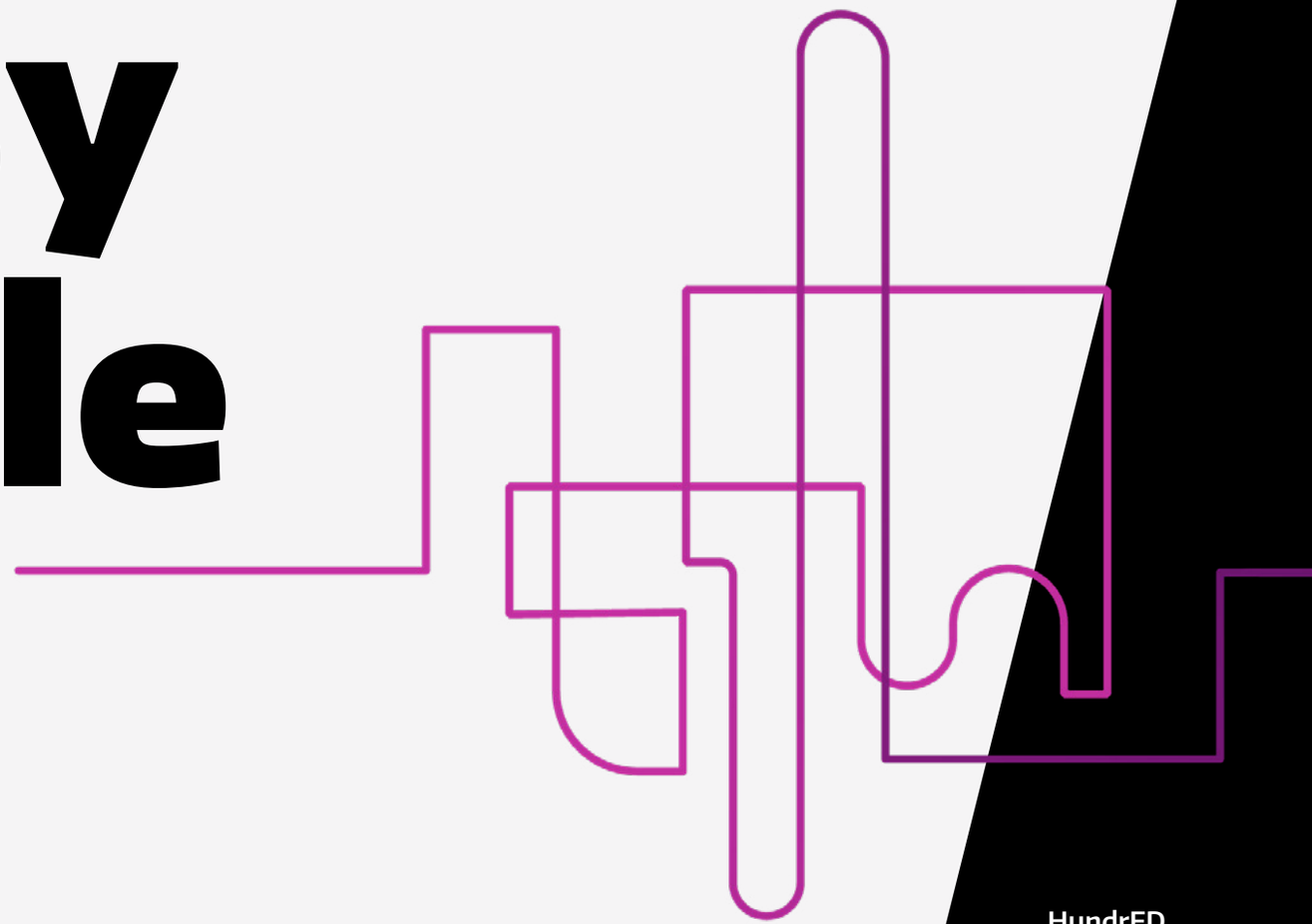
The Messy Middle

Implementing Education Innovations at Scale



HIC HundrED Implementation Centre

HundrED Research Report #032

Contents

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

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Conclusions and recommendations from HundrED reports represent the author's own views.

This is an interactive document.

Foreword

Education, as a dynamic and intricate field, serves as a powerful catalyst for societal progress. The intersection of innovation and education systems presents a realm of complex challenges and unprecedented opportunities. This paper, titled "The Messy Middle: Implementing Education Innovations at Scale", embarks on a journey to dissect the intricate landscape where educational innovations merge with the intricacies of established systems. In the world of education, innovation is not just about introducing novel practices; it's about navigating the nuanced "messy middle" between an innovation's inception and its integration into standard practice.

At the core of this exploration lies the acknowledgement that education systems are multifaceted, human-centered, and deeply embedded in political landscapes. Education innovations, when introduced into these systems, intertwine with the existing complexities. Here, in the elusive "messy middle," the transformational power of innovation meets the labyrinth of existing structures, creating a realm of uncertainty, complexity, and opportunity. It is within this juncture that this paper seeks to unfold the transformative impact, challenges, and strategies of scaling education innovations.

The authors, drawing from HundrED's rich repository of insights and experiences, delve deep into the "messy middle" - the phase marked by complexity and uncertainty - that bridges the gap between innovation validation and institutionalization. They weave a tapestry of understanding, utilizing comprehensive case studies, frameworks, and real-world examples to illuminate this enigmatic phase. The paper skillfully synthesizes diverse contexts, actors, and innovations, bringing to light a range of perspectives from around the globe.

As a beacon of guidance, the paper charts a course through the challenges that arise during the implementation of innovations. It traverses the intricate dynamics of power, communication, and adaptation, revealing the emotional landscapes that innovators and implementers navigate. Furthermore, the paper keenly dissects the process of scaling, identifying the multidimensional nature of spreading innovations: across contexts, through deep changes in perspectives, and even influencing policies.

A cornerstone of this paper is the introduction of the "HundrED Implementation Centre for Education Innovation," which stands as a testament to HundrED's dedication to facilitating the complex process of implementing innovations. The authors envision this center as a space for collaboration, research, and support, aiming to enable innovators and implementers to drive innovations towards meaningful, sustainable impact. This forward-thinking initiative bridges the gap between theory and practice, aiming to offer holistic support in the intricate journey of innovation scaling.

In essence, this paper invites us to explore the heart of education innovation, where ideals meet reality, and the intricate dance between innovation and established systems unfolds. It is a call to recognize that innovation is not a linear journey but a dynamic spiral, guided by reflection, adaptation, and transformation. As we traverse the pages of this paper, we are invited to embrace the messiness of this journey and to see the inherent beauty in the transformative process that innovation brings to education. As a reader, you are invited to engage with the diverse insights, strategies, and reflections this paper offers, and to be part of the ongoing conversation that seeks to reshape education systems for the better.

May this paper inspire educators, innovators, policymakers, and all those passionate about education to embrace the messiness, complexity, and beauty of innovation, for it is within this space that we sow the seeds of positive change for generations to come.

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Executive Summary

In the last decade, HundrED has collaborated and learned from a diverse global community of innovators, educators, school leaders, and other stakeholders in over 100 countries. This led us to announce the HundrED Implementation Centre for Education Innovation this year, along with our research agenda, "Implement at Scale: An Agenda for Education Innovation Research," to deepen our understanding of innovation implementation.

This paper begins to address questions from our research agenda, particularly those related to the complex process of innovation implementation at scale. The introduction of innovations into education systems entails a challenging transitional phase that we refer to as the "messy middle." We define the messy middle as the phase marked by complexity and uncertainty that occurs after an innovation has been tested and validated but before it has been institutionalised as part of standard practice in a classroom, school, or system.

The introduction of innovations into education systems entails a challenging transitional phase that we refer to as the "messy middle."

We begin by outlining our motivations for studying implementation and defining key concepts. We then apply relevant frameworks, including Everett Rogers' Diffusion of Innovations Theory, to understand what happens during the implementation process, drawing on practical examples to test our theoretical framing including five case studies from around the world. Our aim is to show that while each implementation journey is unique and context-dependent, there are global learnings that can be discovered and shared.

Key Concepts

We define implementation, following Rogers' diffusion theory, as putting an innovation into use as part of multiple decision-making processes by teachers, schools, and organisations that move an innovation toward institutionalisation. This process includes not only the decision of whether to use the innovation but related decisions around resource allocation, staffing, and impact measurement in order to achieve sustained systems change.

We refer to the implementation period as the messy middle, situated between the pilot phase and institutionalisation. It signifies a critical period where innovations that have shown promise need to transition towards scale and institutional integration.

We build on the spiral of innovation developed by NESTA, the UK-based innovation foundation, to show where the messy middle falls in the innovation lifecycle, its role in relation to systems change, and the interconnected journeys of the classroom, middle, and top layers of a system.

We are influenced by Moore, Riddell and Vocisano's three dimensions of scale: scaling out, deep, and up. We recognise that when scaling an innovation, the aim is not simply to spread the innovation, but to scale the impact of the innovation.

Frameworks

Using the lens of Innovation Diffusion theory, we explore the messy middle. A key aspect of the mess is that innovation diffusion is not just about the design of the innovation, it is about the process of diffusing the innovation in a social system. Diffusion is always, and fundamentally, a social interaction. And implementation is right in the middle of that process.

We explore the four essential elements of diffusion:

- **The innovation:** Evidence of an innovation's effectiveness is, undoubtedly, an important criterion; however, it is not a sufficient condition for implementation and scale. We explore the five characteristics that, per Rogers, impact an innovation's adoption: relative advantage, compatibility, complexity, trialability, and observability.

- **Communication channels:** We then look at important actors who serve as carriers of information about an innovation and who can influence its uptake. These actors are internal system leaders like champions and opinion leaders and external actors like change agents.

- **Time:** Innovation implementation is a time-consuming process happening over several years. We explore three aspects that influence time: the characteristics within a community (i.e. how open individuals are to change), the decision process around innovation that actors must go through, and patterns relating to the rate of innovation adoption.

- **The Social System:** As diffusion theory is fundamentally a theory of communication between people, we delve into the premise that the social environment, i.e. the context, is the most important factor for understanding how it is that an innovation spreads and scales.

Case Studies and Learnings

We examine five diverse cases to delve into the complexities of the messy middle. These are:

- HundrED's Tailor-Made collaboration with Helsinki Education Division in Finland, which introduced two wellbeing innovations from international contexts into the primary school curriculum.

- HundrED's Tailor-Made collaboration with the Parents as Allies project in the U.S., led by the non-profit organisation Kidsburgh, that supports schools and families to co-design innovative solutions that promote family engagement.

- Teaching at the Right Level (TaRL), an approach to learning that groups students according to their learning levels rather than age or grade. We explore implementation in countries in sub-Saharan Africa.

- Geneva Global's Speed School and Luminos Fund's Second Chance, two accelerated learning programs, and whose implementation in Ethiopia is the focus of our case.

- Sapieduca, a classroom-level, gamified application in Brazil initially developed to increase student engagement.

These cases reveal that the messy middle involves learning by doing in a sense-making process of understanding the who, why, what and how of an innovation in practice.

We explore strategies that innovations have taken around the identification of the who, calling attention to the need to build agency and dismantle power structures; the importance of fostering trust, including through co-design processes; and the linkages between system layers, especially middle-layer actors who can serve as connectors.

We also discuss how understanding the why of an innovation involves recognizing that the motivations and aims for innovation at scale vary among actors and change over time and across contexts. This underscores the need for continual reflection and mechanisms to build stakeholder alignment.

We look at understanding the what and how of an innovation by exploring how the cases sustained their innovation's theory of change while balancing fidelity with iteration and recognising that global best practice is not as important as the buy-in and contextual knowledge of local experts.

And we discuss impact and the need to gather information throughout the implementation process to make sense of how the innovation is changing teaching and learning. We explore challenges that arise with generating evidence, including who has the power and capacity to generate evidence and how the process of gathering information can be approached in a way that does not feel extractive and invasive, but engages all parties in a process of mutual curiosity, relationship building and trust.

Innovation development and implementation are not straightforward linear processes. Our takeaway across the who, why, what, and how is the importance of processes, steps, and mechanisms that allow implementers to navigate the complexities, make sense of the situation, and manage the emotional dimension of change. Given the inherent messiness, we see that change calls for a patient and adaptive approach.

Finally, as we contemplate innovation implementation at scale, it becomes evident that not only can education innovations be replicated across different contexts, cultures of innovation can also be scaled. We hope that HundrED's broader Implementation Centre and the work of so many others can help foster and scale these cultures of innovation, leading to more effective and equitable education systems.

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Introduction

Education systems are human, complex, and political. When an education innovation is introduced into a system, it becomes intricately entwined with the complexities inherent in the system. Thus, for anyone involved in education innovation, understanding and managing the innate complexity of the system itself and the transformative impact of the innovation within it are paramount. This paper focuses on how and what happens when innovations intersect with complex systems, concentrating on the "messy middle" of implementation. We define the messy middle as the phase marked by complexity and uncertainty that occurs after an innovation has been tested and validated by an innovator but before it has been institutionalised as part of standard practice in a classroom, a school, or a system. The paper begins to answer some of the research questions HundrED laid out in Implement at Scale: An Agenda for Education Innovation Research.[1]

We define the messy middle as the phase marked by complexity and uncertainty that occurs after an innovation has been tested and validated but before it has been institutionalised.

We first provide background on our motivations for studying implementation and define key concepts. We then apply relevant frameworks, including Everett Rogers' Diffusion of Innovations Theory, to understand what happens during the implementation process. We draw on several practical examples throughout the paper to test our theoretical framing. Our purpose is to present several frameworks in detail and provide clear definitions of how HundrED conceptualises big ideas around implementation and scaling and then to demonstrate how these frameworks can be applied to the empirical cases presented. The innovations we highlight can be found in the HundrED innovations catalogue. Furthermore, we delve deeper into a select few examples to provide a more comprehensive understanding of what the "messy middle" means in practical terms. These deep-dive examples[2] are:

- HundrED Tailor-Made projects in Finland and the United States. Tailor-Made projects are collaborations between HundrED and education providers and stakeholders that support the structure, frameworks, processes, and capacity required to successfully adapt and implement high-impact innovations that deliver better learning outcomes. We concentrate on two specific Tailor-Mades:
  - The experiences of the Helsinki Education Division (HED) as it introduced two wellbeing innovations, Slam Out Loud, originally from India, and iMoves, from the UK, into the primary school curriculum.
  - The experiences of the Parents as Allies (PAA) project in Western Pennsylvania, U.S. as it scaled out to more districts. PAA, led by the non-profit organisation Kidsburgh, supports schools and families to co-design innovative solutions that promote family engagement and a culture of experimentation to ultimately enhance student learning and wellbeing.

- Teaching at the Right Level (TaRL), a holistic approach to improving foundational skills by grouping students according to their learning levels rather than age or grade and which originates from the non-governmental organisation Pratham in India. We explore the experience of the program's implementation and scale in sub-Saharan Africa.

- Two accelerated learning programs, Geneva Global's Speed School and Luminos Fund's Second Chance, which allow students to complete two to three years of schooling in one school year through child-centred pedagogical approaches. The programs operate in several countries, and we specifically examine the experiences in Ethiopia.

- Sapieduca, a gamified application that enables teachers and students to create student personal projects, obtain performance metrics, check the progression of studies, promote classroom gameplay and launch challenges. The innovation began in the classroom and has been spreading throughout Brazil.

We have selected these examples because they reflect the learnings of innovators and implementers that we believe have found ways to make sense of and articulate what happens in the messy middle. The examples also encapsulate HundrED's own learnings in the Tailor-Made process, where we have collaborated closely with innovators, sharing in their journey of implementation, including moments of celebration, frustration and resilience that speak to the mess.

Finally, we have aimed to highlight innovations taking place across diverse contexts and settings, including innovations being implemented in low, middle, and high-income countries and those involving different actors from governments and non-profits to parents and families. Notably, we have sought to highlight innovations involving the transfer of ideas within the Global South, as in the case of TaRL, and innovations that feature Global South to Global North transfer, as in the case of the HED Tailor-Made. Our aim is to show that while each implementation journey is undoubtedly unique and context-dependent, there are learnings that can be discovered and shared when looking across cases.

Our aim is to show that while each implementation journey is undoubtedly unique and context-dependent, there are learnings that can be discovered and shared when looking across cases.

We recognize that the whole process of an innovation moving from pilot to institutionalisation is messy, not just the middle. That said, it is much easier to see when something starts or ends; yet, the middle stage of something can be murky. We have, thus, chosen to zero in on the middle phase to help distil the complexity of what is happening. The models we discuss below are, of course, simplifications, with the intention that they may help shed light on the hard things and the process of sense-making that implementers must go through. After all, the hard things, like improving and transforming our education systems, are still worth doing even though they are messy and complex.

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

HundrED's Support of Implementation

We have been privileged to support a vibrant community of over 4,000 education innovators who are addressing diverse educational needs in various contexts. At HundrED, we work to identify, amplify, and facilitate the implementation of innovations in schools and settings around the world so that every child can flourish through access to a quality, future-ready education. Innovation is essential to realising this vision and a critical ingredient for achieving the United Nations Sustainable Development Goal 4 (SDG4) for education. As there is no single solution or direction that will achieve this vision, we embrace the power of many innovations that can improve and transform education (hence our name HundrED).

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.[3] Innovations in education change what and where students learn, who and how teachers teach, and the tools, processes and assessments that educators and schools use everyday. Innovation can bring about more equitable learning outcomes and introduce students to new ideas and approaches that can help them thrive in life and career.

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.

While innovation is essential for education transformation, implementing an innovation, especially at scale, is a challenging and complex process. Because implementation is not just a technical, but also a social process, meaning that people and their interactions are at the heart of the work, it can be difficult to anticipate outcomes as well as replicate processes and experiences.

Over the past decade, HundrED has actively engaged in collaboration and learning with a diverse global community spanning innovators, educators, school leaders, and other education stakeholders across more than 100 countries. Inspired by the premise that the world is full of hardworking practitioners who are driving innovative, impactful, and scalable approaches in education, HundrED has endeavoured to give their solutions the recognition and visibility they deserve. Through our work with this community of passionate education change-makers, we have gained valuable insights into the opportunities and challenges which the process of implementing innovation at scale presents.

Photo: Parents as Allies

The HundrED Implementation Centre

To enhance understanding and support for implementation, HundrED announced the Implementation Centre for Education Innovation in February 2023. The centre is dedicated to enabling and facilitating the work of both innovators and implementers, driving innovation at scale.

The centre will provide a hybrid space, both virtual and physical, based in Geneva, Switzerland, for practitioners, researchers and education leaders to drive widespread implementation of innovations, transforming education systems. Specifically, this new centre will support the spread of education innovation through the following interconnected pillars.

Our theory of change is that if teachers, school leaders and other middle-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.

In our initial Centre activities, we are prioritising the development of the research pillar to inform and strengthen the other pillars. To do this, we are drawing heavily on the insights of HundrED's innovator community,[4] and we have engaged a community of experts representing innovators, teachers, non-governmental organisations (NGOs), researchers, and funders from around the world to help shape our research agenda and provide feedback on our position papers. Our aspiration is that future research can be conducted collaboratively with colleagues in other parts of the world, to increase Global North-South collaboration, to highlight South-South collaboration, and reinforce our aim for the Centre's efforts to be truly global.

The work of the Implementation Centre is for anyone interested in how innovation can bring about education systems change, especially these core interconnected (and sometimes overlapping) actors: education innovators, school-level leaders, teachers and school staff, education system leaders, education funders and partner organisations, and researchers and academics. Ultimately, our aim is that the work of the Centre benefits learners around the world.

Figure 1:
HundrED Implementation Centre Pillars

Figure 2:
Education Ecosystem Interconnected Actors

HundrED Implementation Centre

Implementing Innovations

We define implementation, following Everett Rogers' diffusion theory, as putting an innovation into use as part of multiple decision-making processes by teachers, schools, and organisations that move an innovation toward institutionalisation.[5] These processes include not only the decision of whether to use the innovation but several related decisions like what resources to allocate, which staff will work on and support the innovation, and how the innovation will be monitored in order to achieve sustained systems change. Defining implementation in relation to Roger's theory helps us to delineate parts of the innovation diffusion process, making it possible to identify patterns in the spread of innovations.

Moreover, we view implementation as what happens at each site (e.g. classroom, school or district) along the journey toward institutionalisation. The process of institutionalisation happens gradually over time and therefore it can be difficult to pinpoint an exact moment when an innovation becomes part of the system or even integral to the functioning of the system itself. Nevertheless, thinking about this from an ecological perspective, at some point in time the innovation becomes embedded as part of the system. At that point, we would say we see a true transformation in the system. When an innovation becomes part of the regular operations across levels of the school system - from classroom to education leaders – and has been sustainably resourced and integrated into regular planning and training, then we no longer are implementing innovation as an intervention into the system. We have something that has become normalised into an institution and can be part of a wider transformation of education. This process can take 10–15 years, or more, and when this has happened, we may already need to replace or update the normalised solution with a new innovation to keep the system continuously evolving. We are never done innovating.

Photo: VVOB

Implementation as the Messy Middle

We refer to the period when an innovation is being implemented as the messy middle. We were inspired by business writer Scott Belsky, whose book The Messy Middle catalogues the bumpy journey from start to finish in any worthwhile endeavour,[6] as well as Dan McClure and Ian Gray's discussion of the missing or messy middle of innovation that is uncertain and complex.[7] We've come to characterise the implementation stage as both a middle stage and one that is complex, ambiguous, and unpredictable – or messy.

Innovation implementation is a middle phase, situated between the pilot phase and institutionalisation. It is no longer brand new or in the trialling phase, when innovations are being piloted and tested to ensure proof of concept. At the implementation stage, there is already proof of concept (at least in one context) and the hard work of putting the innovation into practice begins. It signifies a critical period where innovations that have shown promise need to transition towards scale and institutional integration. In the figure below, we build on the spiral of innovation developed by Murray, Caulier-Grice and Mulgan of NESTA, the UK-based innovation foundation[8] and have added three phases of trialling, messy middle, and institutionalisation and systems change. These phases are denoted with wavy lines to signal that there is not always a clear-cut distinction between phases and that some steps may always be happening.

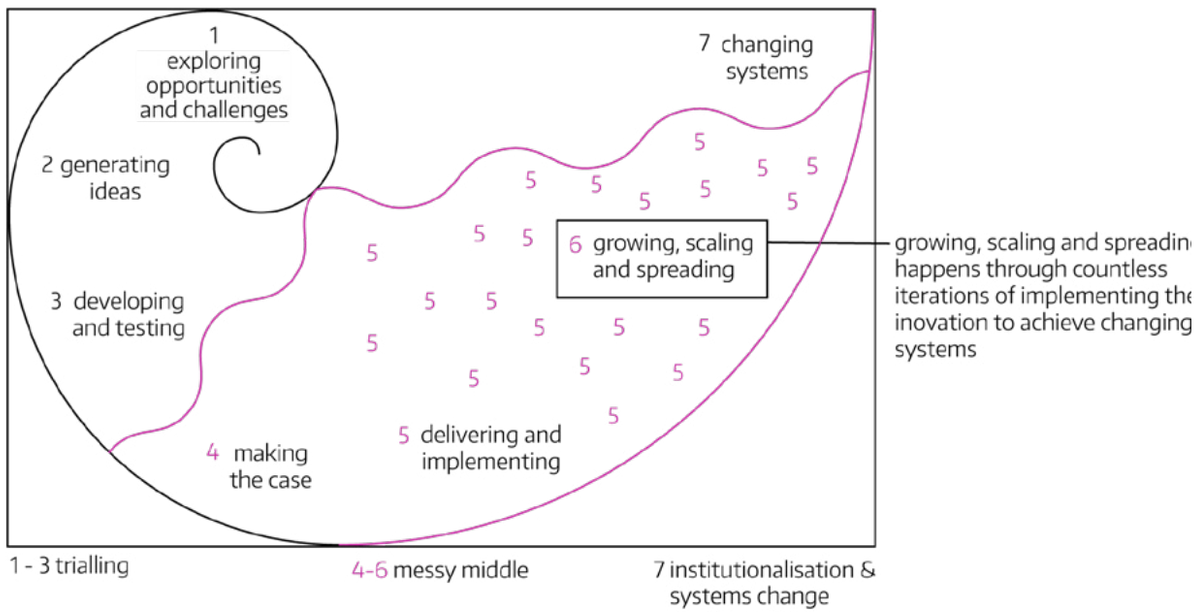


Figure 3: The Innovation Spiral and The Messy Middle
Source: Adapted from NESTA (2014) and Murray, Caulier-Grice and Mulgan (2010)

The use of the spiral is not meant to indicate that innovations do or should grow at a logarithmic, predictable rate and we recognize it has limitations as all models do. However, we find the spiral provides a useful way to represent the process of an innovation's path from ideation through implementation and towards systems change in a way that expresses growth, reach and magnitude. The spiral helps us see how things start small and grow; it also helps us to see the phases and think about who has agency at different moments in an innovation's scaling journey. Finally, the spiral appeals to a more organic, rather than linear sensibility, that is in line with our interest in an ecological approach to systems change.

As innovations progress through the middle stage, the experience might be bumpy. The process of moving an innovation from pilot through to institutionalisation is non-linear. It often means going one step forward and two steps backward in interactions across the layers of people and levels of the system. Moreover, different parts of the system are not always aligned or in sync at the same time.

The mess is evident in how innovations intersect with complex systems. Education systems are inherently human, complex and political. When introducing an educational innovation into such a system, it intertwines with existing complexities. Implementers face volatility, uncertainty, complexity, and ambiguity (also known as VUCA), regarding the outcomes and effectiveness of the innovation, in addition to unpredictability in the system itself. Not

all innovations make it past the messy messy middle: some may not need to continue on if the innovation has run its course, but other innovations might offer a valuable solution, yet institutionalisation is unrealised. Our hope in studying the messy middle is to uncover strategies that may increase the chance of innovations making it through the messy middle toward sustained systems change.

Another aspect of the messy middle includes emotional challenges. Acknowledging capacity limitations, making difficult decisions, or experiencing exclusion from decision-making processes can evoke strong emotions. While not traditionally discussed in academic literature or around meeting tables, we hope to draw attention to these areas to destigmatise them and offer strategies for reaching supportive and productive ways to move innovation forward. The messy middle involves communication gaps, misunderstandings, and conflicting perspectives, layered over power dynamics. Certain individuals or groups may exert influence over others or resist change. It can be difficult to move the right people to action, especially in the face of turnover, changing policy priorities and short policy windows. On the other hand, there may be opportunities and new discoveries to take advantage of during the messy middle that we aim to also examine.

We explore the messy middle further below, looking at *who* is involved, the *why* behind an innovation, and the *what* and *how* of navigating opportunities and challenges faced during implementation, using examples from the case studies noted above.

Photo: VVOB

Scaling Innovations

We have thus far discussed implementation and why we refer to the implementation phase as the messy middle. Another key concept that takes place during the implementation stage is 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 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.[9] We are influenced by Michele-Lee Moore, Darcy Riddell, and Dana Vocisano's three dimensions of scale:

1. scaling out

   which refers to reaching more people in more places;

2. scaling deep

   or changing peoples' ways of thinking and talking and changing behaviour on a collective level; and

3. scaling up

   which entails changing laws and policies.[10]

We often hear innovators discuss their work only in the context of scaling out, but their work can and does influence working culture (scaling deep) as well as policymaking (scaling up). For example, the wellbeing innovation iMoves, when scaled from the UK to Helsinki Education Division, not only reached more people in more places (scaling out), it also changed educators' ways of thinking around how physical activity in the classroom can boost student learning and wellbeing (scaling deep).

Scaling an innovation is an intentional and active process, requiring deliberate efforts and decisions by innovators and innovation implementers, including teachers, school leaders and higher-level education decision-makers.

We recognise that when scaling an innovation, the aim is not simply to spread the innovation, but to scale the impact of the innovation, with the ultimate goal of transforming education systems so that all children and young people have access to a quality, future-ready education. We recognize Robert McLean and John Gargani's holistic view of optimal scale that considers scaling impact in four directions: magnitude, variety, equity and sustainability,[11] as well as the work of the Brookings Institution, whose researchers have long studied scaling from an education lens and, in a recent report, discuss scaling impact, which does not always mean scaling all parts of an innovation.[12]

We return to NESTA's[13] social innovation spiral to help visualise scale. It helps us visualise how innovators progress from ideas to fully developed innovations, while also sharing their innovations with others. When external innovations, such as products, programs, or interventions, are introduced to schools, districts, or geographic regions, educators and the community embark on their unique path that intersects with the innovation's growth spiral at a specific point.

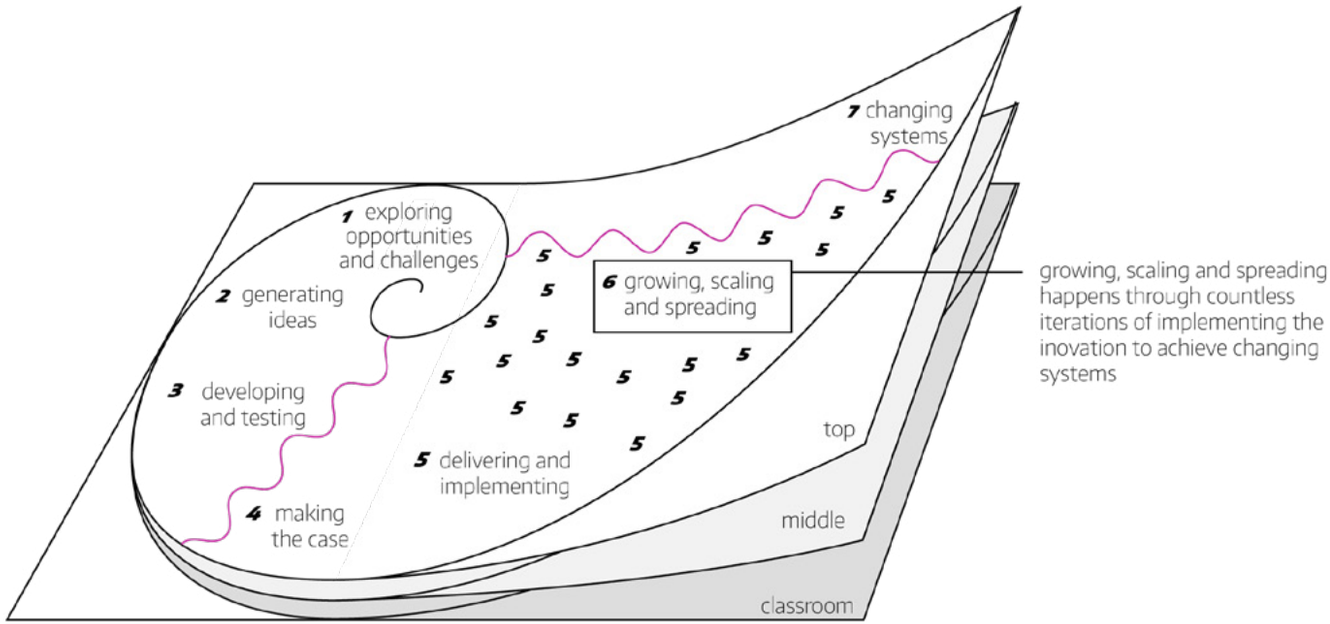


Figure 4: The Innovation Spiral Across System Layers
Source: Adapted from NESTA (2014) and Murray, Caulier-Grice and Mulgan (2010)

We consider this intersection between the innovation and the implementation site to be the crux of scaling. To us, the process of "growing, scaling, and spreading" as depicted in step 6 of the spiral is essentially step 5 repeated at various sites. This concept is depicted in the figure above. However, this does not mean that what is happening in each of the step 5's looks the same. Each implementation will have its own decision-making processes and considerations, and new considerations might come with scale, such as how to train large numbers of teachers versus only a small number. Additionally, we have adapted the spiral to encompass the multiple layers of a system: the classroom layer, the middle layer, and the top layer. Each layer undergoes its own, yet interconnected, scaling journey.

Scaling an innovation is an intentional and active process, requiring deliberate efforts and decisions by innovators and innovation implementers, including teachers, school leaders and higher-level education decision-makers.

Digging into the Mess from the Lens of Diffusion Theory

One of the questions we put forward in our research agenda was, **"How can Innovation Diffusion Theory help explain change and transformation in education?"**[14] Thus, in this section, we dig into the messy middle looking primarily from the lens of innovation diffusion. From the very beginning of HundrED, we have used Everett Rogers' theory, which is grounded in the field of Communication Science, to understand how and why innovations spread from a handful of users to many.[15] Rogers' work, which dates back to the 1960s, has been used extensively to understand the spread of innovations in other fields like agriculture, technology and business; it has also been critiqued as not being relevant to understanding the spread of social impact innovations and for its overfocus on individuals versus organisations.[16] However, among Rogers' key and lasting insights about the diffusion of innovations is that the mechanisms (i.e., the communication channels and the processes) by which innovation is put into practice are integral to the spread of innovation. Rogers' work helps to explain why an evidence-based innovation may not have uptake even though it works or why an innovation from one context may diffuse in another, and this has relevance across multiple sectors, including the education sector.

> A key aspect of the mess is that innovation diffusion is not just about the design of the innovation, it's about the process of diffusing the innovation *in a social system*.

Rogers defines diffusion of innovation as "the process by which an innovation is communicated through certain channels over time among the members of a social system."[17] We would add that how an innovation is supported through those channels also matters, as it relates to the allocation of financial and human resources, the presence of political will, and more. Diffusion includes four essential elements:

- The innovation
- Communication channels
- Time
- The social system.

Importantly, diffusion of an innovation is not a linear process but rather a process of social change that alters the social system through the introduction of new ideas.[18] We would thus say that innovation diffusion goes beyond implementation at scale and reaches systems change. Referring back to the social innovation spiral, we would say diffusion encompasses steps 4-7.

Rogers discusses actors and processes that follow certain distribution patterns, with variation based on their contexts and organisations, histories, and the constellations of actors, as well as the specific attributes of the innovations. A key aspect of the mess is that innovation diffusion is not just about the design of the innovation, it's about the *process* of diffusing the innovation *in a social system*. And implementation is right in the middle of that process. We explore the elements of diffusion below.

The Innovation

One of the things that can be messy in implementation are people's varying views about the innovation. Perceptions about what the innovation does and its relevance to students or school communities and the need for change can vary between actors and across levels in a system. Before implementation at scale is even possible, there must be an innovation that others want to try.

Evidence of an innovation's effectiveness is, undoubtedly, an important criteria for whether or not an innovation is implemented and scaled. However, what it means to be an evidence-based innovation is not always straightforward. Innovations work differently in different contexts, evidence can take time to measure, and what should be measured is not always clear. We would also say that evidence is a necessary but not a sufficient condition for an innovation's implementation and scale. Per Rogers, there are five other characteristics that impact an innovation's adoption. These are relative advantage, compatibility, complexity, trialability, and observability, and they are measured by how potential adopters perceive the innovation.[19] Let's explore their definitions and how they show up in education innovations:

1. Relative advantage

happens when users of an innovation feel it will benefit them. A potential user of an innovation that displays relative advantage might think, *"This is better than what I am doing now."*

2. Compatibility

refers to whether the new innovation matches the existing values and norms of the users. A potential user might think,*"This fits with my context and my values."*

3. Complexity

means the ease or difficulty in understanding and using the innovation. It is the simple, low-complexity solutions that have the advantage. A potential user of a low-complexity innovation might say, *"Oh, I get it. Looks doable."*

4. Trialability

means the innovation is perceived as easy to test or sample. A potential user might say, *"I can take this in small parts to test it bit-by-bit and see if I like it."*

5. Observability

means it is easy to see an innovation's results, or evidence of its impact. This is hard in education, generally, as results often take a long time to achieve. Nevertheless, a potential user of an innovation with observability might say, *"I see this worked in another school like mine, it could work at my school, too."*

It's important to recognize that it's not the characteristics themselves but perception of the characteristics that motivate others to take up an innovation. This is a key distinction because it emphasises the relationship between the innovation and the people who the innovation is impacting. **Diffusion is always, and fundamentally, a social interaction.** These interactions include power, influence, resistance, conflicting and competing demands, as well as solidarity, shared goals, and collective agency. As British author and educationalist Sir Ken Robinson articulated: education systems are human systems, and therefore we have the power to change them through interaction.[20] The innovation itself, as a process, a programme, a curricula, or an intervention, is always in relation to the people who do it, who use it and who spread and support it.

CHARACTERISTICS OF INNOVATION IN PRACTICE

HundrED's own experience supporting the spread of education innovations has shown that Rogers' fundamental concepts of relative advantage, compatibility, complexity, trialability and observability are truly relevant for the people making decisions about innovations to use in their classrooms, schools, and systems. Moreover, in conversations with a group of education thought leaders, including innovators, NGOs, researchers, and funders, who have helped refine and test our thinking, we heard several examples of innovations that spread due to factors resembling Rogers' characteristics.

Many NGOs noted that government stakeholders were more likely to take up a new innovation when it clearly aligned with a governmental priority or need. A clear example of this is VVOB's Leading Teaching and Learning Together (LTLT) programme in Rwanda, which included a mentoring and coaching component for STEM educators. VVOB attributes the Rwandan government's interest in LTLT to its alignment with the government's own focus on improving STEM outcomes.[21] It is likely that the government officials perceived VVOB's innovation as demonstrating relative advantage and compatibility, in that the innovation was seen as beneficial and matches the values and norms of its users.

Others shared that decision-makers were more willing to put an innovation into use when shown evidence of its impact, which is consistent with Rogers' trialability and observability criteria. A great example of this is TaRL. When the programme is first implemented in a new context, middle-level education leaders learn the methodology and practise it with students for 15-20 days in the classroom before training teachers to use the programme. According to staff at TaRL Africa, the non-profit organisation assisting with country-level implementation, after just 15-20 days using the new practice, leaders observe students increase one level in reading. Leaders can clearly observe the programme working in a short time and are thus encouraged to use it across all of the schools they oversee.

We have also observed cases where the criteria influenced the non-adoption of an innovation. For example, the Helsinki Education Division initially contemplated implementing a teacher training programme focused on enhancing student wellbeing. However, stakeholders in Helsinki considered the model to be overly burdensome, as it required frequent trainings and external monitoring of teachers. Such monitoring mechanisms were seen as unsuitable in the Finnish context, where teachers are entrusted with autonomy in developing and reflecting on their teaching, without the need for external assessors. The perceived complexity of the innovation in terms of the requirements for implementing the model with fidelity and its low compatibility with the norms of teaching in the Finnish context meant that an alternative innovation with lower complexity was then chosen for implementation. Importantly, the decision had nothing to do with the positive impact on student learning, as the barrier for the innovation was on the contextual level. This example demonstrates that an innovation may possess the five characteristics in one setting but not in another and that evidence of the innovation is not always the main motivator for innovation uptake.

EXPLORING OTHER INNOVATION FRAMEWORKS AND TOOLS

Rogers' characteristics of innovations are useful to explain why innovations may be taken up or not; yet we find that the theory under-emphasises the aspects of resourcing and ongoing support required from multiple stakeholders that are important for understanding the messy middle. Therefore, we also use the Desirability-Feasibility-Viability framework from IDEO, a U.S.-based consulting firm specialising in human-centred design.[22] Originally created to evaluate the suitability of a product innovation, the framework has been adapted for the education context by Global Schools Forum (GSF) and Aga Khan Foundation (AKF). Notably, these adaptations include recasting the viability sphere as sustainability. The framework and its ensuing questions, as developed by GSF and AKF, are:

1. Desirability

Is there a need for the innovation and does it have evidence of improving learning outcomes?

2. Feasibility

Does the innovation have the leadership, partners, and systems to scale?

3. Sustainability

Does the innovation have a sustainable funding model to scale and operate at scale?[23]

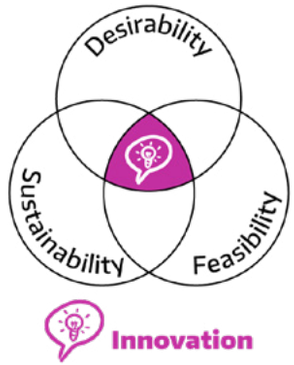


Figure 5: Desirability - Feasibility - Sustainability Framework
Source: IDEO (2017), adapted by Aga Khan Foundation and Global Schools Forum (2023)

The framework can serve as a guide for whether an innovation is ripe for implementation and scale. Interestingly, the first sphere of desirability is similar to Rogers' characteristics of innovations as the questions overlap with relative advantage, compatibility, and observability in particular. The other two spheres go beyond Rogers to look at contextual factors, such as leadership and resourcing, that impact an innovation's ripeness for uptake. Sustainability as it relates to funding is of interest to HundrED and a challenge we hear frequently from our innovator community, which is why we plan to explore it further in a future paper.

A practical tool that complements and enhances both Rogers' and IDEO's frameworks is the Education Scalability Checklist, developed by VVOB and several research and implementing partners.[24] The checklist explores aspects including the initiative's credibility, support, and relative advantage, its scaling strategy, the fit between the initiative and the education system, how easy it is for the education system to adopt the initiative, and the funding sustainability.

By integrating theoretical frameworks with practical tools that help make sense of innovation's characteristics and other requirements, we can enhance our understanding of why innovations are selected in the first place. Another key piece of diffusion theory is how the innovation spreads from one location to another, which falls squarely in the domain of the messy middle of innovation, and which we explore in the next section.

Communication Channels

The second major element in Rogers' diffusion theory is communication channels. An innovation is communicated from one individual or group to another by communication channels, including face-to-face connection, the internet, and the media. Most individuals are influenced by their near peers, or those who are similar to them (the "like me" bias[25]); yet, those who introduce innovations tend to be heterophilous to the rest of society, i.e., they are doing something new that others are not (yet). This underscores the importance of trusted networks that bring in outside opinions and include the presence of actors that Rogers calls opinion leaders, champions and change agents.[26]

Opinion leaders and champions are internal to a system, while change agents are external influencers, and together these actors play a role in communicating and often advocating for an innovation.[27] Opinion leaders are informal system leaders who possess a degree of status in their communities to exert influence on others' behaviour. Champions are powerful, formal leaders within organisations who put their support behind an innovation and influence its uptake. Whereas change agents are viewed as outside actors and frequently work closely with opinion leaders and champions to speed up innovation uptake. We also like Marie Lockton and colleagues' use of the term "resource architects" to denote those external to an education system who introduce knowledge into a system, build relationships, and co-create insights and resources with those inside the system[28], and we see some parallels to the role of a change agent.

In HundrED's Tailor-Made work with the Parents as Allies Project we see the presence of opinion leaders, champions, and change agents, who have played a role in the rate of innovation adoption. The goal of Parents as Allies is for school districts in Western Pennsylvania in the U.S. to co-design innovative solutions with families that ultimately enhance student learning and wellbeing, while building a culture of experimentation and trying new things together. Schools form design teams made up of 4-7 parents[29], teachers, school staff and administrators and follow a design-thinking process to iterate on solutions that will increase family-school engagement in their communities. Some of the solutions, or "hacks," that the design teams have come up with include: gatherings at neutral locations in the community to shift the power centre away from the school, informal coffee talks with school staff that allow parents to better understand the school's priorities while sharing their own perspectives, and a makerspace for students powered by trained parent volunteers who bring in their own expertise and professional backgrounds, shifting the notion of how parents can engage with schools.

The design team members are internal system members who see the value of the Parents as Allies project, believe in the possibilities of family-school collaboration, and use their influence to get more people in their school community to become engaged. As such, we can view them from the lens of opinion leaders: as the design teams roll out new ideas, often inspired by existing innovations, their presence at these new events and spaces can help persuade other parents and teachers to also attend as well as to think deeper about family-school collaboration. Opinion leaders can have almost a domino effect in bringing about support for an innovation.

Meanwhile, Kidsburgh, who oversees the project, can be viewed as a change agent. They are external to the school system and help influence uptake of the solutions by cheering on the design teams, providing training on family-school engagement available to anyone in the school communities, writing about the events so that more people know about what is taking place, and also playing a connector role across the districts. Finally, the handful of superintendents who are very vocal about the project and advocate for its continuation can be viewed as champions, or influential leaders within an organisation that support a given innovation. Without the presence of these groups, it is unlikely that the innovation would have spread from a handful of districts to 28.

Strong communication channels and the networks that convey information about an innovation and persuade others to use it help facilitate innovation uptake. The methods that opinion leaders, champions, and change agents use to convey support and facilitate innovation implementation contribute to the messy middle of innovation. Their degree of influence, their temporal presence in these roles, and the lack of attention paid to cultivating these actors can be cause for messiness, which we explore in further detail later on.

Time

The third element of diffusion is time. The adoption and implementation of innovation is a time consuming process and does not happen in an instant but rather over a period of years. Rogers presents several elements that impact the time for an innovation to be adopted and implemented, including the characteristics within a community (adopter categories), the decision process around innovation that actors go through, and how this influences the rate of innovation adoption.

CHARACTERISTICS OF THE COMMUNITY: ADOPTER CATEGORIES

Even when an innovation is perceived as possessing the key characteristics, and has strong communication channels, these alone are not enough for it to spread. How the people in a given system respond and react to innovation plays a role in innovation uptake and in the time it takes for an innovation to diffuse. Rogers offers five classifications for how people within any social system respond to innovation. Notably, these categories are fluid and are not innate personality traits:

1. Innovators

The smallest group who are the first people in a system to invent or embrace a new idea and have a high risk tolerance;

2. Early Adopters

Who are an influential group in their society and help to persuade others to adopt an innovation;

3. The Early Majority

Who adopt the innovation just before the average person;

4. The Late Majority

Who adopt the innovation just after the average person, and

5. The Laggards

Sometimes called late adopters, the last to adopt an innovation (or some may never adopt it) and who tend to be sceptical of change and new ideas.[30]

The categories together provide a taxonomy of reactions to change. Their distribution forms the shape of a bell curve with innovators representing the smallest group in any given population. As noted above, how a person responds to innovation is not fixed. They may be an early adopter when it comes to one innovation and a laggard when it comes to another. Moreover, whether a social system favours innovation also impacts the distribution; in a more innovative social system, we would expect to see a bell curve with a larger proportion of users in the earlier categories as there would be more people in the social system willing to try it out at an earlier stage. In addition, a social system with a more individualistic culture will have different reactions to change than a collectivist culture[31], underscoring how these categories can vary and change. In the figure below, we show the distribution of the characteristics of communities as plotted on a bell curve.

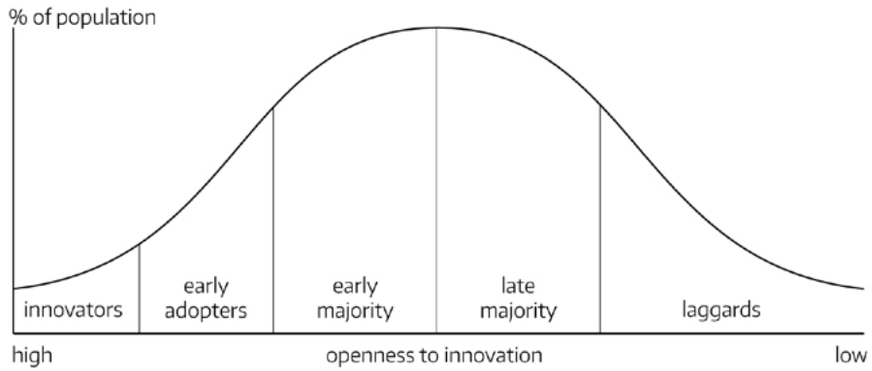


Figure 6: Characteristics of Communities (Innovation Adopter Categories)
Source: Adapted from Rogers (2003).

Something the categories can also help explain is resistance: we are always bound to encounter a resistant group toward an innovation. We should account for this, rather than be surprised. In many cases, the surest path toward innovation adoption at scale is found right in the middle of the community – engaging early and late majority in the implementation process – and moderating expending initial efforts to win over laggards. Also, we may not always need 100 percent of people to adopt an innovation, depending on what it is. This also goes back to McLean and Gargani's notion of optimal scale, meaning that not everything has to be scaled up so it reaches 100% of people.[32] For instance, if the innovation is designed for only a segment of students, much like Second Chance and Speed School, it does not need to reach all children, only those who are out-of-school and need catch-up learning. And while there can often be a drive to get everyone in a system to be innovators, this is actually not necessary for diffusion.

In education, the people who make up these categories of innovators, early adopters, and so on include students and parents who experience the content of an innovation up close, teachers who put an innovation into practice within their classrooms, school and system leaders who oversee,

support, and monitor an innovation's implementation, and NGOs, for-profit companies, researchers, and funders who collaborate with schools to put an innovation into use.[33]

When we look specifically at implementation actors, we notice a few patterns. The actors involved in implementation will vary depending on the type of innovation being implemented (e.g. some innovations like Parents as Allies, Speed School and Second Chance have a specific role that parents play, while others do not directly engage parents in an innovation). Actors will also vary over time as they come and go, through promotions, resignations, etc. Moreover, implementation actors often differ from those who make the decision to adopt an innovation.[34] For instance, it might be that in a centralised education system, the Ministry of Education decides to implement a new learning programme, yet it is the teachers and the students who will be closest to the innovation's implementation at a classroom level. Ideally, there will be "inclusive coordination," meaning that innovators and top-level actors will work closely with classroom-level implementers as an innovation is implemented.[35] Parnika Jhunjhunwal and Benjamin Kumpf of the OECD have called this coordination "intermediation,"[36] which indicates the roles of various actors in facilitating the scaling of social innovations (see also Jeremy Howell's work on intermediation of innovation).[37] No one innovator or actor can create change alone and there are multiple agendas and perspectives to be navigated and managed through the messy middle. We find Rogers' framing of the characteristics of a community helpful for not only thinking about how actors react to change when an innovation is first introduced but also how those reactions to change may shift or stay the same in the implementation process, when the messiness is front and centre.

INNOVATION DECISION PROCESS

Putting an innovation into use involves a series of decision-making processes that takes time. To Rogers, getting from awareness of an innovation to sustained adoption can be examined as a five-stage process that individuals and organisations go through called the Innovation Decision Process. Right in the middle of this process is the messy middle of implementation. These stages consist of:

1. Knowledge

When one is "exposed to the innovation's existence and gains some understanding of how it functions."[38]

2. Persuasion

When one "forms a favorable or unfavorable attitude toward the innovation."[39]

This is 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. This can also be called 'buy-in'. Often when a senior decision maker 'buys-in' to an innovation, or is persuaded to implement it, this can propel an innovation forward. The process of gaining 'buy-in' can be short or lengthy, and it can also be reversed as people change their minds or as turnover brings along new decision-makers with differing views. Persuasion is also related to an innovation's characteristics as discussed earlier. The more an innovation possesses those characteristics, the more likely a stakeholder will be persuaded to try it.

3. Decision

When one "engages in activities that lead to a choice to adopt or reject the innovation";[40]

In most schools and systems there is not one single decision-maker. Although one person may take the ultimate responsibility for the decisions made, the "activities that lead to a choice" are often committees, meetings, sessions, board meetings, parent-teacher association (PTA) meetings, or other regular processes during which decisions are made. Moreover, there are both formal and informal decision-making processes throughout this sequence.

4. Implementation

As we defined earlier, is as putting an innovation into use as part of multiple decision-making processes by teachers, schools, and organisations that move an innovation toward institutionalisation.

5. 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."[41]

Confirmation of education innovations varies depending on the system level involved. At the school level, teachers may continue using an innovation when they observe positive outcomes for their students. This positive perception can then influence middle-level officials to support and sustain the innovation, ultimately reaching the top level of the system, often through dedicated funding. Conversely, if teachers find an innovation burdensome or negative feedback spreads from the school or even at higher levels, it can lead to a lack of support for the innovation across all system levels.

Rogers primarily takes an individual lens when describing the Innovation Decision Process, yet we know that innovation in education involves organisations, including schools, school districts, ministries of education, and non-governmental organisations, to name a few. Rogers does discuss implementation from the perspective of organisations,[42] which resembles the process described above with additional steps, owing to the more people involved in a decision and the greater complexity. Notably, the implementation phase for organisations consists of adaptation of the innovation to the organisation and of the organisation to the innovation, clarification of the relationship between the innovation and the organisation, and the routinisation of the innovation, in which it becomes part of the organisation's ongoing activities.[43] Essentially, this is the process of embedding the innovation into the organisation such that it becomes institutionalised and is no longer seen as new.

This process can be and often is political, given the political nature of education systems, bringing its own twist to the decision-making processes. For instance, social and emotional learning (SEL) frameworks have recently become politicised in the U.S., as political conservatives have begun connecting SEL to critical race theory, resulting in a strong movement against it. This has led some school districts to reframe their SEL learning goals without the mention of SEL, even though the content and goals are mostly unchanged.[44]

Because we take the view that teachers are the primary implementers of innovations, we find the Innovation Decision Process is an appropriate framework for studying how teachers respond to and put innovations into practice. We can also draw from the organisational lens to better understand how systems support and institutionalise an innovation. And of course, there's a messiness to the process, as, by now, we've come to expect. For instance, there may be overlap in the phases with knowledge and persuasion occurring simultaneously, or some phases may precede non-linearly. For instance, a decision to adopt an innovation may come from on high before actors in the system have the persuasion to put it into use. Nevertheless, Rogers' Innovation Decision Process helps make sense of how an innovation moves through a system and the touch points, decisions, and considerations that are occuring.

Figure 7: Rogers' Innovation Decision Process

GETTING TO IMPLEMENTATION:
THE INNOVATION DECISION PROCESS IN PRACTICE

While this paper aims to explore the messiness of implementation, there is also variance and uncertainty as it relates to the stages immediately preceding implementation. This corresponds to the knowledge, persuasion, and decision-making phases in Rogers' theory (see figure above) and the Making the Case phase (Step 4) in NESTA's innovation spiral. Amal Alliance, an NGO innovator in HundrED's community, provided insights on the practical application of the Innovation Decision Process, highlighting the process leading up to implementation.[45] Their efforts to spread holistic social-emotional learning programmes for displaced and disenfranchised children in Bangladesh, Uganda, and Greece[46] mirrored Rogers' stages of knowledge, persuasion, and decision-making. However, the experience and timing varied by implementer type.

In terms of knowledge, NGO partners learned about the innovations through word of mouth, while ministries heard about them intentionally through the NGO's networks and alliances. However, securing ministries' awareness required persistence and outreach through multiple channels.

In the persuasion stage, Amal Alliance found that implementers were more likely to form a favourable opinion of the innovation when it met their existing needs, as we heard earlier from other innovators. NGOs and teachers were often enthusiastic to use the innovation since they lacked SEL programming and were excited to receive the content and training from Amal Alliance. Whereas, parents tended to be less favourable to the innovation (at least initially) due to their lack of understanding of SEL.

In the decision-making stage, political factors, timing, need and the characteristics of the innovation played a role in determining Amal Alliance's success in partnering with governments. For example, in Greece, the Ministry of Education independently introduced a Skills Lab programme that focused on building skills, many of which were social and emotional skills. When they came across Amal Alliance, they recognized that the innovation aligned almost perfectly with the skills they desired to teach (i.e., per Rogers' characteristics, the innovation was perceived to have relative advantage and compatibility). Moreover, Amal Alliance's innovation was easy to use (i.e., low complexity).

Amal Alliance's experiences also show the messiness of the innovation decision process as it relates to the lack of standardisation. Different actors behave differently according to their abilities to take on risk, their openness to innovation, how an innovation aligns with their agenda, and the resources at their disposal. Moreover, the time period for each stage varied, with NGOs moving more quickly to reach a decision to adopt the innovation than governments, which aligns with their different structures, jurisdictions, and size.

RATE OF ADOPTION

This brings us to the rate of innovation adoption. As we have discussed, not all innovations diffuse at the same rate. This is due to factors that include an innovation's characteristics, the composition of adopter categories in a system, norms around innovation, the presence of opinion leaders, champions and change agents, the interactions between people in a system, and the features of the social system itself, expected or unexpected.[47] Some innovations are taken up rapidly while others take much longer to diffuse. What is common among innovations is that the rate of adoption resembles an S-curve, with varying curvature based on the particular innovation and context.[48] In the figure below, we can speculate that Innovation 1 might have had a larger proportion of early adopters, a stronger presence of opinion leaders, champions and change agents, and a more innovation-friendly social system than did Innovation 3. It is also likely that Innovation 1 was perceived by adopters to have greater relative advantage, compatibility, trialability, and observability and lower complexity than Innovation 3. The specific factors will vary but again, as we discussed with the characteristics of the innovation, whether or not the innovation provides a benefit or has evidence of impact, is not driving innovation adoption. Our efforts to explore the messy middle are in part to help innovations realise a steeper S-curve, allowing for innovations that really do move the needle on education to diffuse faster toward optimal scale.

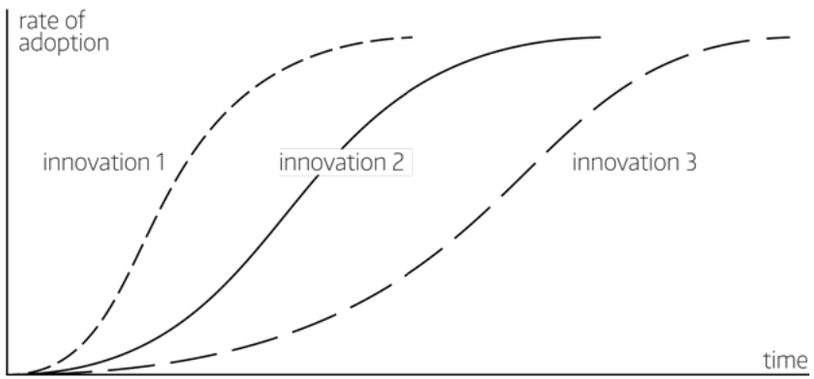


Figure 8: Not All Innovations Diffuse at the Same Rate
Source: Adapted from Rogers (2003).

The Social System

The last element of Rogers' theory of innovation diffusion is the social system. Diffusion theory is fundamentally a theory of communication between people, that is to say it starts from the premise that the social environment, i.e. the context, is the most important factor for understanding how it is that an innovation spreads and scales. We cannot understand innovation without thinking of the context: the context that the innovation was developed in, the context that the innovation was developed for, and the contexts to which the innovation spreads.

But what do we mean when we say context? For for-profit innovators, including the many ed-tech companies in HundrED's community, understanding the product-market fit becomes a challenge when venturing into new markets. This is because different consumer profiles, including classrooms and schools, exist, and the structure of these consumers varies. Innovators must also ensure that the content of their innovation aligns with the educational standards, curricula guidelines, and policies specific to the target markets they seek to scale within. In essence, modifying their innovation to suit the context of the market is crucial for successful expansion.

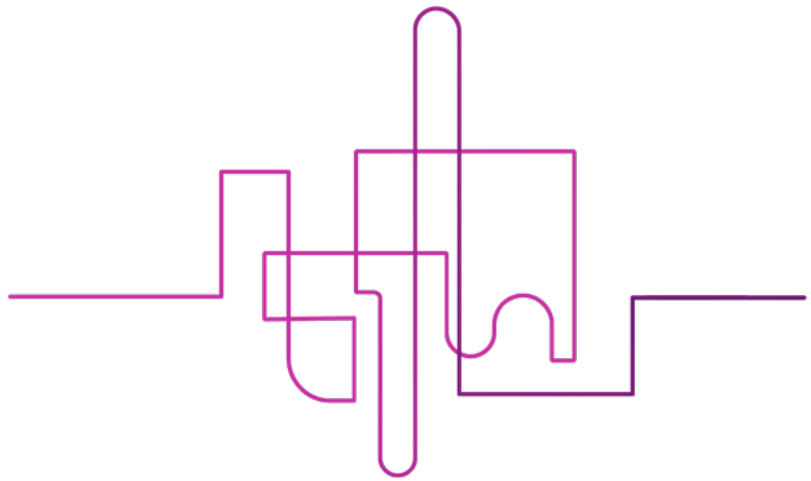
Take, for instance, Aanaab, an EdTech platform led by a private sector company, that provides a full range of professional development opportunities for teachers, schools and governments in the Middle East and North Africa regions. Aanaab has been accredited by the Technical and Vocational Training Corporation (TVTC), the dedicated government agency for technical and vocational training in Saudi Arabia, as well as the National eLearning Center (NELC), making Aanaab the first private licensed online training provider in the Kingdom of Saudi Arabia.

The principles of contextual fit, including the understanding of structural dynamics such as policy and curricular considerations, are equally crucial for non-profit innovations. These innovations also aim to find their place within the existing education ecosystem.

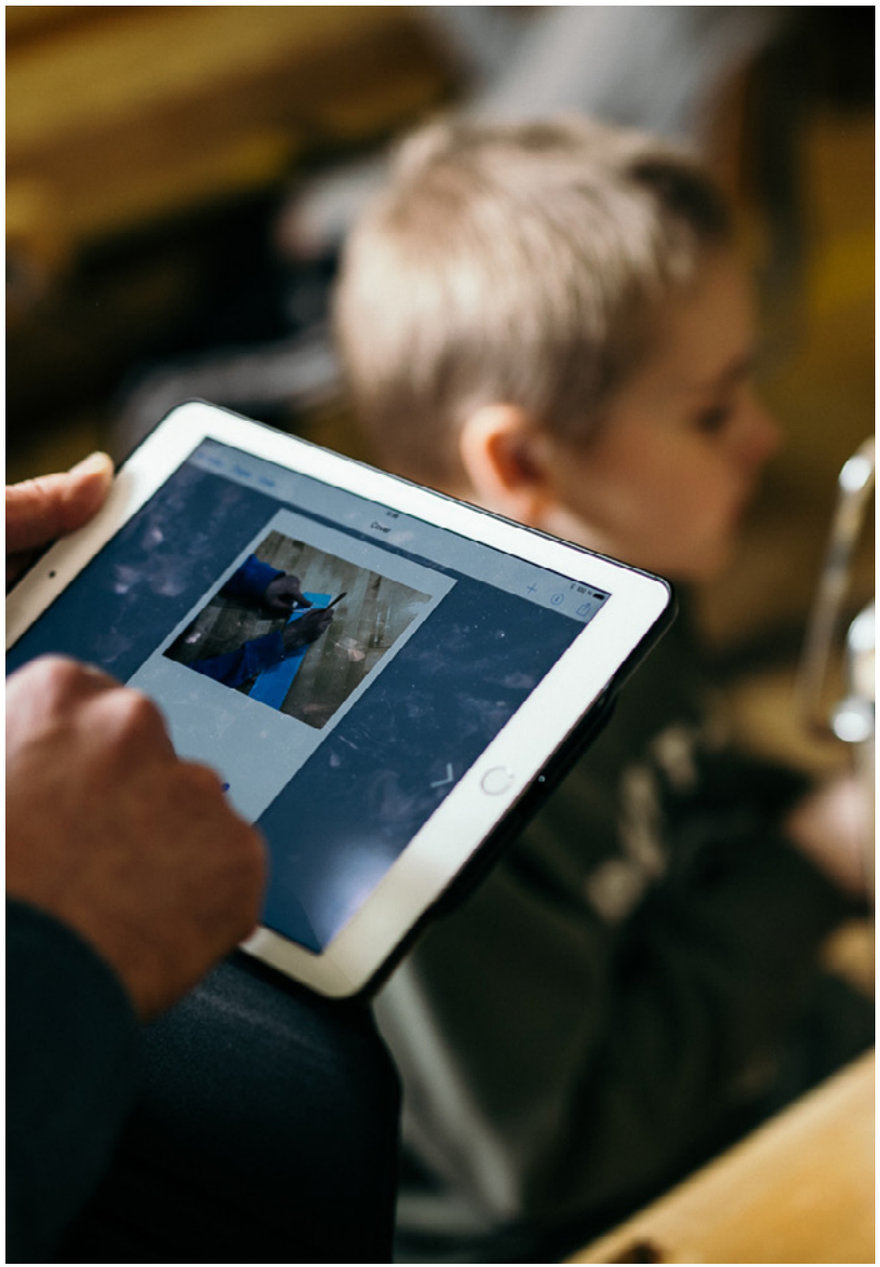
In both cases, whether it is a for-profit or non-profit innovation, the issue of contextualisation and establishing relationships with the users, spreaders, and beneficiaries of the innovation revolves around power dynamics. It requires time and building connections with the relevant stakeholders. This complexity stems from the fact that these dynamics and the mechanisms for determining roles and decision-making authority differ across countries. People's roles and perspectives evolve over time as they transition to new organisations or assume different positions within their current ones. Teachers progress to become department heads, head teachers, principals, or superintendents, and as their capacities and roles develop, the networks and capacity-building efforts that were established with individuals in specific roles and organisations also evolve. This can sometimes have a positive impact, such as the case with a Second Chance champion who rose through the ranks of government and helped pave the way for the innovation's scale to new regions. It can also work negatively, such as when a highly-invested Superintendent in Parents as Allies left for a new role and her replacement decided not to participate in the programme the following year.

That is to say, the context itself is not static; the context is in flux and may even change as a result of adopting the innovation. At the heart of it, context itself is a relational construct. And this means we have to think from the beginning about communication, about people, about relationships, about power, about *how* it is and *who* it is that makes innovation happen, who has the authority to make decisions, who does the implementation, and not have the expectation that things would progress in a linear fashion or neatly.

Photo: VVOB



What Happens During the Messy Middle?



In this section, we examine five cases to delve into the complexities of the messy middle. These five cases are:

- Helsinki Education Division: Slam Out Loud and iMoves
- Parents as Allies
- Teaching at the Right Level
- Speed School and Second Chance
- Sapieduca

2017
ESTABLISHED

4.7M
CHILDREN

16
COUNTRIES

Slam Out Loud

What Is It?

HED adapted two innovations from HundrED's catalogue to the Helsinki primary curriculum: 1) Slam Out Loud, an Indian-origin innovation that uses the power of performance and visual arts to build SEL and creative confidence skills, and 2) iMoves, a UK-origin innovation that consists of innovative and simple exercise programmes catering to different age groups and abilities, promoting physical and mental health and wellbeing.

HED aimed to explore the student experience with innovation, finding this a more important measure than traditional impact measures.

The teachers also recognised that the impact of the trials, beyond students' general satisfaction and skill development, could only be understood on a much longer time horizon than the length of the implementation itself. If the students, in several years, are still oriented toward daily movement or are excited about international collaboration and skilled at giving peer feedback, then it may be possible to trace that back to their experiences with these innovations.

What Has Been the Pathway to Implementation?

Discussions with HED began at the Director-level, what can be considered the middle-layer of the national education system and teachers were later brought on board. Pedagogical experts, situated between the HED Director and the teachers, were key to the innovation's implementation.

HIC HundrED Implementation Centre

Aspects of Scale

Scaling out to new contexts, both geographically into Finland and also expanding their offerings for students with special needs and disabilities

Scaling deep to change teacher mindsets, for example around the use of meditation techniques not typically used in Finnish schools

Scaling up to influence how decision-makers approach internationalisation in special needs schools and approach student wellbeing through innovation in the school environment

Implementers

Teachers integrating the innovations into their classrooms in a way that fit their context

Students who benefited from the new innovations

Lead teachers, at the middle layer (of the school), who supported and championed the implementation

Principals and HED members, at the top layer of the system (in this case), who believed in the power of internationalisation and sought to learn from the outside around wellbeing

HundrED providing change agent support to facilitate the implementation

imoves

What Is It?

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What Aspects of Scale Are Occuring?

Scaling out to a new context, early childhood education centers in Helsinki

Scaling deep to provide moments where teachers and children experience participatory play at the same level

Scaling up to influence how decision-makers approach resourcing for wellbeing activities for children in early childhood education and care

Who Are the Implementers?

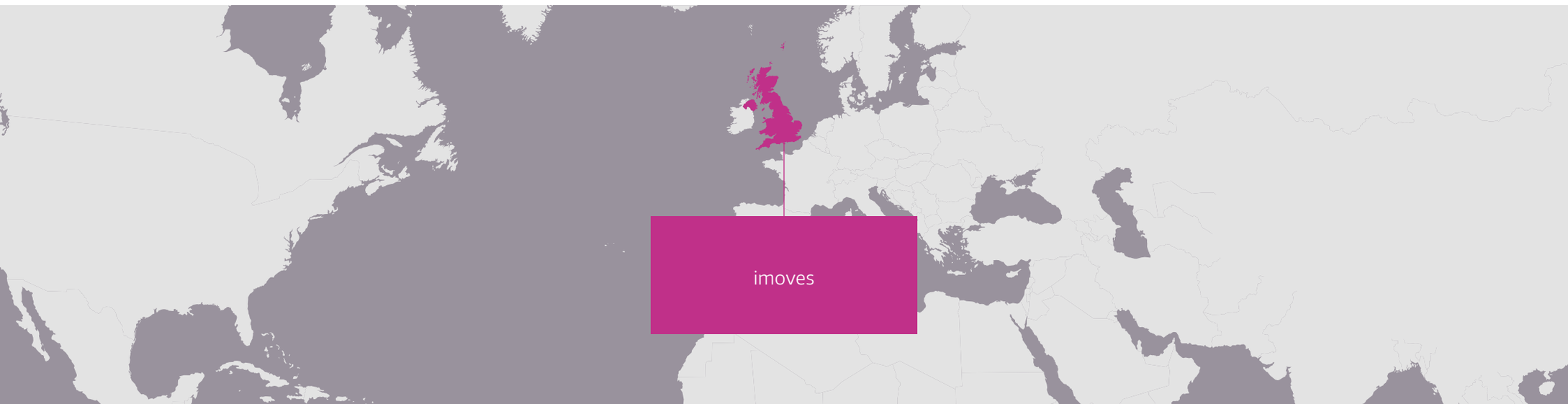
Early childhood education teachers integrating the innovations into their daily routines in a way that fit their context

Children who benefited from the new innovations

Pedagogical experts, at the middle layer (of the school), who supported and championed the implementation

Daycare managers and HED members, at the top layer of the district (in this case), who believed in the power of innovation and sought to learn from the outside around wellbeing

HundrED providing change agent support to facilitate the implementation



Parents as Allies

What Is It?

Small teams of parents, teachers, school staff, and administrators work together to design solutions to improve family-school engagement. Using the principles of human-centred design, teams conduct empathy interviews to probe community needs, design and test "hacks" such as community events, makerspaces, and coffee talks where families feel welcomed and connected to schools, ultimately supporting student learning and wellbeing.

The project began in 2021 and included 11 districts in Southwestern PA along with 6 international locations. The project, now in its second iteration, is focusing on to western Pennsylvania, supporting a total of 28 districts, including 9 districts that had participated in the first year of the project. As the project is still relatively new, its impact is currently being measured; however, design teams have reported positive changes in school culture and mindset shifts around family-school engagement.

What Has Been the Pathway to Implementation?

Discussions around PAA began at the Superintendent level, or what can be seen as the middle layer of the state-wide education system. Those superintendents then selected principals and schools that would be ripe for implementing the innovation, while championing a participatory approach that early on engaged parents, teachers, and other school staff.

HIC HundrED Implementation Centre

What Aspects of Scale Are Occuring?

Scaling out as the project transitioned from a few districts to many

Scaling deep as the project sought to change beliefs around family-school engagement

Scaling up as PAA teams complete Integration and Allocation plans intended to sustain what they have learned and increase support for family-school engagement. Plans have included creating a natural home for family-school engagement goals and strategies like the school improvement plan, or introducing and repurposing investments, such as at least one district that included a budget line item for family-school engagement activities. Another example of scaling up is a school superintendent who instituted family-school engagement training for all new teachers across his district after participating in two rounds of the project.

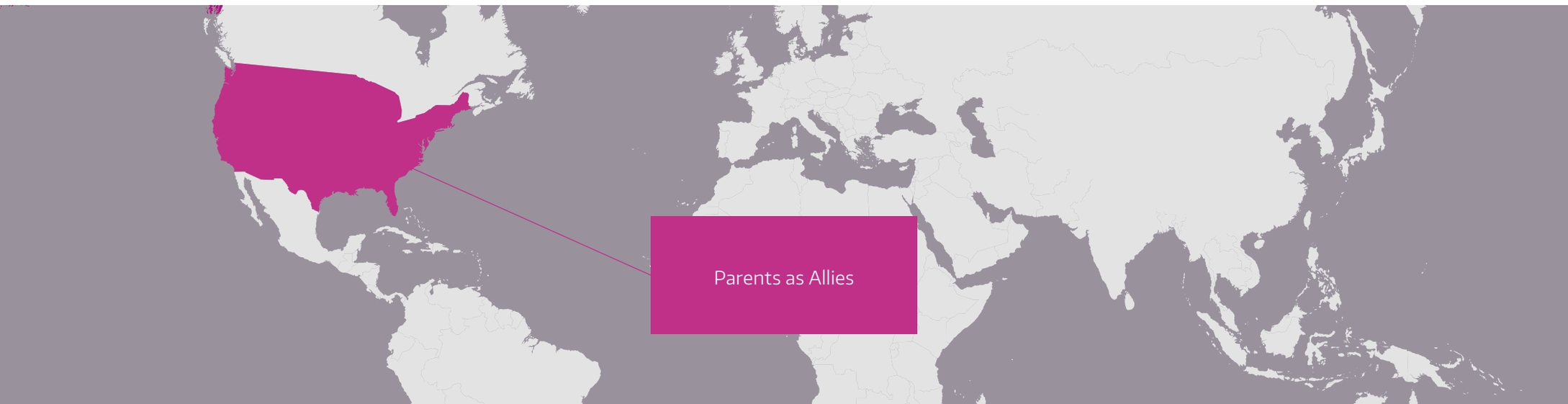
Who Are the Implementers?

Design Teams at each school (parents and school personnel)

Families, students, teachers, administrators and community members that participate in the hacks

Kidsburgh, the project organiser, provides a central point of contact for design teams, guidance and support

The Center for Universal Education at the Brookings Institution, Learning Heroes, and HundrED are support partners who provide research, implementation and impact measurement support. The Grable Foundation has generously provided financial support for the project.



Teaching at the Right Level (TaRL)

What Is It?

A foundational literacy and numeracy innovation in which primary school students are grouped by learning level rather than age. Students are assessed at the beginning of the program, and then receive learning-level vs. age-level content in small groups. The program includes a focus on child-centred learning as well as instruction in local languages. The innovation originated in India in the early 2000s by the non-governmental organisation Pratham and has since spread to several countries around the world. This case study focuses on TaRL's spread to several countries in Sub-Saharan Africa beginning with Zambia in 2016. Pratham and J-PAL supported national governments and partner organisations in implementing the programs in Africa before forming an independent entity, TaRL Africa, in 2019, which currently supports governments in their implementation of TaRL, including contextualisation, capacity building and strategic review and planning.

The program has been evaluated by J-PAL in several studies and has shown that when implemented well the program is effective in achieving positive reading and maths gains.

What Has Been the Pathway to Implementation?

Discussions often begin at the national or top level of the education system and classroom teachers are then brought on board to implement. The middle-layer of the system, including regional or sub-national level officials, has proven to be key to securing support for the innovation.

What Aspects of Scale Are Occuring?

Scaling out, as the innovation reaches more students in new countries

Scaling deep, as the innovation seeks to change mindsets around how learning happens and how students should progress through the education system

Scaling up, as governments create new policies around remedial learning, teacher training and budgets that support the implementation of TaRL

Who Are the Implementers?

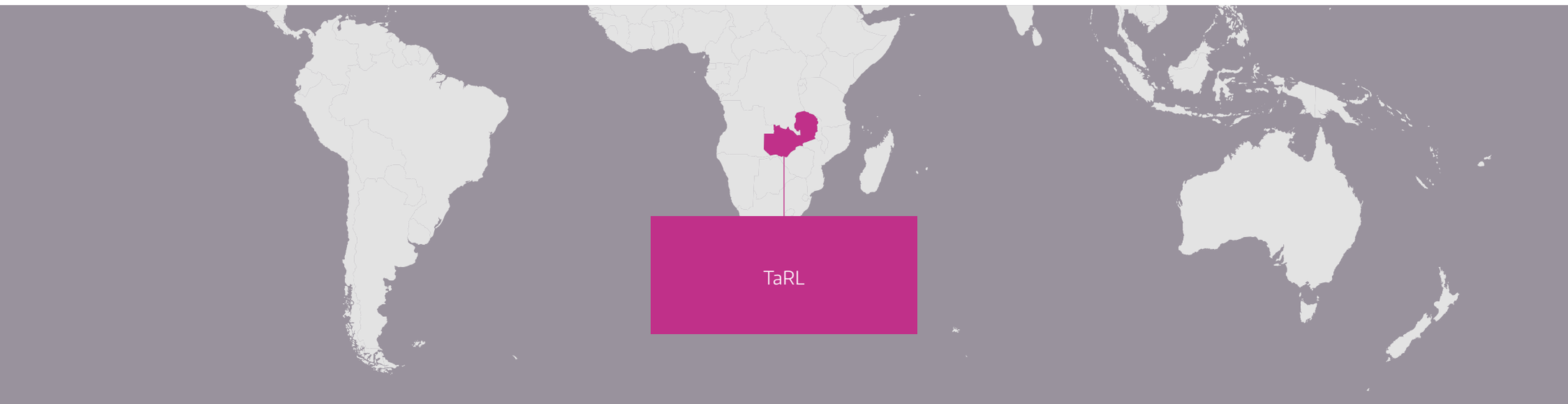
Teachers using the TaRL methodology in classrooms

Mentors at the middle layer who learn the pedagogy and provide training and mentoring support and monitoring to teachers

National governments who make decisions to adopt TaRL, prioritise TaRL through policy decisions and budget support and create materials that are contextualised for their communities

Students who receive the instruction and benefit from the innovation

Organisations including Pratham, J-PAL, TaRL Africa, VVOB, Youth Impact, and others that support the implementation of TaRL through technical, relational, and coordination work



Speed School and Second Chance

Originally developed in West Africa by the Stromme Foundation, Speed School and Second Chance are accelerated learning programs that operate in a handful of countries. This paper zeroes in on their experiences in Ethiopia. The programmes deliver accelerated learning to help out-of-school students catch up to grade level and transition into conventional classrooms in government schools. The programmes take a holistic view and include elements such as mothers' savings groups to help families afford school materials and support their child's education over the long-term.

Speed School is operated by the international philanthropy advising firm, Geneva Global, and Second Chance by the non-profit Luminos Fund. In recent years, the Ethiopian Government has taken over as programme operator and funder in the country's largest regions and some others.

Both programmes have shown remarkable success, with 90% or more students completing the accelerated learning and transitioning to government schools.

What Has Been the Pathway to Implementation?

Discussions around implementation have originated at both the national, or top level of the system, as well as at the regional, or sub-national level. Teachers at the classroom level are bought-in and trained, while middle-level officials are seen as integral to the program's support and scaling.

HIC HundrED Implementation Centre

What Aspects of Scale Are Occuring?

Scaling out, as the programmes reach more learners in more regions in Ethiopia

Scaling deep, as the programmes change mindsets around teaching pedagogy and teacher training. Through partnerships with the Ethiopian government, teachers not part of the accelerated learning programmes receive training in the methodologies, while others are influenced by their peers who teach accelerated learning and begin to try out the pedagogies in their own classrooms. In addition, scaling deep occurs as mindset shifts happen around the possibilities for accelerated learning. Some government contacts had initially been sceptical that the programme could achieve their desired outcomes in only 10 months of learning and through instruction by paraprofessional teachers; however the programmes' success has changed their belief system around what can work in education.

Scaling up, as the programmes work with governments to create new teacher training policies and curricula and practices, ensuring that more than just programme teachers receive pedagogical training. Scaling up also occurs as the government begins to fund and operate its own accelerated learning programmes and bring on new national and international partners.

Who Are the Implementers?

Paraprofessional and community teachers carrying out the accelerated learning methodology when the programmes are managed and guided by Geneva Global and Luminos and implemented by grantee local civil society organisations

Government teachers carrying out the accelerated learning methodology when the programmes are run by the government

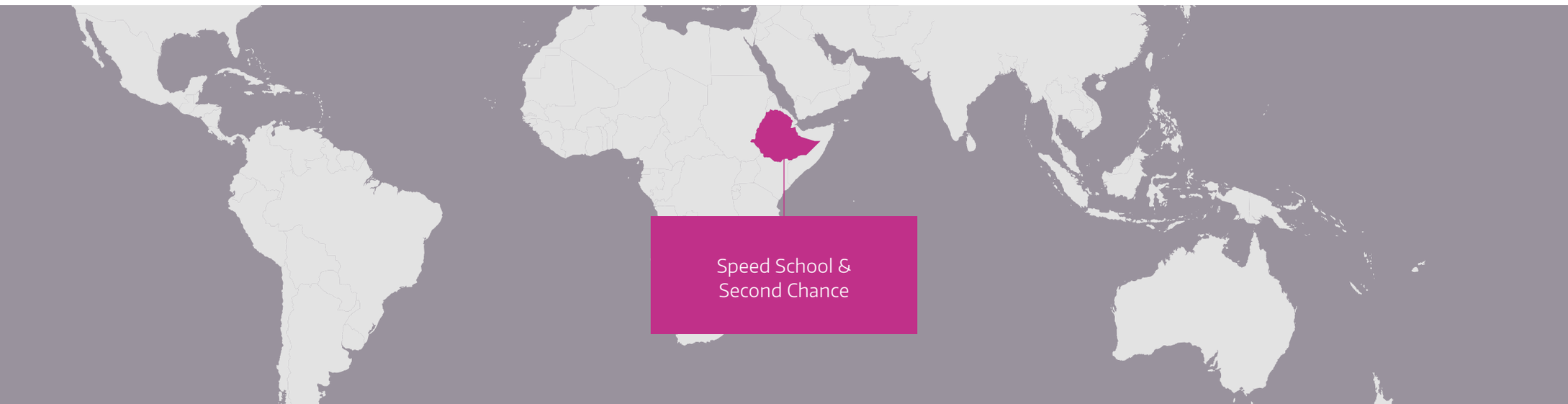
Head teachers, inspectors, mentors, supervisors at the middle layer who monitor and enforce the classroom programmes

Students receiving the instruction

National government making decisions on teaching standards & budgets

Colleges of teacher education and universities that are beginning to teach and use the programmes' teaching methodologies

Luminos and Geneva Global, the innovators, who at times take on the roles of both implementer and change agent



Sapieduca

What Is It?

Developed in Brazil, Sapieduca was born from the needs of public school teachers to overcome the challenges of keeping students engaged and to enhance teachers' ability to work effectively with formative assessment. The solution gave rise to a platform that enables teachers and students to set out student personal projects; obtain performance metrics; check the progression of studies; promote classroom gameplay and launch challenges. The platform is aligned with the Brazilian National Common Core Curriculum (BNCC) and also can be used with any kind of content.

The innovation is motivated by two core concepts: the needs for young people to be protagonists in their learning process and the needs to understand the impact of technologies on the educational environment.

What Has Been the Pathway to Implementation?

Sapieduca has been marketed directly to teachers. Teachers from Mathematics, Chemistry, Geography, Portuguese Language, Art, History and Biology have participated throughout the years of 2019 and 2020. During the COVID-19 pandemic, the tool proved to be effective, which also revealed the full potential of the platform in remote learning. It has currently been used by over 100 teachers and over 1500 students. New features are being prepared, with plans to scale to 100.000 users in the next two years.

What Aspects of Scale Are Occuring?

Scaling Out - over the past 5 years, Sapieduca has been used by more than 1500 students with plans underway to scale to additional users

Scaling Deep - To apply the app's features and activate individual and collective playful engagement, educators need to be open to a new pedagogical mindset. This way of thinking reverses the logic of traditional grades, because in Sapieduca's methodology, students already start at a certain level of knowledge and need to maintain it and, above all, increase this level. To do so, students need to fulfil the activities proposed by the teacher and, with that, receive recognition for their achievements.

This inversion of the logic of offering grades is quite different and innovative compared to traditional approaches to student assessment. In fact, this fostered a new pedagogical approach for teachers to be open to knowing and, above all, verifying in practice how this dynamic takes place in their own context.

Who Are the Implementers?

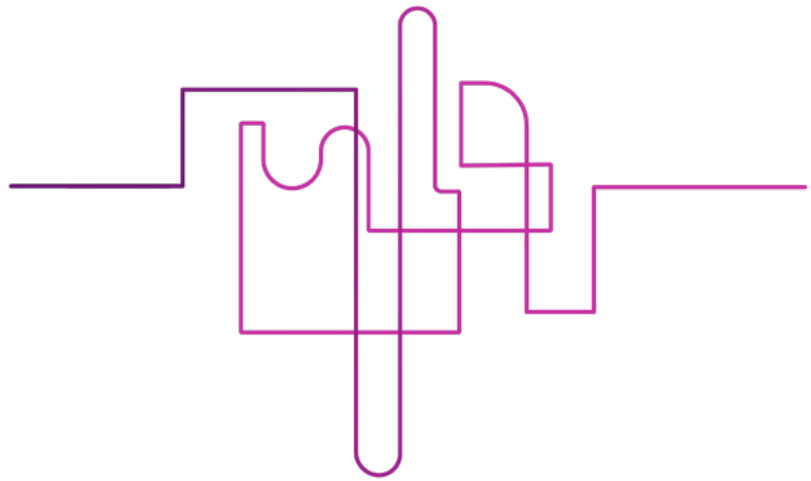
Students who engage with the app and become protagonists in their education. Parents who are also able to view the app and gain a window into their child's learning.

Teachers participated in the trials and lead the implementation and adoption of the innovation in the classroom.

At the classroom level, teachers and coordinators have been early adopters. Their support and understanding of the benefits and challenges that Sapieduca works with is helping build a community of enthusiasts who will be developers of playful and engaging learning.

Government - through the IdeiaGov project organised by the Government of the State of São Paulo, who is working in partnerships with Sapieduca to expand the program

Sapieduca staff who support the app's maintenance and make the case for expansion



Key Learnings

Case Study Learnings

During the Messy Middle, implementers are on a future-oriented journey. This stage is characterised by change, as implementers transition from the current state to the desired future state of institutionalisation. The messy middle involves learning by doing in a sense-making process of understanding the who, why, what and how of an innovation in practice. We recognise that the middle is messy along several different axes. It's messy because it involves people. Not only are there multiple stakeholders (parents, students, teachers, principals, administrators and policy makers) who have different roles, each within these groups of people has levels of individual agency and collective agency, varying capacities and capabilities, different social networks, unique personalities, shared and disparate previous experiences, different needs and wants, and changing emotions. It's messy because people perceive the reasons to implement innovations differently, their utility to solve a certain problem or address certain challenges. Sometimes, it can be difficult to uncover the "root cause" of a problem or issue because people have different perspectives on what constitutes a cause, and may have difficulty even agreeing that something is a problem at all. Even when alignment is reached around key priorities, an innovation's ability to provide a solution in practice, or decisions around how resources should be allocated to address competing agendas, can be messy. These issues become entangled in considerations of ethics, politics, judgement and power. Even when people agree about what we should do, why we should do it, who should do it and how we should do it, the complexities around ethics, politics, judgement and power can create a mess of its own - and this is typically what we mean when we say that implementation is messy. In the following section we draw on the experiences of HundrED innovators and implementing partners to explore how they have navigated these messy questions around the who, why, what and how of implementation at scale.

Key Learnings on Case Studies

SLAM OUT LOUD

Value of middle-layer, even without decision-making authority, can help champion and provide support.

Trust and dialogue are key, and developing open channels of communication and shared understanding early in the process help facilitate the innovation decision process.

Students' participation in the implementation was meaningfully recognised and celebrated. HundrED visited on-site during the students' Final Showcase and students were given certificates from Slam Out Loud.

IMOVES

An innovation can be implemented for different reasons. One teacher liked the idea of bringing in international innovations, while another was more attracted to the wellbeing components.

The innovation itself can provide a meaningful sense of equity between the teacher and the students, for example imoves is playful activity the teacher and students can do together at the same level. Students' perspectives and experiences are taken into account when deciding to embed the innovation.

Implementation can mean deciding not to continue. During the planning, one school decided to stop; other schools realised that the main challenges they faced had nothing to do with the innovation, but about staffing shortages.

SPEED SCHOOL AND SECOND CHANCE

Flexible adaptation. The programmes have worked closely with the Government of Ethiopia at both the central and decentralised levels to adjust the model while still maintaining fidelity to the goals and core elements of accelerated learning, for example, holistic learning, holistic training, and small group management. In cases where certified teachers can only teach for four hours per day, outcomes are correspondingly adjusted from three years of learning to two years.

Importance of middle-layer champions and monitoring as the programme has scaled out and up. Inspectors and school principals are key to monitoring and maintaining quality in the classroom. Champions in middle level positions in government have helped the programmes spread to new districts, zones, and regions.

Influencing the overall ecosystem by showing what child-centred, activity-based, joyful, and small group learning can look like and working with the government to train all teachers in designing and delivering lessons this way. (This includes re-teaching these concepts in cases where they have not been adequately taught to teachers previously–e.g., teaching learner-centred methods by using learner-centred methods, not as a two-hour lecture). In addition the Ministry and several regions launched Speed School Units in 2021, showing how the innovation has changed and influenced the broader education system.

Recognizing the need to sometimes slow down. There have been cases when the government wanted to move faster than existing capacity and processes in place would have allowed. Geneva Global and Luminos have managed this enthusiasm while working with the relevant government units and agents to recognize the minimum requirements for being able to realise success.

PARENTS AS ALLIES

Importance of change agents, namely Kidsburgh, that goes to the hack events, celebrates the teams, and writes stories about their work online, through a cohort newsletter, at conferences and through international associations.

The process of co-creation with parents builds trust & alignment among and between families and schools.

The project disrupts traditional thinking on who should be involved in child's education and how by empowering, valuing, and welcoming families.

Superintendent buy-in sought at beginning helped paved the way for PAA's expansion.

Hacks help principals, teachers, and parents evaluate what works for their context. According to one principal's summary, "*The issue is momentum and how to sustain it. The fall event went so well, there was almost a natural drop off. How do we keep people involved, excited and contributing to build momentum? The answer may be smaller things during the slower times.*"

TEACHING AT THE RIGHT LEVEL (TARL)

Flexible adaptation and co-creation: the TaRL model includes the core components of methodology (grouping by learning levels measured through simple assessments), materials (suitable by levels and context), measurement (assessments), monitoring (mentoring, review and support to teachers), and resources (funding and human resources); yet the details of these components can be adjusted to match the context of where the implementation is taking place. For example, some TaRL programmes are led by volunteers, some take place after-school, and some are run by government teachers during school hours. As governments implement the model they are encouraged from the beginning to co-create and adjust the programs to their context.

TaRL Africa as an organisation can be seen as a change agent, an external system actor helping to see the programme is implemented with quality within the different country contexts.

The TaRL innovation has high observability and the opportunity to see the results in near real-time has made it easier to diffuse.

There is a mindset shift needed because TaRL disrupts traditional thinking on education progression.

TaRL does not only mean implementation at school level: to properly implement TaRL it requires an implementation across all three levels of the system, including bringing in middle and top layers of Ministries of Education around assessment, monitoring and budgets, which are now considered features of the innovation.

TaRL's origins in India may have helped it to spread to other countries in the Global South, as it was more applicable than innovations originating in Global North contexts. Though this is not to say that contextual adjustments have not had to be made.

Both Pratham and TaRL Africa recognize the importance of ongoing experimentation and devote resources to continual testing of new ideas.

SAPIEDUCA

Changes in management and/or policies are sensitive and directly affect pedagogical planning.

Changes in education guidelines,the absence of clear learning goals, and/or change in personnel has lead to discontinuation of the innovation in certain locations

The innovators know they cannot create change alone. They rely on the government to invest in training so that teachers can take ownership of concepts such as active methodologies, formative assessment, gamification and teaching, and the use of ICTs in the classroom.

Photo: Parents as Allies

Understanding the "Who"
Nurturing Agency, Trust and System-Level Linkages

As an innovation is being implemented, innovators and implementers need to identify the intended beneficiaries of the innovation, the key players involved in putting an innovation into practice, as well as the individuals and organisations who will champion and support its implementation. This information is highly context dependent and can change over time. It is also heavily influenced by issues of agency, power, and trust among individuals and across system layers. Below we explore some strategies that innovations have taken around the identification of the "who", calling attention to three key areas:

- Agency and power
- Trust and co-design
- Linkages between each system layer.

Decisions around many innovations implemented at scale, and especially in lower and middle-income countries, can come from the top-layers of a system. When authority is unidirectional from the top, it can mean that classroom-level implementers, i.e., teachers, have little agency to decide what innovations to use to support student learning and wellbeing or how to adjust a given innovation to meet individual classroom or student needs. The examples we have studied show that bringing in teachers into the innovation process and ensuring their agency over key classroom-level decisions is a recipe for navigating the messy middle, as it leads to a greater sense of ownership over their own classroom implementation of the innovation and dismantling of unproductive power structures that impede progress. For instance, in the HED Tailor-Made, teachers had the agency to stop an innovation if it did not meet their objectives. In one instance, a teacher who was initially excited about the trial at the initial kickoff realised during the planning phase that a different innovation had greater relative advantage and decided to recommit to using the other innovation. The messiness is that it is often only *during* implementation that this recognition can come about. Of course, we recognise that the Finnish context is quite unique and that teachers' agency to decide what innovations to pick and choose is not available everywhere. Agency goes hand in hand with what Muskin calls extrinsic capacity, which includes the role that middle and top level actors and decision-makers play to create the conditions for teachers to use, modify, or discontinue an innovation.[49] Agency also ties in with teachers' motivations and aims for using an innovation, which we explore below.

> Another strategy to navigate the messy middle is by nurturing trust through a co-design process.

Another strategy to navigate the messy middle is by nurturing trust through a co-design process. A hallmark of Parents as Allies is that teams of parents and school staff work together to co-design solutions that support family engagement and foster student learning and wellbeing. By deeply engaging parents in the innovation process and empowering them to design solutions for other parents like themselves, Parents as Allies helps to foster relational trust between families and schools, which builds alignment between these groups and further strengthens the goals of the innovation.[50] This identification of the "who" and the right mechanisms to engage this key group of actors, and to do so early in the process, has been a critical factor in the broad support for the innovation. For example, one design team hosted monthly gatherings throughout fall 2022 for families that do not speak English as their first language. This was a relaxed space for the families to ask questions, share experiences, access resources and information and advocate for their children. The gatherings helped the design team better understand parents' needs and try out hacks that included improved signage in the school. It was critical to co-design these ideas with families and also secure their trust and feedback as the hacks were tested. This is one example of more explicitly articulating and addressing the needs of parents in the innovation process. The strategy can be extended to other groups including teachers, students, and school leaders.

A final consideration for navigating the messy middle when trying to understand the "who" is to appreciate and understand the linkages between each system layer. During implementation, the actors in the middle-layer of systems play an outsized role. Teachers tend to be the closest to an innovation, i.e., they are implementing a new pedagogy or introducing new content materials in their classroom, while top level leaders play a role in deciding what becomes part of standardised curricula, how budgets are allocated, and what requirements should be included in teacher training programs, and their input and buy-in for an innovation is critical. At the same time, interactions with middle-level actors, who may be at the district or regional level depending on the system, are very important during the messy middle of implementation. These actors can pass along, ideally positive, information about the innovation to the highest levels of a system, including ministers and policymakers, while providing information and support to the school level. As such, the middle-layer actors form a bridge between the classroom-level and the top-level of the system. This group of actors is closest to each of the other levels and thus can better understand and communicate the perspectives and experiences of the two other levels to each other.[51] Middle-layer actors tend to be much less visible, and there has been a lack of research on this influential group, however that is changing with a growing recognition of these actors' influence.[52]

The experience of HED emphasises the significance of middle-level support, namely of the pedagogical experts, who work at the district level and support school teachers.

The experience of HED emphasises the significance of middle-level support, namely of the pedagogical experts, who work at the district level and support school teachers. The pedagogical leads played a key role in identifying the innovations that would be appropriate to meet the district level educational aims, recruiting the teachers who would be a good fit for implementing a new innovation with their students, and being interested to know about the teachers' experiences with the implementations. The actors did not hold formal decision-making authority over the innovation, yet their presence helped generate excitement and interest for the implementation to continue. In this case, the additional layer of actors between teachers and the district can be seen as a positive redundancy that contributes to effective, adaptable systems.[53] In efficiency-focused systems, there is no room for redundancy, yet this example shows how the presence of these actors, while not decision-makers, helped to enhance the implementation.

Another example of understanding the linkages between system layers is the recognition that as people are promoted within a system, they can bring greater support to an innovation.The Luminos Fund recounted an example of a champion, a mid-level decision-maker at the time, who was initially quite against the new innovation and did not believe it could help students learn three years of content in one year. However, when Luminos showed him the innovation in practise and gave him the opportunity to talk with students and teachers in the program and observe the learning taking place, he became an ardent supporter. When he was promoted to a position higher up in the government, he was instrumental in helping the program get codified into national policy. While it is not possible to predict who will be promoted within a system, it underscores the importance of recognizing both the impermanence of actors in a system as well as the importance of cultivating champions broadly within and across layers of a system. Steffaan Vande Walle of VVOB noted that more attention could be paid to selecting the right champions[54], which may mean considering the extent to which characteristics of champions like gender, social status, age, power, etc. are taken into account.

Understanding the "Why"
Motivations and Aims for Innovation at Scale

Those implementing an innovation need to consider why the innovation is needed or wanted, what challenges the innovation is trying to solve, how the innovation will improve student learning, and how the innovation fits within the existing system.

The messiness here is that the "why" for an innovation can change from one context to another, as there are different underlying factors and conditions in different contexts. Motivations and aims for innovation can also vary considerably by stakeholder group, as we saw from the case study examples, and there can sometimes be a tension between the aims of the innovation and the broader education system. Often when an innovation is implemented, it must try to, "break the mold of conventional schooling in some ways while conforming to it in others," as noted by Columbia University professor Thomas Hatch.[55] New ideas do not operate in a vacuum but are rather working within and sometimes against existing structures and beliefs, and Hatch notes that finding places where values align around change can be a powerful place to introduce new innovations.[56]

People have different goals and motivations around an innovation, as we saw with Helsinki Education Division.

As Second Chance has expanded to other countries outside of Ethiopia, including in Liberia and Lebanon, where a larger proportion of students are out-of-school, they have had to make a number of adaptations.[57] In these new contexts, the innovation needs to solve different challenges and fits within the existing system in a different way, showing that the why can change across contexts and must be continually examined.

Another example of identifying the "why" comes from Parents as Allies and a design team that chose to innovate around barriers to family engagement. After surveying parents and discovering that very few had the required clearances to participate in on-campus events and activities, they sought to innovate around ways to remove such barriers to drive participation. This required taking a closer look as to why families might not have the resources to obtain clearances like background checks or why they may feel uncomfortable doing so - factors that extend beyond the education system and link to complex societal issues of poverty and racism. This process of discovery also translated into a recognition that the school could do more to make families feel welcome. Had the design team not properly understood the why, they might have come up with solutions that did not address the multi-faceted challenge of parents' lack of access to the schools.

This also speaks to a recognition that root causes are difficult to identify. There may be multiple reasons why a given challenge is occurring that can be difficult to surface; we often get it wrong or only partially right. The lesson the case study example showed us was that taking the time to discern what the root causes are - both as an idea is being developed as well as when it is implemented - and doing so through established trust with stakeholders makes the root causes easier to identify.

In addition, people have different goals and motivations around an innovation, as we saw with Helsinki Education Division. Some teachers were interested in participating in the implementation because of an innovations' focus on wellbeing while others were more interested in the innovation's linkages to international contexts. The teachers' varying motivations for participating in the innovation implementations also led them to personally evaluate the fit and impact, "success" of the implementation, and their satisfaction and continued interest in the innovation, according to the pedagogical aims they saw as most relevant to their students. The district leaders supported the teachers in their own assessments during the implementation. Leaders saw each of the unique motivations as both related to the teachers' own autonomous professional decision-

making, and also as aligned with the district's overarching goals not only for student outcomes but also the agency and wellbeing of the teachers themselves as part of the sustenance of the entire education ecosystem.

One of our core aims in our implementation work at HundrED is to develop teachers' capabilities in the context of innovating and implementing educational innovations. Drawing on Sen's capability theory, we see that this requires that teachers are able to pursue the development of their teaching in ways that they themselves have reason to value.[58] It also requires that the educational ecosystem is developed in policy, leadership and practice in such a way that increases the degrees of freedom professionally trained and trusted teachers can take in innovating their teaching. Teachers' capabilities and cultures of innovation are not developed in isolation, but through social interaction and dialogue with other actors - leaders, other teachers, parents and students. By acknowledging and affirming the teachers' differing motivations, the teachers were able to develop their own stances in relation to the innovation, and there was more likelihood the innovation would be taken up in ways that fit into the teachers' existing practice.

What these examples have also shown us is the need for coordination and alignment with stakeholders, which is needed in addition to an understanding of the linkages between system layers as we highlighted above. Any innovation needs coordination and alignment between and across the classroom, middle, and top levels of a system. The innovation will not be sustained if any of the levels are not on board. As Maud Seghers of VVOB shared with us, "*Coordination is always necessary to cut through the messiness. It can happen in more or less formal ways and settings.*" [59] Some of the strategies for doing this are to bring in stakeholders early on into the process, allow time for perspective sharing and reflection, and establish mechanisms for building alignment. One such mechanism is the Conversation Starter Tools by the Brookings Institution developed to build alignment between families and schools.[60] The concept behind these tools, which bring stakeholders together to surface assumptions and discuss core values in education through inclusive, consultative processes, could be applied to other contexts to meet a particular communities' needs. This of course takes work and time but is a necessary aspect of navigating the messy middle.

One approach employed by organisations including Geneva Global and TaRL Africa to achieve alignment and help stakeholders understand the why behind an innovation involves sending middle-level decision makers into the classroom to learn how to use an innovation. This fosters deeper personal motivation and support for the innovation, as leaders can observe how it is happening, and creates champions who believe in the innovation and can advocate for it at higher levels. As we heard referenced in almost every case we studied, there is tremendous power in seeing an innovation up close, and this is especially true for the many stakeholders that are not based in a classroom day-to-day.

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Understanding the "What" and "How"
Sustaining an Innovation's Theory of Change Through Iteration

Every innovation has an implicit or explicit theory of change for how it will create impact. During the messy middle, the theory of change of an innovation will be tested as the innovation moves through adaptation. Implementers will need to determine what are the core elements of the innovation that cannot be adjusted without altering the innovation's impact (which refers to fidelity) and to balance this with iteration and adaptation that is a part of every implementation. There can be a tension around innovation designers and implementers being able to identify which elements of an innovation are core components to the success of the intervention and which elements may be modified or stripped away. This is particularly true when implementing the innovation at scale and across contexts, also because these decisions are not static.

There can be a tension around innovation designers and implementers being able to identify which elements of an innovation are core components to the success of the intervention and which elements may be modified or stripped away.

The case of TaRL illustrates the example of fidelity and iteration well. TaRL is a well-established innovation operating on multiple continents. Yet, after being implemented in several African countries, TaRL Africa started to talk about the innovation in a different way that to us expands the definition of fidelity while maintaining the same theory of change. Teachers using TaRL in the classroom were doing so with fidelity to the model, but the innovation needed more than that to scale, namely buy-in and involvement at middle and national levels around things like assessment, monitoring, review processes and incorporation into national budgets. As TaRL Africa articulates how the model functions in sub-Saharan Africa, the organisation considers what needs to happen at three levels: the school, regional and national levels.

As Chavi Jain, Deputy Director of Measurement, Learning & Evaluation at TaRL Africa explained to us, *"[when] we talk about TaRL, as a whole, we deliberately talk about the different support elements and not just the methodology...Implementation needs to be at these three levels for the program to happen really well."*[51] To us, we would say that this shift can actually be viewed from the lens that the innovation's components expanded to include buy-in at these two higher levels. It was no longer only about what needed to occur in the classroom, and thus, this iteration of the model, was an important step occurring during the messy middle.

We draw inspiration from the way Alemayehu Gebre, Senior Director of Programs at Luminos Fund, articulates the balance between fidelity and iteration that brings in local knowledge: *"Fidelity is critical. But we should also be careful about the word fidelity because it can suggest that there is one right way of doing things - a 'recipe' that just needs to be scaled up. One size cannot fit all. That is not our experience. Instead, we have found that success comes when you gather data on learning and keep on iterating and adapting until you see that things are working to drive learning. This work can draw on global 'best practice' but just as important will be the buy-in and the contextual knowledge of local experts."*[52]

Yet another example of understanding the what comes from Geneva Global and Luminos' models. When implemented by civil society grantees, classes used paraprofessional facilitators whom the grantees recruited from the local communities and who taught 7.5 hours a day for 5.5 days per week. Where the government has taken over the funding and operation of classes, the model has often had to be adjusted to only 4 hours of instruction, as that is the maximum amount of time government teachers accept to teach, since that is their normal

load. In these cases, this means that instead of completing three years of schooling in 10 months, students can only complete two years. A strategic balance between fidelity and flexibility has proven necessary in this and other aspects of the model, adjusting to meet the realities of the context. This does not just affect the model's implementation but also, importantly, its outcomes. These changes, both big and small, are common during the messy middle. As Joshua Muskin, Senior Director at Geneva Global shared, *"With Speed School, we seek high fidelity to the outcomes of holistic learning and activity-based learning, but we expect many differences across all classes. This even pertains to lessons and learning outcomes from the official curriculum. For example, a lesson on Animals in Our Community cannot be the same in a nomadic community as in a coastal fishing community.'*[63]

Additionally, when Slam Out Loud was implemented from India into the Finnish context, there was a period of figuring out what are the elements that have to happen for the Finnish version to still be Slam Out Loud. Teachers were trying to figure out how they could do the innovation without the end of year showcase, which was an alternate way of doing things. Several questions had to be asked: *Are the students experiencing the full benefit of the Slam Out Loud methodology if we adjust or remove certain components? Are there other ways to accomplish the same ends that are still in line with the innovation's theory of change? Can elements of the innovation be adapted for this population of students in a way that is both feasible and meaningful for them?* In the end, an alternative way of organising the showcase was agreed upon, which the teachers, students and facilitators enjoyed.

Some organisations choose to prioritise innovation within the innovation. This is true for Parents as Allies, in which regular experimentation of the "hacks" is expected of school teams, with the idea that as teams try out hacks they will be able to refine solutions that are better fits for their communities. We also saw regular experimentation in the case of TaRL, both as it relates to how Pratham structures and resources its programs in India, and, by extension, how TaRL Africa uses Learning Labs, which are made up of 5-6 schools in each country that run over multiple terms and are a place to do deeper dives around bigger challenges and ways to address them. Manushi Yadav, Head of Strategic Partnerships at Pratham shared that TaRL in India, even with its long history still maintains a very iterative approach, *"We've always retained a pilot area, what we call demonstration blocks, to continue this iterative process even today, even though some of the principles of TaRL are perfected.'*[64]

During the messy middle, innovations also encounter questions around how to embed the innovation into the broader system. In the case of government uptake, resourcing must be provided and inclusion in the national curriculum can also signal embedding. In the case of private sector innovations, this can be a measure of market share. At the same time, simply adding a line in the national curriculum or purchasing an online tool for a school district does not ensure that teachers will change their practice; much depends on the process of the implementation itself. When Sapieduca partnered with the São Paulo government to scale its application that promotes student engagement, it became clear that different stakeholders have different roles to play in embedding an innovation. While Sapieduca brings the innovation, it relies on the government to invest in training so that teachers can take ownership of concepts such as active methodologies, formative assessment, gamification and teaching, and the use of ICTs in the classroom. What is also salient here is the focus on impact versus the innovation alone and the recognition that an embedded innovation scaled across a system will look different from the innovation at small scale.

Other messiness around understanding the "what" and "how" relates to resources, not only financial but also human and support mechanisms, such as how teachers are trained and supported and how leaders embrace and encourage failure. We are also interested in how innovations can be financed at scale and what are the levers required to secure adequate finance, recognizing that processes are different by place. We aim to explore these questions in future research.

Understanding the Impact
Generating Evidence of implementation

In order to gain a better understanding of the who, why, what and how over time, it is necessary to gather information throughout the implementation process to faciliate making sense of how the innovation is changing teaching and learning. For innovations presented in the case studies, collecting data is an important part of being able to show the changes brought about through the implementation. However, collecting, analysing, and interpreting qualitative and quantitative data is not a simple, straightforward process. Researching, programme monitoring and evaluation, and reporting all require decision making about what data should be collected, when and from whom, what indicators will be useful proxies for measuring the intended effects, what methods are appropriate for the analysis, and what concepts and frameworks provide insight into the phenomena under study. Researchers also continually consider the limitations of the data given the resources available for data collection and analysis.

When monitoring and evaluating implementations, time can be a constraining factor for sufficient data collection. There may not be time to generate a baseline, or the right time to do the baseline analysis may have passed by the time researchers are brought into the project. Developing appropriate indicators and use of appropriate methods can be challenging, especially when the impact of the innovation is seen primarily in changes in the interaction between the teacher and the student. Timing can also be a challenge at the end of the implementation period. Since the implementation itself is only the beginning of what may be years of embedding an innovation within a system, the appropriate time to collect endline data must be decided, and data may have to be collected for funding purposes or logistical reasons before a full cycle has passed. Timing can also be a challenge when different cycles take place concurrently, for example the school year may be offset from the funding cycle, or the political cycle may cause a change in leadership in the middle of an implementation, as happened with Sapieduca.

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We understand that teachers are continuously asked to provide more and more information, answer important surveys about their municipality and work, and to provide insights, all while co-developing, co-creating, and participating in school improvement. All while teaching and attending to the students. All of this is can be very heavy for teachers' work, and often takes time away from actual teaching. Teachers may find these queries very important for many reasons, including improving their own work, the field of education, children's learning outcomes, the school culture, or education genderally, and they may also feel that when they respond to requests for data collection they need to it with care and high quality. And as they do not have time, they can feel they are not enough, neither as data providers/collaborators nor educators. This topic is sometimes brought up, in addition to the more complex unmet needs of the more and more diverse students with learning difficulties, integration challenges or other problems at home, especially when the classroom size is growing and helping hands missing at school from other practitioners such as counsellors, nurses and psychologists.

Even when the timing for data collection is done well, the types of data that can be collected in schools and education programmes can cause

challenges for gathering relevant information about the implementation. Especially when working with children, privacy concerns or obtaining parental consent can make it difficult to gather data about student performance. Researchers and practitioners who gather data from children should be aware of the methodological and ethical implications. Guidelines should be followed to ensure that childrens' basic rights are protected and that children are not approached in ways that make them feel unsafe.

Additionally, there is the question of who collects data from students and with whom data can be shared. In cases like Helsinki, where schools and districts have robust systems for data collection and sharing, as well as processes for continually evaluating and improving their own work, all parties are bound by the same legislation that protect the rights of the child. For example, HED is committed to maintaining students' privacy and GDPR is very strictly adhered to in Finland. Although children's healthcare is provided through the schools, and schools in Finland collect both health data and learning data from students, different data sets about the same pupil cannot be used by one person - even the teacher or the health care personnel. Legal obligations come into play in data collection and sharing, where concerns for safety and overreach have created laws, policies, and systems to ensure the rights of the child to the furthest extent possible. Decisions about a student's learning trajectory and discussions about student wellbeing are therefore made through organised support and consultations between, for example the teachers, special education teacher, health nurse, school psychologist, social worker and parents. In our Tailor-Made work, HED presented their strategic goals, based on their own internal data collection and consultative decision-making processes. Sense-making and educational improvement is accomplished in this type of tailored project collaboratively through dialogue, knowing one another and trust building. However, we are aware that in other contexts, with differing capacity, resources and legal structures, power dynamics can come into play between organisations when it comes to data generation and sharing. External organisations can have the power to insist on gathering even sensitive data about people within the local organisation or system to be intervened upon, stipulated as a condition of the programme or intervention, primarily to serve the external organisation's own needs for understanding the local context and situation to which they are outsiders. For this reason, many granting organisations, especially research grants, require participatory methods of data collection and programme design.

In our experience, the challenges of power dynamics related to data collection does not point to a lack of need for data collection and sharing, but rather draws into question two related dynamics. First, there is the question of who has the power and capacity to generate evidence. How can organisations that are in the process of implementing innovation in an effort to change their own work also engage the internal capacity to do their own data collection, processing and sense-making? In what ways are internal analysis and sense-making validated by external organisations, such as those supporting and funding an implementation? Second, how can the process of gathering information be approached in a way that does not feel extractive and invasive, but rather engages all parties in a process of mutual curiosity, building relationships, trust, and getting to know one another? In many places where innovation is a primary means of changing education at the system level, colonial vestiges of structurally determined power relations imbue questions of evidence, that is who knows and how do we know, with a legacy of material and epistemic inequality.

Finally, it can be difficult to understand what are the thresholds and indicators that determine whether an innovation is fully implemented. When discussing with TaRL Africa staff how they have seen systems change as the innovation is being implemented, they acknowledged that they do not have good data on this, as the data is focused on learning outcomes and less about systems and processes. Yet they were able to point to TaRL as affecting change in a process of decolonising education by changing the way leaders think about how education can be structured. While we are in the mess, we have to keep the birds' eye view as well and think of ways to be able to make different levels visible. What is happening in the messy middle is like looking into a kaleidoscope,[65] but we also need to use a microscope and a telescope to observe the change on all of the levels. We would encourage innovators and funders to look for ways to make visible the impact not only on individual children but also to systems change.

Is There an End to the Messy Middle?

Innovation development and implementation are not straightforward linear processes. It can be hard to define a beginning and an end of the mess; all processes involving people proceed from previous interactions and histories that shape the kinds of decisions that can be made, as well as who makes those decisions. We see moving from implementation to institutionalisation as an ongoing process where possibilities arise for systems transformation. Yet, systems can still be changing in other ways while an implementation is taking place. In fact, part of navigating innovation implementation involves considering how the theory of change, content, and methods of an innovation itself move people in ways that drive systemic change.

An excellent case is the collaboration between Geneva Global and Luminos Fund, who are supporting government-led teacher training programs in Ethiopia to ensure that all teachers are proficient in utilising the learner-centred pedagogy embedded in their accelerated learning programs. For teachers nationwide to be trained in these pedagogies has huge benefits on the system. There can also be a smaller, less pronounced ripple effect, but one that is also important. Luminos highlighted how even in classrooms that do not directly implement accelerated learning, but are situated in the same schools as Second Chance classrooms, teachers are learning valuable insights from their counterparts and integrating learner-centred pedagogy into their daily practices. This demonstrates the wider influence of innovative approaches within educational settings.

We also see that the mess is an experience, and that the experience of an "end" to the mess can happen when ownership transfers from the innovating organisation to the implementing organisaion. This is especially in cases where the innovator releases their model to be used and adapted by others. Both TaRL and Speed School have been taken up by multiple actors. While on the one hand this increases the complexity in measuring or monitoring the impact of the innovation, it also can serve as a reduction in complexity or messiness for the originating organisations who become less involved in the day-to-day work of implementation at additional sites. The hope with the Tailor-Mades is that others will take up the model. For example, with Parents as Allies, one aim is that other organisations will be inspired to take up design-sprint based parental engagement strategy facilitation anywhere, without the need for PAA needing to be involved, as Kidsburg is focused on supporting innovation in Western Pennsylvania. At the same time, the work of the PAA group lives on as many of the school districts have now embedded new practices like a school open house, school signage, supporting grade transitions, and communication channels, with no plan to revert to a former practice knowing what they know now.

In our work observing and supporting the implementation of innovations, we have seen that even with ongoing and cyclical processes, there are natural ending points and new beginnings. The school year ends, and graduations and matriculations mark the end of one cycle and the beginning of another. Project funding ends, and people leave their positions for new opportunities. And then we begin again, with the start of a new academic, calendar or fiscal year, calls for new collaborations, and the feeling of a fresh start with new pupils in the classroom and new relationships and friendships to be made. When the messy middle of implementation ends, a new messy period will begin, and, with it, a new opportunity for learning and applying what we have already learned.

Conclusion

In this paper we have outlined key concepts we find useful for understanding innovation implementation at scale and provided sample case studies to help us apply these frameworks. In our dialogues with innovators and education stakeholders, we see lingering complications in how framing work as 'implementation' can help us to identify discrete stages of 'doing' and innovation in practice, and how those demarcations can help us, and help practitioners, to make sense of their own work scaling or diffusing an innovation. In the education development sector, implementation of innovation is often framed in the same way that people understand implementation of policy. In policy implementation, the policy has already been deliberated and adopted "on the books." The question of implementing the policy becomes how to get teachers and other stakeholders to comply with and realise the policy in practice. This framing of implementation can lead to a top-down interpretation of how change happens. However, when we look at implementation from the perspective of innovation diffusion, implementation becomes the site of critical and necessary decision-making and sense-making processes on the road to confirming the adoption of an innovation, embedding the innovation into institutional systems change.

Our takeaway across the who, why, what and how is the importance of processes, steps, and mechanisms that allow implementers to navigate the complexities, make sense of the situation, and manage the emotional dimension of change.

Our takeaway across the who, why, what and how is the importance of processes, steps, and mechanisms that allow implementers to navigate the complexities, make sense of the situation, and manage the emotional dimension of change. Given the inherent messiness, we see that change calls for a patient and adaptive approach. This can mean needing to be both reactive and proactive as a result of what may arise. Allowing for the complexities and uncertainties, while maintaining a long-term perspective, is crucial to achieving sustainable and transformative outcomes. As Parnika Jhunjhunwala and Benjamin Kumpf note in the work on scaling journeys, when implementers are freed from restrictive compliance to activity plans and encouraged to take action toward the desired impacts, they are given the *"latitude to adapt their scaling journeys and bend, twist, or even turn around as and when required."*[66] Regular opportunities for pivoting, mechanisms for dialogue, dissent, and disagreement are necessary, as is the recognition and appreciation that this is a long process and one that is not guaranteed.

In conversations we have had with Thomas Hatch, he has put forth the phrase, *"Implementation is broken,"*[67] inviting deeper exploration into the challenges and complexities surrounding implementation in education. In decades of working with innovation and change in schools, Hatch has observed that a strict commitment to employing the "implementation cycle" – explore, develop, implement – leads to a focus on evaluating whether or not the innovation was implemented, which is not the same as whether or not it leads to impact. Per Hatch, employing the traditional "implementation cycle" leads to a focus on whether people did what was expected of them, rather than whether people are doing what they need to do to achieve the desired goals and broader impact. Hatch

encourages consideration of the structures and mechanisms that need to be put in place so that a productive implementation takes hold over the linear, box-ticking one that we so often see. Adapting, pivoting, and disagreeing are key parts of the messy process of implementation, rather than being discouraged for the sake of programme compliance.

Moreover, innovation should not be seen as a panacea or presented as a silver bullet when it really is used under the guise of cutting costs or making things more efficient in a way that exacerbates existing problems. Innovation itself cannot triage educational systems that are not fit for purposehead on, recognising how power, legitimacy, and authority come into play in making change. As educational researcher Dr. Katariina Mertanen reminds us, *"One person's challenge can be another person's advantage."* Finding the role of innovation in addressing complex educational challenges includes considering how the challenge and its scope are defined, and how such challenges intersect with wider social problems, such as social inequality and exclusion.

To us, this conversation reinforces that implementation is a messy and complex process, and that oftentimes, it is only during implementation when problems of fit of the innovation or alignment between actors are uncovered, and not during the trialling phase as one might assume. Frequently, implementers face new discoveries or setbacks that cause them to alter their course of action. It underscores the importance of endeavouring to understand the problem and its continuous evolution to determine whether a given innovation is in fact a viable solution at a particular place and time. And it reinforces that, while teachers are the primary implementer of innovations, they are part of an ecosystem of actors that may push for implementation of a given innovation or programme, without understanding that it may not be suitable or appropriate for a given context, population or sub-population.

Frequently, implementers face new discoveries or setbacks that cause them to alter their course of action.

This is where a systems lens can provide a critical framing for identifying what the embedded and emerging causes actually are and how they intersect with overlapping challenges outside of the educational context, such as poverty or racism. A systems approach requires looking at the design of the existing education system in relation to other systems, acknowledging various material, social, emotional, political or other factors that can inhibit implementation. Identifying these factors is not something done only at the outset, but a continual process that can be returned to to ensure that initial assumptions still apply as the innovation is implemented at scale. In multilayered systems, there are many problems, which each have their own determining factors. This may sometimes mean needing to slow down and taking more time to identify possible solutions and adding more resources to a problem (to the extent this is available). It might also mean modifying the innovation significantly or introducing new innovations, which requires letting go of ego.[68] We recognize how hard all of this is and that is why, in addition to teacher agency, leadership also matters,[69] including at the middle-layer of a system. Strong leaders can steer an innovation in the right direction, foster a culture of learning, create the conditions that help teachers to implement an innovation, and ensure a systems lens is applied throughout the implementation process.

We take an innovation diffusion lens to the question of implementation at scale in part to highlight that scale is about movement, and the transit and translation of innovations in practice from one place to another.[70] Diffusion is about the importance of the social system in sharing innovation between actors; scaling is a kind of intentionality around diffusion that explores the depth, width, and magnitude of the diffusion of an innovation to understand not only the extended use of the innovation, but also the ways that the implementation, adaption and adoption of an innovation changes the people and the context. We see a reciprocal relation between the change of the innovation because of the

context and the change in the context because of the innovation. These changes are complex, because the contexts themselves are complex, but there are always ethical considerations about authority, power, decision-making, sense-making and values.

Finally, as we contemplate scale, it becomes evident that not only can education innovations be replicated across different contexts; cultures of innovation can also be scaled. Cultures of innovation are characterised by education ecosystems and the individuals within it that embrace new ways of doing things, engage in regular reflection and learning, and embrace risk and change,[71] and can also be scaled. It is not necessary for every ecosystem to constantly reinvent the wheel by creating its own innovations. Innovations spread, and when they travel, novelty re-emerges in their adaptations and translations. In implementation what is more important than the ownership of the innovation is the authority to adopt, adapt and sustain the resources to embed the innovation. This authority can create a sense of ownership that can be cultivated even when an innovation originates outside of the context. Through a culture of innovation and openness to new ideas, fresh approaches can permeate an education system, resulting in tangible benefits for learners. We hope that HundrED's broader Implementation Centre and the work of so many others can help foster and scale these cultures of innovation, leading to more effective and equitable education systems.

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.

As the work of the HundrED implementation Centre builds upon the agenda outlined in this research paper over the coming year, we are actively seeking partners from across the education sector to support our community of education innovators scale the reach of their solutions.

We encourage leaders from public school systems, private education providers, philanthropic actors and multilateral development organisations to join us on this journey. For more information on opportunities to partner with HundrED, please contact David Connolly.

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