TAMPERE UNIVERSITY
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INNOVATORS FUNDING NEEDS FOR SCALING UP K12 EDUCATION INNOVATIONS

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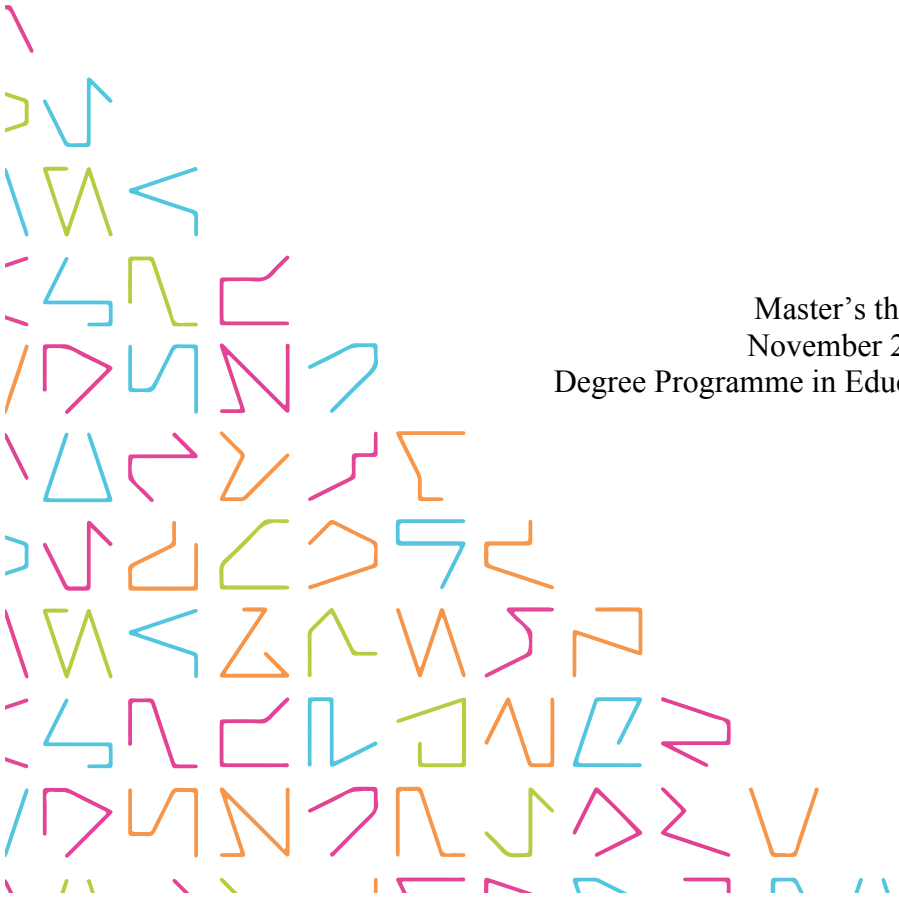

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ABSTRACT

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LEPONIEMI, LASSE:
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Objective. The purpose of this study was to collect information about funding needs for scaling up K12 education innovations. HundrED 2019 Global Collection innovators were asked about their current funding status, future funding needs and their experiences of the funding process in general.

Approach, methodology. The survey was carried out with an electronic inquiry on fall 2018. Out of 100 innovators 61 answered to the survey representing education innovators around the globe. The research was made as multi-method research by doing first in-depth theory analysis and then a quantitative study and content analysis. Results were analyzed by using quantitative methods like average values, dispersion of data and percentage values. Open questions were analyzed by using content analysis methods. The theoretical section explores education innovation and education innovation funding.

Key results. The majority of education innovations are made by not for profit organizations, followed by educator-led practices and for profit organizations, social enterprises and whole school models. None of the innovations is this research were made by government initiatives. The majority of innovations (62%) were not profitable at the time of the study. The respondents stated that their primary need for all external funding is to scale up their innovation. The results show that most of the education innovators combine donations and grants (51%), service or product related income (26%) and self financing (23%) to keep their innovation operational.

Conclusions. The findings indicate that combining quick user growth with increased resource needs is difficult for education innovations. Even though the majority of innovations were able to operate with the current monetary resources for over 12 months they were finding it difficult to keep a long term sustainability. Venture funding needs were usually explained through outcomes whereas actions were explained when looking for grants and donations. Innovators' competencies to explain their funding need and the impact of the received funding differed. Majority of the education investors and grant-givers were expecting to have return of investment or impact measurements which are not always met by education innovations. In general, 39% of innovations were evaluated internally, 25% had an external evaluation. Further research is required to understand how funding needs and their impact requirements differ between different education innovator groups.

Key words: education, innovation, funding

CONTENTS

1 INTRODUCTION

The world of education is full of great innovations. Education systems globally face a sea of new products, practices and models that have the potential to enhance learning in different ways for their students. However, often these innovations are stuck in their site of origin. The aim of this thesis is to provide further information about K12 education innovation funding globally. K12 stands for education from kindergarten to 12th grade, indicating the sum of primary and secondary education without vocational training.

There is a lot of frustration and disappointment in the education organizations that the processes of scaling up innovations and new practices are not working. Often the process is seen as slow and laborious. Also there is a significant amount of resistance; for example, teachers' attitude towards teaching new skills like coding can be negative and they are unwilling to learn new skills by themselves (Multisilta 2017).

There is over decades of literature and evidence how and why innovations scale. Our understanding of the mechanisms and tools to support innovation spreading are more effective through online environments than ever before, but still education innovations struggle to scale up and practices do not travel between classrooms too easily. (OECD 2015.)

Despite sometimes hostile environment some education innovations have been successfully spreading. Something that may have started as a practice of one teacher have grown into education innovations used by millions of educators across the world. In many of these success cases external funding has been needed to scale up the innovator's work.

1.1 Research question

The aim of this research is to provide further information about K12 education innovation funding globally. The research question was stated as

What kind of funding needs are identified by innovators to scale up their K12 education innovations?

To be able to understand the needs of education innovators the research questionnaire was created based on the theory findings. In the questionnaire the focus was on the funding needs, the urgency of the possible funding needs and from which sources and how that funding would be used by the innovator (Appendix 1).

The research was conducted to innovators selected by HundrED for their Global Collection list of 100 innovations in 2019. HundrED is a Finnish education organization which researches all kind of K12 education innovations, from public innovations to private innovations, from for-profit to not-for-profit innovations around the world. Their goal is to help improve education and inspire a grassroots movement through encouraging pedagogically sound, ambitious innovations to spread across the world. All HundrED insights and selected innovations are documented, packaged and shared with the world for free. Submitting innovations for HundrED is always free-of-charge, and HundrED selection criteria is published on innovation toolkit pages. (HundrED 2018b.)

HundrED has conducted its research since 2016, and the research practices identifies innovativeness, impact and scalability as main factors. These main factors are then furthermore divided in 14 sub-factors which are then assessed for every researched innovation (HundrED 2018a). The HundrED sub-factors can be interlinked with indicators from 'Journeys to SCALE' (UNICEF 2016), which is looking for factors like potential to spread, contextual outcomes and possibilities for adaptations based on local needs:

Innovativeness: Valuable improvement within the context
Impact: Established for at least a year with demonstrable evidence
Scalability: Adaptable in new environments with commitment to scale

Furthermore, HundrED research practices can be interlinked with Rogers' theoretical framework of innovation diffusion. Rogers see innovativeness as the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than the other members of a system. HundrED looks the innovativeness factor more from the innovator's point of view; how well innovator has been able to identify and implement factors which correlate positively to the education outcome compared to other innovations in the given context. Therefore, innovativeness is highly context oriented like OECD (2017) report have clarified.

Rogers (2003) sees that demonstrable evidence is one of the most efficient ways of reducing uncertainty, which may slow down the innovation adoption. In the innovation development process the impact occurs *"from recognition of a need or problem, through research, development and commercialization of an innovation, through diffusion and adoption of the innovations by users, to its consequences" (Rogers 2003).*

HundrED is only selecting innovations which have been operational at least for a year, and which are able to provide demonstrable evidence how well the innovations is solving a problem or a need in the education. In the 2019 selection 7 innovations are within a 1+ year pilot stage, 52 innovations class themselves as small scale with less than 5000 users, in 2 or less countries and only 1 continent and 41 innovations class themselves as large scale with more than 5000 users, in more than 2 countries and 1 or more continents. The final innovation selection is made by HundrED Academy, a group of over 100 education experts around the world, who review the research. (HundrED 2018b.)

HundrED states that education can be improved by introducing innovations which are adaptable, flexible and provide positive outcomes for learning. Therefore the third factor is scalability which looks the adoption process from the system level and from the innovator's competencies to boost the adoption rate (HundrED 2018b). The rate of adoption is the relative speed with which an innovation can be adopted by members of a social system - in this case the education systems, educators and other education stakeholders. Based on the Rogers' innovation diffusion theory the innovation adoption always starts slowly, but when more adopters are reached the speed accelerates quickly until the late majority is reached and then again slowing down when most of the possible adopters have been reached (Rogers 2003).

It is believed that there are lots to learn from innovators to understand what kind of resourcing is needed for scaling up in K12 education environment. The research has been made to understand what kind of differences there might be based on innovators site of origin, field of operations and scaling phase.

1.2 Research approach

The main goal for education systems and schools are to ensure quality education for all learners (Sahlberg 2018). Innovation may play a crucial role in creating equity between the learners and in creating opportunities to develop flexible learning environments and supporting approaches to teaching, ensuring that every student can realise their potential (OECD 2016).

There is no single definition of innovation in terms of school practices and pedagogies. Béchard (2000) clarifies educational innovation as an improvement which is an intentional action that aims to introduce something original into a given context. This change have to be also pedagogical as it seeks to substantially improve students' learning.

In this thesis education innovations are seen according the framework of Kozma and Anderson (2002) who see the innovation as a new pedagogical practices which are spreading in schools and which involve changes in learning process for both teacher and students.

Based on the OECD (2014a) report these applied practices can affect students directly (through a new syllabus) and/or indirectly (new ways of engagement in a school community). The OECD (2015) authors describe an 'ecosystem' approach to learning and innovation emphasizing the importance of mutually beneficial relationships between schools and their environments for innovation to sustain – to make innovations reach their full potential they should be seen as collaborative efforts which are not happening in isolation or do not stay static. Innovative Learning Environments report (OECD 2013) lists three principles which are important for collaborative implementation of new practices:

1. **Innovate the pedagogical core;** To be able to renew practices the organization has to have an ability to innovate both the core elements (learners, educators, content and learning resources) and the dynamics that connect those elements (pedagogy and formative evaluation, use of time, and the organization of educators and learners).

2. **Become "formative organizations" with strong learning leadership;** Strong vision and strategies are needed to support the change of learning environments and systems. Leadership needs to be constantly informed by self review and evidence on learning evidence.

3. **Open up to partnerships;** Isolation seriously limits the improvement possibilities of learning systems. Growth-oriented learning system or environment will constantly be creating synergies and finding new ways to enhance professional, social and cultural capital with others.

The OECD (2015) authors describe school innovation as any dynamic transformation towards the creation of innovative learning environments or innovative 'learning ecosystems'. This process can be understood by using the diffusion of innovations theory (Rogers 2003), which explains the process through five progressive stages; knowledge, persuasion, decision, implementation and confirmation.

Beginning with initial knowledge and awareness, adopters are first learning about the innovation; they need to know its elements as well as how and why it works and which are its intended outcomes. The knowledge part is followed by persuasion of the value or importance of the new practice, and the decision to implement it. (Rogers 2003.) Rogers (2003) states that peers are often the best influencer in decision making process.

When decision has been made to adopt the innovation, the implementer begin to use the new practice including possible customization to meet specific needs and then confirms their decision (Rogers 20013). The length of time required to move through the innovation-decision process can vary across individuals and circumstances Rogers (2003) described this quality as innovativeness, or earliness in relation to others in adopting an innovation. Adopter categories range from innovators (the small number of risk-takers who are first to adopt) to laggards (the small number who are the last to adopt or never adopt an innovation). In between these two extremes are the early adopters who follow the lead of innovators and play an important role by adopting the innovation and furthering dissemination to peers in their local network. (Rogers 2003.)

In the context of this thesis research is aiming to find what kind of a factors educational innovation needs to have in order to reach the tipping point in scalability. Tipping point

(Gladwell 2000) is a moment when critical mass is achieved and innovation or practice start spreading faster.

The research hypothesis is that the Implementers of the most rapidly spreading innovations can be seen as a group of people forming a community of practice; they work together with other implementers and innovator(s) to share their knowledge and develop the practice further.

1.3 Structure of the thesis

This thesis consists of 5 different parts which are partly interlinked. The first chapter is giving an introduction to the research and to the theme of this research by clarifying how to define innovation as a part of this research, what are the general interests in the innovation funding research, what is the purpose of this research and what is the research question being solved in this report.

The second and third chapters are a part of theoretical framework. In the second chapter literature review is being done to understand how innovations are seen in the education context, what kind of innovation research have been conducted and why innovations are seen as important change factors in the field of education. The third chapter is deepening the theoretical framework into education investments. Education innovation funding is looked through investments reports to understand funding trends, the different sources used in the education investments and how the impact of these investments can be measured based on different frameworks.

The fourth chapter consists of research. The methodological approach, data acquisition and analysis methods are explained. In the following sections overview to the research results is being made. The fifth chapter is used to analyze the results from the research question point of view, and some interesting differences between innovation groups are pointed out.

The discussion of results is done in the final sixth chapter. The data is compared to existing research, and some similarities and differences are pointed out. Furthermore, research process is also being evaluated. References are listed in the alphabetic order in the seventh chapter, which is then followed with the appendix.

2 INNOVATION IN EDUCATION CONTEXT

Please Based on the Brookings Leapfrogging report (Winthrop & McGivney 2017) the need for innovations in education is two fold. There is an increasing concern that what children learn in school. The traditional academic skills are seen only as a part of the skills young people need to thrive in the ever-changing world. Secondly, based on the new pedagogical thinking newer learning methods would benefit students to develop the full range of skills they need to flourish in their lives. (Winthrop & McGivney 2017.)

There is no single definition of innovation in terms of school practices and pedagogies, and innovation itself is not a guarantee of a positive performance. However, countries with greater levels of innovation have seen increases in certain education outcomes. For example, their mathematical performance have increased, they have got more equitable learning outcomes and more satisfied teachers. Even though teachers have been more satisfied, students were not more satisfied than those in less innovative systems. (OECD 2014b.)

Béchard (2000) clarifies educational innovation as an improvement which is an intentional action that aims to introduce something original into a given context. This change have to be also pedagogical as it seeks to substantially improve students' learning. Innovative school organization is referred by OECD (2014a) as an organization implementing newly applied practices that can affect pupils directly (e.g. through special programs) and/or indirectly (e.g. through new leadership or human resource practices). Furthermore, OECD (2015) employees an 'ecosystem' approach to learning and innovation underlining the importance of supportive relationship between schools and their environments for innovation to sustain.

In this thesis education innovations are seen according the framework of Kozma and Anderson (2002) who see the innovation as a new pedagogical practices which are spreading in schools and which involve changes in learning process for both teacher and students.

2.1 Education innovation on the system level

The Commission on Financing Education Opportunity, chaired by the UN secretary general's envoy for global education, argues that education systems need to innovate and change rather than just replicate past success. Based on their insights education systems must both be strengthened and be better at capitalizing innovative approaches - innovation is seen essential to any acceleration of progress. (Winthrop & McGivney 2017.)

In the context of this thesis education should be understood in its wider scale. Education can be defined as learning opportunities. Education can happen at home, in school, or with members of one's community. Education is a lifelong process. Learning therefore is knowledge, skills and values acquired through education (formal or informal). Learning is critical for lifelong success and empowerment and it occurs both inside and outside of school or education system. (UNESCO 2013.)

The Brookings Center for Universal Education analyzed 15 innovator spotter organizations in their Leapfrogging Education Report in 2017 (Winthrop & McGivney 2017). HundrED was one of the organizations to be analyzed. In the report they analyzed nearly 3.000 innovations from 166 countries categorized by these selected innovation spotters (Winthrop & McGivney 2017).

The vast majority of innovations (81%) is focusing on improving learner's skills. Nearly three-quarters of these innovations are supporting pedagogical approaches that involve playful learning. (Winthrop & McGivney 2017.) Playful learning is when children develop their imagination and physical, cognitive and emotional strengths. It can be seen as a methodology that comprises mind-on, hands-on and body-on activities as a part of learning process. (Kangas 2010.)

In the Brookings report (Winthrop & McGivney 2017) the predominant goal of education innovations is to improve 21st- century skills like critical thinking, confidence, and global awareness and academic skills like literacy, numeracy, and science. A smaller number focus on improving vocational skills, including business skills or those associated with specific trades (Winthrop & McGivney 2017).

This same insight was stated in the OECD (2014b) report, which found out that there "have been large increases in innovative pedagogical practices in areas such as relating lessons to real life, higher order skills, data and text interpretations, and personalization of teaching".

Only a small amount of innovations was focusing on teacher professional development of teacher training (23%) - even though unburdening teacher is one of big discussion topics in the Global North, and the lack of professional trained teachers is seen as one of the main bottlenecks to provide high-quality basic education in the Global South (UN 2018).

However, this might be subject for a change. Based on the OECD (2014b) report educational organization have started to innovate in the areas of professional learning communities for teachers, evaluation and analytics, relationship building with parents and other external stakeholders, and special education. Also the increase in the area of teacher collaboration has been big at the OECD level; teachers may improve their professional practice by reflecting on good and bad practices and learning from others. An average of teachers taking a part in peer observation was 13%. Even though the practice is not used by the majority of teachers, this method was more often spread than decreased across OECD countries. (OECD 2014b.)

Even though it has been argued that education improvements mostly benefit middle-income students (United Nations Global Compact 2015), most of the innovations (57%) were focused on marginalized populations - including low-income children, out-of-school children, orphans, girls, students with disabilities, ethnic minorities, child laborers and children in crises (Winthrop & McGivney 2017).

The innovations are delivered through a mix of education actors. Brookings report (Winthrop 2017) investigated that the innovations spotted by 15 innovation spotters were run by following organizational types:

62 % NGOs;
the most common type of actor in education innovation space.

Based on the Winthrop & McGivney (2017) findings many non-profit organizations have been creating public-private partnerships (PPP). In their research it was found out that 78% of this kind of collaborations were created by NGOs which were at least partly financed through governments (Winthrop & McGivney 2017).

26% Private sector companies;
private sector includes many companies working in education technology space.

Many countries have experienced a rise in the percentage of students with access to laptops or notebooks at school. In an OECD (2014b) country, the share of students having access to a digital device has increased by 18 points on average. The share of students having access to laptops ranged from 92% in Denmark to 27% in Japan in 2015. (OECD 2014b.)

12% Government;
the smallest share of innovations are the result of government policy or initiatives and implemented by ministries of education, including government schools.

Even though government related innovations represent the smallest amount of all innovations in education, the education sector has significantly higher levels of innovation than the public administration on all OECD indicators, and it is at least as innovative as the health sector on each measure (OECD 2014b).

2.2 Implementation of education innovations

Education systems are more than ever required not only to provide their students with appropriate skills and competences to match national priorities, but also foreseeing what kind of capabilities are needed in the future. Many national priorities are economic driven, and schools are kept accountable for providing a foundation achieving them. (Bell & Stevenson 2006.)

Education innovations have a potential to create positive outcomes and advance education opportunities when done well - regardless of their the type of the engagement and rationale (philanthropic or commercial) (UNESCO 2013).

Education sector has been always considered as a pragmatic example of a non-productive sector. Symptomatic for this kind of sector is that productivity growth is limited, very sporadic and slower than in progressive sectors of the economy. Creating an education sector in which valuable innovations are continuously created and efficiently adopted and used is a major challenge to "re-invent" (public) education by creating new complimentary ecosystem for innovation decision process. (OECD 2016.)

The innovation-decision process is the process where an individual (or other decision-making unit) makes a decision to adopt an innovation. This process contains different stages which then eventually lead into an innovation implementation. (Rogers 2003.)

OECD (2014b) have used two factorie to measure education innovation adoption. The first approach has been to adapt existing national innovation surveys, which offer well established tools for measuring innovations, and which have been used for a long period of time. The second approach is based on surveys of an organizational change - how well the new or significantly changed method was implemented as a part of the education system. (OECD 2014b.)

Based on OECD (2014b) insights education sector is at or below the average in terms of the speed of adoption of innovation. 38% of survey attendees reported that their educational establishment was mostly at the forefront in adopting innovations, new knowledge or methods (against 41% on average in the economy). Higher education stands out in terms of speed of adopting innovation, above the economy average, and well above primary and secondary education. (OECD 2014b.)

Based on Roger's (2003) "Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system". Rogers (2003) underlines the importance of the communication as a part of the innovation adoption; the better innovation outcomes and benefits are understood, the more likely the innovation is implemented.

One reason why education have not spread effectively may lay on this area. Education innovators do not often publicly share their own data about innovation effectiveness, which would potentially increase innovation implementation. The effectiveness of

education innovations are publicly available only to 33% of education innovations mapped by Brookings. (Winthrop & McGivney 2017.)

This might be problematic since measuring innovation effects in education it is important to link them to specific social and educational objectives. Examples of objectives can be, for example, learning outcomes, public satisfaction and equity according to different stakeholders' perspectives. (Vincent-Lancrin 2017.) These objectives can be communicated through five progressive stages to support innovation adoption; knowledge, persuasion, decision, implementation and confirmation (Rogers 2003):

Knowledge occurs when a decision-making unit gets to know about innovations existence and gains basic understanding how the innovations works.

Persuasion happens when decision-making unit forms a favorable or unfavorable attitude towards the innovation. This happens through communication and involves both parties. As a part of the persuasion stage uncertainty factor lowers.

Decision occurs when a decision-making unit begins to complete actions which either leads to innovation adoption or rejection.

Implementation happens when the innovations is put into use. Re-invention or innovation modifications are especially likely to happen on this stage

Confirmation stage happens when a decision-making unit has made the decision and seeks reinforcement for it. In some cases reinforcement is not received and the decision needs to be re-evaluated.

Where as Innovation can be defined as a significant change in selected key practices in education, there is no definitive answer what counts as a significant change. Based on the type of the innovation this is heavily contextual. For example, pedagogical practices differ from country to country. When 10% of teachers adopt a new practice in a country, where such pedagogical thinking has not been used before, the change is substantial. If the same happens in a country where the pedagogical thinking has been used by the majority, the innovation diffusion is on the different level. (Vincent-Lancrin 2017.)

Innovation implementation is always complex and takes time, because beginning to use a new method usually means at least a partial culture change. The slow rate of diffusion highlights the struggles any innovation faces. (Rogers 2003.) Rogers (2003) suggested the following five factors that affects the rate of innovation diffusion:

Relative advantage:
How much better the innovation is than the old one it replaces

Compatibility:
How well the innovation is compatible with existing values and experiences.

Complexity
How difficult it is to understand and use the innovation

Trialability:
How easy it is to experiment or trial the innovation.

Observability
How well the innovation outcome and impact are made visible

When innovators understand these factors, they may support the implementation phase of their innovation. The adoption of innovative new products is far from certain. Oosterlynck (2016) pointed out that innovation need to be flexible and adaptable to survive in the education world; the new practices have to be easily modified to the local context from curriculum requirements to school practices.

The innovation implementation happens on Rogers' (2003) model through five adopter categories. The adopter categories classifies their members of a social system on the basis of innovativeness. These five categories are:

1. Innovators
Innovators are actively seeking for new new ideas. They have a high degree of media exposure and their interpersonal networks cover a wide area, usually reaching out their local systems. This group is able to cope with a higher level of uncertainty than other adopter groups. (Rogers 2003.)

2. Early Adopters

Early adapters are local opinion leaders in most social systems. They are more integrated part of the social system than innovators, and potential adopters look for advice and information from them. This adopter category is seen as change agent or innovation ambassadors who are speeding up the diffusion process. The role of the early adopter is to decrease the amount of uncertainty about new idea by adopting and using it. This also makes them usually respected by their peers in their localities. (Rogers 2003.)

3. Early Majority

Early majority's decision process is slightly longer than that of the innovators or early adopters. In general they are willingness adopting innovations, they interact frequently with their peers, but seldom hold leadership position. Therefore they hold an important role of creating interlinkedness in the system. (Rogers 2003.)

4. Late Majority

Late majority approaches innovations with a cautious mindset. The innovation needs to be very stable and well documented; almost all uncertainty factors needs to be removed before late majority feels that it's safe to adopt an innovation. They can be persuaded of the importance of new innovations, but peer pressure is a necessary to motivate adoption. (Rogers 2003.)

5. Laggards

Laggards keep their reference point in the past. They are the most localite of all categories, and they mainly interact with others who also have relatively traditional values. When laggards finally adopt a new idea, it may have been outperformed by a new innovation. Laggards are the last in social system to adopt innovations. However, the resistance towards new innovations from laggards' point of view may be totally rational; they usually have limited (economic) resources which forces them to be extremely cautious in adopting new innovations. (Rogers 2003.).

3 EDUCATION INNOVATION FUNDING

SDFS When the world is changing ever faster, the education systems around the world are in constantly increasing pressure of change. The need and demands of change differ from providing high quality basic education to more sufficient advanced skills to students. In both cases new innovations are welcomed to strengthen the education systems, and scaling them needs investments.

Many innovations are financed by multiple sources, and each of the financing sources support large range of innovations from afterschool programs to in-school labs. Based on the Brookings report (Winthrop 2017) the innovation financing is divided in the following way:

25-30% of innovations are supported by philanthropic foundations, governments, for-profit investments and user fees

20% of innovations are supported by donations from individuals and / or from communities

11% of innovations are supported by international aid dollars.

The next chapters are investigating both sustainable development investments and for-profit investments in education innovations.

3.1 Sustainable development investments in education

United Nations Sustainable Development Goals on Education (UN 2018) underline achieving inclusive and equitable quality education and promote lifelong learning opportunities for all. The targets are divided into ten different items, which all have their own indicators. The current targets are aimed for the year 2030. The 2018 global indicator framework was agreed as a practical starting point at the 47th session of the UN Statistical Commission held in March 2016. The UN Statistical Commission is the highest decision making body for international statistical activities. (UN 2018.)

Achieving the goals will need increasing efforts especially in sub-Saharan Africa and Southern Asia and for vulnerable populations, including persons with disabilities, indigenous people, refugee children and poor children in rural areas (Martin 2017). Brookings (2013) report showcases that there is an annual $38 billion external financing gap for basic and lower secondary education in these regions between governmental funding and what international aid donors are likely to support.

In 2017 there were 264 million children and youth around the world not going to school (UNESCO 2017). And at least 250 million children and youth who cannot read or write (UNESCO 2014). On current trends, half of the upcoming youth generation, 800 million young people, are projected to not have basic skills by 2030. Of these, 58 million children remain out of primary school and 202 million teenagers are not attending secondary school, missing out on vital basic skills needed for future employment. (UNESCO 2017.)

The situation has remain similar for the last five years. For example, based on UN report (2018) on progress of goal 4 in 2017 in the sub-Saharan countries only 40% in general have an access to computers and the Internet for teaching purposes. The average on developing countries is above 60%. The similar trend is visible on trained teachers. Sub-Saharan countries have a relatively low percentage of trained teachers in pre-primary (44%), primary (74%) and secondary teachers (55%). The lack of professional teachers can be seen from students learning results; even though more children than ever are going to school, many do not acquire basic skills in reading and mathematics in these regions. (UN 2018.)

The moral and economic problem posed by this failure of education is given a fierce urgency by demographics: the population of the African continent is set to double in the next thirty years to 2,5 billion. Already, 60% of Africans are 24 or younger. (Martin 2017.)

The learning crises do not only affect the quickly developing part of the world. In OECD countries, for example, 15-year-old boys are more likely than girls, on average, to be overall low achievers (OECD 2015). Young men are twice as likely to report school as a waste of time than young women (Economist 2015), and young women do not see that they have similar possibilities in science related professions than men - even though

young women are outperforming boys not only in academic subjects but also on vocational training (WISE 2014).

In both developing and developed countries education is the greatest equalizer – it offers all children, youth and adults opportunities for success (United Nations Global Compact 2015). Based on the global situation in education, at least four reasons can be pointed out why private sector companies are investing in education (Brookings 2013):

1. **Education systems in emerging market economies and low-income countries need improvements.** Looking at the world population trend, companies will be recruiting the population from these countries in growing rate by 2030. The vast majority of the future recruitments will happen in weak education systems in Asia, Africa or Latin America. (Brookings 2013.)

2. **The companies need to be able to secure future talents with the right skills.** Access to a good-quality education is a vital element for strategic growth in companies. When the education is not meeting the needs of companies, they need to invest themselves to compensate the low skill levels of graduates. For example, in India in one five-year period information technology companies almost doubled their investment to $2 billion on training employees between 2007 and 2011. Already at the moment companies see the talent constraint as a main reason why they can't pursue new marketing opportunities (PwC 2014.)

3. **Every investment made to education gives significant return on investment.** With modest early-stage investments can be ensured that each child attends schools, remains in schools and learns in school can have significant economic returns (OECD 2016). The higher the education of the graduated student is, the higher, in average, the value of their work is for the society in terms of impact, taxation and consumption. On the contrary, every drop out from the education will cause not only a loss for increased annual economic input but also adds costs for the society. (Ball 2004.)

4. **There are new possibilities and tools for business investments in social sector which allow private sector resources to solve wicked public problems.** UNESCO (2013) and PwC Impact Report (2014) suggest that companies should

see education investments as a part of their talent pipeline thinking - providing better skills for students will reduce the need of employee training. According the Brookings (2013) governments should think how to attract and reward companies willing to support the education without privatizing public education but supporting it through collaboration. However, this is very delicate area of education system improvement whereas it may lead to negative consequences of neoliberalism e.g. more polarized education systems, decreased equality and overall learning outcomes (Ball 2004).

Corporate social responsibility has become more important in the era of globalization. Also the attitudes towards the corporate social responsibility has been changing to be more positive. Also a philanthropic movement which is giving earlier earned profits back for social good, is forming the philanthropic landscape. (Ball 2012.) In the beginning of 2000 most of the senior executives saw the sustainability reporting as a way to enhance corporate responsibility to enhance corporate legitimacy even though some managers felt that sustainability work might be counterproductive (Adams & Mcnicholas 2007).

In 2013 Global Corporate Sustainability Report, the UN Global Compact – one of the world's largest corporate sustainability initiatives with over 7,500 private sector participants globally - education is ranked the most urgent sustainability challenge by their business community (UN Global Compact 2015). These donations are usually used more businesslike way as 'investments' with good returns. The receiver of the money will be accountable to build schools, start up education programmes or do some other actions the money was granted for (PwC 2014). This brings a new level of education policies where money brings power - when these social responsibility actions are partnering with governments in solving social problems, sometimes they can also work over and against the wishes of governments, in local and transnational arenas (Ball 2012).

59% of companies believe that they can have a positive impact on education sustainable development challenges, and the education is achieving the second highest score after 'Growth & employment' (83%) and before 'Energy' (57%) (UN Global Compact 2015). Even though businesses have showed interested in investing in education they have not acted accordingly. Brookings (2013) report shows that corporate giving to global health is 16 times more than it is to global education. However, CECP "Giving in Numbers 2017 edition" analysis of 2016 corporate giving shows that education has been the biggest

receiver with 29% leaving health and social service programs on the second highest spot (26%) (CECP 2017).

In the 2010s there has been an increased interest among both donors (to nonprofits) and investors (to for-profit social enterprises) for greater accountability for the money intended to be used for social purposes (PwC 2014). New money is flowing into the sector as business leaders have earned large sums from their activities and want to give back to society. It's typical for these donors and investors that their demands towards their investments are higher; they want the accountability and performance excellence that they expect in the for-profit world. Furthermore, they want evidence that their investment has an impact. (Epstein & Yuthas 2014.)

Corporate sustainability can be seen from two perspectives:

1. How organization is operating in a sustainable way

   "To be sustainable, companies must do five things: Foremost, they must operate responsibly in alignment with universal principles and take actions that support the society around them (1). Then, to push sustainability deep into the corporate DNA (2), companies must commit at the highest level (3), report annually on their efforts (4), and engage locally where they have a presence (5).". (United Nations Global Compact 2015.)

2. How organization is doing philanthropic efforts towards sustainability goals.

   "Using the wealth of business to support societal causes has made a difference on key sustainability issues like health and education. Employees and customers often value company's philanthropic work, both through financial giving and volunteering.". (United Nations Global Compact 2015.)

Many organizations are taking more strategic approach to their philanthropic work. Based on the PwC (2014) research organizations want to implement investment and measurement strategies to understand the impact for investment beneficiaries. The company's philanthropic efforts can be often mistaken for a corporate responsibility approach. The main difference between these two factors is that the first one is about how

organization is able to do its core business in the sustainable way, and the latter about what kind of additional tasks the company may do in the society. (PwC 2014.)

Companies can offer social investments and philanthropy to communities, NGOs and to different programmes. Companies can also contribute by giving workforce through volunteering efforts, though leadership and in-kind contributions of talent. (UNESCO 2013.)

There are many reasons from contributing to improvements to the communities where their employees and consumers live, to addressing new business opportunities through talent development, companies can select the most efficient way for them to contribute (PwC 2014). Companies can also connect their philanthropic actions to their core business to create sustainable activities in long term. In these cases companies are more cautious not to duplicate the effort of others and taking more comprehensive responsibility also on the unintended effects of their funding in areas like religions, traditions and local habits and customs. (United Nations Global Compact 2015.)

3.2 For-profit investments in education

Education services are being targeted by business as an area where considerable profits are to be made. Starting from early 2000s the education service industry as a whole has been growing fast. For example, in UK City Finance House Capital Strategies stated that the industry has been growing at ‘impressive rates of 30% per annum’. At the same time it was predicted that there will be a need of increase amount of ideas with proven track record to reshape the market - traditional education for-profit actors like publishers were going to get more competition. (Ball 2004.)

Policy development is a continuous and engaging process in which those with competing values and differential access to power seek to form and shape policy in their own interests (Bell & Stevenson 2006). For example, based on Spencer-Keyse & Warren (2018) state of debate analysis promoting career skills for education is the most demanded educational need for labor related organizations whereas breadth of skills are more underlined by educators.

Education policy-making has become highly politicized, and policy making costs money. After 2008 financial crises one of the responses has been to make savings in public spending. Education has not been left outside. Marketization and privatization are taken to be one way doing (education) policies cheaper. The expansion of market relations and principles allows in theory to lower the level of public spending. This neoliberal movement in education has led into a situation where education policy, education reform are no longer simply a battleground of ideas, they are also a part of the financial sector, increasingly infused by and driven by the logic of profit. (Ball 2012.)

In the education sector, a too-visible collaboration between public authorities and the private sector is sometimes perceived as problematic (Ball 2004). However, most curricular reforms or expected changes in teaching practices ultimately benefit from this kind of collaboration as it is generally private companies that produce textbooks and pedagogical resources for teachers. On average, over 60% of students have teachers who use textbooks as a primary resource for their instruction. (OECD 2014a.) Collaboration is needed to ensure that the education industry has enough incentives to develop new or significantly improved resources for teachers and students. Furthermore, all stakeholders should be engaged to be a part of education policy and explicit innovation policy discussions for education and training (OECD 2016).

For-profit investments are having a positive and a negative side on education. On the other hand the disciplines of profit are what is needed to reform and re-energize the public sector (Ball 2012.), but on the other hand market mechanisms do not increase equal access to high-quality schooling. The research have shown that when equity of outcomes decreases, so does the quality of education. (Sahlberg 2018.)

Innovations in general can breathe new life into slowing stagnant markets, and act as a mechanism to enhance organization's ability to change and adapt new environment. Businesses need to innovate in order to keep up with their competition by introducing new products or services, improving the efficiency of their production processes and organisational arrangements, or enhancing the marketing of their activities in order to guarantee their survival. (OECD 2016.)

The education material market has been dominated by education publishers. The International Publishers Association (IPA) states that “Publishing's most important

market sector is education, ie the production of materials for schools, colleges, universities, training courses and so on. The biggest publishers in the world today are educational publishers". (IPA 2018.)

During the last decade digital services such as Spotify and Netflix have forever changed the business of music and movies. Both entertainment and education market are content oriented. To understand the magnitude of education publishing, only in US more than 7 billion is spend on K12 textbooks annually. Education technology companies are using same approach than other digital services for the education market, and they are affecting how education content is distributed, used and updated. (Hicks 2018.)

At the same time IPA has been forming a coalition between education publishers to affect to this business environment transition. In their policy paper (IPA 2015) they are addressing policy makers to follow certain principles before contemplating interventions in the provision of learning materials, especially digital. This can be seen both as a way to control new products coming to the market ('...avoid subsidizing digital projects that distort the competitive environment…') but also as a contribution to provide objective learning materials for the market ('A healthy and sustainable educational publishing industry is an asset to any democratic society and essential for a competitive knowledge-based economy…'). (IPA 2015.)

Traditionally the big education publishing companies have been able keep the key business areas for themselves - and they still are. In 2015 market leader Pearson Education division alone brought in almost 3 times more revenue (6,1 billion euros) than the second biggest education publisher China South (2,6 billion euros) (Wischenbart 2016).

Hicks (2018) points out that textbooks are almost out of date upon publication, so it is not a surprise that a new breed of education-technology companies is targeting this market by offering software solutions to break huge volumes through highly scalable business models. Simultaneously every education publisher knows that biggest growth opportunities are digital products and services, expansion into global markets, and efficient investments in education content-based enterprises (Carmody 2012).

The policy statement given through IPA (2015) therefore feels more like an attempt for slow down open source platforms and peer-based contributions in the education market.

Each of the education publishers are working on end-to-end solutions; not just textbooks and testing, but software-based learning delivery platforms (Carmody 2012).

Working in the education sector might be difficult for an innovator entrepreneur or NGO to reach sustainable operating model. When the education market is seen to be slow to adopt innovations and to adapt new practices, creating and sustaining a commercialized innovation may take more time than on the other fields of economy. (Karzunina, West, Mora & Philippou 2017.)

Publishers giant size, resources and extensive reach on education and media landscape gives them a big advantage over smaller providers like startup organizations and teacher-led practices; they can do bigger investments and wait for the market to develop (Carmody 2012). From startup organizations point of view the speed of development is essential; when organization starts to operate on risk capital it eventually will run out of funds, if its' product is not reaching profitability (Ries 2011).

Vedrenne-Cloquet (Karzunina *et al.* 2017) explains the slowness of the market in the following way:

> *"Think of a long, rising tide - not an avalanche. Distribution and timing of adoption are key. Digital transition in education, although a powerful trend, is five times slower than in other sectors undergoing a digital transition. What this means for start-ups is that they have to brace for a slow and long sale cycle unless they operate in the direct to consumer space."*. (Karzunina *et al.* 2017.)

A lean startup organization is trying to maximize its ability to pivot their offering as many times as needed to find a market fit; when the market fit is found, the organization will be less dependant on risk funding, can reach profitability (Ries 2011). From the diffusion of innovation point of view, when the market fit is reached the innovation has reached enough evidence to reduce uncertainty within adopters, and the adoption rate will be increasing (Rogers 2003).

Business-driven innovation in education is expected to close the productivity gap by disseminating new tools as well as new practices, organizations and technology. At the moment educational tool industry is emerging. There are small firms specialised in

inventing and commercializing mainly ICT-based technologies. New practices for knowledge generation and accumulation have emerged. These tool producers' main target is not the huge public school system. (OECD 2016.) Education market probably does not fully satisfy the conditions for attracting and sustaining strong entrepreneurial activity - this can be also seen from the Brookings report (Winthrop & McGivney 2017) where only 26% of innovations were run by private sector companies.

Even though most of the for-profit investments are steered for education technology (edtech) companies and public education has made massive investments in ICT in schools schools have not yet resulted in the hoped transformation of educational practices. Event though there is a huge potential of digitalization for fostering and enhancing learning, the impact of it on education has been shallow. (OECD 2016.)

Transformation might not have happened because there have not been powerful strategies for increasing teachers' ICT skills, improve teachers' professional development and reforming pedagogies (OECD 2016). All of these factors were pointed out as categories missing educational innovation by Brookings (2017).

Based on Metaari's (2018) analysis education technology investments rise to reach a new record of 9,52 billion dollars in 2017. 813 different companies received funding, and edtech investments gain up 30% from 2016. Since 1997 education technology companies have received 37,8 billion dollars of investments, and 62% of those dollars were invested during the last three years (Schulman 2018).

Most of the investments targeted education markets in US and China as expected, but dramatic spike in the investments made to companies in the UK, the Nordic Cluster, and Israel (Metaari 2018). Global South is also having a substantial increase in edtech investments in Africa, particularly for startups in South Africa, Kenya and Nigeria (Puskar 2018). The lack of an affordable or accessible formal education sector means the people of Africa can be the most enthusiastic adopters of learning technology (Martin 2017).

Yet although 2017 was a record year, only a small amount went towards primary and higher education. Pre-K12 companies got 13% of the overall investment (1.2 billion dollars), and higher education companies received 8% (682 million dollars). (Puskar

2018.) This same insight has been stated by OECD (2015) report. Higher education shows the greatest innovation intensity when secondary and primary education have approximately similar lower levels of innovation (OECD 2015).

Investments made to Pre-K12 companies spiked in 2015, but have leveled off in 2016 and 2017. Investors have focused on companies selling legacy products (and managed services) in this academic segment. (Metaari 2018.) Given these numbers are a small fraction of total investments, small education startups may find it quite challenging to get in front of the right people in a school district (Schulman 2018).

These findings reveal a focus shifted from education that would be occurring in schools and classrooms, with a large sum of the investment going instead towards "consumer-" and "corporate-focused" learning companies. Products designed for consumers are the most concentrated revenue opportunities for suppliers and investors are clearly aware of this. For example, Metaari (2018) analysis pointed out that Chinese educational robot company ROOBO have attracted over 500 million dollars of funding during the last two years. They produce consumer products which can help cognitive development and encourages young children to be proactive learners (Metaari 2018).

Furthermore, Metaari (2018) analysis show that there are the following investor preferences:

1. Education technology companies that are selling products that integrate a range of new technologies including cognitive science, artificial intelligence, mixed reality (augmented reality & virtual reality), and neuroscience interest investors the most.

2. Many investors are looking for products and services which incorporate with brain plasticity and the latest findings in cognitive science.

3. Mixed Reality Learning products are still relatively new for the market and they are incorporated with advanced simulation (mostly in higher education and corporate learning products).

4. Mobile learning and location-based learning products have been on the market over 10 years and they are now benefiting from current device capabilities.

3.4 The impact of education investments

Investments in education tend to be small, short-term and uncoordinated. And they often are directed towards children and youth in middle-income societies with few investments benefitting the most marginalized groups. (United Nations Global Compact 2015.)

Only 23% of companies measure outcomes and impacts of all their education investments and grants. Based on CECP (2014) ”Giving in Numbers” report 76% of companies are tracking the societal outcomes and impacts of their grants. Only 18% of those 76% have been tracking these outcomes for more than five years. (CECP 2014.)

Still most corporations are not evaluating outcomes for every single investment, but rather focusing on the ones which are aligned with company priorities or meet a specific threshold amount (Figure 1). The most common threshold value in the CECP (2014) survey was 100.000 dollars. Companies measuring outcomes and impacts worked with fewer nonprofits and approved less grants than others. (CECP 2014.)

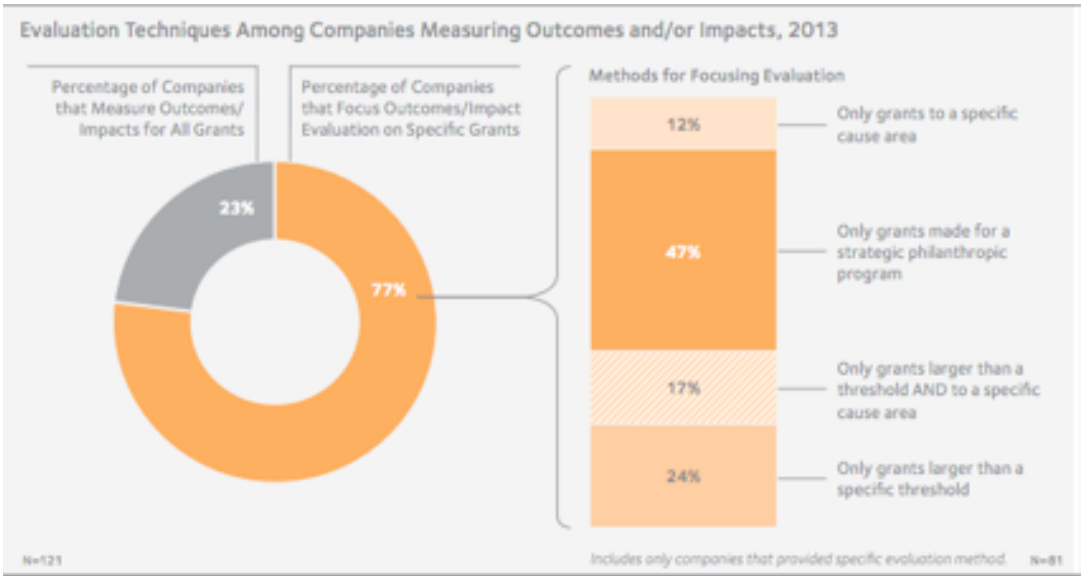


FIGURE 1: Evaluation Techniques (CECP 2014)

Based on the UNESCO (2013) companies can affect the education on three different levels:

1. Core Business
2. Social Investment & Philanthropy
3. Advocacy and Public Policy Engagement

Companies can make their contributions by themselves or they can be working more efficiently through partnerships - education itself is seldom a part of company's core competences. Investment strategy should include the nature of the potential long-term impact. Immediate evidence might be difficult to show; therefore, investments need to be sustained in long term in order to achieve the intended impact. (PwC 2014.)

3.4.1 Three-part process for engagement

UN suggests the following Three-Part Process For Engagement for companies interested in investing in education (UNESCO 2013). The model consists of parts called "Make the business case", "Identify activities" and "Be smart" . The model starts from making the business case. The idea is that a reason to engage in education should align with a long-term growth and business strategy, and also focus on company's core issue areas for (social) investments. The UN model offers the following five drivers support education while benefiting business. Every driver creates business value (e.g. growth, cost-reduction, profitability) from engaging in education activities. After every driver company should identify activities that realize business benefits and solve education challenges in line with local needs. The third part of the model is 'to be smart'. In general, that means that company ensures responsible social engagement. Activities should be sustainable, scalable and aligned with local needs. (UNESCO 2013.)

Some examples of value creation based on UNESCO 2013 guiding document are listed below:

Foster innovation in education, by identify activities that help deliver social and business values and by piloting new, open source practices and technologies that may improve education for hard-to-reach communities. This can be made by applying design thinking and develop low-cost learning materials which can be used by under-resourced schools and by identify innovative products by supporting competitions for educational entrepreneurs and commercializing successful ideas. Furthermore, the guiding document suggest to support innovative teaching methods and tools that foster creative and entrepreneurial thinking and to leverage analytical expertise to develop tools to measure the impact of education programmes. (UNESCO 2013.) Interestingly, International Publishers Association (2015) lobbying paper is speaking against some of these suggested

actions, for example by stating that policy makers should *"...avoid subsidizing digital projects that distort the competitive environment. This inevitably leads to a limited selection of material that is quickly out of date*". This can be seen as a clear counter argument against any open source practices. Especially where it's continued in the same report by saying *"...support teachers by encouraging experienced, professional publishers to develop the teaching tools they need". (IPA 2015.)*

Address operational risks from company perspective by not utilizing child labor in any form and by considering the impact of business operations in education. And from beneficiary point of view that the learning environments are clean and safe, and their operational and business expertise is sufficient. (UNESCO 2013.)

Improve brand leadership and enhance corporate reputation, for example, by using cause-related marketing campaigns to align organizational brand with education initiatives and by investing in programmes that support socio-economic movement. This can be done by offering cash donations to education organizations that reflect company values and demonstrate a record of sustainable social impact. It's also suggested to share organization's education activities and outcomes in corporate responsibility reporting (UNESCO 2013.). To be able to take the full advantage of their donations and investments the organizations should create their own model for measuring the impact of their contributions as suggested in CECP 2014 report.

Boost employee morale and retention, for example, by permitting employees to innovate products and services for education during work hours. This can be also tied up with a possibility to employee volunteer opportunities and employee gift matching through giving campaigns to subsidies and support education needs. (UNESCO 2013.) This kind of a support for education innovator might be crucial, but it might also steer the focus based on the needs of supporting organization. Furthermore, the value of this kind of resource investment might be difficult to measure (PwC 2014.).

Develop capacity of future employees, by identifying current and future skills needed in the labor market, and design and implement appropriate training programmes, by expanding apprenticeship opportunities and by investing in basic education in emerging markets to improve future talent pool.(UNESCO 2013.) The same perspective of future recruitments were also highlighted in the Brookings (2013) report.

3.4.2 Impact analysis framework

PwC Impact Analysis Framework (2014) address the education investments more from company's point of view than UN Three-Part Process For Engagement. It's main target is to outline what is the intended impact the company wants to achieve.

Organizations define "impact" in various ways, and they measure different indicators depending on their definition of the impact. Some organizations may see impact in education as a "philosophical" term when another organizations may define impact in terms of project assumptions and objectives (CECP 2014.). PwC (2014) framework defines the impact more in business terms:

"*Impact is the direct tangible difference on business and society by an education intervention".*

The implementation of the framework is based on the following questions with set indicators.

1. What is the impact company want to have by investing in education?

Potential Types of Impact on Society	**Potential Types of Impact on Society and Business**	**Potential Types of Impact on Business**
1. Access to educational opportunity	*4. Development of a skilled workforce*	*7. Brand differentiation*
2. Learning Outcomes	*5. Efficiency of education collaborations*	*8. Employee retention and morale*
3. Strengthened education systems	*6. Community social and economic development*	*9. Profitability*
		10. Business Resilience

2. Which investment opportunities can achieve these types of impact?

Organisations can steer their investments in different ways. Examples of these possibilities are

a) Direct Programming;
Interventions that directly deliver education with the goal of improving learning

b) Educator Training;
Training and skill development of educators

c) Product Development;
Physical goods, products and services developed to improve learning. The product may be also sold on the market, but it's not the intention or main objective of this investment.

d) Infrastructure;
The built environment and technology for accessing education

e) Policy Change;
Investing in education policy change through support for advocacy.

What are potential indicators to assess the impact of investment?
After the company has made its decisions for the first questions, it has to choose what kind of indicators can be used to assess and understand the impact of their investment. Indicators should be chosen carefully so that they lead into macro-level understanding of the impact, and that the company can do strategic data-driven results in long term. (PwC 2014.)

Sample indicators can be, for example:
1. Access to educational opportunity
These can vary from access rates to number of out-of-school children, from the the distance to the nearest school for students to overall financial contributions towards increased access to education. The main idea of these indicators are to measure how the educational opportunity is happening in the specific context or in the region (PwC 2014.).

2. Learning Outcomes

Learning outcomes can be understood through evidence on high-quality teaching and learning materials and by assessing how suitable the learning materials are for the context (PwC 2014). Access to high-quality educational materials and innovations are not enough alone, but they should be accompanied with demonstrable evidence of implementation and learning results (HundrED 2018b).

3. Strengthened education systems

The weaker education systems are usually under resourced, might not have up to date curriculums or system-wide educator training (Brookings 2013). To support this kind of a systems organizations can support educator certifications or accreditations and demand transparency of financial allocations to schools. System level performance can be also improved through knowledge sharing within education systems - however, this kind of activities should be then also further tied up with similar factors than in the first group like student enrolment rates and number of out-of-school children to fully understand the effect. (PwC 2014.)

4. Development of a skilled workforce

OECDS (2017) skill surveys indicate that there are challenges providing sufficient skills for students prior entering the working life - even some students indicate that they do not find school meaningful for their future needs. From employer point of view mastery of right knowledge and skills are relevant to meet labour demands when students are entering working life. PwC framework suggest organizations to look into school completion rates and job placements rates for graduates if they are interested in supporting this kind of a initiatives. (PwC 2014.)

5. Efficiency of education collaborations

Most of the education innovations are made by not for profit organizations. These organizations are depending on financial contributions shared by public and private organisations. (Winthrop & McGivney 2017.) The efficiency of these organizations is suggested to be measured through the number of beneficiaries reached through investments and by looking into the change in perception and attitudes. In some cases also brand recognition or reputation can be used as a part of external evaluations. (PwC 2014.)

6. Community social and economic development

Social impact can be very difficult to measure. If education investor or grant-giver is supporting this kind of an approach they should be very mindful of the their actions not to be seen affecting the education in neoliberal way (Ball 2004). Suitable measurement factors could be, for example, attendance of the community members in education decision making, the number of (positive) changes in community policies and also the amount of money co-invested by the community for education (PwC 2014).

7. Brand differentiation

CECP 2014 and 2017 reports highlight education as one of the most important grant-giving area for organizations. The benefit is explained through a positive brand visibility and awareness. Furthermore, organizations can showcase their employee (volunteer) participation rate in education investment processes and communicate their business leaders as education champions (PwC 2014.).

8. Employee retention and morale

In the PwC 2014 framework the employee retention and morale section is very similar compared to UNESCO 2013 guiding document. The additional thing is providing is also mentioning changes in the employees' individual commitment towards employers values and possible improvements to their own performance through this positive impact (PwC 2014).

9. Profitability

Even though most of the education innovations are not for profits their profitability should not be overlooked. If education innovators are not able to reach long term sustainability they are always dependent on the external funding. Therefore, PwC framework suggest investors to look into business factors like revenue growth, key markets and how they are utilized, and also research and development factors to reach growing revenue and increased number of students benefiting from product or service. (PwC 2014.)

10. Business Resilience

Business resilience should be look at from investor and beneficiary point of view. Transparency of community engagement efforts and compliance with regulations for health and safety are crucial. Also the adherence to government policies and frameworks should be advised. (PwC 2014.)

From education innovator point of view, it's important to understand what kind of factors education investors and grant-givers are looking for when doing their investment. In the literacy overview it can be found that there are suitable and well thought impact factors for different education innovations, however there seems to be a gap in the implementation. Simultaneously education investors do not always measure the impact of their investment (CECP 2014), the impact can be understood in multiple ways (PwC 2014) and education innovations do not have in-depth models for measuring their outcomes (Winthrop & McGivney 2017). In the following chapters researched education innovations are analyzed from these factors.

4 RESEARCH

4.1 Research plan

The aim of this thesis is to provide further information about K12 education innovation funding globally. The research question was stated as "What kind of funding needs are identified by innovators to scale up their K12 education innovations?"

Education innovation funding and funding needs are researched in this thesis. The study is not looking into privatization of education as such, but researching not for profit and for profit education innovations which are challenging the traditional actors like education publishers in the education market. Through the research it's hoped to get information how different education innovators have been solving their need of external funding through venture capital investments, grants and donations.

The objective of this thesis is to understand how funding affects to scaling up education innovations, and how innovators' see their own need of funding. The research will investigate HundrED Global Collection 2019 innovations. These selected innovations will represent different stages in the scaling process and the innovations will be categorized by using Roger's diffusion of innovations theory.

The hypothesis is that innovators capability to measure their outcome will positively correlate the investment probability. The second hypothesis is that the freedom to adapt and modify the innovation is correlating positively to the speed of scaling up the innovation.

4.2 Data acquisition methods

The research was conducted as an independent study to HundrED Global Collection innovators. The research was made after the innovators had been chosen to the Global Collection list, and it was stated that answering to this research survey do not affect in any way to their status being chosen to the Global Collection List.

The research was conducted by using survey questionnaire (Appendix 1), which included a group of structured questions. Survey research is based on a theoretical framework and the questionnaire is conducted based on the existing models and theoretical findings (Järvinen & Järvinen 2004). In the context of this research the questionnaire was created based on the findings of the theory analysis, especially the Brookings report (Winthrop 2017) which were presenting the largest sample size from the field of education innovations. The questionnaire was tested with native and second language English speakers before sending to respondents. The electronic survey questionnaire was used because the respondents were located around the world, and the electronic web-based survey provided them an easy way to response to the questions.

The data was acquired by using electronic questionnaire which was sent via email to all 100 selected innovators on 17th of September 2018. Out of 100 innovators 61 replied to the questionnaire until it was closed on the 3rd of October 2018. The results were collected by using online questionnaire which is attached to the report (Appendix 1). In research results answers to open questions have been modified in the way that innovations remain anonymous.

The statistical response rate of 61% can be seen as exceptionally high. In the research questionnaires the response rate is usually between 30% to 40%, and it is very likely to have a response rate less than 60%. The average time which was used for answering was 17 minutes. The high response rate may identify high interest and motivation towards research results, or the respondents in general are finding it important to be able to conduct some new data from the field. (Hirsjärvi, Remes & Sajavaara 2005; Heikkilä 2005.)

4.3 Research analyze

The research had been made as multi-method research by doing first in-depth theory analysis and then a quantitative study and content analysis for HundrED 2019 selected innovators. The reason to select a multi-methods approach is to get more diverse understanding of how the funding of education innovations is actually affecting to scaling them up (Spratt, Walker & Robinson 2004).

The strategy of this research was to use survey-research methods, which can be analyzed by using quantitative or qualitative methods. The research data in this study has been presented by using quantitative methods like average values, dispersion of the data and percentage values. Tables and data visualizations were used to analyze the data. The quantitative material was analyzed by using descriptive statistics analysis and the qualitative material by forming themes (Saaranen-Kauppinen & Puusniekka 2006.).

In the content analysis the data was compressed based on the words mostly used the answers to get condensed understanding of the themes mostly mentioned in the open answers. The basic idea of the content analysis is to understand which are the most common themes in the answers and how the information can be categorized. The content analysis rely on logical reasoning and interpretation. First the the content needs to be split into pieces and then build again based on the meanings of the open answers. (Sarajärvi & Tuomi 2009.)

Content analysis can be divided into three different categories; content related analysis, theory related analysis and theory based analysis (Eskola 2001). In the context of this research the content analysis was made based on the content related analysis, and it was done for all open answers and "Other" sections of the research. The purpose of content analysis is to create theoretical model out of the open research responses (Sarajärvi & Tuomi 2009).

The analysis were based on three different stages. In the first stage the content was reduced based on the themes and words mentioned in the answers, in the second stage the content was clustered into groups, and in the third stage the content was turn into theoretical abstracts. This method is used to condense the lengthy open answers into clear themes or abstracts which reveal the nature of the answers (Sarajärvi & Tuomi 2009).

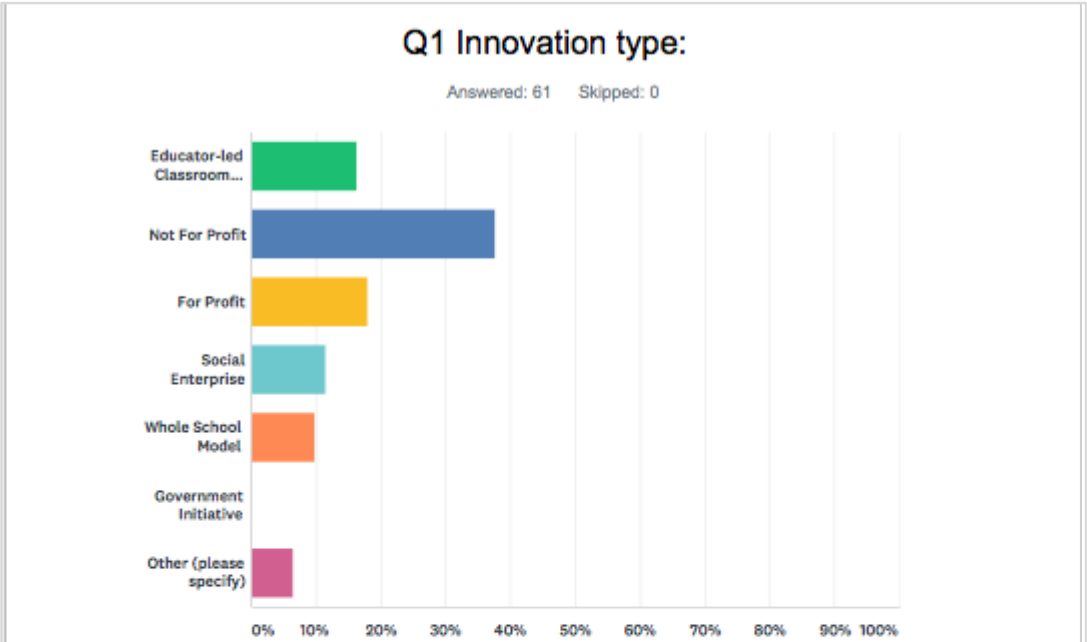
5 RESEARCH RESULTS

5.1 Research overview

In the research 38% of innovators identified themselves as not for profit organizations forming the biggest group of respondents in the survey (Figure 2). In the Brookings report 62% of education innovations were identified as NGOs (Winthrop 2017), but the comparison can't be made directly. In the Brookings report innovations were categorized only in three categories; NGOs, Private sector companies and Governmental initiatives whereas in this research report we wanted to identify also niche groups among organizations.

The second largest group attending to the survey were 16% as educator-led classroom practices, which can be seen as micro-entrepreneurs or micro-NGOs depending on their funding strategy. If NGO and Educator-led Classroom Practice respondents are compared together they represent 54% of all innovations.

When looking companies (29%) contributing to the education innovations their responses are divided between for-profit organizations (18%) and social enterprises (11%) (Figure 2). Comparing to the Brookings report 26% of all education innovations they listed were made by private sector companies (Winthrop 2017). Therefore, the results considering private companies are well aligned with the Brookings findings.



ANSWER CHOICES	RESPONSES	
Educator-led Classroom Practice	16.39%	10
Not For Profit	37.70%	23
For Profit	18.03%	11
Social Enterprise	11.48%	7
Whole School Model	9.84%	6
Government Initiative	0.00%	0
Other (please specify)	6.56%	4
TOTAL		61

FIGURE 2: Innovation type

The 5th biggest group among the respondents were whole school models (9,84%) executed by both private and public schools (Figure 2). A whole-school model integrates the key aspects of school together and tries to minimize the gap between planning and implementation. In practice this means integrating teaching (curriculum) with the social and organisational (culture) and technical and economic aspects of school (campus) and community practices (Sterling 2013).

7% of respondents specified them as something "other" than described their organizations in the following way:

> *"United Nations Agency, a combination between not-for-profit and social enterprise, government initiative taken from (based on) innovation."*

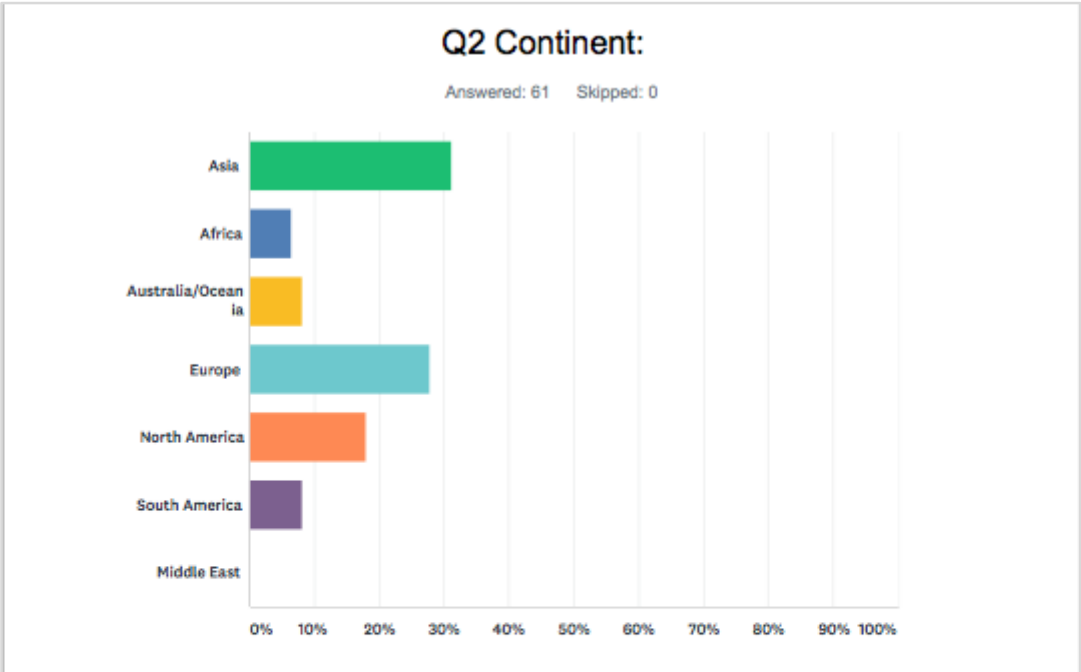
One respondent also founds it difficult to be identified as ‘for profit’:

> *“‘For profit’ sounds wrong - we are on a mission to change behaviours in the way we learn.” (Other)*

HundrED Global Collection included 7% government led innovations, but none of these innovators responded to the research survey. This can be seen from two perspectives; considering the small amount of such innovations all of them might have missed the survey or as these innovations are resources as a part of government their interest towards further funding needs is small. Since governmental initiatives were not giving any answers to this survey, the results can’t be used for analyzing or understanding the funding needs of these organizations at all.

In the HundrED Global Collection 2019 all selected 100 innovations are categorized in the following way; 51 not for profits, 27 innovations for profits, 17 education led initiatives (this could be class/school/research based) and 7 government led initiatives (HundrED 2018b). Comparing this information to the survey responses (Figure 2), it can be stated that the results are following similar kind of a pattern than Brookings report findings (Winthrop 2017); biggest group creating education innovations are not-for-profit organizations followed by private companies.

The 61 respondents represented innovators around the world. Asian education innovators formed the biggest group (31%) followed by European (28%) and North American (18%) education innovators. The smaller amount of education innovators replied from Australia/Oceania (8%), South America (8%) and Africa (7%). Innovators represented altogether 31 different countries. None of the selected innovators from Middle East did answer to the questionnaire (Figure 3).



ANSWER CHOICES	RESPONSES	
Asia	31.15%	19
Africa	6.56%	4
Australia/Oceania	8.20%	5
Europe	27.87%	17
North America	18.03%	11
South America	8.20%	5
Middle East	0.00%	0
TOTAL		61

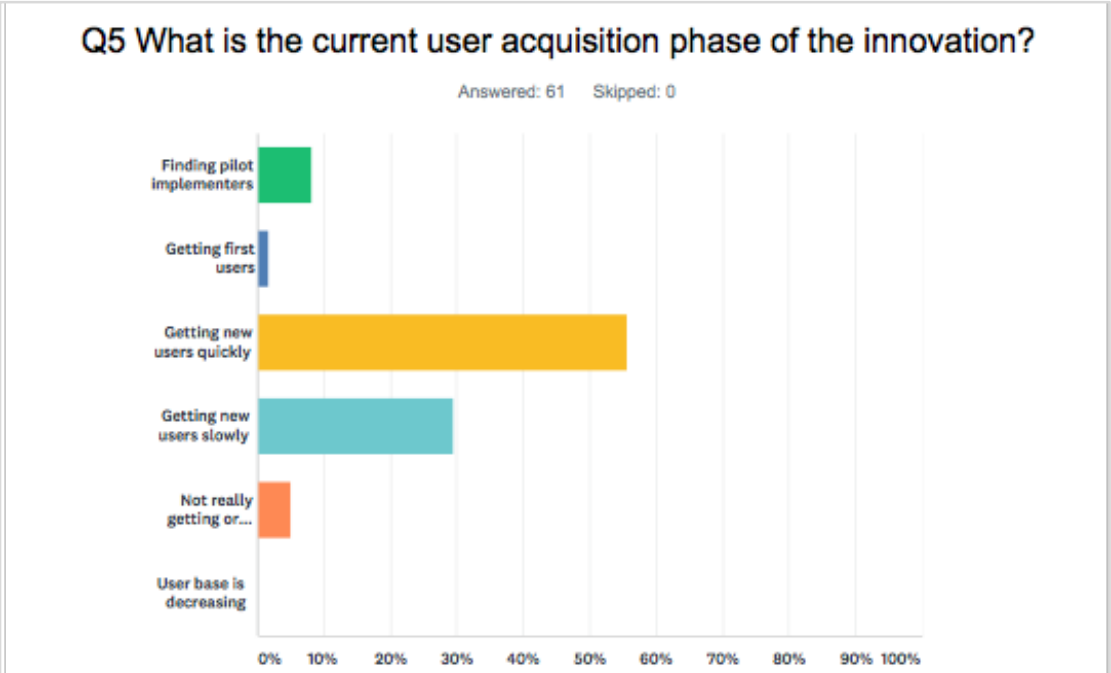
FIGURE 3: Continent

HundrED Global Collection list research criteria includes ‘scalability’ factor. The organization is trying to identify education innovations which have increased potentiality to be scaled up to further classrooms around the world. (HundrED 2018b.) The research findings support a successful identification of such innovations. The biggest group of respondents identify their user acquisition phase as ‘Getting new users quickly‘ (56%), followed by the second biggest group ‘Getting new users slowly’ (30%) (Figure 4).

The group ‘Getting new users quickly’ can be matched to the law of diffusion of innovations between early adopters and early majority; this period of innovation diffusion can be states as a tipping point where user implementation is significantly increased (Rogers 2003).

Smaller amount of innovators are in the earlier phase of the innovation diffusion spectrum; 8% of innovators are trying to identify their first pilot implementers and 2%

are starting to get their first customers. Approximately 5% of the innovations are having a more stable which is not changing in either direction. Interestingly none of the innovations are losing using at the time of the survey (Figure 4).



ANSWER CHOICES	RESPONSES	
Finding pilot implementers	8.20%	5
Getting first users	1.64%	1
Getting new users quickly	55.74%	34
Getting new users slowly	29.51%	18
Not really getting or losing users	4.92%	3
User base is decreasing	0.00%	0
TOTAL		61

FIGURE 4: User acquisition phase

On the average level innovations researched has scaled to 16 countries. Two out of 61 responses answered to be scaled to 100 countries whereas some innovations were only used in their origin country at the time of the survey (Figure 5).

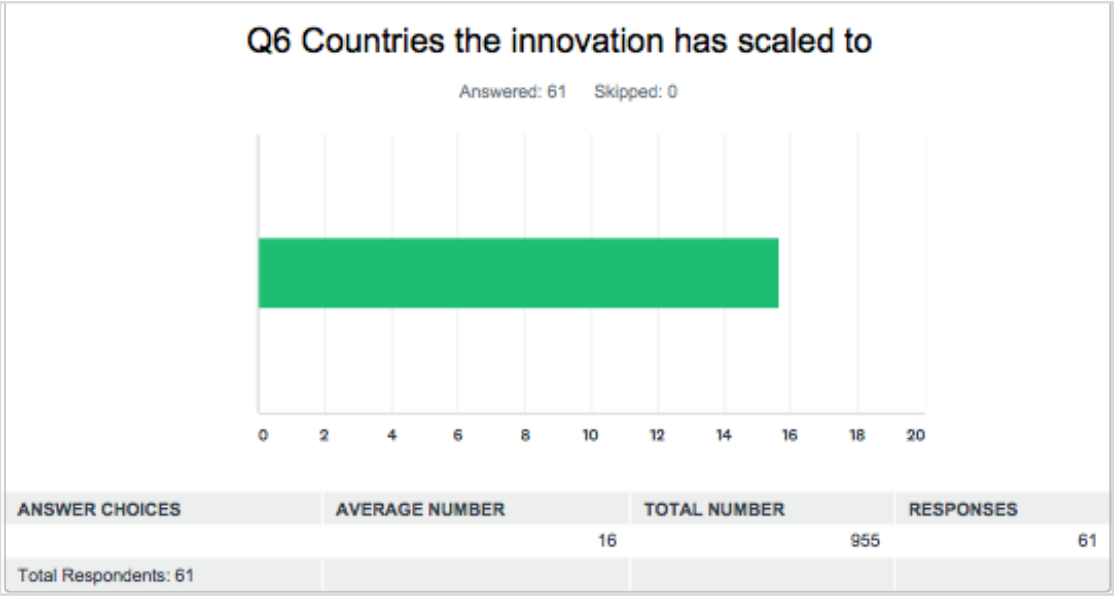


FIGURE 5: Countries the innovation has scaled to

When innovators were asked to estimate the current amount of users the answers and their type varied a lot. Most whole school models were calculating their users as school or classroom units whereas other innovations calculated them through amounts of students or educators, or both. Out of 61 responses 4 answers were also eager to mention indirect beneficiaries like families and students influenced by the innovation even though they were not seen as users.

Out of 61 respondents 54 innovators also estimated how many new users they get monthly at the moment. The average amount of new users was 44 users in a month. However, this data can't be used for any further analysis since the units differ between innovations; some innovators calculate new users as individuals whereas some as classrooms or schools.

For example, one innovator describes their user acquisition by saying:

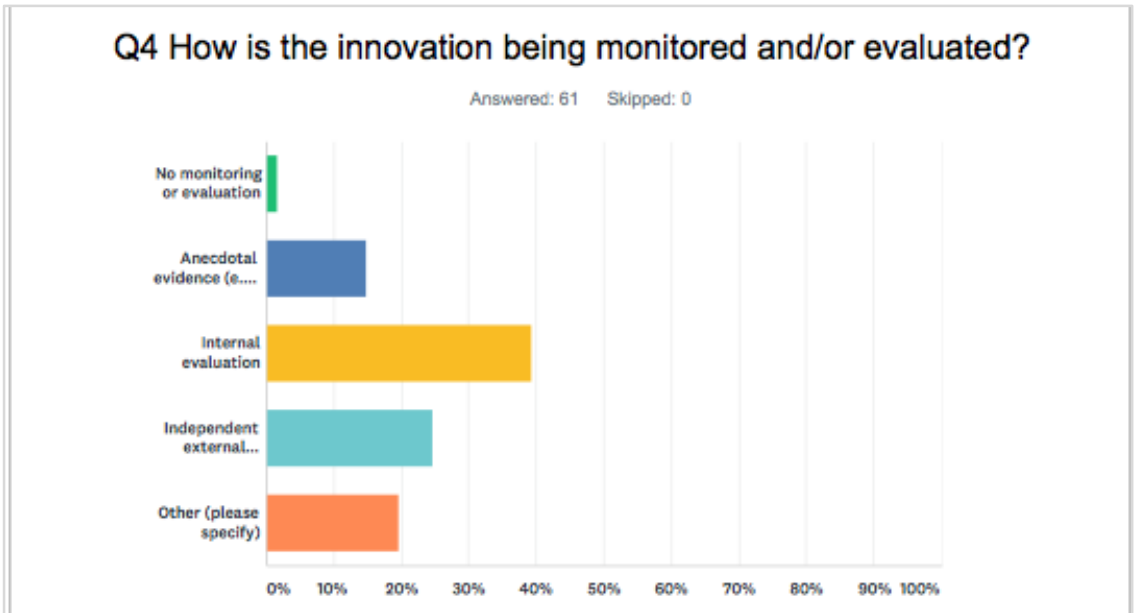
> *"We're going through a boom at the moment - 50+ new schools join every day. We've also got a very exciting roadmap ahead to allow us to continue growing." (For Profit)*

And another one:

> *"Starting in one school in East London, we have now established a national network of over 300 schools and 3500 teachers covering all parts of the UK and beyond." (Not For Profit)*

Where it seems that user target group is clear for every innovator some of them are having a need to provide the biggest possible number to showcase the excellence of their work. For further studies questions 7 and 8 need to be reformed by identifying the primary user group to get better quality data, which can be compared together.

In the PwC (2014) and UNESCO (2013) framework for education investment impact suggest strong interlinking to innovation monitoring and evaluation in order to steer education investments. Innovations selected for HundrED Global Collection 2019 are resourcing for monitoring and/or evaluating their work. Out of 61 respondents only one has stated not to do any monitoring or evaluation.



ANSWER CHOICES	RESPONSES	
No monitoring or evaluation	1.64%	1
Anecdotal evidence (e.g. quotes from educators / learners)	14.75%	9
Internal evaluation	39.34%	24
Independent external evaluation (e.g. published research)	24.59%	15
Other (please specify)	19.67%	12
TOTAL		61

FIGURE 6: How is the innovation being monitored and/or evaluated?

The biggest part of education innovators (39%) are doing internal evaluation followed by innovators doing independent external evaluation (25%). Anecdotal evidence is used by 15% of innovators (Figure 6). The group 'Other' is interestingly big in this question and it shows further combinations of all stated ways of doing monitoring and evaluation for innovations, for example:

> *"A combination. Anecdotal evidence and research by our end users!"*
> *(Whole School Model)*

> *"Anecdotal evidence & Independent external evaluation"*
> *(Social Enterprise)*

> "*Internal evaluation (SAT, IB, AP scores) and also anecdotal (educators / learners / parents)"(Educator-led Classroom Practice)*

Some innovations have created in-built monitoring and evaluation tools as described below:

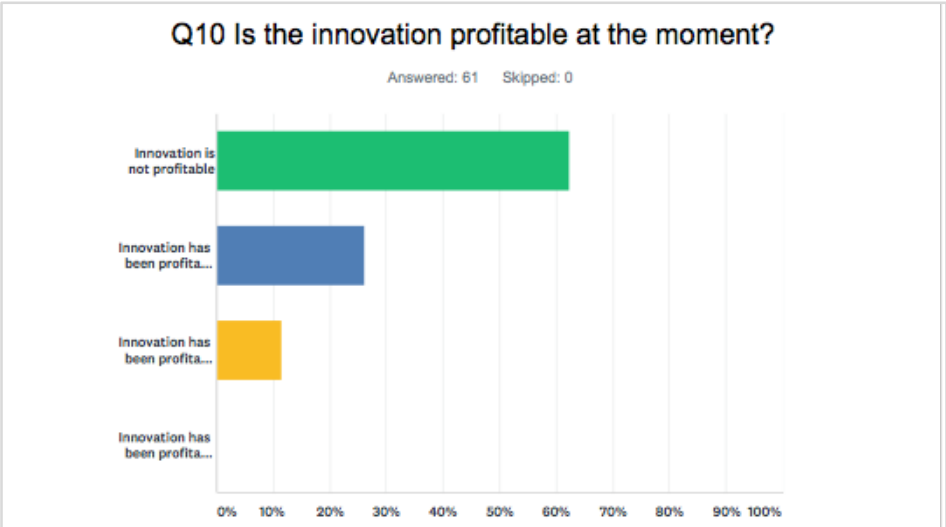
> *"It has live-data reporting built into the program, capturing the students answers at a year level scale and providing educators with graph snapshots of their year level cohort"*
> *(Social Enterprise)*

> *"Anecdotal, qualitative and quantitative measuring of academic progress, confidence levels, teacher ability etc, semi structured interviews, teacher observations, white board forums, external evaluation."*
> *(Not For Profit)*

> *"1) Through the academic success of the graduates 2) Through the social approval that permits the use and expansion of the project 3) By the constant growth of the program"*
> *(Not For Profit)*

5.2 Funding needs of innovations

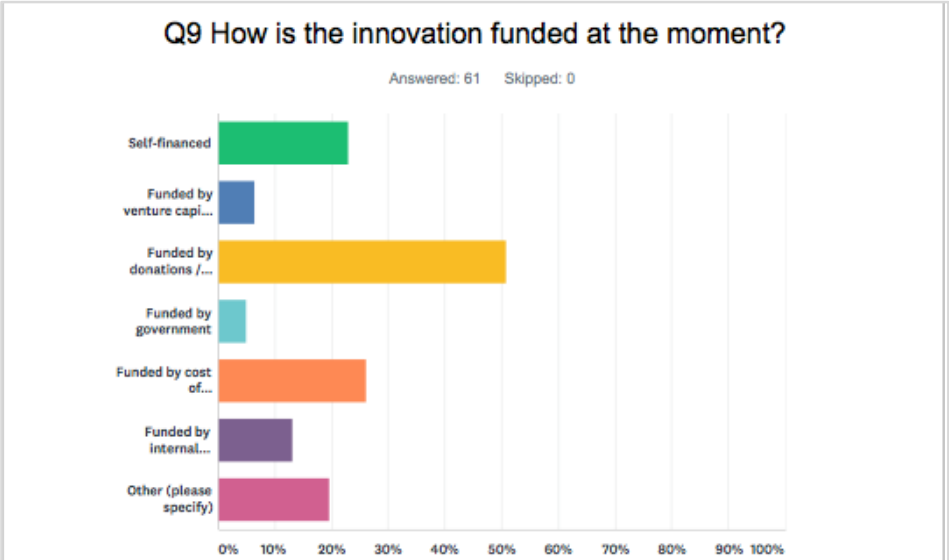
Most of the innovations are in the need of external funding. Based on the research results 62% of innovations were not profitable at the time of the survey. Only 38% of innovations have been profitable for 5 years at the most. None of the innovations have been profitable for over 5 years (Figure 7).



ANSWER CHOICES	RESPONSES	
Innovation is not profitable	62.30%	38
Innovation has been profitable less than 2 years	26.23%	16
Innovation has been profitable for 2-5 years	11.48%	7
Innovation has been profitable more than 5 years	0.00%	0
TOTAL		61

FIGURE 7: Is the innovation profitable at the moment

Innovations selected for HundrED Global Collection 2019 are combining various of funding instruments together in order to keep operations ongoing. The majority of innovations (51 %) are funded through donations / grants, followed by income from services and products (26%) and self financing (23%). Some innovations are funded through internal budgets as a part of a parent organization (13%). Only a small minority of innovations are using venture capital investments (7%) or governmental funding (5%) (Figure 8).



ANSWER CHOICES	RESPONSES	
Self-financed	22.95%	14
Funded by venture capital investments	6.56%	4
Funded by donations / grants	50.82%	31
Funded by government	4.92%	3
Funded by cost of service/product	26.23%	16
Funded by internal budgets as a part of an parent organization	13.11%	8
Other (please specify)	19.67%	12
Total Respondents: 61		

FIGURE 8: How is the innovation funded at the moment?

In the Brookings report (Winthrop & McGivney 2017) it was stated that most of the innovations were combining 3-5 funding sources together. Similar kind of a funding strategy can be witnessed by the innovators selected by HundrED. These complex funding structures are well presented in the 'Other' section when innovators were asked to specify their current innovation funding situation:

> *"By government, Inter American Development Bank and by voluntary work." (Other)*

> *"Scholarship funds provided by external philanthropic/academic organizations." (Other)*

> *"[Innovation]'s income is split roughly evenly between governments (~33%), foundations (~33%), and unrestricted income from individual supporters, corporate partnerships, and fundraising campaigns (~33%)." (Not For Profit)*

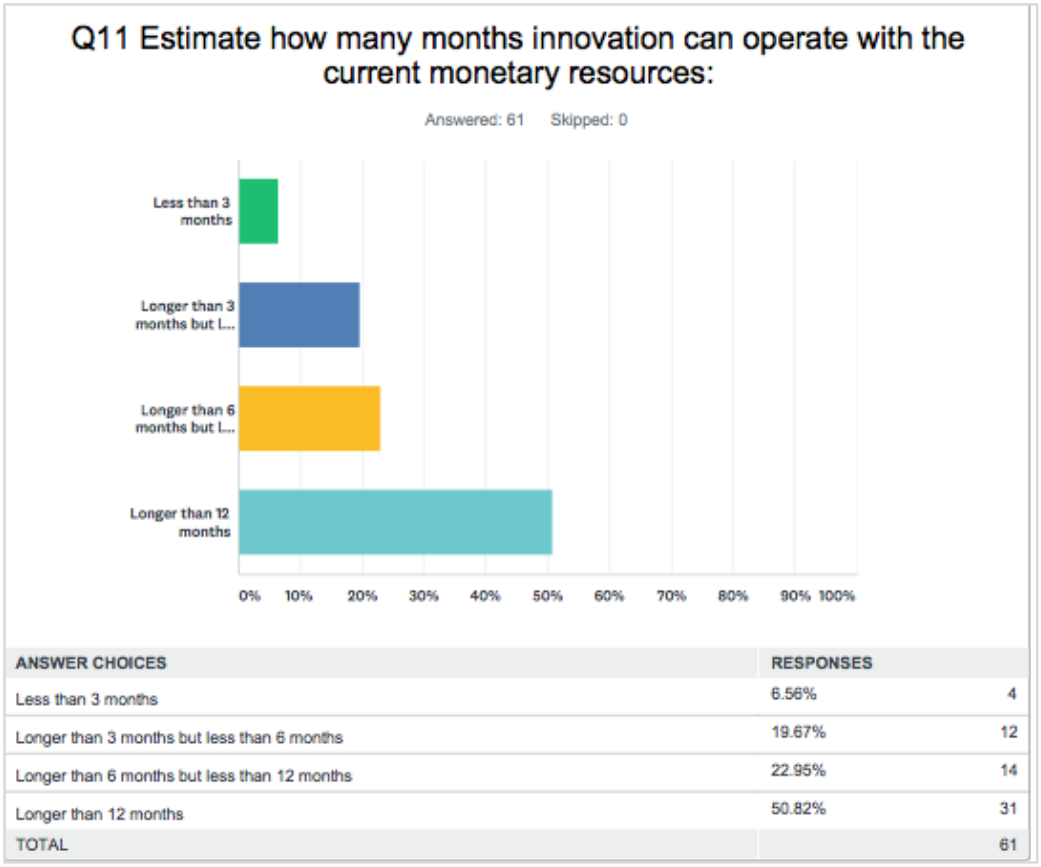
However, some innovations have more straight forward models:

> *"Through tuition - we are a private, non-profit international school."*
> *(Educator-led Classroom Practice)*

> *"Self financed and funded by cost of service."*
> *(For Profit)*

> *"As a social enterprise, we generate revenue from traded services in order to fund our educational programmes."*
> *(Social Enterprise)*

The monetary resources of respondents were surprisingly positive. Most of the innovations (51%) were able to continue their operations for longer than 12 months. 23% of the innovations were able to operate over 6 months but less than 12 months, and 20% over 3 months but less than 6 months. Only 7% of innovations are in the immediate need of external funding with the operating window less than 3 months (Figure 9).



ANSWER CHOICES	RESPONSES	
Less than 3 months	6.56%	4
Longer than 3 months but less than 6 months	19.67%	12
Longer than 6 months but less than 12 months	22.95%	14
Longer than 12 months	50.82%	31
TOTAL		61

FIGURE 9: Monetary resources

Even though funding situation is not critical for the half (51%) of the innovations the other half of the innovations are looking for external funding within the next 6 months (49%) (Figure 9). 66% of innovations are looking for venture capital and 87% innovations are looking for grants and donations (Figure 10).

Furthermore, 40% of all innovators are looking for both venture capital and grant and donations within the next 6 months. When the groups are compared together 92% of innovators who are looking for venture capital are also interested in grant and donations, whereas only 70% of grant and donation seekers are also interested in venture capital.

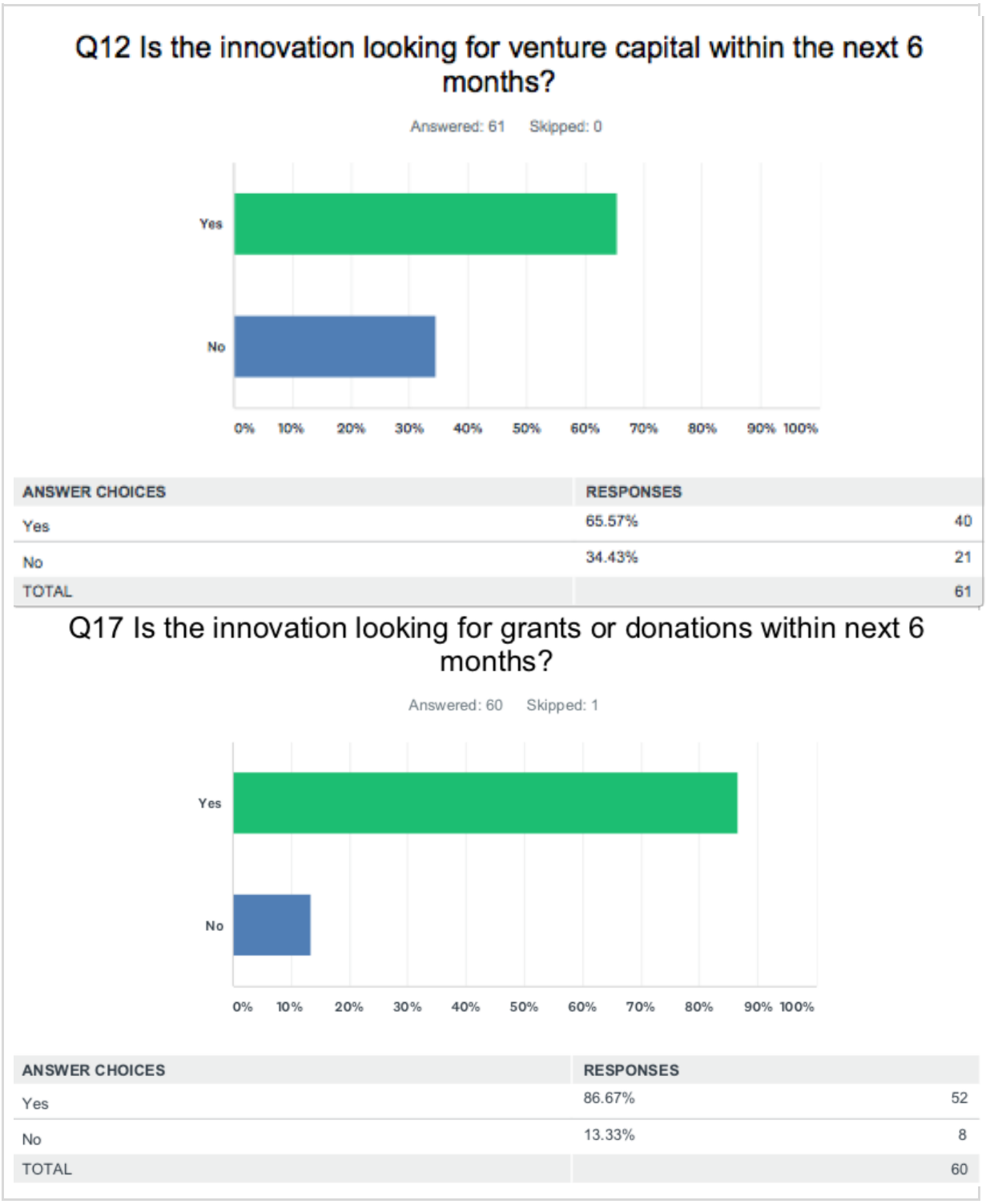


FIGURE 10: Is the innovation looking for venture capital?

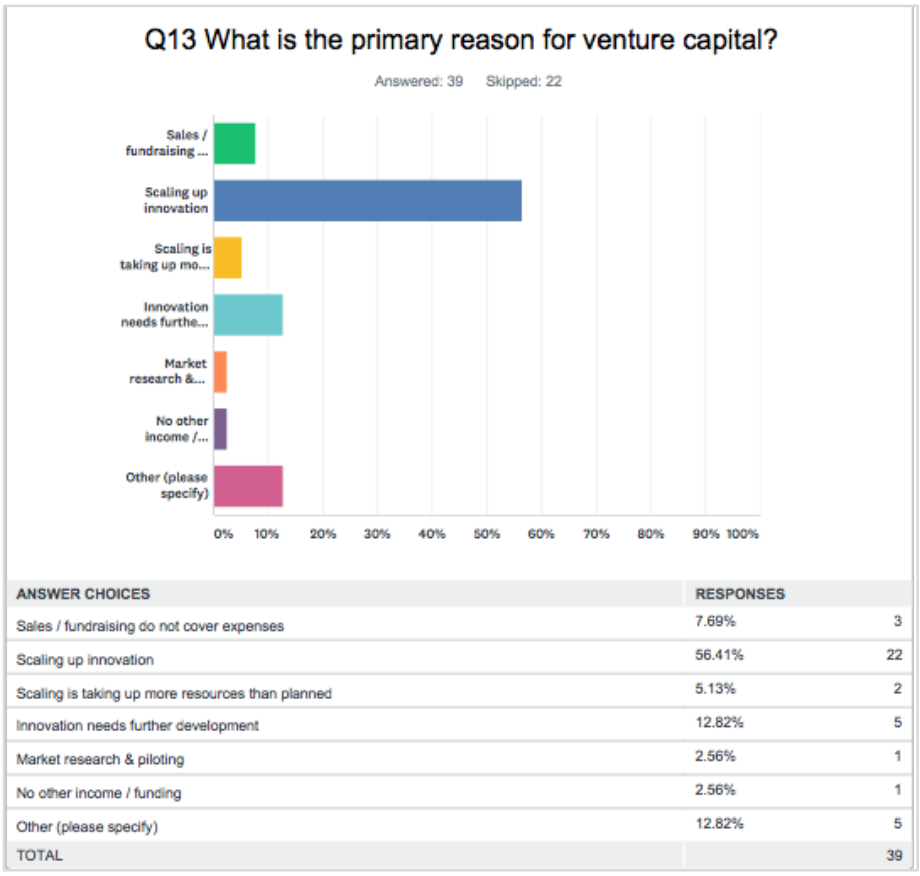
5.3.1 Venture capital needs

The main reason to get venture capital is to scale up the innovation (56%) or to develop the innovation further (13%) or for some other reasons (13%). Minority of the innovators are looking resources for sales and fundraising activities (8%) or to have additional resources for scaling up the innovation (5%). Market research & piloting and lack of other income has been stated as a main reason by one innovator (Figure 11).

Based on the specified answers in the 'Other' section most of the innovators are looking venture capital for developing the innovation further, e.g:

> *"Development of new material, training and capacity building especially in the developing countries, set up of online learning platform."(Not For Profit)*

> *"Developing a new resource to underpin the present materials." (For Profit)*

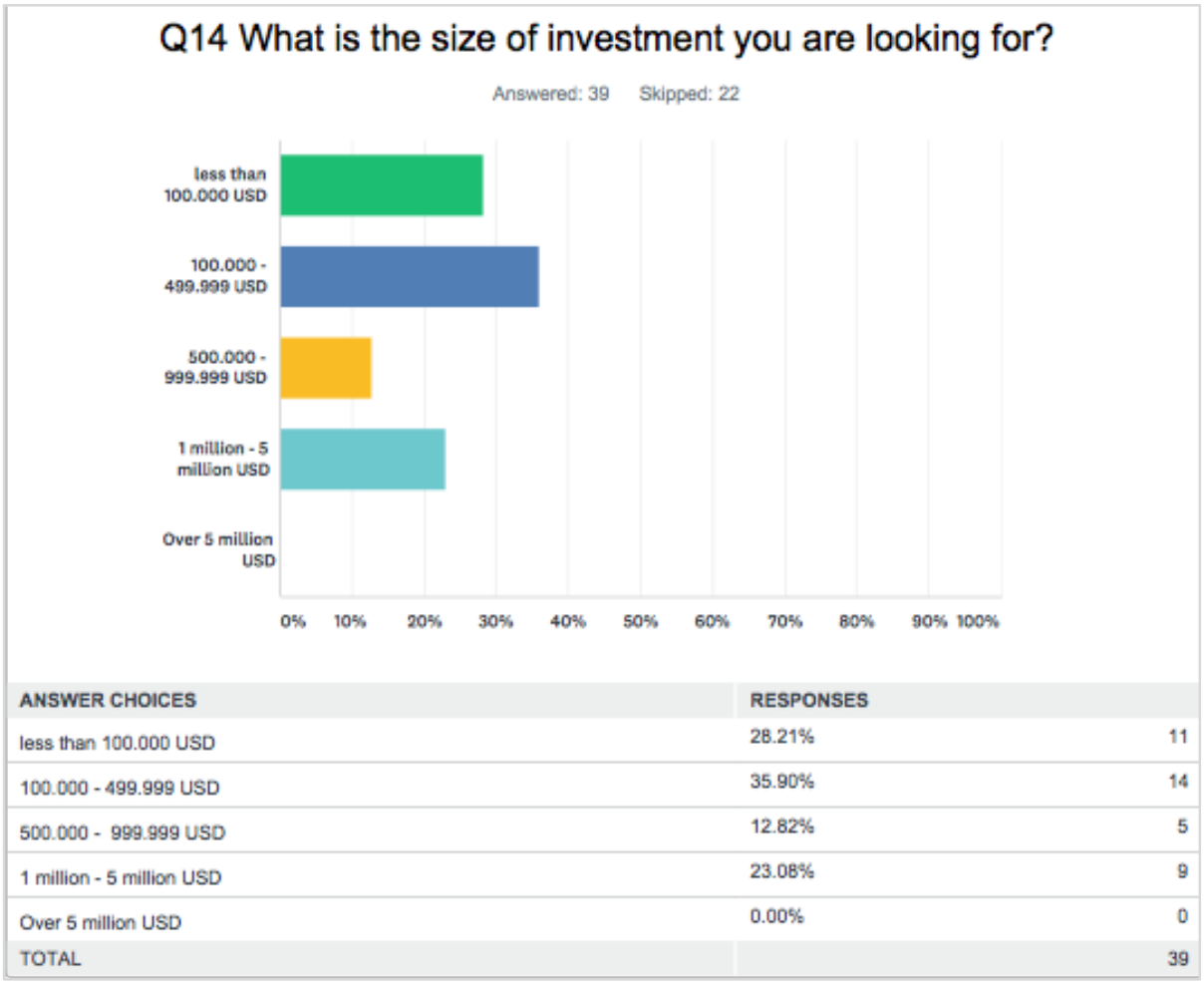


ANSWER CHOICES	RESPONSES	
Sales / fundraising do not cover expenses	7.69%	3
Scaling up innovation	56.41%	22
Scaling is taking up more resources than planned	5.13%	2
Innovation needs further development	12.82%	5
Market research & piloting	2.56%	1
No other income / funding	2.56%	1
Other (please specify)	12.82%	5
TOTAL		39

FIGURE 11: What is the primary reason for venture capital?

Minority of the innovators are looking resources for sales and fundraising activities (8%) or to have additional resources for scaling up the innovation (5%). Market research & piloting and lack of other income has been stated as a main reason by one innovator (Figure 12).

The majority of investments (36%) looked for are between 100.000 to 499.999 USD, the second biggest group (28%) is formed by investments less than 100.000 USD. Interestingly third biggest group of investments (23%) looked for are between 1 million to 5 million USD, but none of the innovators are looking for moonshot investments over 5 million USD (Figure 12). This finding is aligned with Metaari (2018) report pointing out that majority of education related investments are small.



ANSWER CHOICES	RESPONSES	
less than 100.000 USD	28.21%	11
100.000 - 499.999 USD	35.90%	14
500.000 - 999.999 USD	12.82%	5
1 million - 5 million USD	23.08%	9
Over 5 million USD	0.00%	0
TOTAL		39

FIGURE 12: What is the size of investment you are looking for?

The investment need is divided in two exactly similar size majority groups; 44 % of innovators needs the investment within the next 6 months, and 44% after 6 months but less than 12 months. 13% of innovators are needing the investment after 12 months (Table

1). This result indicates that education innovators are prepared to long adaption times pointed out in Both OECD (2015) report and EdTech Investment and Venture Capital report (Karzunina *et al.* 2017).

TABLE 1: Venture Capital / When is the investment needed the latest? All responses.

ANSWER CHOICES	RESPONSES	
In the next 6 months	43.59%	17
After 6 months but less than 12 months	43.59%	17
After 12 months	12.82%	5
TOTAL		39

Based on the open question text analysis words development, scale, program and sales are mentioned most often in the answers (Figure 13). These words are mentioned in the answers, for example, in the following ways:

> *"Pay human resource for sale and program innovation." (Not For Profit)*

> *"Developing and strengthening the programme, new online teaching and learning tools for MOOC, alignment with the programme with the Sustainable Development Goals." (Not For Profit)*

> *"Recruitment of sales people (UK, USA, UAE), recruitment of customer engagement manager, market testing (consumer market in UK, USA), product development (Special Education features, consumer product). The capital will also help to unlock 500,000€ in innovation support from the Business Finland Young Innovative Company funding program." (For Profit)*

> *"Replicate language versions of the innovation, development more content and offer incentive for wise clicking online (monetizing and gratification of innovation), and innovative engagement of innovation." (Other)*

> *"Sales and marketing" (For Profit)*

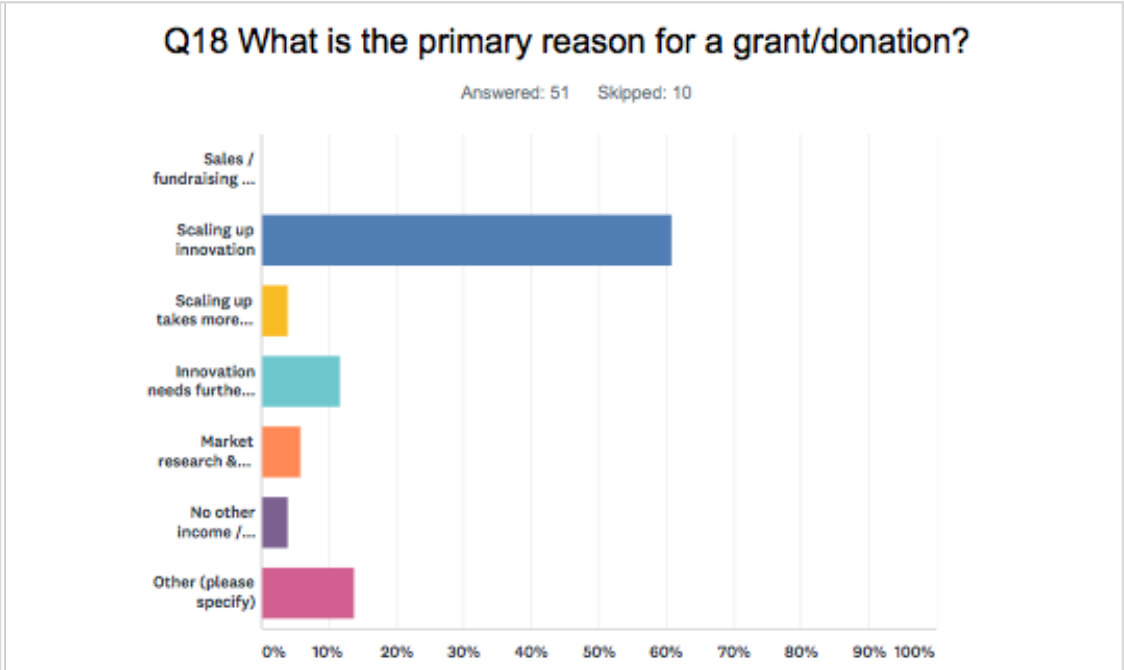
> *"The investment will be used to build the team in business development so as to reach 100,000 users in the next 18 months with a revenue forecast of $5 million (USD)" (For Profit)*

"To fund operations, technology and sales teams." (Social Enterprise)

FIGURE 13: Cloud view - How the (venture capital) investment would be used?

5.3.2 Grant and donation needs

The primary reason for grant and donations is the same than with the venture capital funding; majority of innovators (61%) are looking funding for scaling up the innovations followed by the need to develop the innovation further (12%). The significant difference compared to the venture funding is that no-one is looking for grants and donations for sales and fundraising (Figure 14). However, revenue growth from operations was one of the suggested impact factors suggested in PwC (2014) Impact Framework – the revenue growth was indicating operational sustainability in the longer time perspective. Therefore also education innovators looking for grants and donations should pay attention to this factor; the smaller the amount of service and product related income is, the bigger the risk is if one of the grant- or donation-givers backs off.

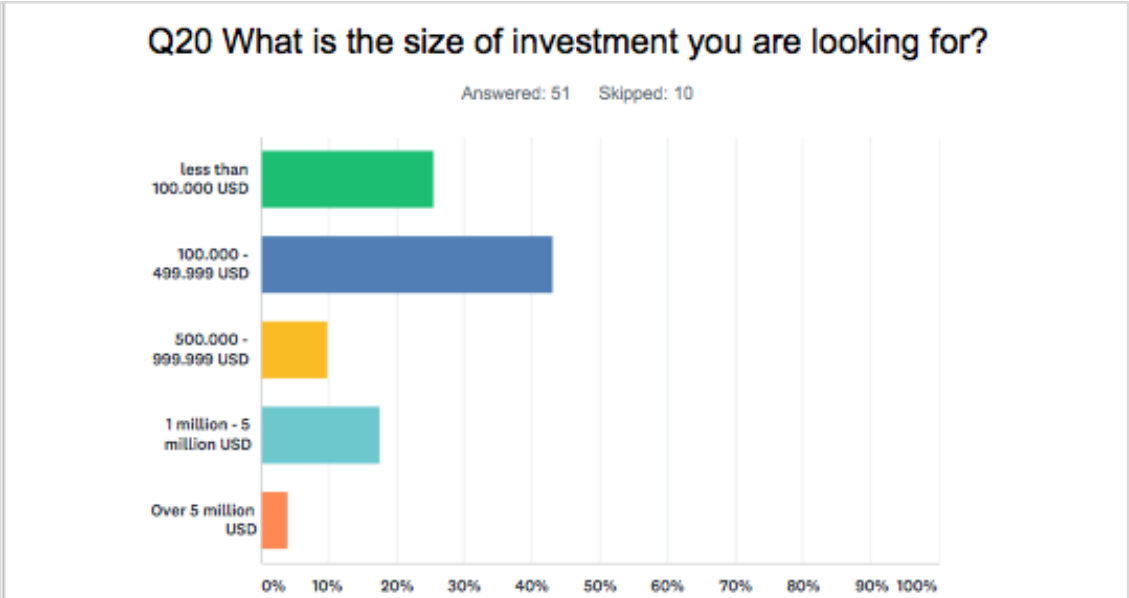


ANSWER CHOICES	RESPONSES	
Sales / fundraising do not cover expenses	0.00%	0
Scaling up innovation	60.78%	31
Scaling up takes more resources than planned	3.92%	2
Innovation needs further development	11.76%	6
Market research & piloting	5.88%	3
No other income / funding	3.92%	2
Other (please specify)	13.73%	7
TOTAL		51

FIGURE 14: What is the primary reason for a grant/donation?

The amount of funding looked for is quite similar compared to the venture capital funding. The majority of innovators (43%) are looking for investment between 100.000 USD to 499.999 USD, followed by the second biggest group (25%) of investments less than 100.000 USD. Interestingly less innovators in total are looking for big investment tickets, but 4% of them are looking for investments over 5 million USD whereas there were no innovators looking for such a money from the venture capital side (Figure 15).

The urgency of the investments seems to be pretty similar compared to venture capital investments. Small majority (43%) are looking for receiving the investment in the next 6 months, followed by 39% looking for receiving the investment in after 6 months but less than 12 months. 18% are needing the investment after 12 months (Appendix 2. Q21).

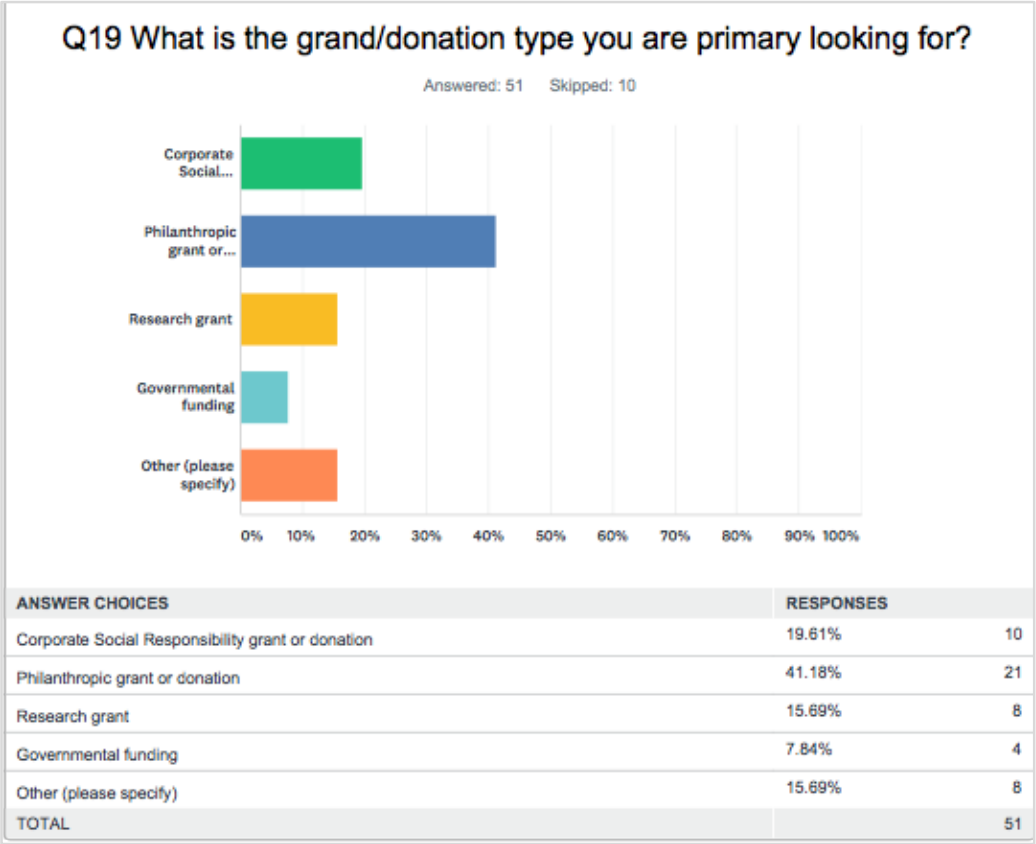


ANSWER CHOICES	RESPONSES	
less than 100.000 USD	25.49%	13
100.000 - 499.999 USD	43.14%	22
500.000 - 999.999 USD	9.80%	5
1 million - 5 million USD	17.65%	9
Over 5 million USD	3.92%	2
TOTAL		51

FIGURE 15: What is the size of investment you are looking for?

In the grant and donation section it was also asked what kind of type of grant or donation was in the specific interest of innovator. Majority of innovators were looking for philanthropic grant or donation (41%) followed by Corporate Social Responsibility investment (20%) and Research grants (16%). Especially the interest towards research grants were visible in the open text answers (Figure 16).

Innovators could be looking more eagerly research and R&D funding through grants and donations. For example, OECD (2016) report suggests that education needs a strong and efficient system of knowledge creation and diffusion, and that this system should be based on scientific research into teaching and learning. The more innovations can lean on demonstrable evidence on their research results, the bigger probability there is for funding (PwC 2014).



ANSWER CHOICES	RESPONSES	
Corporate Social Responsibility grant or donation	19.61%	10
Philanthropic grant or donation	41.18%	21
Research grant	15.69%	8
Governmental funding	7.84%	4
Other (please specify)	15.69%	8
TOTAL		51

FIGURE 16: What is the grant/donation type you are primary looking for?

Based on the content analysis on open answers how the grant/donation would be used the answers differ from venture capital usage. In the content analysis there are higher density on development related topics whereas in the venture capital analysis ‘sales’ was one of the key terms (Figure 13 & 17). Furthermore, answers state more actions towards student and learning impact instead of monetary achievements often mentioned in the venture capital section. This difference can be explained through the different nature of the funding.

FIGURE 17: Text Analysis Cloud / How the grant/donation would be used:

Examples of the answers:

"To develop 1-2 Innovation Labs ($45,000 USD each) - purpose built spaces for 200+ students filled with STEAM activities designed to encourage student creativity while encouraging these orphaned children to learn to believe that they can take big steps towards their dreams." (Not For Profit)

"Development of materials and teaching/learning platform based on research." (Not For Profit)

"Scaling up the research that has done so far by inviting more researchers and extending the areas of interests." (Educator-led Classroom Practice)

"The grant would be used to fund a parallel project with indigenous leaders in the field to create learning resources that detail indigenous understandings of sex, gender and sexuality diversity for young people. To do this effectively, a bi-cultural process is required, and this takes time and care. Funds are required to do video and animation production, and then follow up evaluation." (Not For Profit)

"To carry out research with universities and employers on how the innovation can compliment a learners progress in these sectors." (Whole School Model)

"The grant/donation will used to develop [innovation] to be useful in low resource settings, e.g. how can we use the power of artificial intelligence and augmented reality to empower teachers to get children ready and successful in primary school." (For Profit).

6 RESEARCH CONCLUSIONS

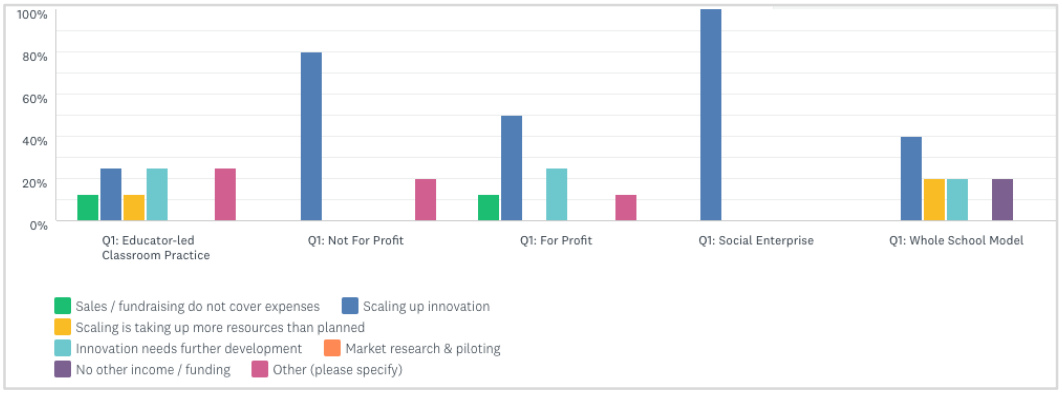
6.1 Scaling up innovations is the primary need

In almost all innovation groups from educator led classroom practices to whole school models scaling up innovations is the primary need for education innovators. The only exception to this majority is for profit organizations which are rather using grants and donations for improving their innovation (38%) than scaling it up (25%). However, also for profit organizations are using venture capital mainly for scaling up their innovations (50%), and improving innovation is clearly the second biggest need (25%) (Figure 18 & 19).

When looking the results more closely, some interesting smaller details are revealed. Looking at both venture capital and grant & donations, the need of funding in educator-led classroom practices is divided among multiple different needs. Among these innovators looking for venture capital innovation development is seen as important (25%) as scaling it up (25%) (Figure 18).

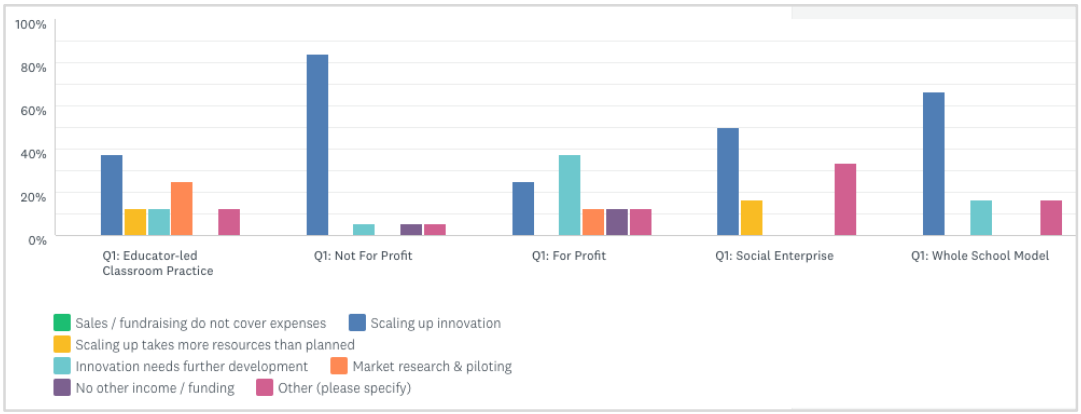
Interestingly venture capital is not used at all for doing market research or piloting, but grants and donations are used for this purpose among educator-led classroom practices and for profits. Based on the results in total it seems that among these two innovator groups the innovations more likely still developing and they are eagerly trying to find a sustainable operational model. For example, these two are the only groups who are identifying lack of sales or fundraising as a primary reason for venture capital. This might be because schools have been slowly adopting ICT-based learning products, which are usually made be for profit organizations (OECD 2016).

When looking at the other innovator groups they seem to have a clear need to use funding solely for scaling up. For example, all social enterprises researched would use venture capital only for scaling up their innovation. It can be also stated based on the results that grants and donations are used for wider needs than venture capital. That can be explained by understanding the nature of venture capital; as for profit investments innovators need to show growth and increased revenues to get them.



	SALES / FUNDRAISING DO NOT COVER EXPENSES	SCALING UP INNOVATION	SCALING IS TAKING UP MORE RESOURCES THAN PLANNED	INNOVATION NEEDS FURTHER DEVELOPMENT	MARKET RESEARCH & PILOTING	NO OTHER INCOME / FUNDING	OTHER (PLEASE SPECIFY)	TOTAL
Q1: Educator-led Classroom Practice	12.50% 1	25.00% 2	12.50% 1	25.00% 2	0.00% 0	0.00% 0	25.00% 2 Responses	22.22% 8
Q1: Not For Profit	0.00% 0	80.00% 8	0.00% 0	0.00% 0	0.00% 0	0.00% 0	20.00% 2 Responses	27.78% 10
Q1: For Profit	12.50% 1	50.00% 4	0.00% 0	25.00% 2	0.00% 0	0.00% 0	12.50% 1 Responses	22.22% 8
Q1: Social Enterprise	0.00% 0	100.00% 5	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	13.89% 5
Q1: Whole School Model	0.00% 0	40.00% 2	20.00% 1	20.00% 1	0.00% 0	20.00% 1	0.00% 0	13.89% 5
Total Respondents	2	21	2	5	0	1	5	36

FIGURE 18: What is the primary reason for venture capital?



	SALES / FUNDRAISING DO NOT COVER EXPENSES	SCALING UP INNOVATION	SCALING UP TAKES MORE RESOURCES THAN PLANNED	INNOVATION NEEDS FURTHER DEVELOPMENT	MARKET RESEARCH & PILOTING	NO OTHER INCOME / FUNDING	OTHER (PLEASE SPECIFY)	TOTAL
Q1: Educator-led Classroom Practice	0.00% 0	37.50% 3	12.50% 1	12.50% 1	25.00% 2	0.00% 0	12.50% 1 Responses	17.02% 8
Q1: Not For Profit	0.00% 0	84.21% 16	0.00% 0	5.26% 1	0.00% 0	5.26% 1	5.26% 1 Responses	40.43% 19
Q1: For Profit	0.00% 0	25.00% 2	0.00% 0	37.50% 3	12.50% 1	12.50% 1	12.50% 1 Responses	17.02% 8
Q1: Social Enterprise	0.00% 0	50.00% 3	16.67% 1	0.00% 0	0.00% 0	0.00% 0	33.33% 2 Responses	12.77% 6
Q1: Whole School Model	0.00% 0	66.67% 4	0.00% 0	16.67% 1	0.00% 0	0.00% 0	16.67% 1 Responses	12.77% 6
Total Respondents	0	28	2	6	3	2	6	47

FIGURE 19: What is the primary reason for a grant/donation?

6.2 Funding needs are explained in two ways

When innovators are asked to explain how the investment would be used, there are big differences between innovators. Venture funding need is usually explained through outcomes whereas actions are more explained when looking for grants and donations.

The results also indicate the difficulty for education innovations to change their narrative based on the need. Rogers (2003) states that innovation adaption happens when the uncertainty is reduced by positive implementation examples. The result can be supported by TALIS 2013 survey which states that smooth implementation of innovation; to make adaption as easy as possible a lot of examples showcasing the innovation in action are needed (OECD 2014a). However, when looking from the investment point of view investors are often looking for more impact driven analysis of the innovation. They want to understand how their investment will increase the quality, reach and possible revenues of the innovation (Ries 2011.).

1) Communicating action

Some innovators are explaining themselves through the vision and action they are having, but not giving very clear explanation how the investment in practice would affect to educational outcomes. Investing or donating money for this kind of actions can be justified through common values, but it will be very complicated for investor to understand what kind of a impact the investment is having, and how the outcomes can be measured.

> Example 1:
> *"To host a gathering of 4000+ children from 100 countries in the city of Rome for 4 days. Children work on the 10 chosen SDGs will be showcased during the event. Companies will be invited to the event so that they can pledge the ideas to be taken to scale."*
> *(Educator-led classroom practice / Venture Capital investment)*

> Example 2:
> *"The investment could be used to fund expanding programs in Afghanistan, Cambodia, and South Africa, but also to set up new project sites in Jordan and also*

Bamyan (which would be innovation's third School in Afghanistan)." (Not For Profit / Venture Capital)

Example 3:

"The grant/donation will used to develop innovation to be useful in low resource settings, e.g. how can we use the power of artificial intelligence and augmented reality to empower teachers to get children ready and successful in primary school." (For Profit / Grants & Donations)

3) Communicating outcomes

Minority of innovators are explaining the usage of investments through business terms, explaining how many people or organizations will benefit from the investment and how the investment is able to support the organization achieving sustainable operations in the long run. Based on the PwC report (2013) innovators with this kind of competence and capability to explain their investment need are more likely to receive funding; investors are looking more innovators who can be accountable for their actions and are able to demonstrate the return of the investment.

Example 1:

The investment will be used to build the team in business development so as to reach 100,000 users in the next 18 months with a revenue forecast of $5 million (USD) (For Profit / Venture Capital)

Example 2:

To develop 1-2 Innovation Labs ($45,000 USD each) - purpose built spaces for 200+ students filled with STEAM activities designed to encourage student creativity while encouraging these orphaned children to learn to believe that they can take big steps towards their dreams. (Not For Profit / Grants & Donations)

Example 3:

We are looking to launch campuses delivering pre-service teacher qualifications in both Kenya and South Africa. Investment is needed to fund infrastructure costs and

staffing for years 1-3 until the venture becomes profitable. (Social Enterprise / Venture Capital)

6.3 For profits cope with a short runaway

Based on the research results for profit organizations are operating with the tightest monetary resources; 27% of them can operate with the current monetary resources less than 3 months and also 27% of them can operate longer than 3 months but less than 6 months (Figure 20). This can be seen also as a positive sign; these organizations may be following lean production methods to achieve the most with available funds – in the startup sector 3-6 months is long enough time to create a minimum viable product and test the market fit (Ries 2011).

However, these organizations should be simultaneously prepared for the longer adaption times after entering the market – which means larger cash resources to support the growth. Otherwise Sudden costs and changes in the cash flow may be critical for these organizations (Karzunina et al. 2017). The struggle for balancing their cash flow is also seen through their need of investment. 75% of them are needing venture capital investment within the next 6 months and 63% of them are needing the grant or donation within the next 6 months. The most commonly wanted investment in this category is between 100.000 - 499.999 USD for both venture capital investments (50%) and grant & donations (63%).

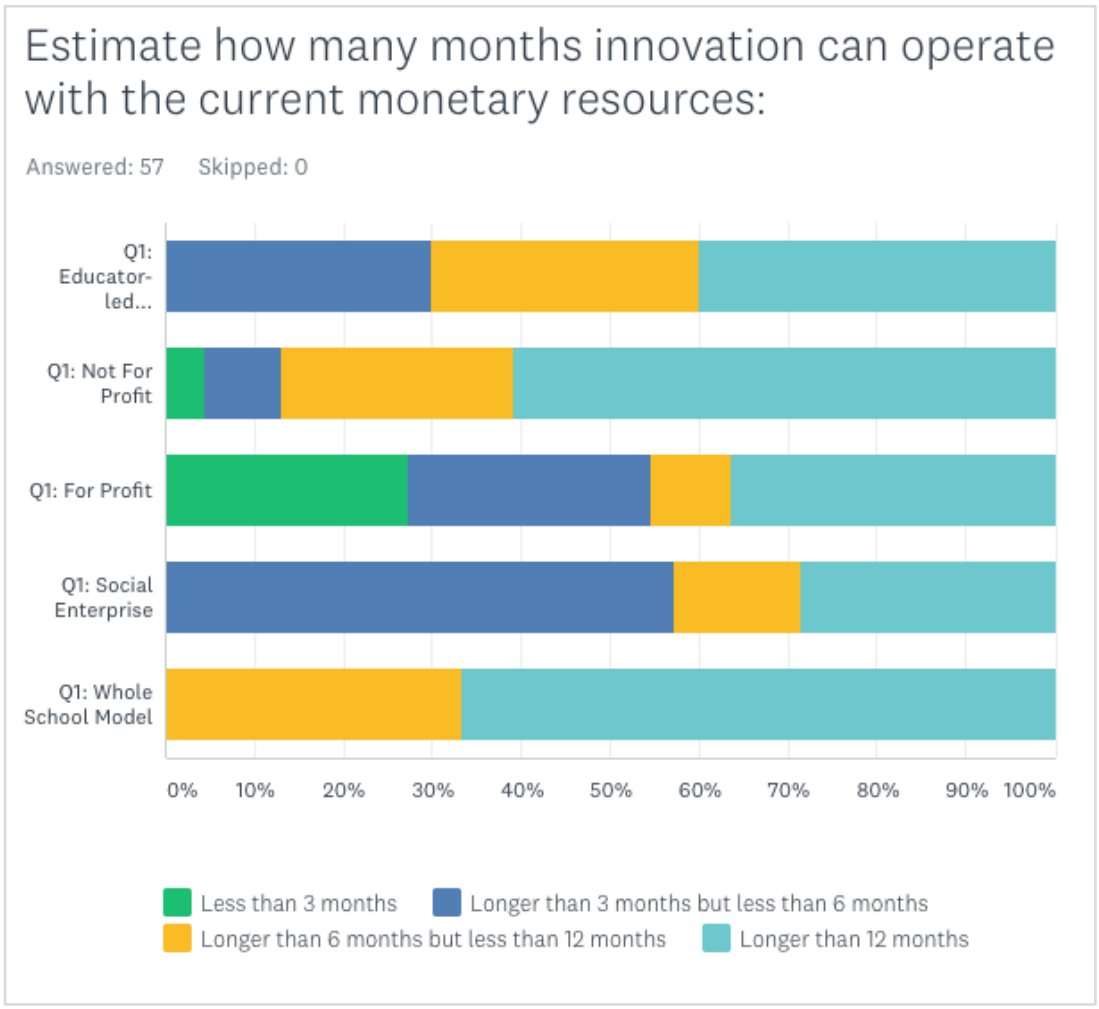


FIGURE 20: Monetary resources

Even though time window for receiving additional funding may be short, innovators in this category seem to be optimistic.

> *We have the product, impact and growing profile meeting a real and growing need. We could not have made the innovation we wanted to without choosing to be a for profit company as we could not access seed or early development funding.*

However, some of them might face product-market fit challenges when trying to identify suitable investors:

> *There is a huge need of funding opportunities for a company like ours to scale up the business. Too big for angels but a bit too small for VC:s.*

There is only one group of innovators which is in the greater need of a quick investments. Social enterprises are having the highest demand for receiving the investment within the next 6 months; 80% for the venture capital investments and 67% for grants and donations. However, this group of innovators are having more stable monetary situation than for profits - majority of social enterprises (58%) can operate between 3 to 6 months with their current resources. Likewise for profits, also social enterprises are mainly looking for investments between 100.000 - 499.999 USD as a venture capital investment (40%) and as a grant & donations (67%) (Figure 20).

Some of the social enterprises might find it difficult balancing between public and private systems and markets. They are explaining their situation in the following way.

> *Education investments and grants are mostly targeted at govt. partners and are seldom focused on private organisations. This is a major challenge.*

> *We're very much feeling that we're ahead of [country's] school curriculum, with schools hesitant to take up the tech-based offering over a F2F workshop. That being said, the schools who do complete the online program repurchase.*

> *We're eager to learn how to present our innovation to receive funding*

Whole school models are in the other side of the spectrum by having the most hefty resource situation. Majority of them (67%) can operate longer than 12 months with the current monetary resources. Even though monetary resources are well balanced these innovators seem not to look for big venture capital investments; 40% are looking for investments under 100.000 USD and 40% investments between 100.000 - 499.999 USD. Similar trend is witnessed among grant & donations with 33% are looking for investments under 100.000 USD and 67% investments between 100.000 - 499.999 USD. However, the more secure financial situation can be also read from further comments.

> *We have scaled locally in [state] through the help of foundation grants and have secured a government grant to continue dissemination between public schools in [state] in 2019-2020. We seek other grants (or CSR money, though that might be more difficult to secure) to scale nationally and globally as we build a model that*

offsets our costs, otherwise we will need to charge sizeable fees which only select schools would be able to afford.

TABLE 2: Funding urgency

	LESS THAN 3 MONTHS	LONGER THAN 3 MONTHS BUT LESS THAN 6 MONTHS	LONGER THAN 6 MONTHS BUT LESS THAN 12 MONTHS	LONGER THAN 12 MONTHS	TOTAL
Q1: Educator-led Classroom Practice	0.00% 0	30.00% 3	30.00% 3	40.00% 4	17.54% 10
Q1: Not For Profit	4.35% 1	8.70% 2	26.09% 6	60.87% 14	40.35% 23
Q1: For Profit	27.27% 3	27.27% 3	9.09% 1	36.36% 4	19.30% 11
Q1: Social Enterprise	0.00% 0	57.14% 4	14.29% 1	28.57% 2	12.28% 7
Q1: Whole School Model	0.00% 0	0.00% 0	33.33% 2	66.67% 4	10.53% 6
Total Respondents	4	12	13	28	57

6.4 Educator-led classroom practices differ from others

Educator-led classroom practices differ from other groups. Often these innovations have not been yet scaled to multiple countries, and they tend to operate closer to their origin. For example, out of 10 respondents 7 were scaled to 10 countries or less. However, the average was risen to 20 countries because of two respondents which were operational in 63 and 90 countries.

When looking at the majority of these educator-led classroom practices they are seeking smaller investments than other groups. They are primarily looking for venture capital investments (63%) and grant & donations (50%) less than 100.000 USD. The reason why they are mostly interested in the smaller investments might be tied up with their competence to communicate the impact of the investment.

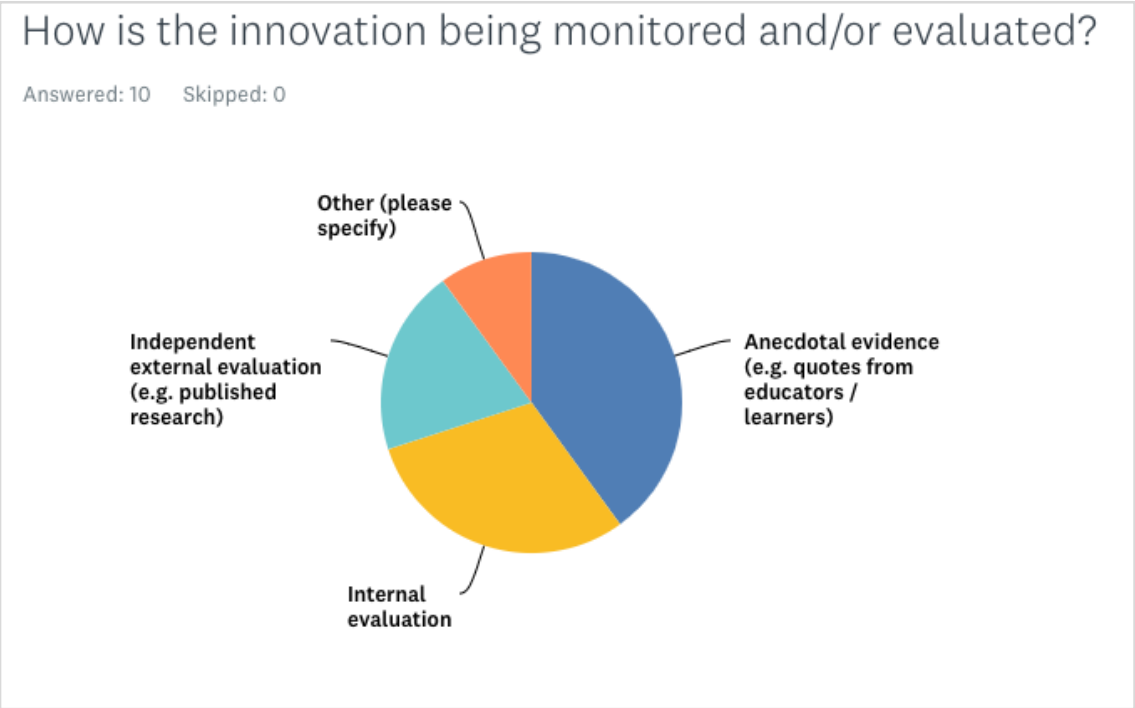


FIGURE 21: Educator-led classroom practices and monitoring methods

Whereas all other innovator groups are monitoring their performance through internal or external evaluation, educator-led practices are mainly leaning on anecdotal evidence (40%) (Table 3) – in some open answers they are also communicating the investment benefits more from the visibility point of view. This kind of a reasoning might fall short when trying to persuade venture investor or grant-giving organization. From investor point of view, it may be difficult to understand the actual benefit and impact of the investments. The results indicate that these innovators could benefit a lot by identifying their actual impact factors based on Impact Analysis Framework and creating their investment offering accordingly. (PwC 2014.)

For example:

[Innovation] is a first of the kind event which will bring innovation, ideas and solutions to the world by the children. It will provide with a massive opportunity for industries, corporates, institution, municipalities and government to come together and witness the potential in every child making visible their power and their potential.

We can offer funders very unique opportunities, including acknowledgment in the end credits of student-produced video journalism, launches of feature series websites as well as national and local events.

TABLE 3: Educator-led classroom practices and monitoring methods

ANSWER CHOICES		RESPONSES	
No monitoring or evaluation		0.00%	0
Anecdotal evidence (e.g. quotes from educators / learners)		40.00%	4
Internal evaluation		30.00%	3
Independent external evaluation (e.g. published research)		20.00%	2
Other (please specify)	Responses	10.00%	1
TOTAL			10

6.5 Synthesis of results

Based on all responses in this research report the different innovator types can be analyzed in the following way:

Educator-led Classroom Practices are working with the smallest resources. They are looking for smaller investments to keep their operations running and their impact outcomes are still developing.

Not-for-Profits have already reached more stable working environment, however many of them find it difficult to keep their operations sustainable. They often combine multiple grant and donations together and they may invoice their services, but they seldom look for venture capital.

For Profits and Social Enterprises are eagerly scaling up their work. Therefore most likely these organizations are investing more resources to the growth than other respondent groups. This comes visible through the shortest operational runaway of any other groups in this survey.

Whole School Models are having the most stable status of operations. Most likely this is because of their business model; tuition fees and governmental budgets are decided annually. Based on this more secure and long term aspect of funding these organizations know well beforehand their available resources.

7 DISCUSSION OF RESULTS

Even though the sample size was rather small (n=61) the research was able to replicate similar kind of patterns than the bigger and more extensive research study made by Brookings (Winthrop & McGivney 2017). Brookings report stated that education innovations are delivered through a mix of education actors where NGO's are forming the biggest group, followed by private sector companies and government initiatives.

Innovators were given more answer options in this research to understand how they identify themselves. In the results biggest innovator group was Not For Profit organizations combined with Educator-Led Practices. The second biggest group was private companies, which were combining for profits and social enterprises together. However, similar result were not replicated in the governmental innovation sector (Figure 2). None of the respondents identified themselves as such, but one innovator described in the "Other" section that they are a part of a NGO working under the government.

TABLE 4. Comparison between research results and Brookings Leapfrogging Report (Winthrop & McGivney 2017)

	NGO & Educator-Led Practices	Private Companies	Governmental
Brookings Report	62%	26%	12%
Research Results	54%	29%	0%

When innovators were explaining their current funding situations they picked multiple options and described in the "Other" section how they are *"Looking for any funding"* in order to keep their operations ongoing. Brookings (Winthrop 2017) report stated that innovators usually use 3-5 different funding sources together. Similar kind of pattern can be identified from their answers in this research (Figure 8).

Both OECD (2015) report and EdTech Investment and Venture Capital (Karzunina *et al.* 2017) are pointing out that education industry is adapting new practices slower than other industries. Looking at these research results it seems like that education innovators are also quite risk averse. The only group of innovators which are heavily investing into the growth are for-profit organizations. This is also directly reflecting to their runway length,

which is the shortest among all innovator groups. Interestingly, the for profits are also the the biggest innovator group which is looking for more funding to develop their innovation further. The conclusion could be made that especially for this group it is extremely important to find the market fit or to reach the current development goals before the funding runs out.

7.1 Contribution to previous research

Education innovations are seen crucial for renewing education systems around the world. Corporate responsibility investments and risk capital investments have been increasing in the field, and education is seen as the most important target for corporate giving (CECP 2017) - even though based on the results of Metaari (2018) research especially investments in K12 education innovations have been stagnating and even decreasing in some markets, like South America. That might also affect to the overall representation of education innovators in the HundrED Global Collection 2019 where South America only represents 8% of all innovations in this research (Figure 3).

As a part of the education discourse it's often stated how there is a need of additional funding. In this research report these existing surveys were contributed from the innovator point of view. There reports are often only showing results how much investments have been made, but not really asking from the grassroot level innovators how they see the situation from their point of view. For example, as a new results it was indicated that innovators usually combine together donation and grants (51%), service or product related income (26%) and self-financing (23%) to keep their innovation operational (Figure 8).

This result can help us to understand that many of innovators are seeing the work so important that they are willing to risk their own financial situation to improve the education systems - even though most of the educational innovations are not for profits. Therefore a conclusion could be made that many of the education innovators are very passionate about their work, and willing to sacrifice a lot of their own personal (financial) freedom in order to create better educational opportunities for children. More strategic thinking could benefit especially this group of innovators.

Businesses have many reasons to invest in education from local (serving employees and customers) and global point of view (affecting the coming labor demands) (PwC 2014). In the Figure 1 it can be sees how over 77% of the companies focus their investments to programs which offer outcome and impact evaluation. The risk is that the passion based, usually Educator-Led Classroom Practices, may be not seen as a viable option for investments. Not because their work would be worse, but they are more relying on anecdotal evidence (Figure 21) which is not seen as a hard enough data by grant givers.

Based on our research results it can be suggested that some certain innovator groups could benefit from collaborations. Especially the educator-led classroom practices can be seen usually small, but growing solutions which would benefit tremendously from long term collaborations. However, these long term collaborations might be hard to get for them because of the lack of impact data. Simultaneously whole school models are having the most secure financial situations of all innovation types, and they usually have more possibilities for experimenting new solutions in their schools. Therefore, collaboration models between these two innovator types could help educator-led classroom practices to develop their working methods further - and maybe to transform into not for profit or for profit organization to achieve better sustainability for their operations.

7.2 Practical conclusions

In this survey strong majority (everyone else except one) was hoping to receive help for closing their funding rounds. Even some respondents were sounding slightly unfocused and frustrated with their funding endeavors.

> *"We are looking for any kind of funding that can help us to expand outreach of the program and expand access of quality education for deprived children from marginalized communities (specially girls), so that they can also get equal opportunities for quality education."*

Many education innovations are created by passionate educators who created their educational solution based on the actual need, but they might lack of knowledge how to build sustainable and growing operations (Winthrop & McGivney 2017). Therefore, there might not be a solid business or operational competence how to scale the innovation for

a larger scale. For example, in some open answers the funding is only hoped for to continue the same work than has been done before, but it's not strategically thought how the investment could be used to improve the innovation outcomes.

Maybe education innovators should be looking more closely existing frameworks for education investments and match their offering based on presented impact factors to find the most suitable factors to measure their success. For example, action research methodology shares a lot of similarities between both UN Three-Part Process For Engagement (2013) and PwC Impact Analysis Framework (2014). Action research was first introduced by Kurt Lewin in 1940s. The idea of action research approach is to both take action and create knowledge or theory about the taken action (Dickens 1999).

The action research framework works well for combining action and research to overcome social and organizational issues with those who are experiencing the issues directly (Dickens 1999). Both UN and PwC framework has similar kind of a structure than the action research methodology. They start from the planning phase, and continue with taking action and evaluating it. Based on the evaluated action the future planning will occur. Thereby the investments promote skills of inquiry, reflection, problem solving and action based decisions.

Interestingly neither one of the models do not give an active role for beneficiaries; both UN and PwC frameworks seem to expect that investing the money will be enough for producing the results; they do not suggest any concrete ways or actions how to operate together with the beneficiaries. One key difference between venture capital investments and CSR investments is that in CSR investments companies usually work with issues which are outside of their core competencies whereas risk investors usually invest in their core competence areas. The lack of understanding the work of a beneficiary might be one reason why CSR education investments can feel uncoordinated and short term.

Action research model, however, underlines the participatory role of all stakeholders. To be able to measure the impact, an active dialog and knowledge building together is necessary. The impact can't be measured nor understood deeply without being in active dialog with the beneficiaries. That should be also seen as a way to improve company's own performance in the processes. In general venture capital investors are better in this - and the reason is obvious. When they are expecting to receive return of investment they

are more engaged and willing to work for the benefit of the beneficiary organization.

Therefore also CSR education investments, like all investments, should be seen as an action involving both the giving and receiving party. Based on the provided examples, the investments which involve volunteering or / and other engaging activities and ”doing together” result the most lasting impact and are long-term (CECP 2017). Often these qualities have been missing from education investments which are looking the short term benefit. That can be often a mistake purely because of the different nature of the market - education industry has been claimed to work 5 times slower than other fields of business (Karzunina *et al.* 2017). And this slowness is as evident in rich and poor countries (Winthrop 2017).

Based on the research results in this survey, innovators are mainly looking for quite small investments under 500.000 USD (Figure 12 & 15). At the same time innovators are struggling to keep their work sustainable (Figure 7) even though the operating window is longer than 6 months for 74% of innovators (Figure 9). This gives quite controversial view of the resource situation of education innovators; even though 62% is saying that they are not able to work profitability at the moment (figure 7) strong majority of them are having quite stable monetary situation. For example, with a money buffer of 1 year innovations’ quick ratio rating would be over 1. Whereas quick ratio over 1 is meaning for an good financial balance (organization can pay it’s all short term liabilities with the assets on hand with an ease), it may also communicate about the risk averse attitude towards growth - especially when need for scaling up was clearly the major need stated in the survey (Figure 11 & 14).

Investments are always made based on the bilateral understanding of the funding need, the use of the funding and the expected outcome. One of the key question from the innovators point of view is how to communicate and make their impact more tempting for investors - and from investors point of view how they are able to encourage education innovators to scale up and find sustainable models in long-term.

One solution to boost the growth could be hidden in the Impact Canvas Model (Saari *et al.* 2017), which offer possibilities to challenge the operational and future orientation of innovations - and this kind of an aspect is almost totally missing from UN and PwC

frameworks. Based on the Impact Canvas Model innovators could challenge themselves or be challenged by investor with these questions;

- Why would someone pay for this: what is the benefit?
- What can be learned from benchmarking alternative solutions and/or their business models?
- How could the competition evolve in the future market?
- Who invest in us and why now and in the future?
- What is our roadmap to utilize the results?

Since it seems difficult to close the funding gap in education, maybe the only way forward for education innovators is to find ways to provide not only pedagogically outstanding models but also include ways to overcome the financial barriers. It doesn't mean that systems should head to the neoliberal dream of over capitalized education but more to be able to identify innovations which can improve the learning outcomes at the same time they are making the usage of education resources more efficient. As much as educators would like to have unlimited - or at least fair - resourcing for education this might be the only chance to offer a possibility for a every child to flourish.

7.3 Critical Evaluation

The sample size of this research was rather small (n=61) and therefore the results should not be used for explaining the global funding status of all education innovations but rather as a snapshot to understand what kind of a needs there are among different innovators working in this field. Furthermore, the sampled innovators have been already selected to HundrED Global Collection 2019. Therefore, respondents mainly represent innovations which are doing well in their respected fields.

For further studies some of the questions would need to be redesigned. For example, "Q7. Estimate the current amount of users" and "Q8. Estimate how many new users you are getting monthly at the moment?" did not provide good quality data since innovators defined term "user" differently. The hypothesis was to get a number of individuals who are using the innovation, but only few innovators were able to provide an exact figure as asked. However, some innovations calculated their users as "schools" or "classrooms"

whereas some of them also included the annual website users to this number. Therefore these questions were left out of the analysis completely. For the future studies this section should be redesigned in a way that schools, classrooms and individual are separated as a different "user types". And if the innovator is calculating their users in the form of schools and classrooms they should also provide average size of those groups for researcher to understand the amount of individuals the innovation is reaching.

From research point of view these answers to questions 7 and 8 helped to understand the difficulty innovators are facing when they are asked to provide exact impact figures. Based on the answers it seemed like some innovators were trying to come up with the biggest number they can get.

Another critical point in the research was analyzing the need of funding. Now the options in question "Q14 and Q20. What is the size of investment you are looking for?" might have steered their answers. Looking back to the results it could have given more variety into results if the investment need would have been just a blank field where innovators would need to submit a numeric value. That would have been especially helpful to understand the micro-funding needs in the first category of under 100.000 USDs and also with the bigger investment needs in the category over 500.000 USDs.

Thirdly, most interesting reasoning and clarifications were often mentioned in the "other" section. For example, in the questions "Q4. How is the innovation being monitored and/or evaluated?" and "Q9. How is the innovation funded at the moment?" would have benefitted for open text answer in addition the the multiple option field. Now in both questions 12 innovators explained their methods of evaluation and funding in the "Other" field in free text form, and these self reflective answers were explaining very well their situation. It would have been beneficial for the research to have more this kind of a reflective open answers from respondents.

In general, the research results are a satisfying short overview to education innovation funding. However, there are multiple interesting fields which would benefit from the additional research. For example, all innovation types seem to have their own specific needs for the funding which could be researched more in detail.

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APPENDICES

Appendix 1. Research questionnaire

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Education innovators' needs for external funding

1. Basic Information

This information will be used for creating a HundrED Research Report about education innovators' needs for external funding. Responses to this survey will not be used in the selection process of HundrED Global innovations. Please do not share any critical or confidential data which can't be published as a part of the research. The final research report will be published by HundrED and Tampere University of Applied Sciences.

Answers may be given anonymously. In case of being interested in being matched together with investors and grant-givers through HundrED, contact details will be asked.

More information about the survey:
Lasse Leponiemi, Head of Operations, HundrED
lasse@hundred.org

* 1. Innovation type:

- ◯ Educator-led Classroom Practice
- ◯ Not For Profit
- ◯ For Profit
- ◯ Other (please specify)
- ◯ Social Enterprise
- ◯ Whole School Model
- ◯ Government Initiative

* 2. Continent:

- ◯ Asia
- ◯ Africa
- ◯ Australia/Oceania
- ◯ Europe
- ◯ North America
- ◯ South America
- ◯ Middle East

3. Country of Origin:

4. How is the innovation being monitored and/or evaluated?

- ◯ No monitoring or evaluation
- ◯ Internal evaluation
- ◯ Anecdotal evidence (e.g. quotes from educators / learners)
- ◯ Independent external evaluation (e.g. published research)
- ◯ Other (please specify)

* 5. What is the current user acquisition phase of the innovation?

- ◯ Finding pilot implementers
- ◯ Getting new users slowly
- ◯ Getting first users
- ◯ Not really getting or losing users
- ◯ Getting new users quickly
- ◯ User base is decreasing

* 6. Countries the innovation has scaled to

0 50 Over 100

* 7. Estimate the current amount of users

8. Estimate how many new users you are getting monthly at the moment?

0 Over 10.000

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Education innovators' needs for external funding

2. Current funding situation

* 9. How is the innovation funded at the moment?

- [ ] Self-financed
- [ ] Funded by government
- [ ] Funded by venture capital investments
- [ ] Funded by cost of service/product
- [ ] Funded by donations / grants
- [ ] Funded by internal budgets as a part of an parent organization
- [ ] Other (please specify)

* 10. Is the innovation profitable at the moment?

- ( ) Innovation is not profitable
- ( ) Innovation has been profitable for 2-5 years
- ( ) Innovation has been profitable less than 2 years
- ( ) Innovation has been profitable more than 5 years

* 11. Estimate how many months innovation can operate with the current monetary resources:

- ( ) Less than 3 months
- ( ) Longer than 6 months but less than 12 months
- ( ) Longer than 3 months but less than 6 months
- ( ) Longer than 12 months

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Education innovators' needs for external funding

3. Venture Capital

* 12. Is the innovation looking for venture capital within the next 6 months?

- ◯ Yes
- ◯ No

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Education innovators' needs for external funding

4. Venture Capital: Detailed information

* 13. What is the primary reason for venture capital?

- ◯ Sales / fundraising do not cover expenses
- ◯ Innovation needs further development
- ◯ Scaling up innovation
- ◯ Market research & piloting
- ◯ Scaling is taking up more resources than planned
- ◯ No other income / funding
- ◯ Other (please specify)

* 14. What is the size of investment you are looking for?

- ◯ less than 100.000 USD
- ◯ 1 million - 5 million USD
- ◯ 100.000 - 499.999 USD
- ◯ Over 5 million USD
- ◯ 500.000 - 999.999 USD

* 15. When is the investment needed the latest?

- ◯ In the next 6 months
- ◯ After 12 months
- ◯ After 6 months but less than 12 months

16. How the investment would be used?

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Education innovators' needs for external funding

5. Grants & Donations

* 17. Is the innovation looking for grants or donations within next 6 months?

- ◯ Yes
- ◯ No

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Education innovators' needs for external funding

6. Grants & Donations: Detailed Information

* 18. What is the primary reason for a grant/donation?

- ◯ Sales / fundraising do not cover expenses
- ◯ Innovation needs further development
- ◯ Scaling up innovation
- ◯ Market research & piloting
- ◯ Scaling up takes more resources than planned
- ◯ No other income / funding
- ◯ Other (please specify)

* 19. What is the grand/donation type you are primary looking for?

- ◯ Corporate Social Responsibility grant or donation
- ◯ Research grant
- ◯ Philanthropic grant or donation
- ◯ Governmental funding
- ◯ Other (please specify)

* 20. What is the size of investment you are looking for?

- ◯ less than 100.000 USD
- ◯ 1 million - 5 million USD
- ◯ 100.000 - 499.999 USD
- ◯ Over 5 million USD
- ◯ 500.000 - 999.999 USD

* 21. When is the investment needed the latest?

- ◯ In the next 6 months
- ◯ After 12 months
- ◯ After 6 months but less than 12 months

22. How the grant/donation would be used?

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Education innovators' needs for external funding

7. Matchmaking

23. Is there anything else you'd like to share about education innovation funding?

24. Do you want to be matched with possible investors and grant-giving organizations through HundrED?

- ◯ Yes
- ◯ No

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Education innovators' needs for external funding

8. Contact Details

Please leave your contact details so we can do the matchmaking.

* 25. Contact information

Name	
Innovation	
Email Address	
Phone Number	

26. Is there anything else you'd like the possible education grant-givers and/or investors to know?

Appendix 2. Research data

Education innovators' needs for external funding

Q1. Innovation type:

Answer Choices	Responses	
Educator-led Classroom Practice	16,39 %	10
Not For Profit	37,70 %	23
For Profit	18,03 %	11
Social Enterprise	11,48 %	7
Whole School Model	9,84 %	6
Government Initiative	0,00 %	0
Other (please specify)	6,56 %	4
	Answered	61
	Skipped	0

Q2. Continent:

Answer Choices	Responses	
Asia	31,15 %	19

Africa	6,56 %	4
Australia/Oceania	8,20 %	5
Europe	27,87 %	17
North America	18,03 %	11
South America	8,20 %	5
Middle East	0,00 %	0
	Answered	61
	Skipped	0

Q3. Country of Origin:

The list of origin countries have been left out to secure responder anonymitet.

Q4. How is the innovation being monitored and/or evaluated?

Answer Choices	Responses	
No monitoring or evaluation	1,64 %	1

Anecdotal evidence (e.g. quotes from educators / learners)	14,75 %	9
Internal evaluation	39,34 %	24
Independent external evaluation (e.g. published research)	24,59 %	15
Other (please specify)	19,67 %	12
	Answered	61
	Skipped	0

Q5. What is the current user acquisition phase of the innovation?

Answer Choices	Responses	
Finding pilot implementers	8,20 %	5
Getting first users	1,64 %	1
Getting new users quickly	55,74 %	34
Getting new users slowly	29,51 %	18
Not really getting or losing users	4,92 %	3
User base is decreasing	0,00 %	0
	Answered	61

Skipped	0

Q6. Countries the innovation has scaled to

Answer Choices	Average Number	Total Number
(no label)	15,6557377	955

Q7. Estimate the current amount of users

Answered	61
Skipped	0

Q8. Estimate how many new users you are getting monthly at the moment?

Answer Choices	Average Number	Total Number
(no label)	43,98148148	2375

Q9. How is the innovation funded at the moment?

Answer Choices	Responses	
Self-financed	22,95 %	14
Funded by venture capital investments	6,56 %	4
Funded by donations / grants	50,82 %	31
Funded by government	4,92 %	3
Funded by cost of service/product	26,23 %	16
Funded by internal budgets as a part of an parent organization	13,11 %	8
Other (please specify)	19,67 %	12
	Answered	61
	Skipped	0

Q10. Is the innovation profitable at the moment?

Answer Choices	Responses

Innovation is not profitable	62,30 %	38
Innovation has been profitable less than 2 years	26,23 %	16
Innovation has been profitable for 2-5 years	11,48 %	7
Innovation has been profitable more than 5 years	0,00 %	0
	Answered	61
	Skipped	0

Q11. Estimate how many months innovation can operate with the current monetary resources:

Answer Choices	Responses	
Less than 3 months	6,56 %	4
Longer than 3 months but less than 6 months	19,67 %	12
Longer than 6 months but less than 12 months	22,95 %	14
Longer than 12 months	50,82 %	31
	Answered	61
	Skipped	0

Q12. Is the innovation looking for venture capital within the next 6 months?

Answer Choices	Responses	
Yes	65,57 %	40
No	34,43 %	21
	Answered	61
	Skipped	0

Q13. What is the primary reason for venture capital?

Answer Choices	Responses	
Sales / fundraising do not cover expenses	7,69 %	3
Scaling up innovation	56,41 %	22
Scaling is taking up more resources than planned	5,13 %	2
Innovation needs further development	12,82 %	5
Market research & piloting	2,56 %	1
No other income / funding	2,56 %	1
Other (please specify)	12,82 %	5
	Answered	39

	Skipped	22

Q14. What is the size of investment you are looking for?

Answer Choices	Responses	
less than 100.000 USD	28,21 %	11
100.000 - 499.999 USD	35,90 %	14
500.000 - 999.999 USD	12,82 %	5
1 million - 5 million USD	23,08 %	9
Over 5 million USD	0,00 %	0
	Answered	39
	Skipped	22

Q15. When is the investment needed the latest?

Answer Choices	Responses	
In the next 6 months	43,59 %	17
After 6 months but less than 12 months	43,59 %	17

After 12 months	12,82 %	5
	Answered	39
	Skipped	22

Q16. How the investment would be used?

Answered	38
Skipped	23

Q17. Is the innovation looking for grants or donations within next 6 months?

Answer Choices	Responses	
Yes	86,67 %	52
No	13,33 %	8
	Answered	60
	Skipped	1

Q18. What is the primary reason for a grant/donation?

Answer Choices	Responses

Sales / fundraising do not cover expenses	0,00 %	0
Scaling up innovation	60,78 %	31
Scaling up takes more resources than planned	3,92 %	2
Innovation needs further development	11,76 %	6
Market research & piloting	5,88 %	3
No other income / funding	3,92 %	2
Other (please specify)	13,73 %	7
	Answered	51
	Skipped	10

Q19. What is the grand/donation type you are primary looking for?

Answer Choices	Responses	
Corporate Social Responsibility grant or donation	19,61 %	10
Philanthropic grant or donation	41,18 %	21
Research grant	15,69 %	8
Governmental funding	7,84 %	4
Other (please specify)	15,69 %	8

	Answered	51
	Skipped	10

Q20. What is the size of investment you are looking for?

Answer Choices	Responses	
less than 100.000 USD	25,49 %	13
100.000 - 499.999 USD	43,14 %	22
500.000 - 999.999 USD	9,80 %	5
1 million - 5 million USD	17,65 %	9
Over 5 million USD	3,92 %	2
	Answered	51
	Skipped	10

Q21. When is the investment needed the latest?

Answer Choices	Responses	
In the next 6 months	43,14 %	22

After 6 months but less than 12 months	39,22 %	20
After 12 months	17,65 %	9
	Answered	51
	Skipped	10

Q22. How the grant/donation would be used?

Answered	50
Skipped	11

Q23. Is there anything else you'd like to share about education innovation funding?

Answered	37
Skipped	24

Q24. Do you want to be matched with possible investors and grant-giving organizations through HundrED?

Answer Choices	Responses	
Yes	98,28 %	57

No	1,72 %	1
	Answered	58
	Skipped	3

Q25. Contact information

Answer Choices	Responses	
Name:	100,00 %	54
Innovation:	100,00 %	54
Address:	0,00 %	0
Address 2:	0,00 %	0
City/Town:	0,00 %	0
State/Province:	0,00 %	0
ZIP/Postal Code:	0,00 %	0
Country:	0,00 %	0
Email Address:	100,00 %	54
Phone Number:	100,00 %	54
	Answered	54

Skipped	7

Q26. Is there anything else you'd like the possible education grant-givers and/or investors to know?

Answered	42
Skipped	19