

Implement at Scale

An Agenda for Education Innovation
Implementation Research

HIC HundrED
Implementation
Centre

HundrED
Research
Report #030



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This is an interactive document.

hundrED

HundrED Implementation Centre is part of HundrED, a mission-driven organisation transforming K12 education through innovation.

Executive Summary

This paper introduces a research agenda on the implementation of education innovations in primary and secondary schools around the world. At HundrED we aim to elevate innovations across education systems, especially by focusing on the implementation of innovations at the school and district levels.

Drawing from Everett Rogers' Diffusion of Innovations theory, we define innovation in education as a new or modified practice and/or technology that supports any part of the education ecosystem and leads to meaningful improvements in a given context. Innovations in education change what and where students learn, who and how teachers teach, and the tools, processes and assessments that educators use in the classroom everyday. These innovations can come from anywhere and can be adapted to suit different contexts, leading to more inclusive and effective education systems that benefit everyone.

Our innovator community has shared with us that innovations often stall in the implementation phase. We define implementation - again drawing on Rogers - as putting an innovation into use as part of a decision-making process toward full adoption of the innovation by a teacher, organisation or system. We are especially interested in how innovations are implemented at scale and the role of implementation actors in this process. Implementation actors are not only responsible for executing or carrying out an education innovation, but for making decisions about how that execution is done. They include teachers, students, parents, school leaders, education and edtech companies, non-profit organisations, and research projects.

To address the need for a greater understanding of and focus on implementation, we launched the HundrED Implementation Centre for Education Innovation in February 2023. The new Centre will support the spread of education innovation through four pillars of: research, practitioner support, practical methodologies and systems leadership.

Under the research pillar of the Centre, HundrED will conduct empirical research that explores innovation implementation at scale in public and private K-12 education in low, middle, and high income countries. HundrED's research will focus on four topics:

1. Theorising the diffusion of innovation in education: We will explore how existing theories and fields can help us understand innovation implementation in practice.
2. Getting to implementation: We will look at how users move from awareness of an already proven innovation to a decision to put it into practice.
3. Implementation in practice: We will consider the practical methods for implementing innovation at scale and whether characteristics of success and failure be distilled and generalised.
4. Working toward education systems change through innovation: We will examine how innovation, when implemented across and within systems, plays a role in systems change.

We hope this report will invite discussion and debate as well as inspire new collaborators to join us. We invite you to share your reflections and comments with us at implementation@hundred.org.



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Foreword

As a foundation dedicated to advancing education and supporting children in reaching their full potential, we are delighted to introduce this paper on the implementation of innovation.

Providing quality and equitable learning is crucial for children to thrive. Insights from research in the learning sciences and recent technological advancements point to new opportunities that can transform education. Given the rapidly changing world we inhabit, it is imperative that we embrace innovation to enhance educational practices.

However, innovation by itself is not enough. Only when educational innovations are based on evidence and implemented effectively can they reach a large scale and fully realize their potential to transform children's learning. Therefore, we are delighted that HunderED has accepted the challenge of deepening the current understanding of the implementation of scaling processes of education innovations. This paper represents the first step on this journey. The recently launched Global Implementation Centre on Education Innovation draws upon HunderED's experience in identifying, amplifying, and facilitating the implementation of education innovations. This paper sheds light on the key pillars and objectives of the centre and its aims to transfer promising innovations to different contexts and to scale them alongside local actors.

Within these pages, you will find a suggested research agenda on the implementation of education innovations. The Jacobs Foundation is pleased to support this agenda and invites others to join HunderED in this important endeavour. Innovation cannot succeed in isolation. It is crucial for researchers, education leaders, policymakers, and the philanthropic sector to come together, share best practices, and find solutions to challenges we face.

We support the vision for this work because we firmly believe that only through investment in building the evidence base on innovation and implementation, we can empower educators and innovators to create impactful and scalable solutions that address the diverse needs of learners in a systemic way.

We would like to express our gratitude to the organizations and individuals who have already contributed to this work. For those who are new to this effort, we encourage you to delve into this position paper, engage in meaningful discussions, and join us on this transformative journey towards a more effective implementation of education innovation at scale.

Let us work together to provide children everywhere with access to quality learning opportunities that prepare them adequately for the challenges and opportunities that lie ahead.



HundrED's Work on Innovation

Introduction

This paper introduces a research agenda on the implementation of education innovations in primary and secondary schools worldwide. The paper discusses why innovation in education is needed, the challenges and possibilities of innovation implementation, and the varying actors involved. Specifically, the paper:

- Explores the need for innovation, the implementation process and considerations of scale
- Introduces the aims of the newly launched HundrED Implementation Centre on Education Innovation
- Shares a research agenda on the implementation of education innovations and
- Invites other actors to collaborate with us on this journey.

We hope this report will invite discussion and debate as well as inspire new collaborators to join us. We invite you to share your reflections and comments with us at implementation@hundred.org.

Innovation in education is a new or modified practice and/or technology that supports any part of the education ecosystem and leads to meaningful improvements in a given context.

HundrED's Work on Innovation

At HundrED, we envision a world where every child can flourish through access to quality education that equips them with the skills to thrive as global citizens. When HundrED first launched in 2015, we aimed to help innovators around the world by showcasing Finnish innovations in education, illuminating the aspects that have made Finland one of the world's best education systems. Since the launch of our first Global Collection in 2018, we have broadened our focus to identify and amplify innovation in education that is happening anywhere in the world.

To us, **an innovation in education** is a new or modified practice and/or technology that supports any part of the education ecosystem and leads to meaningful improvements in a given context.¹ Innovations in education change what and where students learn, who and how teachers teach, and the tools, processes and assessments that educators use in the classroom everyday.

Innovation is essential to meeting the shared challenges and opportunities faced by education systems globally, to work toward greater inclusivity and equity in education, and a critical ingredient for achieving the United

Nations Sustainable Development Goal 4 (SDG4) for education by 2030. As there is no single solution that will achieve our vision for a world where all kids are thriving, we embrace the power of many innovations that can improve education (hence our name HunderED).

At HunderED we aim to elevate innovations across our education systems, especially by focusing on the implementation of innovations at the school and district levels. Our free platform to connect schools and systems with innovators has more than 3,000 innovations from around the world. Through a robust research and selection process, we identify innovations and highlight solution practices that can answer some of the most critical challenges in education today. Every year, we select 100 inspiring education innovations around the world to be featured in our Global Collection and

conduct 4-6 Spotlight Collections of education innovations within a specific region or theme. Through events, communications, and community, our amplification of innovations gives greater visibility and credibility for innovators and their solutions among education stakeholders. We strive to create a positive place to share, ideate, collaborate, and connect with like-minded changemakers making an impact in education through our various communities focused on selected innovators, Country Leads, Ambassadors, and Youth Ambassadors.

What Do We Mean by Innovation?

Inspired by Everett M. Rogers' classic book *Diffusion of Innovations*, we define innovation in education as a new or modified practice and/or technology that supports any part of the education ecosystem and leads to meaningful improvements in a given context.²

Breaking down this definition, we highlight that innovations are new. They present something that is novel, going beyond re-envisioning education toward tangible changes in learning, teaching and education ecosystems. 'Meaningful improvements' means innovations must have evidence of improvement over and above what already exists for its intended users. Additionally, innovation is contextualised. A technology which is old-hat in one place may be a breath of fresh air in another. A pedagogical practice that works well in one school district might fail dismally somewhere else. Innovations are transferable to other contexts when adapted to meet the realities of a new setting.³

We recognise innovation as an improvement to any part of the education ecosystem, whether that means an innovation directly impacting teachers and students, or a supporting innovation that enhances the overall functioning of the ecosystem, such as the introduction of a new data collection system. That said, most often, the innovators that apply to be part of HunderED's Global Collections have created innovations that impact the instructional core. This is the three-sided relationship between students, teachers and content, or the core of what goes on in a classroom. In the instructional core model, there is an interplay between



← The Creative Confidence method created by Slam Out Loud, an Indian NGO, is changing how arts education and social emotional learning happens for over 10 million students in India and world-wide. In these pictures you can see the innovation being used in New Delhi, India and being experimented as a part of the Helsinki Education District curriculum in Finland. The innovation has been validated by HunderED.

teachers' knowledge, interpretation and response to the teaching materials; between the teaching materials and students' own knowledge, interpretation and response, and between teachers and students themselves, their dynamics and relationships.⁴ It is important that these three do not happen in isolation; it is in part the student's response to experiencing the teacher's relationship to, enthusiasm for, and expertise in the content, which awakens the students' own love for the subject.⁵ Innovations that impact these interactions have the greatest potential for transformation.

Teachers play a critical role in impacting student outcomes,⁶ and, as the CEOs of their classrooms, are central to the uptake of innovation. We also recognize that other actors influence student learning, including peer teachers, principals, families, and innovators who may bring new ideas into classrooms.⁷ In addition, education innovations can change the interactions between elements of the instructional core by changing or expanding who is taught, thus ensuring more equitable learning, as well as where they are taught. Changing the physical learning environment or the parameters for participation can impact the instructional core.⁸ In the visual below, we have added 'communities' and 'learning environments' to the instructional core model to reflect this (see figure 1 below).

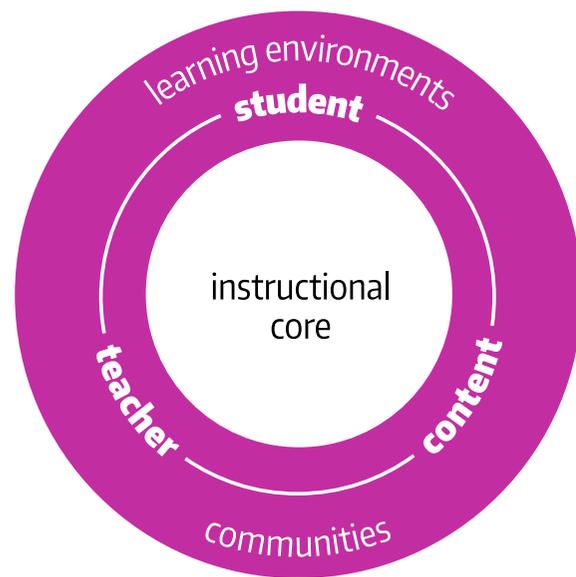
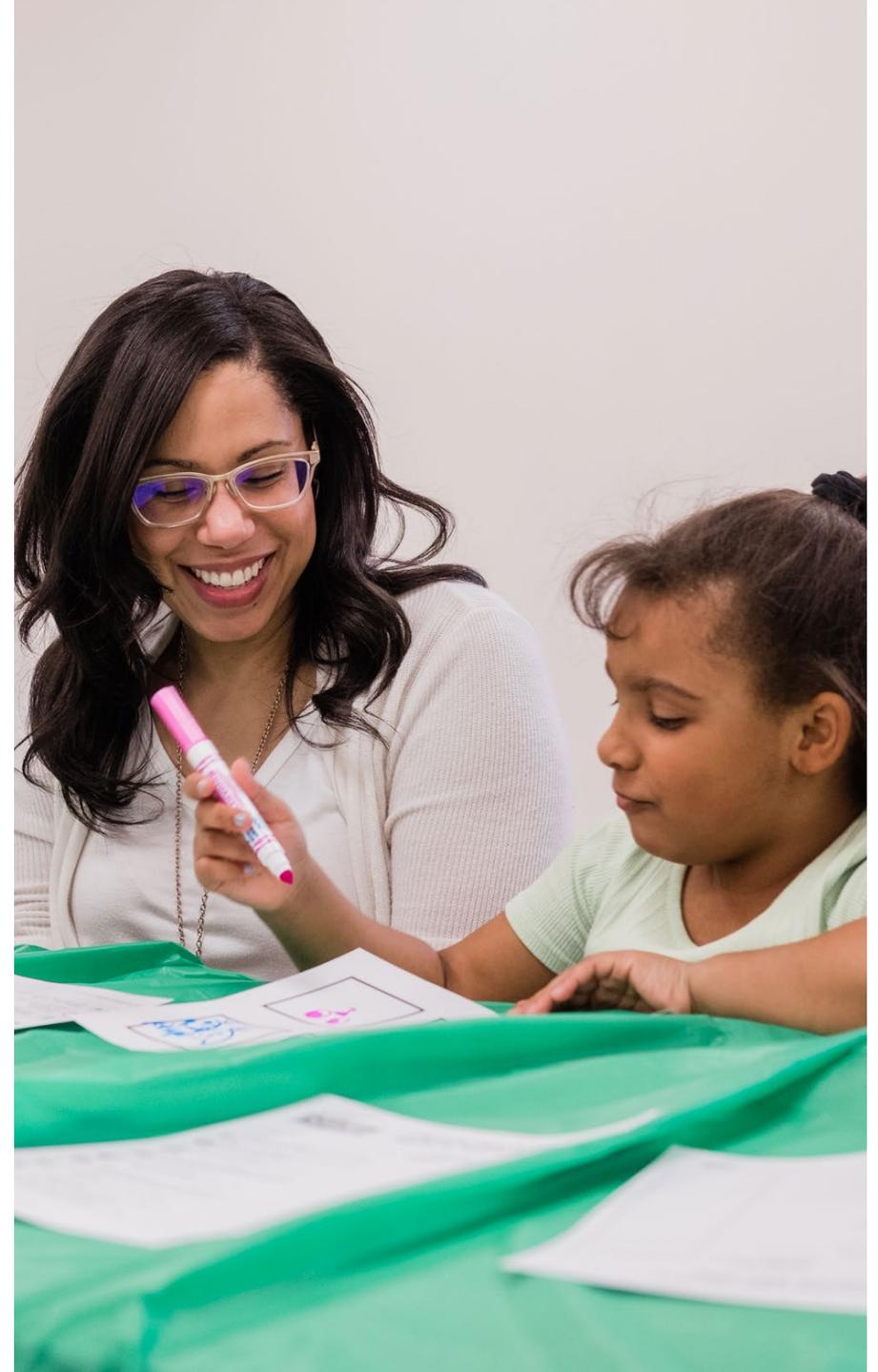


Figure 1: Most innovations in HundrED's collections impact the instructional core. (Adapted from Cohen and Ball, 1999)



↑ As part of the Parents as Allies project led by Kidsburgh, school districts in western Pennsylvania, U.S. are co-designing innovative solutions with families to enhance students' learning. Here, a parent and her child work together on an activity around digital citizenship during a community connections event. Parents as Allies is a HundrED Tailor Made project. (Photo credit: Ben Filio)

Why Do Innovations Come About?

Innovations are developed in all countries and contexts, and in some places, necessity may even drive innovation.⁹ At HundrED, we recognize that innovation can come from anywhere and, importantly, that innovation (in many cases) can be adapted to suit different contexts.

When we think about why education innovations are developed, we can turn to business literature for some insights. Peter Drucker, a renowned management theorist, identified seven sources of innovation in his book "Innovation and Entrepreneurship: Practice and Principles."¹⁰ These sources and their application to the education sector are discussed below:

1. The unexpected

Innovations can arise from unexpected events or changes in the market, technology, or society. An example of this in the education sector is the COVID-19 pandemic leading to the widespread adoption of online learning.

2. Incongruity

Innovations can emerge from the gap between what is expected and what actually happens. Incongruity in student outcomes can inspire innovative teaching methods that bridge the gap between traditional academic learning and the skills required for the 21st century, such as social and emotional learning (SEL), creativity, and problem-solving.

3. Process needs

Innovations can be born from the need to improve existing processes, increase efficiency, and reduce costs. Process needs can drive innovations in education technology, such as learning management systems or adaptive learning software that enhance efficiency.

4. Industry and market structures

Changes in industry structure or market demand can drive innovation. In education, this shows up as schools and universities compete to offer programs that align with changing job market demands.

5. Demographics

Changes in population demographics and social trends can influence innovation. For example, in the U.S., bilingual education programs in K-12 schools have been developed in response to an increase in English language learners. These programs provide instruction in both English and the student's native language, promoting cross-cultural understanding and cognitive and social benefits.

6. Changes in perception

Innovations can arise from changes in the way people perceive products, services, or events. Changes in perception have led to the development of personalised learning approaches that focus on tailoring instruction to the needs, interests, and strengths of individual students, shifting away from a one-size-fits-all model, where all students receive identical instruction and assignments.

7. New knowledge

Innovations can emerge from advances in science and technology or from the discovery of new knowledge or ideas. New knowledge can inspire innovations in education, such as the integration of emerging technologies like artificial intelligence into the classroom.

In each of these cases, the innovators will make some type of assessment of what is needed, desired, or aspired to in order to develop a solution that meets a particular need in the context. In our discussions with our partner community, we heard repeatedly how important it is to understand the challenge before designing the solution. In many cases, our HundrED innovators are former teachers who started designing their innovations in their own classrooms, or parents who saw a need that was unmet for their own and other children in their community. In these cases, the spark for innovation was rooted in their own experiences as an educator or student, the needs they saw and the inspiration they drew from those experiences.

Why Is Innovation Needed? A Case For Equity

By embracing innovation, we can create more inclusive and effective education systems that benefit everyone. Innovation can bring about more equitable learning outcomes by reaching students who have been historically marginalised, while introducing all students, regardless of their background or circumstances, to new ideas and approaches that can help them thrive in life and career. Moreover, sustained innovation in education can ensure that improvements keep up with the evolving needs of students and teachers alike. That is to say, we are never done innovating.

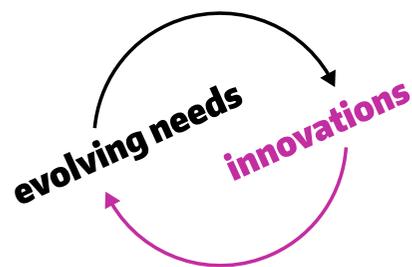


Figure 2: Innovation is always needed.

Innovation in education can contribute significantly to equity by providing more opportunities for traditionally underserved students. By developing new approaches, technologies and resources, education innovations can create more inclusive and accessible learning environments that address the diverse needs of learners. For example, innovations that provide learning outside of formal schooling structures can offer opportunities for children and young people affected by conflict who otherwise lack access to school. Additionally, innovations can address equity concerns by developing culturally and linguistically responsive curricula and pedagogies that acknowledge and value the diverse backgrounds and experiences of all students.

Many of the innovators in our community are working to reach those who are most disadvantaged by education systems. This includes learners from low-income backgrounds, students with disabilities, girls, and students in crisis- and conflict-affected settings. Moreover, HundrED's focus on equity is inspired by the Finnish education system, which works to ensure that all learners no matter their socioeconomic background or personal circumstances have access to a high quality education. This equity in Finnish education, relative to other education systems globally, is one of the reasons the system is seen as so successful.¹¹ As Nasima Razmyar, Helsinki's Deputy Mayor for Education, said at HundrED's 2022 Innovation Summit, "Finland is a success story when it comes to education [because] we realise that the only resource that we have is the human resource...To us, it has always been [about] equal opportunities. Everybody has the opportunity to flourish."¹²

Equity to HundrED also means facilitating knowledge and idea sharing from the Global South to the Global North, disrupting traditional patterns of knowledge exchange, and developing more and diverse solutions that work. An example is a project in Helsinki that we are currently supporting through our Tailor-Made work, where Finnish teachers are learning from their own implementation of Slam Out Loud, an innovation developed in Delhi for students in India. In this process, education leaders are also learning about how to lead transformation in schools.

While innovation can positively impact education systems and lead to

greater inclusivity and equity, it cannot solve all challenges. We do not see innovation as a panacea but rather a necessary and continuous component for bringing about education change.

Implementing Innovations

To understand the aims of the Implementation Centre and our research direction, it is first necessary to define what we mean by implementation and how it fits into the spread of education innovation. Our definition of implementation is based on Everett Roger's theory of innovation diffusion.¹³

We define implementation as putting an innovation into use as part of a decision-making process toward full adoption of the innovation by a teacher, organisation or system.

Taking this more precise definition of implementation allows us to develop our study of innovation in education in the following ways:

- It gives us an analytical frame and theoretical grounding for the study of implementation at scale;
- It narrows the scope of the phenomenon under study to the period of time between the introduction of an innovation and the innovation's eventual embedding or abandonment, what we call the 'messy middle';
- It makes a distinction between the innovations and the actors involved in the innovation diffusion process; and
- It places greater attention on the experiences of teachers and schools.

Implementation refers to putting an innovation into use as part of a decision-making process toward full adoption of the innovation by a teacher, organisation or system.



The decision-making process in which implementation is situated is what Rogers refers to as the Innovation Decision Process. This is a five-stage process by which one becomes aware of an innovation and ultimately decides to adopt it for sustained use. These stages of the process are:

— Knowledge

when one is “exposed to the innovation’s existence and gains some understanding of how it functions”.

— Persuasion

when one “forms a favorable or unfavorable attitude toward the innovation.” Unlike the typical definition of persuasion, this stage is not about others persuading an individual to use an innovation but rather about the individual forming their own opinion of an innovation, during which the individual seeks out information about the innovation to reduce uncertainty around its use.

— Decision

when one “engages in activities that lead to a choice to adopt or reject the innovation”;

— Implementation

when one “puts an innovation into use”; and

— Confirmation

when one “seeks reinforcement of an innovation-decision already made, but he or she may reverse this previous decision if exposed to conflicting messages about the innovation.”¹⁴



Implementation at Scale

When we talk about adopting an innovation ‘at scale’ or about ‘scaling innovation,’ we use the word scale to indicate an order of magnitude: it tells us how much and in which directions. At its simplest, scale has meant an increasing number of implementation sites.

At HundrED, we define the potential for scale in relation to an innovation that is actively expanding to other contexts or has a high degree of transferability for others to adopt its practice/technology.¹⁵ We are influenced by Michele-Lee Moore, Darcy Riddell, and Dana Vocisano’s three dimensions of scale:

- *scaling out*, which refers to reaching more people in more places;
- *scaling deep*, or changing peoples’ ways of thinking and talking and changing behaviour on a collective level; and
- *scaling up*, which entails changing laws and policies.¹⁶

As we think about scale, it is not only innovative approaches to education that can scale from one context to another, skills and processes for how to implement innovations can also be scaled, as well as a *culture of innovation*. When people and organisations embrace change, innovation, and risk-taking, new approaches can permeate an education system, leading to tangible benefits for learners. This cultural shift requires ongoing efforts to foster a growth mindset and a willingness to experiment and learn from failure. Ultimately, it is this culture of innovation that will enable us to create more effective and equitable education systems.

If scale indicates an order of magnitude, *how* such increasing orders of magnitude are accomplished, whether size or depth, is another matter. Scaling an innovation (or an implementation process or a culture) is an intentional and active process, requiring deliberate efforts by innovators and innovation implementers, including students, teachers, school leaders and higher level education decision-makers.

Yet, many innovations have difficulty scaling. As McClure and Gray argue¹⁷, the process of inventing and piloting a new idea is vastly different from institutionalising and scaling it, which helps explain the challenges of innovation at scale. The authors suggest that the very things that make an innovation successful in early stages (e.g., its simplicity and a small, dedicated group of people ensuring its implementation) will not work as the innovation scales to more sites. Complexity will need to be added in around innovation features, the people who are responsible for the innovation, and integration into the broader system. Whereas scaling to additional contexts will require removing complexity, as assumptions that worked in the original model may not hold in a new context.¹⁸ This necessitates a need to modify the innovation to where it may be highly or partly customised and calls to mind the Brookings Institution’s work on the need for flexibility and adaptability in scaling, both as it relates to the innovation as well as the process itself.¹⁹

Alongside Brookings’ emphasis on flexibility and adaptability, one of their oft cited recommendations is to incorporate scalability and sustainability considerations into the planning process from the outset.²⁰ For non-profit organisation VVOB, this means working with the system from the start, rather than conducting small-scale trials with eventual transfer of ownership to the government system.²¹ However, this can be hard to achieve in practice. Innovators may operate on the margins of the system, testing their ideas without prioritising scale or lacking the necessary contacts within government systems to do so. At HundrED, we have been discussing with our innovator community the ways in which they perceive and achieve scale, in addition to conversations on the optimal scale for an innovation and ways of reaching historically marginalised communities through scaling efforts.²²

We recognise that when scaling an innovation, the aim is not simply to spread the innovation, but to scale the *impact* of the innovation. As John Gargani and Robert McLean have suggested in their approach to scaling science²³, scaling impact can be approached in many ways. The authors take an holistic view of optimal scale by considering scale in four directions: magnitude, variety, equity and sustainability. This way of approaching considerations of scale can be useful, however from our

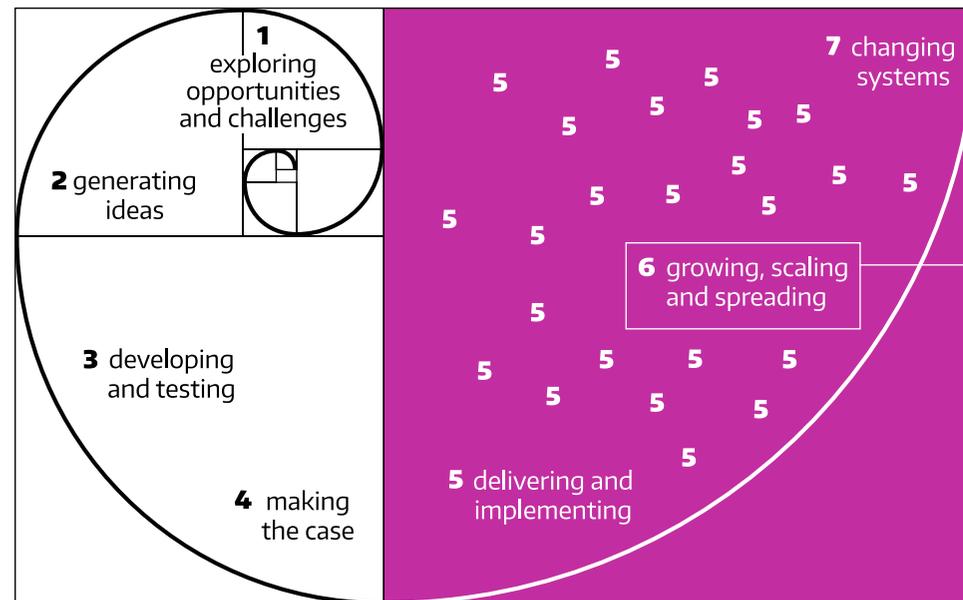
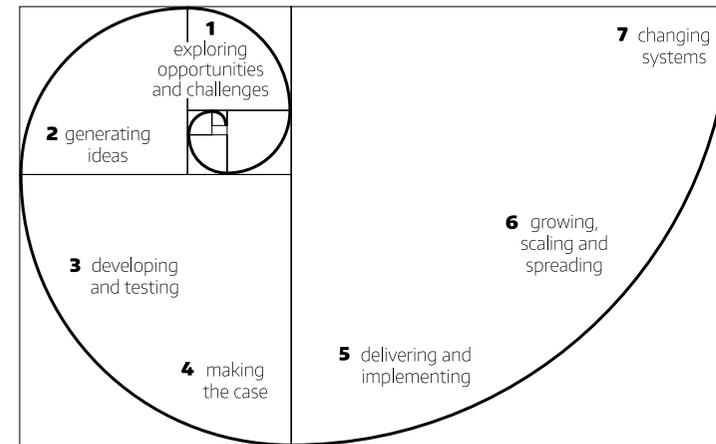
perspective, it misses the need for multiple, interacting and coordinating innovations. When we start talking about improving math teaching by changing the working conditions of teachers or by increasing teacher pay or modifying the curricula, we are not talking about changing the impact of the innovation through equity, sustainability or variety: we are talking about new innovations.

This is because at the heart of an innovation is a theory of change, a philosophy of education, and an understanding of human behaviour. When these fundamental principles shift, it signifies a different innovation. For instance, changing the working conditions of teachers requires more innovation. No single innovation can resolve all challenges in education. In practice, there could be many different - maybe hundreds of different - innovations needed to change an education ecosystem. This is what makes transforming education at the system level so complex and why we at HundrED highlight so many innovations. There are many specific challenges that need to be addressed. Additionally, the wonderful things teachers are already doing can be augmented with new innovations, and not everything is universally applicable or relevant.

We find Murray, Caulier-Grice and Mulgan's²⁴ social innovation spiral as useful for thinking about the lifecycle of an education innovation, as innovators move through the process of going from ideas to innovations, and sharing their innovation with others. At the same time, when innovations are brought to a school or a district from the outside, as a product, programme, or intervention, the educators and the community are also on their own unique path or journey, which intersects with the innovation's own growth spiral at a particular point. We find this focus on the intersection between the innovation and the implementation site to be the crux of the question of implementation at scale. To us, "growing, scaling and spreading" as depicted in step 6 is really just step 5 over and over again in lots of different sites. This is reflected in the figure below. In our Tailor Made work, we have seen first hand how the ongoing dialogues,

concerns, aspirations and relationships that are at play at the school and district level come to bear on the implementation of innovations at scale.

Figure 3: Implementation at scale: Delivering and implementing over and over (Adapted from Murry, Caulier-Grice, and Mulgan, 2010).



growing, scaling and spreading happens through countless iterations of implementing the innovation to achieve changing systems

□ Typically Innovator-led ■ Typically Implementer-led

Who Are Implementers?

In the education innovation space, implementers are actors who are not only responsible for executing or carrying out an education innovation, but for making decisions about how that execution is done. Implementing an innovation implies agency on the part of the implementer, as they decide how, if, and to what extent, they will embed the innovation in their own or their organisation's practice. Implementers can include:

– Students and Parents

Students and their parents play a pivotal role in driving education innovation forward. Students try out and engage with new curricula or pedagogical approaches introduced in the classroom. Meanwhile, parents extend the learning process at home, providing support and engagement with these innovative practices.

– Teachers

Teachers play a critical role in implementing innovative practices within their classrooms. They are responsible for designing and delivering lessons that incorporate new technologies, pedagogical approaches, and instructional methods.

– School Leaders

School leaders oversee the implementation of innovative practices at the school level. They may provide resources and support to teachers, coordinate professional development opportunities, and think through how the innovative practices align with the school's overall goals and mission together with teachers.

– Education & EdTech Companies

EdTech companies work to develop innovative technologies that enhance students' educational experience. They work with schools and educators to create and implement solutions that improve student outcomes and support educational processes.

– Non-Profit Organisations

Non-profit organisations play a critical role in education innovation by providing resources, funding, and support to schools and educators. They may also advocate for policies that promote innovative practices in education.

– Research Projects

Research projects that produce innovations develop new approaches and evaluate their effectiveness. They create innovations with a focus on building the evidence-base for the innovations' use-cases and impact. Innovations emerging from academic research can be taken to market by commercial organisations, integrated into programmes run by nonprofits, or implemented and embedded directly into education systems.



Ultimately, successful implementation of innovative practices in education requires collaboration and coordination among a variety of stakeholders, including teachers, school leaders, edtech companies, and non-profit organisations.

In our collections, the majority of the innovations have been developed by NGOs. These NGOs have designed novel programmes to support children, especially children who are outside or at the margins of the formal education. In the case of NGO-led innovations, the organisation is often both innovator and implementer. They not only design the innovations or interventions, but also sustain the infrastructures to spread the innovation to more schools or communities, including providing training, materials and other resources needed for the innovation. The NGO's staff gathers funding and community buy-in for participation, runs the programmes, and ensures fidelity to the model. In this innovation to implementation model, the implementation is often framed as the end-goal; implementation at scale is the final proof of concept of the relevance and impact of the innovation.

Many other innovations in our collection have been developed in the commercial sector by educational companies and startups. For EdTech and other educational businesses, implementation plays an important role in the teacher-user or school leader's decision to continue to use the product or subscribe to the service. The end goal is to have recurring and returning customers for their innovation, to find product-market-fit, and to be able to show the actual learning impact their solution makes. Successful implementations at new schools are therefore key to building a sustainable business, and that process of implementation and making the decision to use an innovation is repeated by every new customer as the innovation diffuses. EdTech companies are also often involved in testbedding and co-creation of their innovations with schools during the design phase of the innovation lifecycle. These development processes can facilitate collaboration between innovators and implementers at a very practical level, especially as the innovation is being iterated in early or transitioning stages.

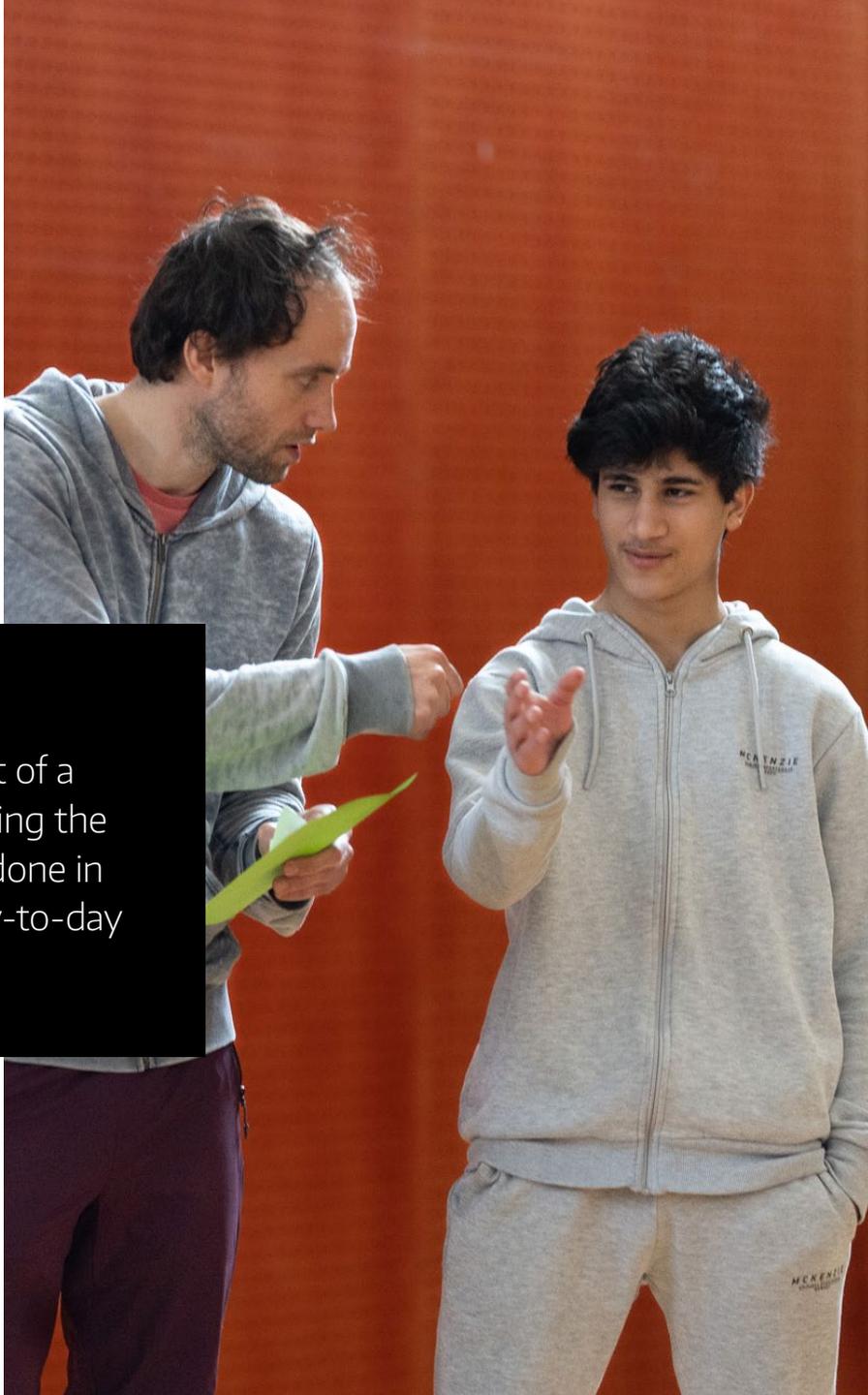
← The UK-based innovation iMoves has been validated by HundrED for their engaging and fun approach supporting movement during the school days. The innovation has been influencing over 50,000 students in 8 countries. In these photos you can see the innovation in action in Helsinki Education District and in Sheffield in the UK.

When we think about transforming education through innovation at a global scale, we have been most interested to see not only the role of NGOs, but how students, teachers, school leaders and municipal or district level decision makers in the public system are approaching the implementation of innovations. We take this approach because the majority of K-12 educational provision globally is provided by public schools, or private schools following the national curricula. From this perspective, we understand that implementation is not just the work of one person or organisation as the sole implementer. Rather, various actors are involved in the implementation of an innovation, as mentioned above.

In the long run, however, schools are not 'implementing' education. Implementing an innovation is part of a process of changing the ways things are done in a school on a day-to-day basis. Eventually the implementation ends, as the new curriculum, platform or programme becomes part of regular ways of working for the teachers. Within this framework, we understand that in most cases, it is the teachers themselves who are implementers. Even so, just as many innovative teachers and school leaders do not think of themselves as 'innovators,' most teachers do not think of themselves as 'implementers'. 'Implementer' is not an identity; it describes the work and the role that they play in a particular moment of education transformation through innovation. As an analytical distinction, we therefore mark implementation as a particular phase in the process of the diffusion of innovations, which helps us to look at how innovations are taken into use and how that use becomes part of the routine.

When a community of practitioners develops something together and then puts it into practice, it's not possible to separate the innovators from the implementers. However, we make a conceptual distinction

Implementing an innovation is part of a process of changing the ways things are done in a school on a day-to-day basis.





between the innovators, as actors who comes up with the idea or model and who would be able to claim rights to the innovation, the innovation itself, which can be communicated and operationalised apart from the innovator, and the people who did not originate the innovation, but put it into practice in their own work. It's a framework for diffusion as a process where people on the ground have to make decisions about what they are going to do, inspired and encouraged by innovators and innovations.. Bringing decision-making front and centre in the conversation about implementation is here meant to illuminate one of the core tensions in current development implementation research: the perceived failure of many implementations. At the heart of our framework for studying implementation is the question of who makes the decisions in the day-to-day interactions of bringing an innovation into the classroom.

You can read more about our definition and approach to implementation in our second position paper *The Messy Middle: A Framework for Understanding the Implementation of Education Innovations*.

← Children in Greece color their emotions thermometers as they partake in Amal Alliance's Colors of Kindness classes. Colors of Kindness in an innovative EdTech program that focuses on enhancing social and emotional competencies and is a verified HundrED innovation. (Photo credit: Amal Alliance)

Our Solution: The HundrED Implementation Centre

To address the need for a greater understanding of and focus on implementation, we launched the HundrED Implementation Centre for Education Innovation in February 2023.²⁵ Our broad aim is to better understand implementation at scale and to support innovators and schools to develop cultures of innovation that contribute to positive education systems change. The Implementation Centre will provide a comprehensive set of tools, including research, community building, and direct stakeholder support.

The Four Pillars of Our Work

The new HundrED Implementation Centre will support education innovation implementation at scale through the following pillars:

1.

RESEARCH

We aim to build a robust evidence base that develops both practical and theoretical understandings of education innovation implementation at scale.

2.

PRACTITIONER SUPPORT

The centre will coordinate co-learning between innovators and implementers to adapt and adopt innovation at scale.

3.

PRACTICAL METHODOLOGIES

We will lead practical “do-tank” initiatives designed to catalyse innovation implementation at scale.

4.

SYSTEMS LEADERSHIP

Working directly with education systems leaders, particularly those at the middle level of leadership, the centre will support the implementation of education policy that embraces innovation and prepares all students for the future, with a view toward those least served by education systems today.



Each of these pillars is related to the others. By structuring the Centre in this way, we aim to create a holistic approach for increasing implementation of education innovations at scale. Our theory of change is that if teachers, school leaders and other mid-level education decision makers are supported through the messy middle of innovation implementation, it is more likely that innovations which are a good fit for the context will be adopted and that innovations will spread, ultimately leading to more inclusive and effective education systems that benefit everyone.

← Students in Rwanda participate in a science experiment facilitated by teachers who have been trained under VVOB's Leading Teaching and Learning Together (LTLT) programme. VVOB is a member of HundrED's innovator community. (Photo credit: VVOB in Rwanda)

In this paper, we present an outline of the research agenda for our work in the Implementation Centre. By creating and exchanging knowledge through research, we can collectively enhance our understanding of how innovations can be successfully implemented at scale to benefit learners worldwide.

Who Is the Work of the Implementation Centre For?

HundrED's research agenda and the corresponding work of the HundrED Implementation Centre is for anyone interested in the role of innovation in bringing about education systems change. The research will be especially useful to these core interconnected actors:

— Education innovators

whether nonprofit organisations, for-profit companies, or classroom teachers, are the backbone of HundrED's work. Innovators work tirelessly to put their ideas in practice and sometimes this involves stepping back as another education actor takes up the innovation in a new context. We hope innovators will continue to share their journeys with us so that this series reflects their lived experiences and motivates other would-be innovators to take up the cause for education change.

— Teachers and School-level leaders

who are on the frontlines of implementing innovations, many of which may not have originated inside their classroom or school. We hope this research and the sharing of experiences from peers around the world will help teachers and school leaders to make decisions about how and when to adopt innovations and provide practical ways to actively engage in the process of contextualising an innovation to match the realities of their school setting.

— Education system leaders

particularly those at the municipal and sub-national levels as well as private sector education providers. It is within these systems that innovation will move from implementation to institutionalisation and the leaders of these systems have a role to play in prioritising innovation. The research aims to help system leaders better understand why innovation is crucial to education change, what makes an innovation scalable, and how to de-risk and incentivize innovation, among other questions. HundrED is purposely gearing this research agenda toward mid-level systems leaders, as our work naturally intersects with this layer and we find it is a powerful group that can incite change.

— Education funders and partner organisations

Including philanthropic foundations, UN agencies, bilateral and multilateral funding agencies, local and international organisations, who together resource support and amplify major themes around education. Education funders also play a crucial role as catalysts for the implementation of specific programmes and projects. We hope our research enables these broader ecosystem actors to better partner with education systems and innovators in the uptake of innovation, for example by exploring new and additional roles funders can play in funding innovation as a complement to domestic education budgets.

— Researchers and Academics

We are especially interested in this series helping to create stronger dialogue between researchers and innovators, and we believe that working together as partners in this work can lead to greater results.

While we have categorised our audience into five broad groups, the groups are not mutually exclusive. Teachers and researchers can be innovators alongside NGOs and companies, for example. And school-level leaders play a role in institutionalisation along with other systems-level leaders. In the figure below, we have shown the interconnection between these actors.

Ultimately, our aim is that the work of the Centre benefits learners around the world. By exploring the lifecycle of innovation and what it takes to institutionalise a new practice or technology into education systems, we hope more children and young people around the world develop the skills they need to flourish.



Figure 4: The interconnected actors the Implementation Centre is designed for.



A Research Agenda on Implementation at Scale

Under the Research Pillar of the Centre, HundrED will conduct empirical research that explores innovation implementation at scale. Our research will focus on the implementation of innovation in public and private K-12 education in low, middle and high income countries. Using Everett Rogers' Diffusion of Innovations theory as a starting point and drawing from our learnings over the years gained through working with our innovator community, we will pay particular attention to the people who make up an education system and their relationships with one another. That said, we intentionally take a multi-disciplinary, holistic approach that draws from other disciplines including systems thinking, implementation science, and behavioural economics to match the complexity and variability of how innovations are developed, adopted and scaled in different contexts. We will also include practical insights and examples from innovators to complement the theoretical approaches.

This research series will focus on four topics, which are further detailed below:

1. Theorising the diffusion of innovation in education

We will explore how existing theories and fields can help us understand innovation implementation in practice.

2. Getting to implementation

We will look at how users move from awareness of an already proven innovation to a decision to put it into practice.

3. Implementation in practice

We will consider the practical methods for implementing innovation at scale and whether characteristics of success and failure be distilled and generalised.

4. Working toward education systems change through innovation

We will examine how innovation, when implemented at scale, that is across and within systems, plays a role in systems change.



We are excited about the possibilities of what this research agenda can produce.

- First, the research can shed further light on innovation from an education perspective. Though innovation is well-studied in business literature²⁶, the insights and good practices do not always apply to the structures and goals of education systems.
- Second, within the existing literature on education innovation, there is often fragmentation by theme, for example, a focus on scaling or on innovation in humanitarian contexts. Building on the existing and important work done to date and our own Tailor Made work, we aim to look broadly across themes and disciplines to produce a more cohesive understanding of innovation implementation at scale.
- Finally, we hope this research will amplify the perspectives and experiences of the teachers, school leaders, innovators and other partners in HundrED's community, especially voices from the Global South which have historically been underrepresented in global development research.²⁷

← Rohingya children in Cox's Bazaar participate in Amal Alliance's flagship Colors of Kindness program. Amal Alliance is a member of HundrED's innovator community. (Photo credit: Amal Alliance / Friendship NGO)

1. Theorising the Diffusion of Innovation in Education

In this initial inquiry, we aim to employ various theories around innovation, implementation, and systems change in order to explain our observations of the diffusion of education innovations. HundrED has been using Rogers' theory of innovation diffusion since its inception and is eager to take this one step further by analysing the extent to which Rogers' theory (now more than 50 years old) explains what we see in complex environments around the world. We are particularly interested in investigating the explanatory power of Rogers' theory as it relates to social innovation, specifically to education innovation. While Rogers' theory has become popular for his much cited S-curve and description of early adopters and laggards, we see that the theory offers a much richer exploration of the elements of time, communication, and the relationship between innovation and organisational change than what is typically used from his theories.

At the same time, we also have an interest in understanding the limitations of Rogers' theory, and the intersections between innovation diffusion theory and other relevant conceptualisations of human behaviour. To this end, we aim to explore what other conceptual frameworks and fields can tell us about innovation implementation in the education sector.

SOME OF THE QUESTIONS WE ARE INTERESTED IN EXPLORING ARE:

1. How can innovation diffusion theory help us explain change and transformation in education?
2. What can we learn from other conceptual frameworks about innovation implementation at scale? For example:
 - Systems Thinking
 - Design Thinking
 - Implementation Science
 - Behavioural Economics
3. What can we learn from other fields about innovation diffusion? For example:
 - Health
 - Business
 - Agriculture
 - Technology
4. What can we learn about innovation implementation at scale through the lenses of gender and equity?

2. Getting to Implementation

There is much about this early stage of the spread of an innovation that can be explored from how education stakeholders become aware of innovations to who are the decision-makers that set the agenda for innovation implementation. We know from our innovator community that moving from knowledge to persuasion to decision-making can be a lengthy and nonlinear process. We hope that by researching the stage of the innovation decision process that leads to implementation, we may discover learnings that, for example, help shorten the time to get to implementation, thereby increasing the rate of innovation adoption.

As we think about the importance of context, we know that innovations developed in one setting may not always work in another. We have seen this with our Tailor-Made project in Helsinki in which ideas that originated from South Africa to promote early student literacy lacked relevance in the Finnish context and Finnish teachers were not persuaded to try the innovation. The innovation-decision process stalled at the second step: they were not convinced to try it out. As VVOB aptly noted in its work on moving innovations from pilot to scale, "...teachers and school leaders, like most people, are not particularly keen on executing and scaling other people's ideas."²⁸ We understand that this reluctance, while often attributed broadly to human nature, has more to do with

the situations and circumstances in which implementers find themselves at particular times. That is, a person who becomes an early adopter of one innovation may be a laggard when it comes to another innovation. Understanding more deeply what characteristics of innovations and social systems lead to innovation adoption is therefore one of the key drivers of HundrED's work in innovation implementation in education. We are curious about what can be done to ensure that teachers and school leaders go through the innovation-decision process, and, through this process, are able to adapt and tailor the innovation to fit the needs and aspirations of their own professional development, to their students, school and community.

Furthermore, in looking at factors that shape the innovation-decision process, we can look at innovation-friendly environments. In a past study, we found that systems that embraced innovation recognized the need for improvement, fostered open dialogue among all stakeholders, cultivated a culture of experimentation that tolerates risk-taking, and had flexible and sustainable funding for innovation.²⁹ Through this updated research, we aim to understand what, if anything, has changed in the last several years, including how the COVID-19 pandemic may have affected the composition of education innovation.

SOME OF THE RESEARCH QUESTIONS WE ARE CURIOUS ABOUT INCLUDE:

1. How do education stakeholders become aware of innovations?
2. What makes education stakeholders open to try innovations that originated in a context outside of their own?
3. How do the processes and actors involved in setting agendas for innovation implementation affect the outcomes of the implementation? For example:
 - the role of actors such as opinion leaders, change agents, policymakers, and innovators
 - the role of data and evidence as part of the decision-making process
 - the role of financial and human resources
 - the possibilities and limitations of unidirectional (bottom-up or top-down) approaches

3. Implementation in Practice

Once education stakeholders decide that an innovation might be a good fit and is worth seeing how it operates in practice as part of their own work to adopt an innovation, the process of implementation begins. However, we find that this middle part of the innovation lifecycle, in which an innovation is put into practice in a new organisation or in many schools in a system simultaneously, does not get enough attention. Implementation is a complex process involving multiple actors, and the outcome is not assured. As we and many others have seen in implementation processes around the globe, an implementation period can end with the relevant actors deciding not to institutionalise and sustain the innovation, for reasons such as fit, funding, or the complexity of the innovation itself, among many other reasons we are interested to explore.

During the implementation stage, the people who are putting the innovation into practice - that is primarily teachers, students and parents - modify the innovation, or the ways they use the innovation, to fit their particular circumstances. This is a process we refer to as adaptation.³⁰ When innovations are adapted, the concept of fidelity comes into play. Yet, it can sometimes be difficult to identify what are the core components of an innovation versus those that can be modified, as this can also change based on context.³¹

Fidelity and adaptation are important considerations when it comes to implementation at scale. For instance, when many schools in a system implement the same innovation, modifications made in one location can have far-reaching implications for the innovation's effectiveness system-wide. Additionally, as an innovation scales from one context or system to another, the notion of what works can actually change. We are interested in exploring these factors as well as others such as stakeholder engagement and coalition building, professional development, policy alignment, and resource allocation when considering the implementation of innovation across many sites.

Finally, at any point in the implementation process, there is a likelihood that an innovation can be discontinued³², due to reasons such as lack of perceived value or the departure of key supporters of the innovation. Understanding the reasons that implementations lead to non-adoption, and how an innovation-decision process that ends in 'no deal' can still lead to productive learning and an openness to innovation among those involved in the implementation, is part of what we at HundrED are interested to better understand through the work of our Implementation Centre.

**SOME OF THE QUESTIONS WE SEEK TO FURTHER
EXPLORE INCLUDE:**

1. How can innovation designers and implementers identify which elements of an innovation are core components to the success of the intervention and which elements may be modified or stripped away, particularly when implementing the innovation at scale?
2. What kinds of processes help teachers and other education stakeholders implement an innovation and can those processes be used across contexts and at scale? For example:
 - Networking
 - Co-creation and co-design
 - Participatory and collaborative approaches
3. Why does the diffusion of some innovations stall and what can be learned from the experience?
4. What can be learned from the different resourcing models of various innovations? For example:
 - the relationship between the funding and the teachers' and students' experience of the implementation
 - the relationship between funding models and the sustainability of the innovation
 - the relationship between the costs of the innovation and the outcomes and impact of the innovation
 - the key considerations and strategies for effective allocation and management of funding, time, infrastructure, and technology as it relates to implementation at scale
5. What are the thresholds and indicators that determine an innovation is fully implemented?
6. How does policy and system alignment impact the successful implementation of education innovation at scale? What strategies and challenges are involved in achieving effective alignment for widespread innovation adoption?

4. Working Toward Education Systems Change Through Innovation

For innovation to move the needle on transforming education, it must permeate within and across education systems. We know from working with our innovator community over the last 8 years that there is no shortage of innovations in education. Yet, when we look at the reach of innovations, we find many innovations, while scalable, are still operating in just a handful of localities. For venture-funded innovations, the inability to find new markets for their solutions means that they will not be able to sustain operations in the long run. For NGO-led innovations, the promise that their work will serve hundreds of thousands or even millions of the most underserved beneficiaries remains unmet, as they are unable to sustain operations in more remote or under-resourced areas.

In addition to the reach of an innovation, to sustain impact, the support structures surrounding both the innovation itself (e.g. the NGO or business that developed the innovation) and infrastructures surrounding the student (e.g. the school or community centre) must also be lasting. Too often innovations are implemented but discontinued a couple of years later when users become dissatisfied with an innovation, funding ceases, or key supporters of an innovation move on to new roles. Innovation must be institutionalised within systems, meaning that the innovation becomes a part of regular activities within a community or school and is no longer seen

as a “new thing.”³³ We see institutionalisation of innovations at a large scale (e.g. throughout whole education systems) as a path toward transforming education systems for the better. This is the point at which sustained funding mechanisms and policy structures become paramount to sustaining a thriving culture of innovation.

Transformation of systems is a complex process. K-12 education systems are by nature hyper complex, heavily interconnected with deeply rooted historic institutions and large distributed networks of power across multiple stakeholder groups. Systemic change at scale takes years and even decades to come to fruition. Moreover, it is critical for the actors who are networked together in an education system, particularly at the grassroots level, to have a vision of what transformation looks like in their own sphere of influence. A Brookings Institution report states, “It is impossible to transform, and utilise existing system strengthening tools for transformation, unless you know where you are headed.”³⁴ Moreover, this vision will look different for each community. As we heard from HundrED collaborators, the path to institutionalisation is not homogenous.

We hope our research can shed light on pathways that systems have taken and whether there are some lessons that can be shared across borders. We are eager to draw on systems theory and recent systems change literature for this work. In addition, we will also conduct research on the impact of innovations and ways to measure and communicate this impact.

**SOME OF THE QUESTIONS WE SEEK TO FURTHER
EXPLORE INCLUDE:**

1. What is the role of innovation in education systems transformation and what are the potential limitations?
2. How can a systems approach help us understand:
 - Networks of education innovation stakeholders
 - How the social, political and economic structures of an education system affect the diffusion of innovation
3. How can an experimental culture of innovation be developed, sustained, and scaled to other contexts?
4. In cases where innovations have been institutionalised, how was the impact of the innovation sustained? For example, what are the roles of:
 - Innovation design
 - Resourcing
 - Leadership
 - Goal and process alignment among actors
 - Individual and collective agency
5. How has the implementation of education innovations reached an impact on children and young people at scale, especially the most vulnerable, and how is this impact captured?

How We Will Answer These Questions

We have outlined an ambitious research agenda that explores all stages of the innovation-decision process, from awareness of an innovation through institutionalisation and with a view toward systems change. We hope to answer these questions above by drawing on what we know, including existing literature, examples from the HundrED innovators and HundrED's Tailor-Made work, as well as research and experiences from universities and partner organisations.

We will concentrate our research around four key stakeholders:

- First, we will draw on HundrED's robust community of more than 3,000 innovators around the world. By listening to, documenting, and analysing innovators' stories, we can better understand implementation progress. We will survey and interview our community as well as conduct action research alongside a select group of innovators to understand in real-time the challenges and opportunities they encounter in the spread of an innovation. We also seek to learn from innovators by conducting case studies of innovators to further understand the implementation process.
- Second, we will turn to our Tailor-Made partners, including middle-level systems leaders. HundrEd's ongoing Tailor-Made work has an explicit focus on implementation of innovations at the school and district level. Currently, the Tailor-Made program operates in Finland and the U.S. and HundrED seeks to expand it to other regions and contexts. By interviewing and conducting research alongside systems leaders at the middle-level of leadership, we can gain specific insights into the decision-making process these leaders undertake.
- Third, we will work with organisations who have been implementing innovations at scale and researching implementation at scale. We are interested in learning about how implementation looks different for different models of innovation and types of innovation organisation models, including for and non-profit organisations. This collaboration could include surveys, interviews, and case studies of organisations to understand what implementation at scale looks like for them.
- Finally, we will explore existing research, especially as it relates to systems thinking and implementation science. We are excited by new work from Noragg and others on systems thinking, as well as the body of work on implementation science and look to explore this literature in greater detail. We also aim to partner with universities in Finland and beyond, especially universities in the Global South, to undertake joint research.

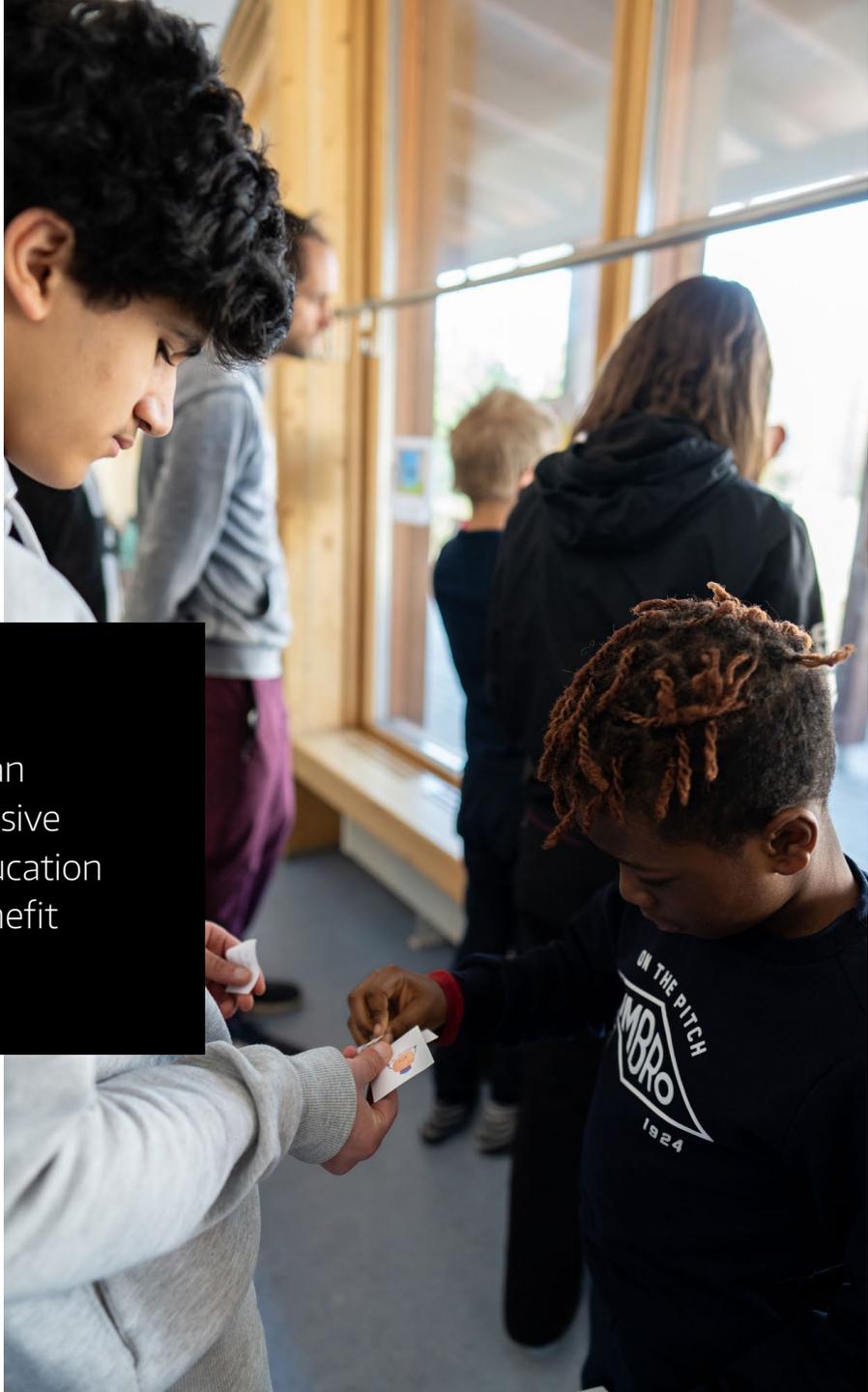
Conclusion

In this paper, we have outlined a research agenda on the implementation of education innovations at scale that will carry out in connection with our newly launched HundrED Implementation Centre for Education Innovation. Innovations in education change what and where students learn, who and how teachers teach, and the tools, processes and assessments that educators use in the classroom everyday. Innovation can come from anywhere and in most cases can be adapted to suit different contexts. By embracing innovation, we can create more inclusive and effective education systems that benefit everyone.

HundrED's interest in implementation stems from our earliest work identifying and amplifying education innovations around the globe leading to the recognition that more can be done to facilitate the spread of innovation. We view implementation as the 'messy middle' between the introduction of an innovation and the innovation's eventual embedding into organisations and systems or abandonment.

Through the HundrED Implementation Centre, we aim to better understand implementation at scale and to support innovators and schools to develop cultures of innovation that contribute to positive education systems change. Under the research pillar of the Centre, we will explore four themes: theorising the diffusion of innovation in education, getting to implementation, implementation in practice, and working toward education systems change through innovation. We hope this report will spark new conversations and inspire collaborators to join us on this journey for the benefit of learners everywhere.

By embracing innovation, we can create more inclusive and effective education systems that benefit everyone.





The Call to Action

HundrED conducts multi-year collaborations with different education stakeholders across a wide range of education services. We work with partners such as public and private sector education bodies as a service provider for specific needs they may have in fostering education innovation; as a technical solutions provider for education development organisations; or as an impact initiative platform through the support of direct funding from philanthropic foundations. Our activities can be grouped into three broad categories; **identification**, **amplification** and **implementation**.

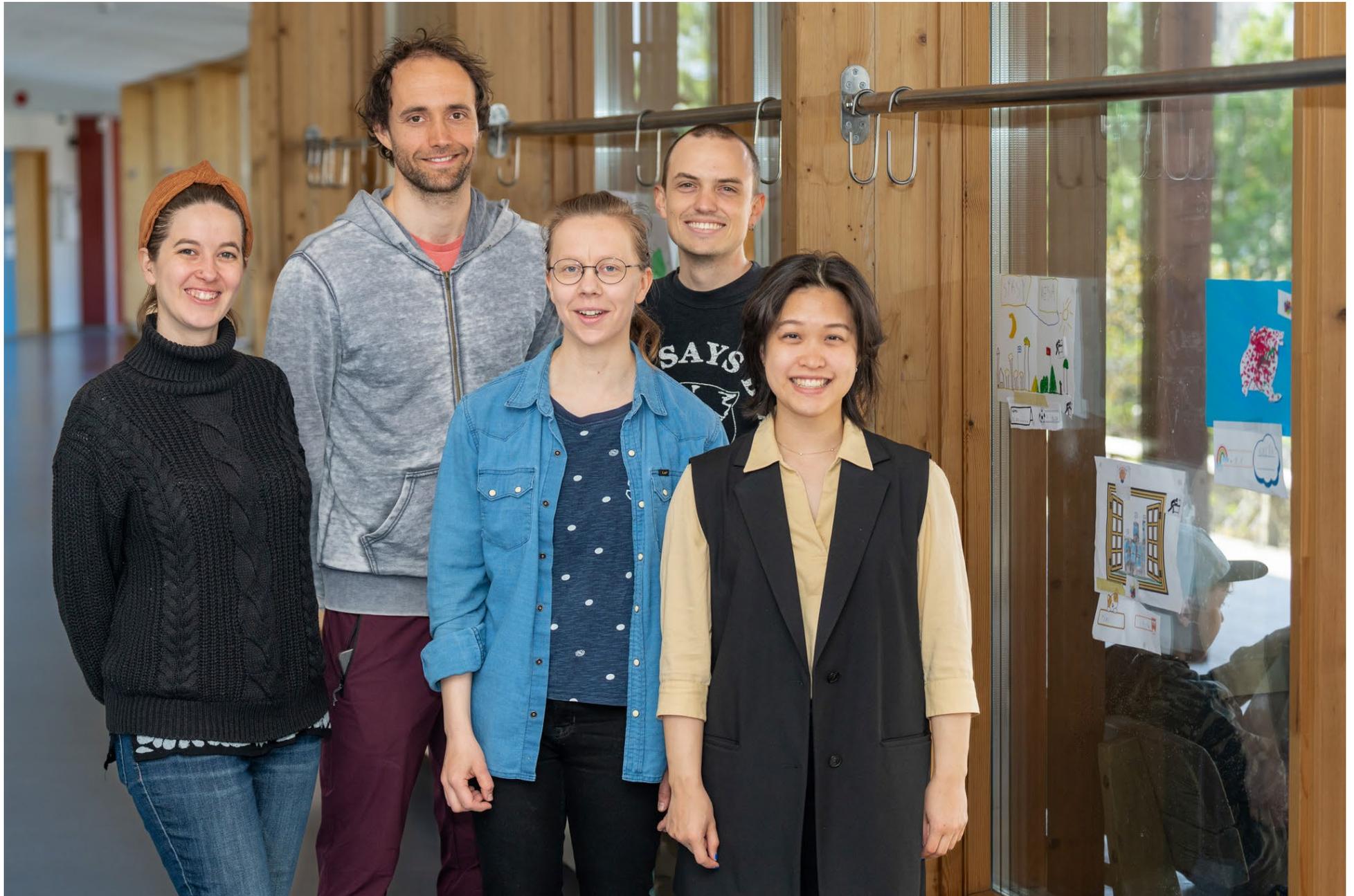
“Many education providers find it challenging to identify and implement solutions that work on a system level. Through the HundrED Implementation Centre, we endeavour to better understand what works in different contexts and why, while providing better access to education leaders to the wealth of existing education solutions that currently exist,” explains **Lasse Leponiemi**, co-founder of HundrED.

HundrED is actively seeking partners across its community of stakeholders; from innovators, to education leaders, policymakers, public sector bodies, philanthropic organisations, multilateral development bodies, NGO's, the private sector and students to collaborate with. For more information on opportunities to partner with HundrED, please contact David Connolly.



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Endnotes

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