SCHOOL FUTURES – using scenario approaches to inform transformation initiatives in the Luxembourg school system

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Alternative, plausible, but challenging visions of the future – called scenarios – help us to explore the future today, to familiarise ourselves with a 'systems thinking' approach, and to strengthen our ability to address the uncertainties of tomorrow. This anticipation competency, that also includes a capacity for systems thinking and making normative judgements, is particularly important for younger generations still at school. In Luxembourg, the Education Scenarios Project served to develop a set of national scenarios for education, and the sequel School Futures Project helped to leverage these scenarios in school development processes that engaged students as well as teachers in future-oriented systems thinking. Ariane König, Senior Research Scientist at the University of Luxembourg, Ciaran McGinley, Senior Associate at NormannPartners, Bo Manuel Raber of the University of Luxembourg, Francis Schartz, former president of the Luxembourg National Council for Sustainability, and Gerard Drenth, Senior Associate at Normann Partners, worked with in collaboration with diverse stakeholders in the Luxembourg education system, including with students and teachers from three different schools in Luxembourg. Below they share insights and experiences relating to the scenario approaches used.

Source: SF

Young people contributing to system change, not climate change

School strikes organised by the *Friday4Futures Movement* made a clear call for the transformation of schools to equip learners to contribute to 'system change, not climate change.' But what is the future of sustainable education? How can one learn to better address complex and interconnected sustainability challenges, including the growing risk of pandemics, the ongoing 6th mass extinction of species – caused by humans – and extreme weather events?

Our future will be strongly influenced by changes in demography and social and cultural norms, technological innovation and environmental change. Changes across all these spheres are interconnected. Silver-bullet solutions for one issue may backfire in another domain. And yet, the way in which society produces new knowledge is organised in disciplinary silos, sectors, and professions, silos and sectors around which many education systems and their curricula are built.
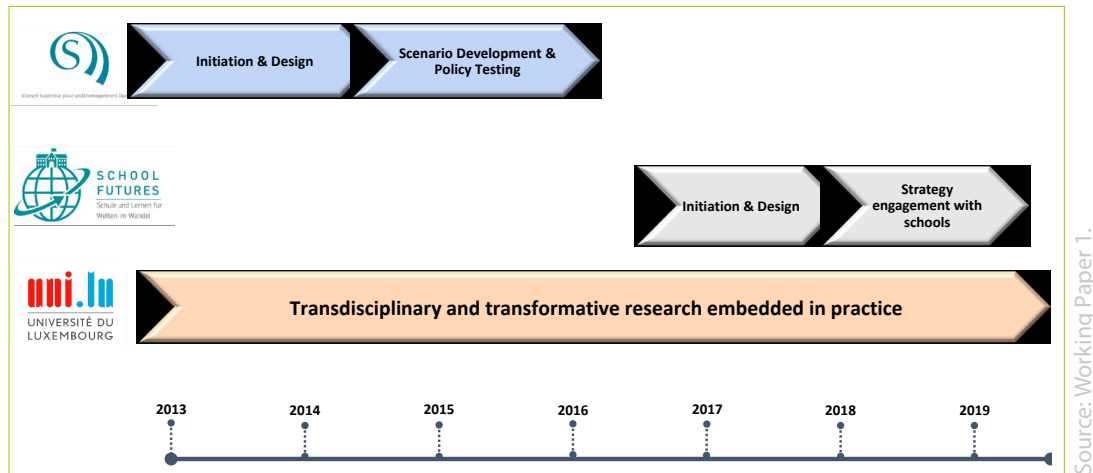
What can individual schools do to steer their way through times of turbulence and uncertainty? These were core questions behind two consecutive projects on the future of education in Luxembourg.

These two projects (see **Figure 1**) served to challenge all participants to explore the purpose and organisation of education, and how it might plausibly unfold against the backdrop of accelerating and interconnected changes in society, technology and the environment. A more detailed paper on the underlying concepts, methods, processes, outcomes and impacts was recently submitted for publication[1].

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1   König et al. , *Navigating school transformations for resilience: Exploring the potential of scenario thinking approaches to structure learning for resilience in school systems and schools.* Submitted to the international peer reviewed journal *Sustainable Consumption*, 2021. Figures 1 to 4 have been drawn from this paper.

This set of two projects present a first example of transformative research for sustainability in Luxembourg. The aim of such research is to co-design, implement and learn from concepts, methods and participatory processes as well as spaces for reflection and judgment to actively contribute to changing practice and policies for sustainability in different settings together with the stakeholders in those settings.

Figure 1. Using scenario approaches to inform transformation of the Luxembourg schools and the school system[1]

SCHOOL FUTURES Project, University of Luxembourg - available on www.sustainabilityscience.uni.lu

Education and the Luxembourg context

With over 60% of school children from foreign residents in a population of just over 625 000 people, Luxembourg's tri-lingual school system faces particular challenges. It comprises about 240 schools, with around 30 high schools and one university.

Failure rates at school leading to repetition of a year are exceptionally high (close to 20% of students repeat at least one year) and represent a significant factor in the average costs of education per student that are well above the average in OECD countries. Students are assigned to rigid specialised study tracks at the age of twelve. Teachers are contracted directly by the Ministry of Education and the remuneration of a primary school teacher is comparable to that of a professor at one of the German universities just across the border. Furthermore, the population has above average education levels in terms of both completed secondary schooling and higher studies.

The CSDD 'Education Scenarios Project'- Exploring the future through scenarios

Scenario sets are neither predictions nor strategy; they are several different but equally plausible and challenging stories (or narratives) about the future that are differentiated from each other by considering variations in important drivers of change (see **Figure 2**). Scenarios can also be compared to charts to help imagine very different places in the future that no one has yet visited. As such they can serve as common points of reference to explore alternative futures collaboratively in diverse groups. Scenario sets are not meant to be accurate predictions – in fact the method was developed on the assumption that the unpredictability of the future needs to be embraced.

Figure 2 - Variation of the six key drivers across the Luxembourg education scenarios

SCHOOL FUTURES Project, University of Luxembourg - available on www.sustainabilityscience.uni.lu

From July 2013 to December 2015, a set of three plausible, challenging and relevant scenarios were co-created under the auspices of the CSDD in collaboration with the University of Luxembourg. This phase of the project brought together the views of multiple stakeholders, including teachers and employers, policy makers, non-governmental organisations working on inclusion challenges, and parent associations. The participants' age range was 17-70. As described in the University of Oxford's Scenario Planning Approach, a scenario set is created for a specific user, use and purpose. And everyone is considered a learner. All actors, teachers and students alike, explored the contextual uncertainties together as equals.

The three resulting scenarios described the future of education in Luxembourg in 2030 with a particular focus on sustainability (see **Box 1** for the main three story lines). Each scenario looked at how the contextual world, including fundamental and possibly disruptive changes in our global systems or in the EU, would influence the Luxembourg school system, its governance, its curriculum and its teaching methodologies. Sustainability is conceived as comprising a normative goal as well as material outcomes, for example in terms of reducing energy or material flows or enhancing biodiversity in any given place.

The scenario set was tested and validated by a stakeholder workshop in December 2015 and prepared for publication and deployment in early 2016. A short video (available in French and German) was made of the final scenario set for sharing with the general public and to support strategy development at individual schools within the school system.

Box 1 - Main story lines of the three scenarios on 'Education in 2030'

Global Competition: A world characterised by strong competition, technological innovation, life-long learning and the absence of public welfare systems and long-term work contracts demands a combination of learning relating to entrepreneurship with strong STEM Skills (science, technology, engineering and mathematics).

Regional Autonomy: A world of diverse local strongholds and regional interests in which the middle class is struggling. Experimentation with alternative governance and technological systems is prevalent and there is a decentralised system of local community-oriented schools that support local and regional social learning.

1 000 000: A world of simmering tensions, where Luxembourg becomes a safe haven for a select elite immigrant population, which is bound together by strong nationally-enforced community educational and social projects.

Working with the 'Education Scenarios' in workshops at national level

In scenario approaches, the path of collaborative work in multi-stakeholder situations is often considered just as important an outcome as the resulting scenario set itself. All those who engage can develop a better *systemic understanding* of the interconnectedness of changes in the social, technological and environmental spheres. Furthermore, dialogues across different viewpoints when constructing scenarios help participants to identify very different understandings of the work, and worldviews and values that different groups of people defend. This can help to develop an improved '*normative judgement*' about what might be acceptable in terms of the implications of different courses of action for disparate groups of people.

The outcome, three very different, challenging but equally plausible futures, emphasises that the future is open and uncertain, if not even wholly unpredictable – but helps to better understand various drivers of change and just how they might interact with each other. It therefore trains anticipatory competences in all who participate. An example of outcomes of a workshop that served to test the scenarios at national level is presented in **Box 2**.

Box 2 - What needs to be changed first in the Luxembourg school system

Outcomes of a scenario workshop:

- *the meaning of learning and teaching* would need to change from learning subject material in a curriculum of facts that might soon be outdated to improving self-efficacy in effecting the changes one wishes to make, and to learning to learn and to love learning;

- *counter increasing risks of societal fragmentation* in an increasingly diverse population, with a focus on responsible citizenship;

- *teach perspectives on systems thinking* that equip students to cope with accelerating and interdependent changes in technology, society, the economy and the environment, by making connections across diverse disciplines that are rarely made today;

- *teach languages:* the acquisition of a high level of proficiency in one core language by each student should be given primacy;

- *ties between schools and the private sector should be strengthened* to start closing the gap between what school education achieves and the skills and competences required by the job market;

- *current early tracking* of students at an early age based on their prior performance has to be changed. The fundamental approach to the evaluation of students' performance should change from punishing mistakes to rewarding great achievements, to reduce rates of class repetition;

teacher training would need to change, in a way similar to what was done in Finland (see e.g. Sahlberg, 2011), including higher qualification requirements. A culture of research and reflection for improving teaching practices should be instilled;

requirements for the school system to keep pace and self-organise in response to accelerating change: *diversification of the school system* to leave more room for local differentiation with less detailed requirements for adherence to the national curriculum, and more private schools.

The *School Futures Project*: from scenarios to school development – the Athénée secondary school as a pilot

The overarching goal of the Luxembourg School Futures Project was to introduce future-oriented systems thinking into the Luxembourgish school curriculum. At the level of the school, the School Futures project not only created a framework that engaged secondary school students with their future education, it also involved them in the co-creation of recommendations and a vision of how the school should navigate the future, with an associated set of teaching materials for systems thinking.
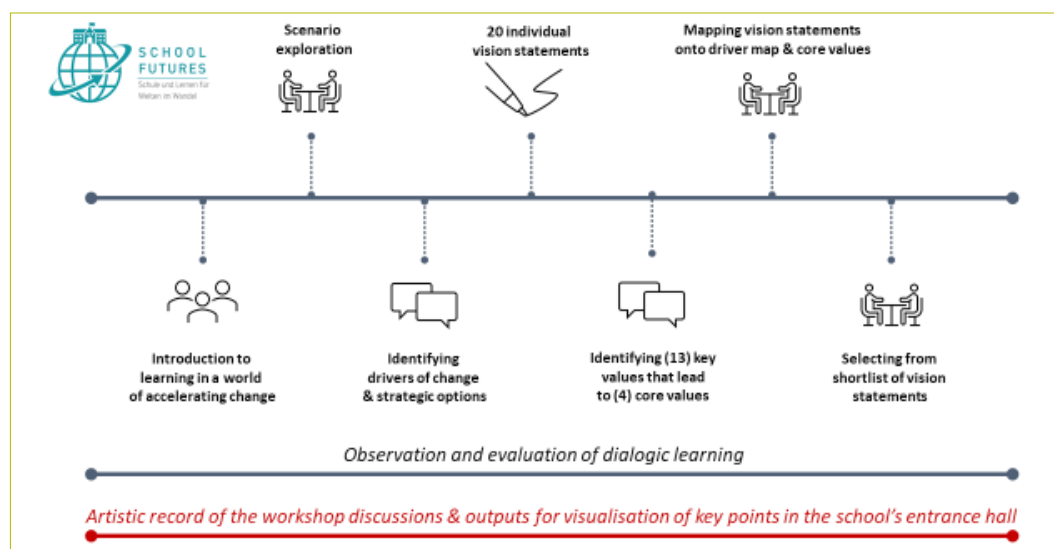
The idea of the importance of co-creation of visions and action fields across generations was embedded in the School Futures Project from the outset. Transformative learning from dialogue across differences forms the conceptual foundation of the project. Such learning can emerge from dialogue between individuals and groups with diverse sets of values and worldviews in which each group is brought to reflect on and creatively reconsider their own ways of thinking and doing. Education itself mostly trains society to break down problems in order to understand isolated cause-effect relationships, rather than to think co-jointly in terms of system elements. This project considered all those who chose to engage as systemic learners, stimulating participants to practice cognitive switching between diverse perspectives, and empowering them to be comfortable in the face of uncertainty.

Three schools, each with its own unique history and target student population, were selected to participate in the project. The academically oriented *Athénée de Luxembourg*, the technology orientated *Lycée Guillaume Kroll* and the *Ecole Privée Fieldgen* – the private school of Fieldgen. The end goal was to help each school co-create approaches with students and teachers on how to compose spaces and processes for learning that can complement teaching in specialised tracks with opportunities to engage in systems thinking. The development of methods and teaching material for systemic explorations of practical questions was co-designed by drawing on contents from diverse subjects and connecting them in a meaningful manner. The national scenario set was then used to promote 'learning for a world of transition' at the level of individual schools. Below we highlight the experience of the Athénée of Luxembourg, the oldest school in the country.

Founded as a Jesuit College in 1603, the school has a long history that runs in parallel with the Grand Duchy itself. Today, on a modern campus close to the city centre, the co-educational (since 1968) school has around 1350 students. It is a classical school whose central vocation is to enable its students to successfully complete their secondary school education with a Baccalaureate qualification that will give them access to the very best universities. The main steps that the Athénée followed during the second phase of the project are illustrated in **Figure 3**.

Figure 3 - Main steps in the transition from scenarios to strategy: Athénée, Luxembourg

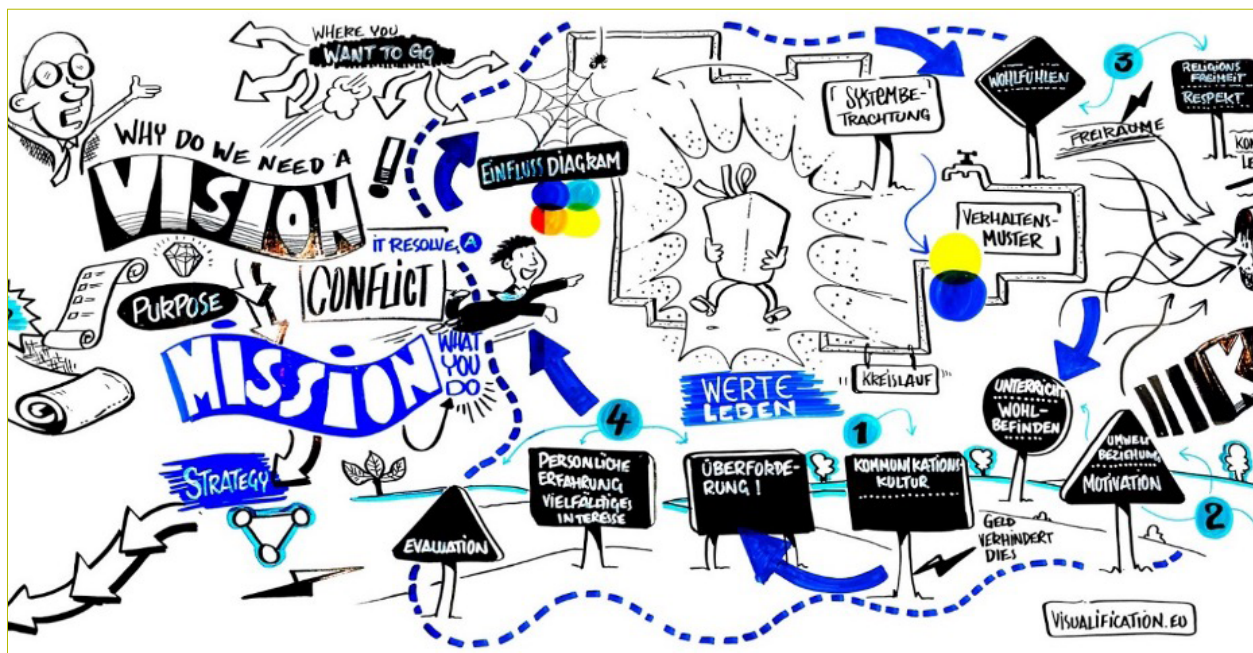SCHOOL FUTURES Project 'Co-creation of the Education Scenarios for Luxembourg in 2030', University of

Luxembourg, available on www.sustainabilityscience.uni.lu

Methodologically, the scenarios proved effective in triggering future-oriented and systemic dialogues, in which participants did not only argue on the basis of their past experiences. A key decision element in the process for the second workshop was to start off with students and teachers in separate groups, so that students firmed up their perspectives first, before working in mixed groups with teachers.

The project was also accompanied by an artist, Jorge Bogumil, who created a unique artistic record of the workshop discussions and output, which was placed in the hallway of the school to share key points and create an additional window of accountability on the process (see **Figure 4**).

Figure 4 - Artistic record of the 2nd workshop at the Athénée

SCHOOL FUTURES Project 'Report on the co-creation of a school vision with the Athénée du Luxembourg', University of Luxembourg, available on www.sustainabilityscience.uni.lu

Claude Heiser, Dierctor of the Athénée, who was appointed after the project was established at the school, embraced the new vision, co-created by students and teachers. He gave a commitment that the outputs would inform future deliberations on the school's future strategic direction[2].

Dialogic learning across generations

Overall, the CSDD education scenario project initiated participatory processes with diverse expertise and perspectives, including policy makers, scientists, teachers, a parent association and secondary school students, to co-create recommendations for necessary changes in the school system and in schools for the future of education in Luxembourg. The multi-stakeholder dynamic in the Education Scenario Project helped to combine diverse perspectives across disparate sets of expertise and experiences, as well as generations, and contributed to developing a particularly rich scenario set compared to scenario sets developed by single institutions, companies or membership organisations. Each individual or organisational actor who chose to engage both contributed to the overall result and gained new perspectives with strategic value in return. The project can therefore also be seen as a networked and interactive value-creating system.

In the School Futures project, however, the most notable thing was the differences in intergenerational perspectives between the students and the teachers and the researchers, revealing the power of intergenerational dialogues to invite deeper reflection and greater openness about what the future might hold and what our spheres of influence might be. The transdisciplinary research approach with carefully and purposefully developed concepts, methods, processes and spaces brought the different actors together in a multi-stakeholder, cross-generational exploration of the future of education in the Grand Duchy of Luxembourg.

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2   Full Workshop Report: http://sustainabilityscience.uni.lu/wp-content/uploads/sites/48/2021/01/
    SCHOOL-FUTURES-ATHENEE-BERICHT.pdf
    Short-URL: https://tinyurl.com/y58pyzet
    more info: sustainabilityscience.uni.lu

Observational studies during the workshops served to document the nature of the dialogues (whether too consensual, disputational, or drawing fruitfully on diverse perspectives). Moreover, students had the opportunity to explore systemic interconnections between well-being, productivity, organisational vision and mission, the nature of the built and natural (learning) environment on campus in a systemic manner with reference to the one organisation they were deeply familiar with. This helped extrapolation of how some drivers of change in the global context might influence future changes within and much beyond the school setting, in Luxembourg society at large.

All concepts, methods, processes and learning tools will be published both in print - through various channels - and on the project website on the internet. These materials will be available for transfer and adaptation to other national and school settings by the end of 2021. **Box 3** shows what is currently available.

Box 3 - Additional online reference material

http://www.oecd.org/fr/education/Education-Policy-Outlook-Country-Profile-Luxembourg-FR.pdf

https://www.youtube.com/channel/UCnQhQsmv4vHP_6TbuDaXlYw (Luxembourg scenarios for education)

http://sustainabilityscience.uni.lu/wp-content/uploads/sites/48/2021/01/SCHOOL-FUTURES-ATHENEE-BERICHT.pdf

https://sustainabilityscience.uni.lu/

https://www.researchgate.net/profile/Bo_Raber

https://csdd.public.lu/fr/actualites.html