as much as possible.

As illustrated by the above quotes, the formation of the expert groups involved in the AI Leap was shaped by a certain amount of contingency and pragmatism, rather than by a clearly planned process. This shows that the formation of the group unfolded within the constraints of already established sociotechnical networks, rather than through an open-ended selection process. Once established, however, the expert group cohesively worked together in defining the direction of the AI Leap and, by extension, became a new and influential node within these networks, contributing to the shaping of national discussions about the future of education and technology. As a production site of future work, we may argue that the programme could be seen as a space where the aims and methods of the programme were defined in the process of negotiating positions and deadlines. Within this space, the authority of the actors involved rested on the ability to set the epistemic boundaries of the project, that is: which questions to ask, what kinds of expertise to draw on, and what counted as legitimated knowledge within the programme to decide the way forward.

Epistemic Boundaries of the AI Leap

Building on the above, the following section examines how these epistemic boundaries were enacted in practice through the selection and privileging of particular forms of expertise. As Bogner and Menz (2009) remind us, experts are those whose competences are recognised as shaping how others perceive and accept certain action

orientations. Today, this competence often draws on scientific domains, particularly educational psychology and neuroscience, which are increasingly positioned as legitimate forms of knowledge about learning (Williamson et al., 2025). The interviews show that this applies also to the working groups in the AI Leap, where the overall orientation of the future work was described by the people involved as based on a "scientific approach". A few of the members of the working group were entrepreneurs from the tech industry, but most of them where researchers from interdisciplinary fields revolving around educational psychology, communication and cognitive science. This orientation is also explained in terms of personal connections, since one of the key persons involved in the formation of the vanguard "also has a very scientific background" as one participant explained.

Based on the professional background of the people involved in the AI leap, what is referred to as a scientific approach to learning in this context can understood in terms of evidence-based methods and with focus on its cognitive aspects. This contrasts with the more situated and relational understandings of learning that prevail in more qualitative work done in educational research. This suggests that the authority of the AI leap vanguard in the broader sociotechnical network rests not only on professional or disciplinary competence but also on presenting their claims about the direction to take as more scientifically grounded and therefore more legitimate than others. The dominance of cognitive and brain-based framings of learning within the AI Leap working group marks a shift from the more entrepreneurial and techno-optimistic orientation that characterised earlier educational development projects such as the Tiger Leap. This difference was also recognised by the participants themselves, some of whom explicitly described their role as offering a counter-perspective to the digital optimism that has prevailed in Estonia since the 1990s. Although the AI Leap was also first presented as an educational innovation programme and included some entrepreneurs coming from the private sector, the dominance of people with a scientific background in the project is turning gradually shifted its focus, described as follows by one of the participants:

> It has been more of startup mentality going on in this AI leap, but I think it's getting better because there are so many like scientists involved already /.../ and you can't work in a startup if you are a scientist.

What is suggested here is that the epistemic boundaries of the AI leap in its current form could be considered a break with the start-up mentality and rapid pace that has characterized Estonia in the post-Soviet period. The interviews further suggest that the primary orientation of this "second leap" was not towards promoting technological breakthroughs but towards managing the uncertainties surrounding digital transformation in education via scientific approaches. This reorientation also implies renegotiation of terms such as "innovation" that otherwise has come to signal educational development and progress. As one of the participants with a background in cognitive science put it:

> As a society, we tend to think that we are innovative when we implement as much as technology as we can in our classrooms, but actually, this is not the case. We are innovative when we implement it in a wise way but in order to do it in a wise way, we need scientific approach, and this approach needs time.

Rather than articulating a clear vision of progress, AI Leap thus appears as an attempt by the sociotechnical vanguard to produce stability and legitimacy within a shifting technological landscape. Beyond protecting education from the unwanted effects of AI, several experts in the group also viewed the project as an opportunity to introduce "knowledge about learning as cognitive process" into education – a perspective that, in their view, had been needed long before AI entered the classroom. These included methods aimed at strengthening the intrinsic motivation and metacognitive abilities of students, rather than focusing on the measurement of factual knowledge, which is rendered obsolete by the development of generative AI.

Postdigital Education Futures

The analysis of AI Leap also reveals how the sociotechnical vanguard participates in the making of what can be described as *postdigital education futures*, visions of education that unfold in a world where digital technologies are already deeply embedded and no longer represent novelty (see e.g. Jandrić & Knox 2022). AI – especially in its current form dominated by generative algorithmic techniques and LLMs, differs from earlier emerging technologies in that it has not been deliberately implemented in classrooms, but, rather, constitutes an already present condition that education must learn to handle and govern. Within this landscape, the task of the vanguard is not to imagine entirely new technological possibilities but to define what counts as desirable and legitimate

forms of continuity in the face of ongoing change. Most important among these are cognitive abilities of students that are now being threatened by their ungoverned use of AI, which, as one participant explains, needs to be handled before it is too late.

> The crisis [caused by GenAI] wouldn't be so bad if it weren't for the fact that every year or month that we postpone action the students are developing new habits of learning and new habits of thinking and changing habits at a large scale is really difficult.

Such claims about AI as undermining learning are analytically significant, as they attribute agency to the technology itself within the broader sociotechnical network of education. Rather than being treated as a neutral tool, AI is positioned as an actor capable of reshaping pedagogical relations and practices, that is, a medium of instruction, but only when properly integrated. At the same time, AI is also framed as a force that will transform the labour market, productivity, and more in relation to education, which forms of knowledge and skills are considered important in the future. From this perspective, several participants, particularly those from the private sector, emphasised that schools must also keep pace with technological developments and learn to use AI in constructive ways.

This emphasis on adaptation and future-oriented skills is also reflected in the international media coverage of the AI Leap. In one of the first articles about the initiative, produced by the Estonian Business and Innovation Agency, the project is motivated with the notion that the "education system cannot ignore or ban new technologies" but instead should take a leading position in this development and sure that Estonia's "future workforce is AI-ready" (e-Estonia, 2025). The balancing between these two positions is described by one participant of the vanguard as the goal of the whole programme, namely to "tackle this situation in such a way that we don't dismiss the course on useful technology, but also tackle the harms that it can create and that is already creating at the same time".

In this sense, AI Leap embodies a distinct mode of *postdigital anticipation*. That is to say, it neither rejects nor celebrates digitalisation but normalises it as the taken-for-granted condition of education. Within the broader sociotechnical network of Estonian education, the work of the sociotechnical vanguard thus centres on finding the balance between techno-hype and resistance, but also between techno-opportunism and pedagogical certainty. This becomes evident in the way in which postdigital anticipations are articulated and negotiated across the different actors involved in the programme, a balancing act between adapting to emerging technologies to stay ahead of other nations, on the one hand, and striving to make this transformation governable and pedagogically meaningful, on the other.

Concluding Discussion

The role of the sociotechnical vanguard in the roll out of the AI Leap program highlights the contingent, negotiated, and epistemically grounded nature of education futures. Rather than emerging from a coherent vision or a unified agenda, this vanguard operates through ongoing attempts to stabilise uncertainty and provide legitimisation for particular orientations toward the future as a way of governing educational change. Through appeals to scientific knowledge and evidence-based methods, the experts participating in AI Leap construct forms of epistemic authority that allow them to define what counts as responsible or trustworthy educational change. Drawing on Taylor's definition of social imaginary, we argue that this reveals how certain futures are prefigured through claims that possess epistemic authority – and thus legitimacy – because they already align with the dominant assumptions and shared understandings within the broader sociotechnical network about what counts as valid knowledge and therefore appropriate action. From this perspective, the capacity of the sociotechnical vanguard to exert influence does not depend on introducing radically new ideas but aligning future-oriented claims with these established epistemic orientations.

At the same time, it is worth noting that the attempts to stabilise uncertainty unfold in a postdigital educational landscape in which generative AI is already widely present, while pedagogical responses to this condition are still under negotiation and development. For networked learning scholarship, this points to the importance of examining education futures, when they are still in the making, rather than assuming that new technologies will translate smoothly into established learning and teaching practices. Despite the widespread adoption of generative AI in upper secondary education where already in 2024 close to 90% of Estonian students reported using tools such as ChatGPT (Granström & Oppi, 2025), its integration has not yet crystallised into stable learning habits. Instead, the empirical material suggests the emergence of what might be described as *proto- habits*, in which

stable forms of learning and anticipated futures coexist, producing frictions and dilemmas, particularly around assessment, responsibility and educational purpose.

Within this context, attempts to reassert control through cognitively oriented neo-positivist approaches, such as pre- and post-test designs aimed at isolating measurable learning gains, may come to obscure the stabilisation of the aforementioned proto-habits. Generative AI simultaneously disrupts established habits, while new forms of learning, participation and distribution of agency across different actors are still taking shape. From a networked learning perspective, this highlights the need for more future-oriented and relational approaches that look at learning as an emergent, networked practice, rather than as an outcome that can be fully stabilised and measured in advance. Such an orientation foregrounds questions of who is able to participate meaningfully in these emerging practices, not only as users of technology, but also as future makers. That involves paying closer attention to how the sense of agency is distributed and then re-distributed across learners, teachers and technologies in the emergence of proto-habits, and how existing inequalities may be reinforced or reconfigured as education futures are negotiated within sociotechnical networks.

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