In collaboration with
Trinity College Dublin

WORLD ECONOMIC FORUM

Innovative Learning Solutions to Navigate Complexity: Adapting Systems Thinking to Future Classrooms

WHITE PAPER

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Images: Getty Images

Contents

Foreword

Bringing systems thinking to the classroom: a framework for proactively reforming learning in a complex world

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We live in a time when having a systems perspective on the world around us has never been more important. The challenges of climate change, inequality and biodiversity loss emerge in making this statement. Not only are these three issues interconnected in a complex manner themselves, but to take deep and meaningful action requires an in-depth understanding of patterns, relationships, interconnections, dependencies and trade-offs. We need to generate this kind of sophisticated analysis and understanding against a backdrop of a world overloaded with information, both real and false.

This white paper, co-produced by the World Economic Forum and Trinity College Dublin, is focused on how we might go about embedding that valuable and necessary systems thinking mindset into all stages of the education system. Here we present insights into current learning and teaching practices and changing demands. We also provide practical examples of how future education might take a systems thinking perspective. This can be achieved by drawing on tools such as the Strategic Intelligence Platform launched by the World Economic Forum and by envisaging a classroom of the future that can make use of a variety of digital applications to facilitate the systems thinking approach.

We see the importance of constantly questioning how students learn and welcome this white paper that recognizes the need to teach and learn in new ways and challenges us to innovate and do better. It is critical that all students can deal with different and complex perspectives and views, going beyond their comfort zone and the short sound bites of the world of social media. More important, still, is that we learn to use the emerging landscape of digital tools in an empowering and responsible way to drive greater critical thinking and unlock more creativity.

Through the experimentation, incubation and creation of novel practices by early adopters of strategic intelligence, we hope that the models we feature can inspire and illuminate innovation in mainstreaming systems thinking in the classroom, be it physical or digital. This approach represents the future of learning and education, and we are excited to be part of supporting this transformative process. We believe this paper will encourage educators, learners and policy-makers to adopt systems thinking as an essential aspect of learning and education. This will nurture a future generation of more tolerant, understanding and discerning thinkers.

Executive summary

Transforming education through systems thinking tools is imperative to prepare young and adult learners for an increasingly complex world.

To meet current global challenges, education needs innovative approaches. The past century of educational reform has been largely reactive, responding to change and adversity as opposed to preparing for it. This paper, *Innovative Learning Solutions to Navigate Complexity: Adapting Systems Thinking to Future Classrooms*, advocates for education policy-makers and teachers to create a more future-proofed learning and development system that can proactively address current and future challenges and equip learners with the aptitudes to navigate an increasingly complex world.

FIGURE 1 **Challenges that need to be addressed while developing reform**

Technology can assist in addressing some of these challenges, but it cannot be the solution. Systems thinking can provide a framework to understand and manage complex systems, offering solutions to these challenges and creating more adaptable, flexible and forward-thinking education systems.

Responding to this gap, the eight case studies presented detail how forward-thinking educators worldwide have successfully applied the Strategic Intelligence Platform's digital tools to provide systems thinking exploration and understanding among learners. These use cases provide a guide for how policy-makers, educators, researchers and students can embed these methodologies in their everyday study or practice. These include:

1. Public policy (adult learning): SDG-focused policy development
2. Media studies (postgraduate): exploring Latvian political parties using digital tools
3. Sustainability (postgraduate): unlocking entrepreneurial opportunities through systems and design thinking
4. Management - (postgraduate): futures, strategic design and innovation
5. Business (undergraduate): corporate entrepreneurship
6. Business (undergraduate): PESTLE analysis and market intelligence
7. Career development (secondary): developing a future-proof career
8. Social studies (secondary): unpacking Puerto Rico's political status – crafting an argumentative essay.

The case studies were categorized by discipline, levels and future-ready aptitudes, specifically skills and abilities, attitudes, adaptability and values. Drawing from the insights gained through these case studies, this paper suggests implementing proactive reforms to learning and development as outlined in Box 1.

BOX 1 | **Recommendations overview**

- Restructure curricula to emphasize interdisciplinary projects and connections between disciplines.
- Use practical assessments using systems thinking instead of standardized testing.
- Instruct educators in systems thinking methodologies and tools through workshops and training.
- Provide media literacy training to teachers and embed media literacy skills across curriculums.
- Offer college credit or micro-credentials to train learners in systems thinking methodologies.
- Create a community of practice among educators and learners to scale successful use cases.
- Shift from solution-led to problem-led learning methodologies.
- Equip learners with foresight and scenario planning skills to plan for their future careers.

The adoption of these strategies can have a significant impact on preparing a future-ready generation. In the short term, systems thinking can improve student engagement, motivation, creativity, critical thinking and decision-making. However, the long-term impacts will be a future-proofed education system, increased societal success in navigating real-world challenges, increased capacity to create and implement innovative solutions, and mindset shifts towards increased understanding of the complexities of sustainability, society and interdependent economies.

Introduction

Integrating systems thinking into the classroom can provide new approaches to education reform and develop a more adaptable system.

Digital innovations and the impact of the COVID-19 pandemic brought about a significant shift from traditional classrooms to digital and online learning. Exponential technological advancements continue to transform industries, leading to a demand for executive education to reskill the workforce of tomorrow. The world is growing increasingly complex. Climate change, the energy transition and the interdependent global economy are all examples of the **complexity** surrounding us. Education reform needs to match these complexities to help future learners better understand these issues.

Reactive education reforms

> There needs to be a shift from traditional, rigid approaches to more dynamic and responsive ones that can account for the complexities of learning, teaching and a rapidly changing world.

When reflecting on the past, it becomes apparent that educational reform is largely reactive – always playing catch-up rather than being future-ready. The past century of pedagogical reform is proof of this. The first half of the 20th century was marked by two world wars, which left many countries suffering from massive economic and infrastructure destruction. Efforts were directed towards expanding and improving public education systems to cultivate a skilled labour force to rebuild and maintain peace.

The 1950s, 1960s and 1970s were marked by decolonization. These events served as a source of inspiration for the civil rights and social justice movements and highlighted the persistent issue of inequality and discrimination in education around the world.[1] As a result, governments began to take steps to expand access to higher education for marginalized groups, such as women, minorities and low-income individuals.

The 1980s were marked by economic downturns, which led governments to decrease fiscal spending on education and shift more costs to individuals and families, resulting in a growing trend towards the privatization and marketization of education. Consequently, private schools and universities experienced significant growth in the eighties and nineties.

The effects of the Fourth Industrial Revolution are currently being experienced. This era is characterized by the evolution of interconnected digital technologies, a skills-oriented workforce and complex value-creation systems. The recognized need for educational reform arises when an existing system fails to meet the changing demands of society and learners. While many of these above-mentioned reactive reforms resulted in educational improvements, often, reform tends to focus on short-term fixes rather than future-proofing the system. To create a more adaptable, flexible and innovative education system, there needs to be a shift from traditional, rigid approaches to more dynamic and responsive ones that can account for the complexities of learning, teaching and a rapidly changing world.

From reactive to proactive: reforming learning approaches for a complex world

One way to approach complex systems and encourage proactive educational reform is through **systems thinking**, an academic school of thought that aims to anticipate potential issues and identify opportunities for improvement before they become problems. While systems thinking has been adapted to fields such as policy-making and business, it has yet to significantly impact mainstream representations of complex societal issues, especially in education. Incorporating systems thinking into the classroom could offer new perspectives on how to approach education reform and create a more future-proofed system.

Modern advances in digital technologies can help make systems thinking more accessible to students and educators. Specifically, new data visualization techniques, formats and tools like interactive digital narratives (IDNs), animated infographics and dashboards can all assist in exploring complex systems. Currently, the World Economic Forum's Strategic Intelligence (SI) Platform provides several digital tools to users through their collection of transformation maps, EarthTime stories and advanced analytics features. These data visualization tools can help students and educators explore and make sense of the complex and interlinked forces that transform economies, industries and global issues.

Solutions for stakeholders looking at future-ready policy transformation

This paper presents case studies that offer solutions for stakeholders, either as models to replicate or as inspiration to develop new approaches. Additionally, the paper highlights the importance of harnessing the power of technology and encourages the use of digital systems thinking tools, such as those available through the SI Platform.

Educators, learners and policy-makers should adopt a constructivist and constructionist approach to learning, which involves actively engaging with and exploring complex systems. This approach fosters curiosity, imagination and innovation, and helps to inspire a life-long love of learning. By implementing the strategies and recommendations provided in this paper, educational reform can have a profound and influential impact on the next generation of global citizens.

↓ The Constitution of the Italian Republic was enacted in 1948 and made elementary education free and compulsory for a minimum of 8 years. By 1961, illiteracy was reduced to just 8.3%. Photo by Valentino Petrelli

1 The current landscape: a look at global challenges

Limited media literacy, standardized testing and complexity hinder critical thinking and contribute to misinformation and problem-solving challenges.

The World Health Organization (WHO), the United Nations (UN) and many other institutions began using the term "infodemic" during the COVID-19 pandemic in early February 2020. This term was used to describe the alarming proliferation of misinformation and rumours surrounding the pandemic, causing confusion and impeding efforts to control the outbreak. The WHO emphasized the need for accurate and timely information to combat the infodemic as the spread of misinformation was leading to panic, mistrust in institutions and harming efforts to control the crisis. This term has since been widely adopted to describe the spread of harmful content, which is partly attributed to inadequate teacher preparation programmes, educational shortcomings and polarizing media.

1.1 Elementary, secondary and adult learning in the Fourth Industrial Revolution

Media literacy education – The emergence of the internet and access to information has brought about "new literacies" that encompass the internet, digital, media, information and computer literacy. Among these, media literacy is particularly crucial as the media plays a significant role in shaping societal opinions and values. Successful implementation of media literacy programmes is demonstrated in countries such as Finland, where the emphasis on media literacy in public schools began as early as 2016. As a result, Finland has secured the top position among 41 European nations for its resilience to misinformation for the fifth consecutive time, as reported by the Open Society Institute in Bulgaria.[2]

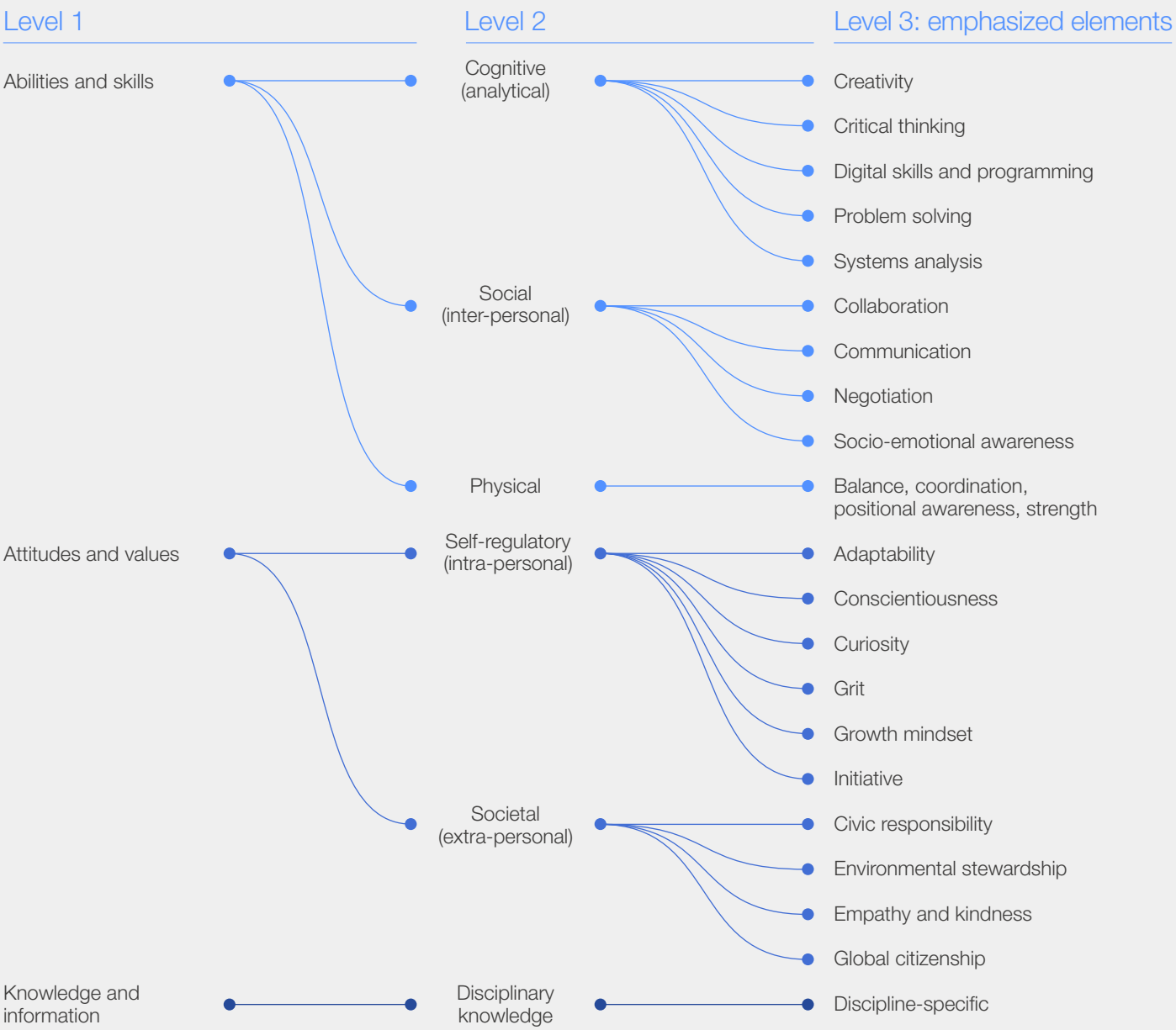
Unfortunately, Finland is the exception, and media literacy education is not well-established in most countries. Also, teacher preparation programmes that include media literacy are rare. Consequently, educators often lack formal training in media literacy foundations, resulting in a missing pedagogical necessity in schools. Understanding the constantly evolving media environment is essential for developing critical thinking skills, among others, which are crucial for success in the Fourth Industrial Revolution.

Standardized testing – The overemphasis on test-taking as a means of standardizing learning promotes dullness and rigidity,[3] resulting in schools prioritizing transmitting test answers over encouraging the drive for learning. Often, these tests measure a student's rote memorization abilities, which are diminishing in importance in today's digital age. Additionally, most standardized tests involve multiple-choice questions, which discourage exploration and curiosity by preparing students to regurgitate the "right answer" instead of engaging in thoughtful consideration of potential outcomes and processes. In a sense, standardized testing prepares students to pick a side and then move on rather than encouraging exploration, reflection and lifelong learning.

Future-ready skills – A key challenge preventing the broad development of future-ready skills through education is the lack of a common foundation, definition and understanding of the skills needed for the future and how these can be developed from an early age. As a result, the World Economic Forum's Centre for the New Economy and Society published a white paper in January 2023 titled *Defining Education 4.0: A Taxonomy for the Future of Learning*, which introduced a taxonomy of aptitudes that aims to bridge the disconnect between young and adult learners, including skills, abilities, attitudes and values. It is also integrated with the Forum's existing work on creating a global skills taxonomy aimed at the adult workplace with an emphasis on lifelong learning. This taxonomy aims to establish a common foundation for learning institutions to identify and cultivate the essential aptitudes learners require to succeed in the future.

"Standardized testing prepares students to pick a side and then move on rather than encouraging exploration, reflection and lifelong learning.

FIGURE 2 | **World Economic Forum's Education 4.0 Taxonomy**



Source: World Economic Forum, *Defining Education 4.0: A Taxonomy for the Future of Learning*, 2023.

Problem-solving – Modern education systems don't effectively teach problem-solving skills, an essential aptitude of the Education 4.0 Taxonomy. Students with inadequate problem-solving abilities may develop poor solutions. These solutions, usually based on assumptions, don't tackle the core issues and can even worsen the situation. Russell Ackoff, an innovator in organizational theory, general systems theory and operations research, explained that "getting the right solution to the right problem is crucial for successful problem-solving. Failure often occurs because we address the wrong problem".

According to Tissione Parmar, Learning Solutions Team Lead, United Nations Institute for Training and Research (UNITAR), "Allocating more time to unpacking problems can lead to better outcomes. Making assumptions about problems sometimes results in wasted resources and little impact". Therefore, shifting from solution-led to problem-led thinking encourages critical reflection and emphasizes identifying the underlying problem before seeking solutions. To enhance problem-solving, education needs to alter how it teaches students to approach challenging problems.

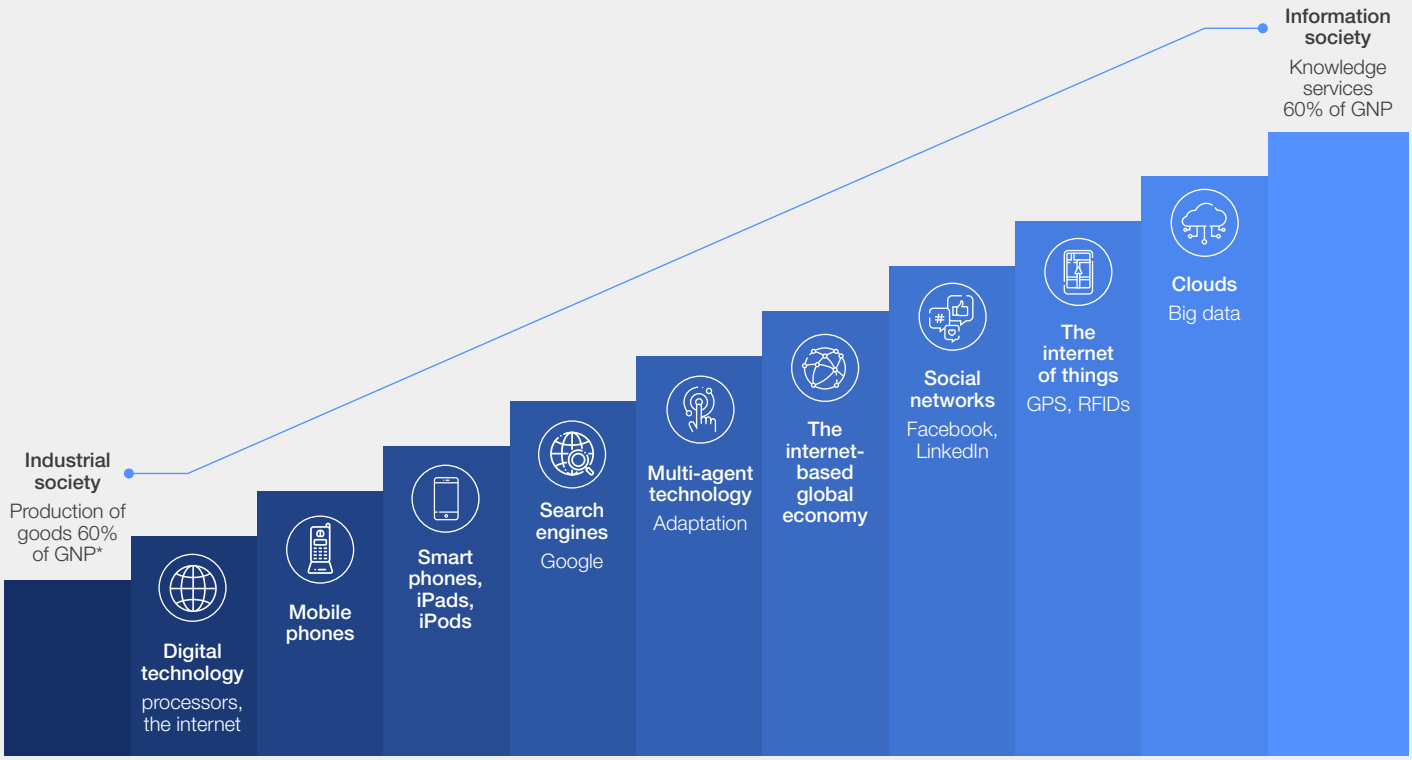
1.2 A new generation of complexity

Digital technologies have transformed society, offering unparalleled opportunities for individuals to access a wide range of information that was not accessible before. The availability of trusted information is crucial for encouraging informed discourse, but it also carries risks if individuals lack the ability to comprehend the information. Therefore, it is essential to equip individuals at an early age with the mindset, skills and tools necessary to navigate the overwhelming volume of information in the world.

Until recently, levels of complexity, specifically in social systems, were relatively low. Research has shown that because of the development and adoption of information and communication technologies, these levels have become a "defining feature of the 21st century".[4] For example, as global interconnectivity increases, the world's technologically advanced economies move from a focus on the nation-centric production of goods to global-centric knowledge-based services (see Figure 3).

Due to this growing web of interdependencies, studying complex systems in the physical and social sciences has gained momentum over the past quarter-century. Research suggests these important new conceptual perspectives and methodologies can help individuals understand the challenging social and global problems of the 21st century.[5] While some complex systems-related concepts can be found in school curricula, primarily in the physical sciences, the overarching interdisciplinary or cross-domain nature of these concepts are not currently recognized enough, let alone harnessed. Hence, the absence or lack of systems learning, specifically at the primary and secondary level, leaves the next generation of adults unprepared to interpret the diverse, interconnected systems that exist in the world today.

FIGURE 3 **Increase in complexity of social systems caused by digital technology**



Stages	Key resources	Distribution	Scope
1 Agricultural society	Land	Village roads	Local-regional
2 Industrial society	Capital	Motorways and railways	National
3 Information society	Knowledge	Digital networks	Global

*Gross national product

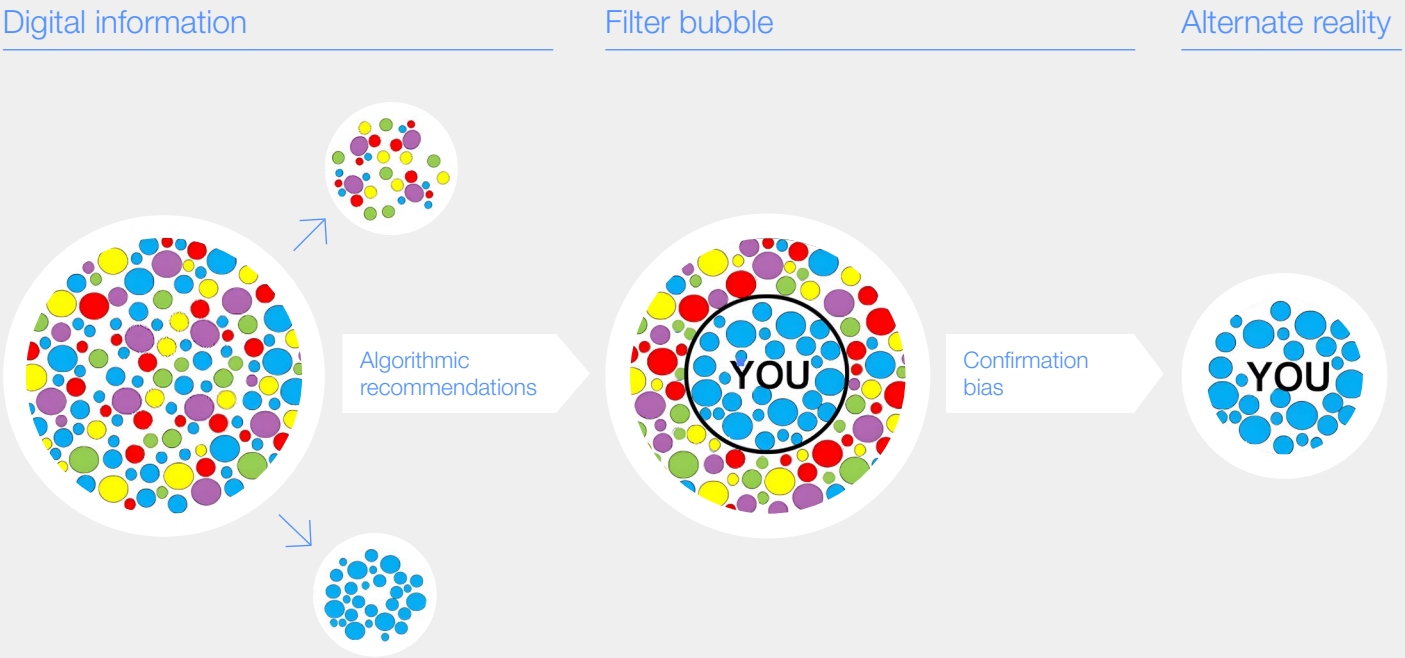
Source: Rzevski, G., "Complexity as the defining feature of the 21st century", *International Journal of Design & Nature and Ecodynamics*, vol. 10, issue 3, 2015, pp. 191-198.

1.3 Navigating mass media: the search for fact over fiction

The dissemination of news, knowledge and information across digital platforms is a complex system, as it involves multiple actors and factors that interact with one another in intricate ways. According to Hartmut Koenitz, a professor at Södertörn University, there is a need for new "representations of complexity that foster systemic thinking by facilitating an understanding of multiplicity, interconnectedness and long-term effects".[6] Information disseminated through media platforms frequently becomes prone to oversimplified representations of complex material – even fake news – resulting in the polarization of populations and the collapse of democratic discourse. Hence, there is a need for media literacy instruction that serves to raise awareness of these challenges and teach people to make sense of the complex media ecosystem.

Furthermore, business models for social media, search, video streaming and others often aim to maximize screen time through algorithmic recommendations and sensationalism.[7] News distribution on the internet and social media propagates polarization because this business model breeds filter bubbles, which feed individual narratives. Biases are confirmed with the bombardment of "like" stories, resulting in people developing alternate realities (see Figure 4).

FIGURE 4 **Process of information dissemination across select digital platforms**



While much attention is given to technological solutions for fighting fake news, such as using natural language processing (NLP) and deep learning for deepfakes,[8] it is not always a viable option for everyone. NLP is frequently used to identify fake news in the Western context, but the development of scalable fake news classification techniques for low-resource languages like Hindi or Swahili is still in its early stages due to limited datasets and a shortage of robust NLP libraries for such languages.

Technological approaches alone cannot resolve the fake news problem. The spread of misinformation and its harmful effects stem from the limited ability of individuals to navigate complex information systems. Moreover, there are few, if any, tech tools for identifying bias in the news, a more subtle form of media propaganda. Antagonists will always exist, and, therefore, appropriate weapons for self-defence are necessary.

2

Systems thinking 101 – past, present and the strategic intelligence platform

Embedding systems thinking in learning methodologies can train students to think critically, recognize hidden patterns and relationships, and solve complex problems.

Systems thinking provides effective methods, tools and patterns recognition to understand and manage complex systems, and it is growing in popularity in the private and public sectors. It is an improved way of thinking with powerful societal benefits across all disciplines.

For example, sports are complex in nature. Their systems include multiple components, non-linear interactions, emergent properties, dynamism, recurring **feedback loops**, path dependence and an inability to isolate individual components.[9] One successful example of a coach who applied a systems thinking approach to enhance performance is Soviet ice hockey hall-of-famer Anatoly Tarasov. After World War II, he was tasked with building a USSR ice hockey team from scratch. The team would go on to become the best in the world. He accomplished this by developing a training regime that drew insights from seemingly unrelated entities, such as the Bolshoi Ballet dancers and chess grandmasters. He saw hockey as a highly dynamic and team-oriented sport that required constant movement, communication and collaboration among players. He believed that passing was even more important than shooting, and that a team that was able to move the puck quickly and accurately would be more successful than a team that relied heavily on individual skill or shooting prowess.[10]

Tarasov's coaching style can be viewed through a systems thinking perspective as he emphasized the interdependence and interconnectedness of players on the ice, and this focus on teamwork had a lasting impact on the sport worldwide. His holistic approach to training and strategy can be applied to education worldwide. In this sense, students are athletes. By embedding systems thinking in learning methodologies, they can be trained to think more holistically and recognize patterns and relationships that may not be immediately apparent. They can practice their cognitive flexibility, problem-solving skills and open-mindedness. They can learn to analyse and solve complex problems and make better decisions based on a deeper understanding of how different factors interact. Therefore, it is important to understand the history and evolution of systems thinking to better appreciate the underlying principles and methodologies used in this approach and apply it more effectively in a variety of contexts.

2.1 A brief history

Systems thinking traces its origins to the early 20th century but has gained mainstream attention in recent years. Austrian biologist Ludwig Von Bertalanffy is credited with developing "general systems theory", which suggests that complex systems must be understood as an integrated whole rather than looking at individual components in isolation. Bertalanffy used a mathematical model of organism growth to demonstrate how systems thinking can be applied to complex phenomena. He argued that an organism's growth is influenced by multiple factors, such as body size, metabolic rate and environmental conditions, creating a feedback loop where changes in one part of the system can influence other parts dynamically and non-linearly.[11]

Professor Jay W. Forrester, a computer scientist at the MIT Sloan School of Management, was another systems thinking pioneer. Forrester realized that social systems were more difficult to understand and control than physical systems during his tenure as an MIT Laboratory manager. Forrester's work with General Motors (GM) in the 1950s catalysed his research. He developed a computer-based model of GM's production and supply chain systems, which allowed GM to simulate and analyse their behaviour under different conditions. Through his work with GM, Forrester realized the limitations of traditional linear thinking and developed the concept of "system dynamics", which eventually evolved into the broader framework of systems thinking that exists today.[12]

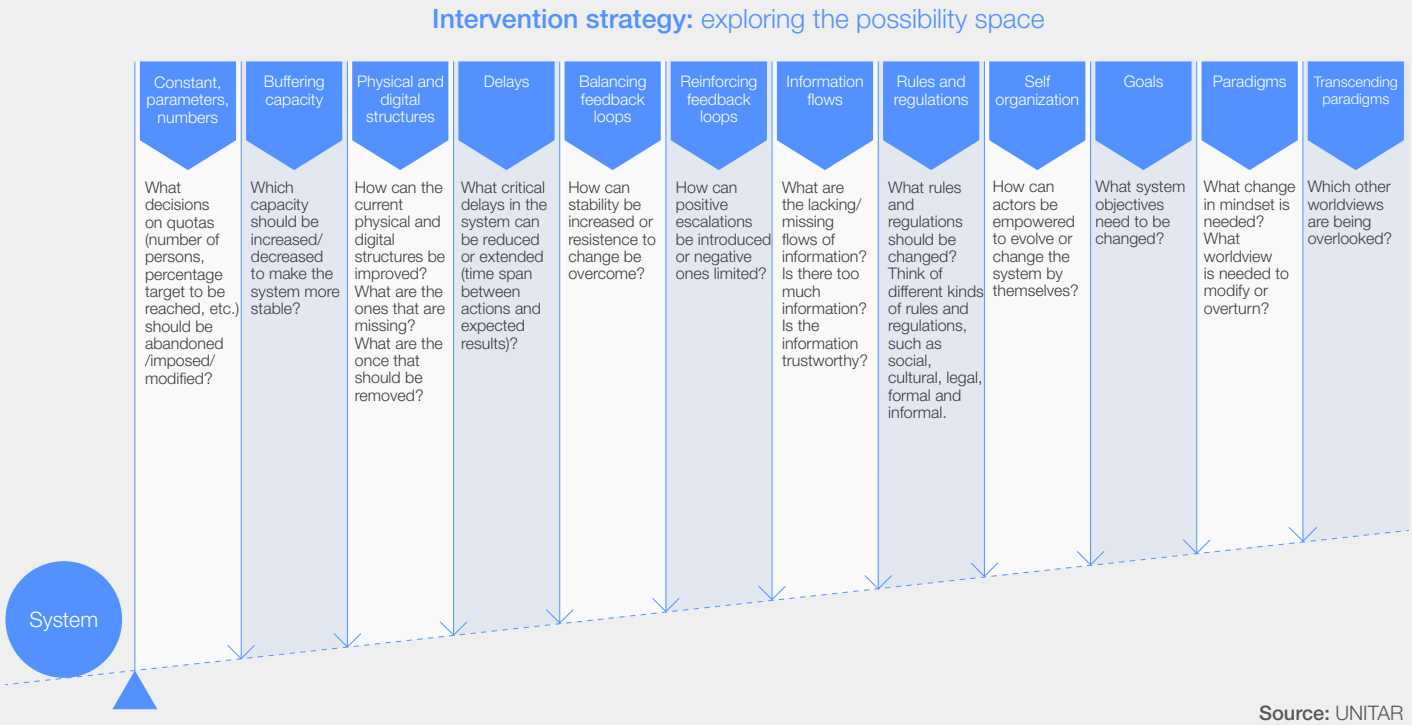
2.2 Systems thinking today

Modern examples of how systems thinking is used can be found in the fields of healthcare, sustainability, city planning, business and more. While systems thinking has found a strong foothold on the world stage, education in systems thinking approaches is limited or non-existent in many learning institutions, especially when it comes to tackling other complex fields. However, organizations are developing frameworks to integrate systems thinking approaches into their learning methodologies.

For example, UNITAR conducts training modules to prepare Disarmament, Demobilization and Reintegration (DDR) practitioners, UN missions and local communities with the skills necessary for the international field of Community Violence Reduction (CVR). UNITAR conducted a session that specifically focused on CVR using systems thinking methodologies. The purpose of this module was to support practitioners and experts in mapping the complexity of the international CVR landscape and to help assess potential ways to intervene through training and capacity building. Participants were taught using a systems thinking framework that enabled them to identify different **leverage points** (see Figure 5) when intervening in a system, apply the concepts to the international field of CVR and assess potential leverage points and develop intervention strategies.

The training had a transformative impact on the participants, as they gained a better understanding of the "big picture" and the importance of examining the system before implementing solutions based on assumptions. It also had an impact on the training programme. For example, it became evident that practitioners in the field required practical project management skills rather than theoretical knowledge of CVR, which went against their initial assumptions. This led to a change in the initial plan, and additional sessions were created to address this need by focusing on building training and capacity-building programmes rather than the initially proposed theoretical knowledge.

FIGURE 5 | **Leverage points for intervention strategy used in the UNITAR training module**



Source: UNITAR

By employing this type of framework to identify problems across the board, organizations can effectively save time, effort and money. This approach allows them to redirect energy towards systematically identified problems rather than assumed problems. Organizations can identify the root cause of an issue and streamline the training programme accordingly.

2.3 Systems thinking and the evolution of the Strategic Intelligence Platform

The World Economic Forum's SI Platform originated from its engagement with universities, experts and thought leaders, and its commitment to addressing global challenges through multistakeholder collaboration. The initiative emerged from the Forum's network of Global Agenda Councils, which brings together over 1,000 thought leaders from academia, government, international organizations, business and civil society, grouped in expertise-based thematic councils.

To scale this engagement and provide continuous access to the collective intelligence of this broad network of contributors, a dedicated platform and methodology were required to analyse and address the interconnected global challenges that were at the heart of this network. In 2017, the World Economic Forum launched the SI Platform to bring together a wide range of data and insights from experts, policy-makers and stakeholders. The platform uses advanced tools and techniques to identify emerging trends and assess risks, enabling users to create informed solutions.

Using a systems thinking approach, the platform identifies potential leverage points for positive change and helps decision-makers predict and adapt to the constantly changing global landscape through scenario planning, modelling and simulation. It provides organizations with a more nuanced and holistic understanding of complex global issues and their interconnectedness, enabling decision-makers to develop more effective and sustainable solutions.

As showcased in the use cases that follow, the SI Platform offers great potential in the educational realm. It helps learners to approach problems in a more systematic and holistic way, leading to better decision-making skills in various aspects of their lives. Exposure to these tools also prepares learners for the demands of the 21st-century workforce, where innovation, problem-solving and critical thinking skills are highly valued.

> **The SI Platform helps learners to approach problems in a more systematic and holistic way, leading to better decision-making skills in various aspects of their lives.**

3 Learning institutions and the strategic intelligence framework

The following case studies can provide learning institutions with strategies and inspiration regarding how to foster systems thinking skills using strategic intelligence. To align with current research and knowledge, these case studies were collected and categorized based on their emphasis on essential future-ready aptitudes. These were divided into skills and abilities and attitudes and values. This chart synthesizes the data collected with aptitudes from *Education 4.0: A Taxonomy*, as illustrated in Figure 2. Since all the case studies involve traditional forms of knowledge and related learning methods, this aptitude is not included in the chart.

TABLE 1 | **Case studies and the top five aptitudes they cultivate**

	Level	Adult	Postgraduate			Undergraduate		Secondary level	
	Domain	Public policy	Management	Sustainability	Communication studies	Business	Business	Career development	Social studies
	Institution	National School of Government, Pretoria, South Africa	University of Lisbon, Lisbon, Portugal	University of Limerick, Kemmy Business School, Limerick, Ireland	Riga Stradiņš University, Riga, Lativia	Universidad Panamericana, Mexico City, Mexico	The American University in Cairo, Cairo, Egypt	Chadwick International School (IB), Incheon, South Korea	Shepaug Valley School, Connecticut, USA
Skills and abilities developed in case study									
Analytical thinking: Involves breaking down complex information into its parts to understand its underlying structure					●	●	●		●
Problem-solving: The process of designing, evaluating and implementing a strategy to answer a question of achieve a desired goal		●		●		●		●	
Communication and collaboration: The ability to articulate complex ideas and convey information to others to solve complex problems		●	●						
Creativity and innovation: Involves identifying new and innovative ways to address complex problems			●	●		●	●		
Foresight: Awareness of trends and patterns to anticipate future trends, and ability to apply that knowledge to make informed, proactive decisions			●	●		●	●	●	
Critical thinking: Involves evaluating information and making judgements based on research and evidence					●		●		●
Reflection: A process of describing learning, how it changed, and how it might relate to future learning experiences			●	●	●			●	
Attitudes and values developed in case study									
Empathy: Ability to consider how different elements of a system impact one another, which requires an understanding of other perspectives		●							●
Open-mindedness: Involves approaching problems considering different perspectives and possibilities		●			●				●
Curiosity: A strong desire to know or learn and encourage asking questions and exploring different aspects of problems or systems					●			●	●
Adaptability: The ability to adjust and modify one's approach as new information becomes available or as circumstances change		●	●	●		●	●	●	

CASE STUDY 1

Public policy

SDG-focused policy development

Summary

Curator and Institution: Bongani Mayimele, Director for International Relations and Partnerships, National School of Government, Republic of South Africa; Bryonie Guthrie, Strategic Intelligence, World Economic Forum; Willem Fourie, Associate Professor, University of Pretoria; Simone Smit, Head of Exploration, United Nations Development Programme's Accelerator Lab

Subject(s): Public policy and the Sustainable Development Goals (SDGs)

Relevant SI feature: Strategic Intelligence Premium features: "Monitor", "Create Map", "Advanced Dynamic Briefing"; SDG transformation maps

Learner level: Adult learners, government official trainees

Time allotment: Five training days and a total of one month to develop pitches

Assessment: Summative assessment policy pitch

Context: The National School of Government in South Africa is responsible for training government employees and offering regional training. While prioritizing the SDGs is essential, achieving them has proven to be challenging due to growing complexity and uncertainty. To achieve the SDGs, responsive policies and implementation capabilities were recognized as a need. Also, it was noted that institutions need access to high-quality information, knowledge and expertise to forecast the future, identify trends, benchmark good practice, make informed decisions and avoid costly mistakes. Developing countries are more impacted by the SDGs and require resources, like the SI Platform, to understand and adopt policies to support the achievement of the SDGs. Therefore, SI was included in the training of government trainees through this new programme. Interns in government ministries in South Africa are not employed permanently but rather hired on a short-term basis to upskill and train to make them more employable on the open job market.

Learning objective

Learners will build policy development skills and demonstrate progress towards the achievement of the SDGs for South Africa through awareness-building and the creation of effective SDG policy pitches.

Learning activities and procedures

As a first step, groups were thematically assigned by SDG: energy (SDG 7), employment (SDG 8) or education (SDG 4). Participants were then provided with five days of training. This included a project briefing and strategic intelligence onboarding, an introduction to methodologies in developing policy proposals, policy-brief writing and composition and policy pitching. In this training, participants had lectures and a Q&A session with both local and international thematic experts in energy (SDG 7), employment (SDG 8) and education (SDG 4). Groups then worked collaboratively on developing policy pitches and were provided access to several tools, like the SI Platform and mentors for guidance and advice. Participants submitted drafts of their pitches, received feedback and then produced a final policy pitch. The best pitch received a prize.

Outcomes and impact

This course enhanced research and policy-pitching skills and promoted SDG awareness and systems thinking. This contributed to enhancing individual skills and institutional capacity-building, strengthening governance and achieving positive economic, social, political and environmental impacts, leading to a more sustainable trajectory for the country.

CASE STUDY 2

Communications studies

Exploring Latvian political parties using digital tools

Summary

Curator and Institution: Lāsma Šķestere, Riga Stradiņš University, Riga, Latvia

Subject(s): New media and net society

Relevant SI feature: Transformation maps and SI Premium feature: “Create Map”

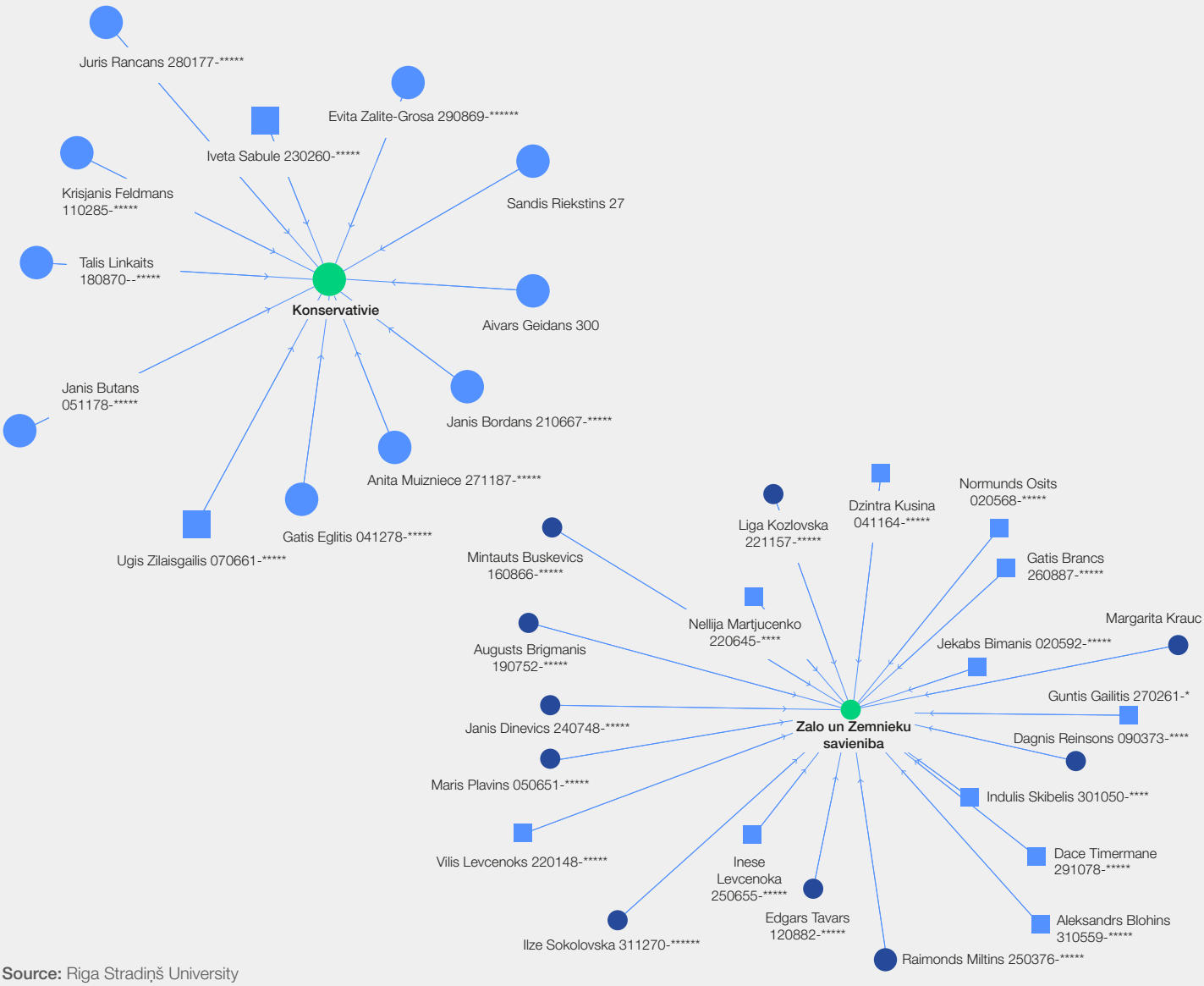
Learner level: Postgraduate master’s class

Time allotment: One session of 3 hours

Assessment: Summative reflection essay and presentation of finding

Context: Students have taken a media theory prerequisite class. As an introductory activity before this session, students were introduced to mapping and practised the skill by looking at the largest donors to political parties and highlighting their relationships with other parties, focusing on donors that allocated €1,000 and more over the year. After this activity, they were provided with technical instructions on using the World Economic Forum SI Platform’s advanced features, like the “Create Map” and “Monitor” tools.

FIGURE 6 **Mapping Latvian parties political agendas**



Source: Riga Stradiņš University

Learning objective

Students will be able to identify the primary beliefs and values of political parties running for election in the 2022 Latvian Saeima (parliament) elections through developing digital literacy, and they will demonstrate how these issues relate to global topics using the Forum transformation maps.

Learning activities and procedures

The instructor should introduce the Latvian parliament elections and explain the importance of understanding political platforms and their global context. Students are then placed in groups and assigned a specific party to research using reliable sources provided by the teacher, discovered independently or by using the SI Platform's advanced "Monitor" feature. The following guiding questions are provided:

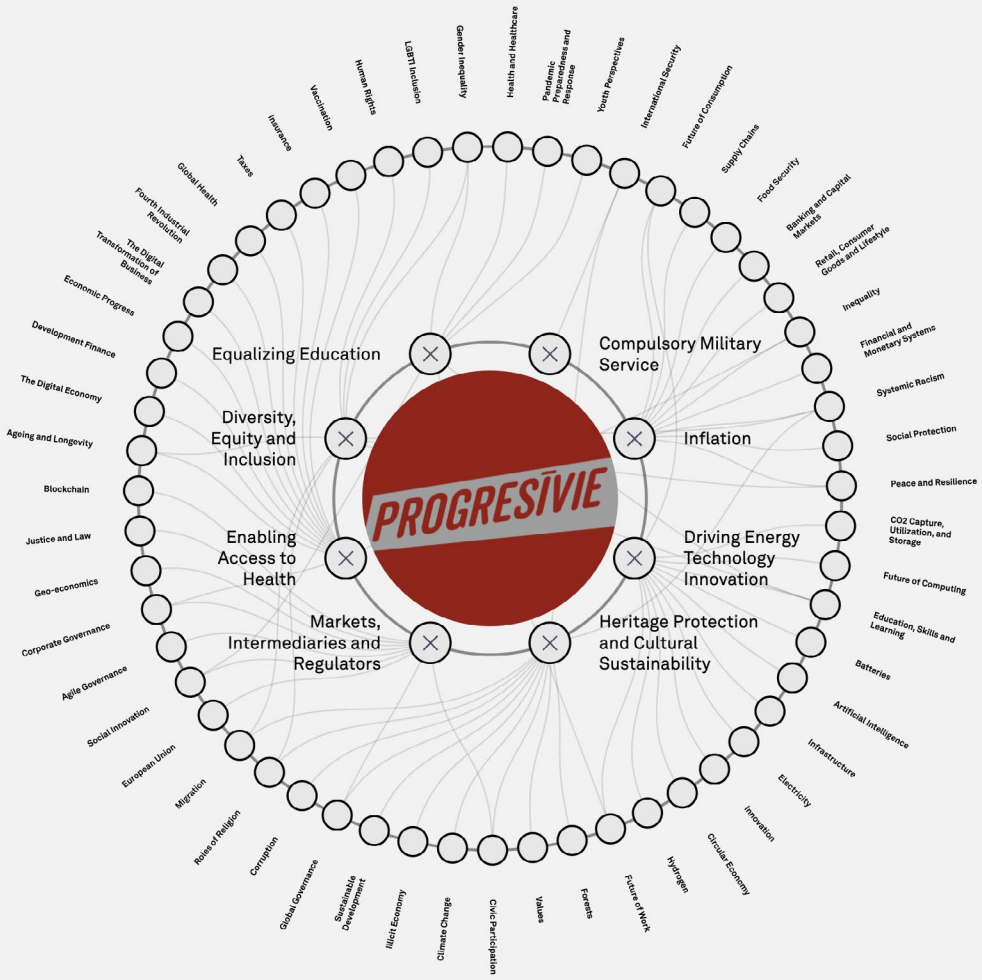
- What are the beliefs and values of specific political parties running for election to the Saeima?
- How relevant are these issues in the world, and what other issues are they related to?

Students should then create a comprehensive transformation map showcasing beliefs, values and interconnections between parties and global topics similar to the map shown in Figure 7. The activity concludes with the students presenting their maps and writing a reflection about their own transformation through this process and how digital tools can be used to better understand complex systems like politics.

Outcomes and impact

Short-term outcomes include students being able to understand the complexities of political parties and their platforms, and as an impact, they are better prepared to engage in civic participation and comprehend the global political landscape. This knowledge prepares them to vote responsibly and enact positive change in their communities. Additionally, students will learn how to use digital tools effectively and how to apply specific properties of new media to their communication practice, planning and management. This proficiency in multimedia and network structures will enable them to communicate effectively online.

FIGURE 7 **Progressive party agenda, Latvia**



Source: Riga Stradiņš University

CASE STUDY 3

Sustainability

Unlocking entrepreneurial opportunities through systems and design thinking

Summary

Curator and institution: Rahmin Bender-Salazar, University of Exeter guest lecture, England

Subject(s): Circular economy, systems thinking, design thinking, entrepreneurship

Relevant SI feature: Transformation maps: Circular Economy

Learner level: Master's class

Time allotment: 1-hour session

Assessment: Formative assessment – experiential workshop followed by Q&A

Context: This lesson was a master's level guest lecture for a cohort of students engaged in a circular economy course at Exeter Business School. The purpose of this workshop/guest lecture is to introduce the circular economy strategic intelligence map, both its creation process and its content, to challenge students as potential circular entrepreneurs.

Learning objective

Learners will be able to combine, recombine, dismantle and rethink concepts to generate new ideas aimed at solving social and ecological issues through circular solutions.

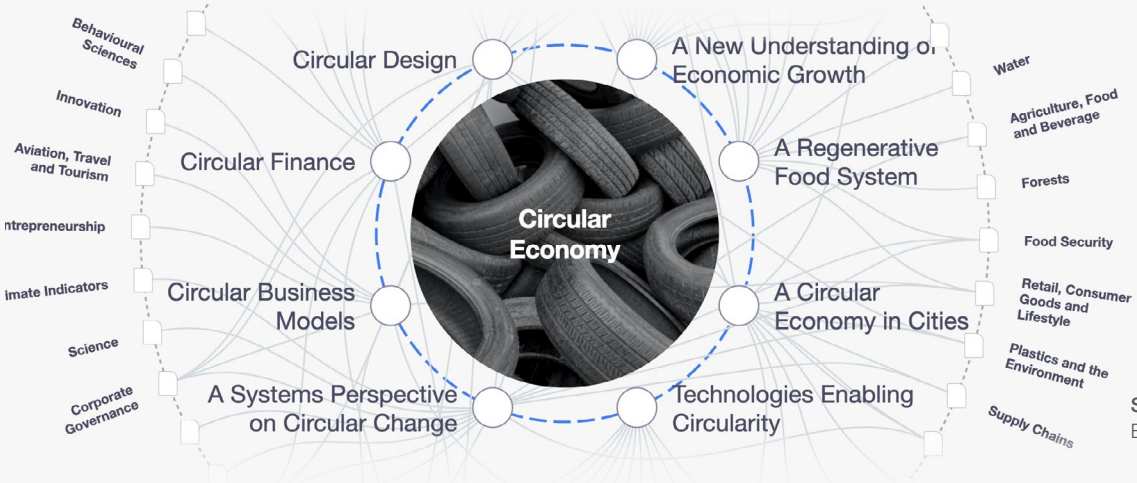
Learning activities and procedures

In this activity, the instructor should introduce and/or re-introduce learners to the basics of concepts of entrepreneurship, circular economy, systems thinking and design thinking. Then, the instructor should focus on combining these concepts to help learners consider how they would place ideas in context, innovate and ultimately solve social and ecological problems within systems. This will be conducted as a collaborative experiential workshop, where learners will work on zooming in (design thinking) and zooming out (systems thinking) to reflect on what interventions and ventures could impact these interconnected, interdependent and dynamic elements of the circular economy.

Outcomes and impact

The short-term outcomes of this lesson are for learners to gain a basic understanding of entrepreneurship, circular economy, systems thinking and design thinking, as well as experiential workshop practices. This workshop also promotes critical thinking and helps to develop students' skills in combining, recombining, dismantling and rethinking concepts to generate new ideas aimed at solving social and economic issues through circular solutions. The long-term impacts are for learners to develop the ability to think creatively and innovatively in addressing complex problems in the circular economy. They will also be able to apply systems thinking and design thinking to their future endeavours as circular entrepreneurs, as well as make informed decisions and contribute to sustainable development.

FIGURE 8 **Circular economy transformation map**



Source: World Economic Forum

CASE STUDY 4

Management

Futures, strategic design and innovation

Summary

Curator and Institution: Paulo Carvalho, ISEG, Lisbon School of Economics and Management, University of Lisbon, Portugal; Olivier Woeffray, World Economic Forum

Subject(s): Business, strategy, innovation

Relevant SI feature: "Discover" (briefing on topic for the client case mobilized for the module, i.e. future of tourism) and SI Premium feature "Create Map" (creation of your custom map based on priorities of the user)

Learner level: Executive training and MBA level

Time allotment: 2-hour session

Assessment: A formative simulation assignment

Context: Both in the MBA and executive programme, this is an introductory session of the module focusing on foresight. Learners might have previous knowledge of core business skills but have no previous formal learning in foresight.

Learning objective

Learners will be able to demonstrate what horizon scanning means and use the digital tools and platforms available to build a skill set and toolbox in strategic foresight, allowing them to improve the competitive positioning of organizations and use these as inputs to identify new growth opportunities, promote strategic agility and design innovation strategies and projects.

Learning activities and procedures

The session opens with a lecture/briefing on strategic intelligence and scenario planning and unpacks the main concepts, theories and frameworks that are useful for practising foresight. The module session specifically focuses on horizon scanning, which is the initial step in the process that involves detecting changes, interpreting their meaning and ultimately integrating these insights into decision-making, strategy or innovation processes. This should be followed by a discussion on foresight and the basics of this approach. The instructor then showcases strategies for mobilizing the strategic intelligence tool for identifying key driving forces, complementing this with other sources. Finally, the class should participate in a simulation where participants are given a specific case and work in groups to categorize the driving forces based on given frameworks (e.g. signals, trends, megatrends, wild cards, uncertainties etc.). They do this by mobilizing strategic intelligence in a horizon-scanning exercise and sharing their outputs in a presentation.

Outcomes and impact

The results and influence of this module are that learners gain knowledge about the SI Platform, scenario planning and foresight. For instance, it demonstrates how to effectively employ systems thinking and interconnectedness while systematically examining broader contextual elements. This module establishes a strong link between theoretical principles and practical tools and equips students with the ability to use those tools in their future practice, contributing to a more innovative and adaptive workforce.

CASE STUDY 5

Business
Corporate entrepreneurship

Summary

Curator and Institution: Moataz Darwish, Professor of Practice, School of Business, The American University in Cairo, Egypt

Subject(s): Corporate entrepreneurship, corporate innovation and scenario planning

Relevant SI feature: Transformation maps and dynamic knowledge feed

Learner level: Undergraduate students

Time allotment: Four 1-hour sessions

Assessment: Summative. The concepts and maps are embedded in the final project of the course.

Context: In previous sessions, learners have been exposed to the concept of corporate entrepreneurship and innovation and focused on disruptive innovation theory in prior classes. The course covers the three horizons of innovation, and these sessions focus on the third stage. In that context, the course introduces the scenario planning tool as a method to explore the future and better strategize and innovate.

Learning objective

Learners will be able to understand and analyse concept scenarios and systemic driving forces and recommend innovative solutions in a summative project presentation.

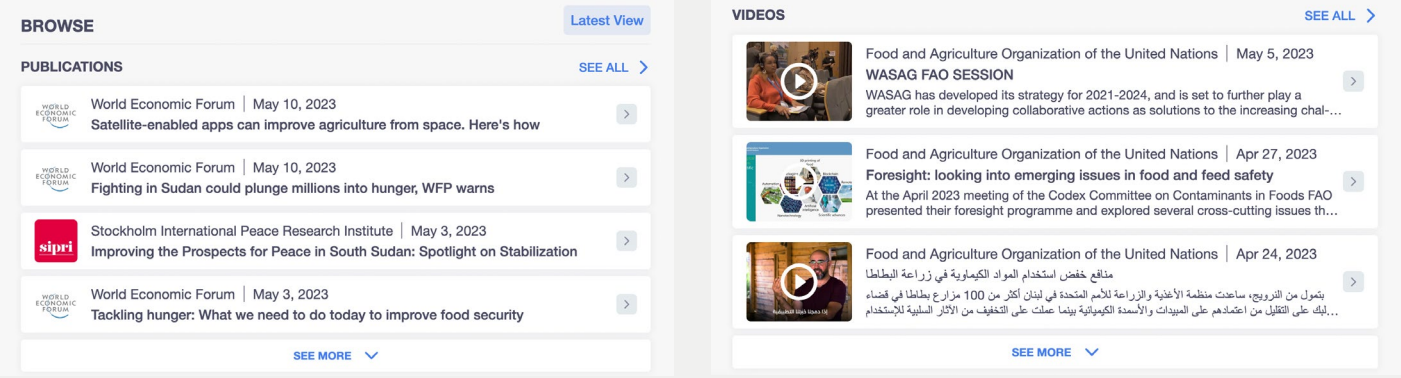
Learning activities and procedures

In this module, the instructor should lead discussions on scenario concepts by exploring their origins and reviewing different cases. The instructor should explain the scenario process and go through the steps with a red thread case, covering driving forces and using the Forum's strategic intelligence maps. The class would then examine scenarios from literature, including the World Economic Forum Food Systems Scenarios as the main features case, as a group. Teams of students will then be assigned case studies selected from a pool of big tech companies. Teams are asked to analyse their selected companies from a corporate innovation perspective and recommend future long-term disruptive innovation proposals. They are encouraged to use the World Economic Forum *Global Risks Report 2023* and transformation maps in the process. Teams should then present their findings to the class at the end of the semester as a summative assessment.

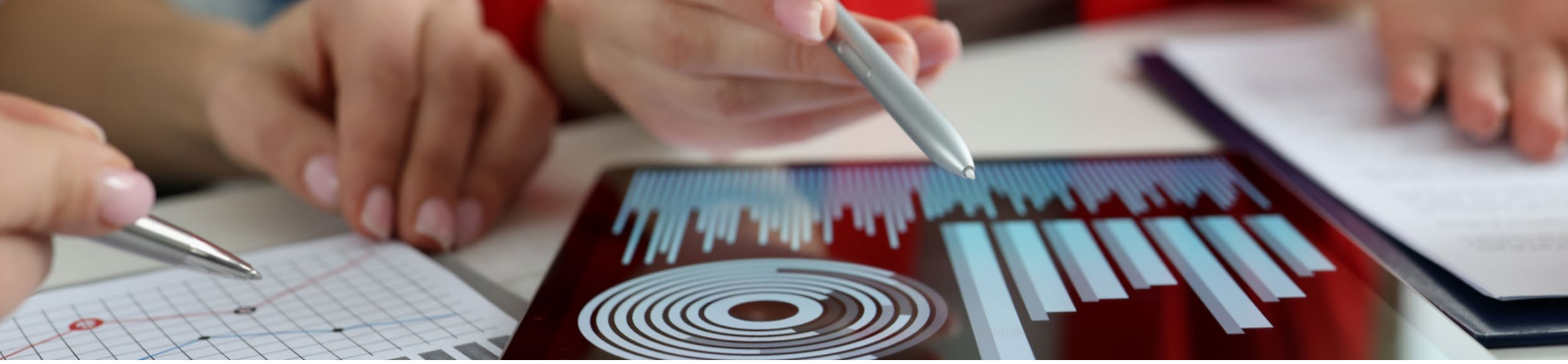
Outcomes and impact

The module outcomes include knowledge enhancement and the development of research and critical thinking skills. The course covers corporate entrepreneurship, innovation, scenario planning and Forum strategic intelligence maps, providing a solid foundation in these areas. In the long term, learners will have the ability to develop insights into disruptive innovation, scenario planning and options-based thinking, aiding them in making well-informed decisions in uncertain situations.

FIGURE 9 **Knowledge feed, food security**



Source: World Economic Forum



CASE STUDY 6

Business

PESTLE analysis and market intelligence

Summary

Curator and institution: Alberto Gamez, Universidad Panamericana, Campus GDL, Mexico

Subject(s): International market intelligence

Relevant SI feature: Country transformation maps

Learner level: Undergraduate programme in international business

Time allotment: Two sessions of 1.5 hours

Assessment: Interim assessment presentation of 3-5 minutes.

Context: In previous sessions, students were taught several tools such as a political, economic, sociological, technological, legal and environmental (PESTLE) analysis, a strengths, weaknesses, opportunities, and threats (SWOT) analysis, and Porter's five forces analysis in classroom activities or via flipped classroom methods. The project interim assessment presentation will help support students in their summative assessment, which combines their presentation insights and other research in a market intelligence final paper for a specific product.

Learning objective

Learners applied their knowledge of international market features through a PESTLE analysis and conducted a benchmarking analysis to enable students to assess the feasibility of exporting a product to a given international market.

Learning activities and procedures

In this learning activity, the professor reviewed a finished PESTLE analysis to reinforce previous theoretical knowledge and then introduced the SI Platform by demonstrating its functionality with an example country map. The class was then divided into groups of three or four and assigned a product made in Mexico with export potential and three markets to assess using the PESTLE analysis. Students used the SI tool to gather ideas for each variable within the analysis, and the professor supervised their progress by asking specific questions and/or requesting proof of their investigation efforts. Once the activity ended, the groups discussed which market offered the most feasibility and justified their selection to connect their results to their understanding of the analysis tool and their learning outcomes. Students then shared their results with the class and explained their difficulties obtaining information and how the SI tool helped them. The professor asked the group to identify three relevant outcomes from the activity to promote metacognition and reinforce the concept's usefulness in business analysis.

Outcomes and impact

The short-term outcomes of the lesson were that learners gained knowledge about different analytical and digital tools to support assessing product exports in international markets. In the long term, students benefit from a skill set that enables them to make informed decisions and develop strategies to adapt to changing market conditions, reduce risk and improve their competitiveness. By understanding the market as a complex system that involves political, economic, social, technological, legal and environmental factors, they learn to identify opportunities and threats and respond accordingly. This can help them better position their brand, set achievable growth targets and increase productivity. Additionally, it can help them assess the validity of their existing products and services and identify areas for improvement or expansion, as well as define new product development opportunities.

"Students benefit from a skill set that enables them to make informed decisions and develop strategies to adapt to changing market conditions, reduce risk and improve their competitiveness.

CASE STUDY 7

Career development

Developing a future-proof career

Summary

Curator and institution: Jason Reagin, Chadwick International School (IB schools)

Subject(s): Career planning, future career-ready skills

Relevant SI feature: Four transformation maps: Digital Identity, Fourth Industrial Revolution, Future of Work, and SDG 8: Decent Work and Economic Growth.

Learner level: Second-level career programme students

Time allotment: 4-6 hours

Assessment: Formative assessment – project, essay or presentation

Context: Students in IB schools use approaches to learning (ATL) skills throughout their time in IB schools. There is some form of ATL in each of the four IB programmes. ATL skills are basically any skills that students need to develop to be successful. This can vary from communication and collaboration skills to creativity and innovation skills.

Learning objective

Learners will be able to use inquiry-based learning, act and reflect on their exploratory experience to identify and predict the essential career-ready skills that will be relevant to their future careers.

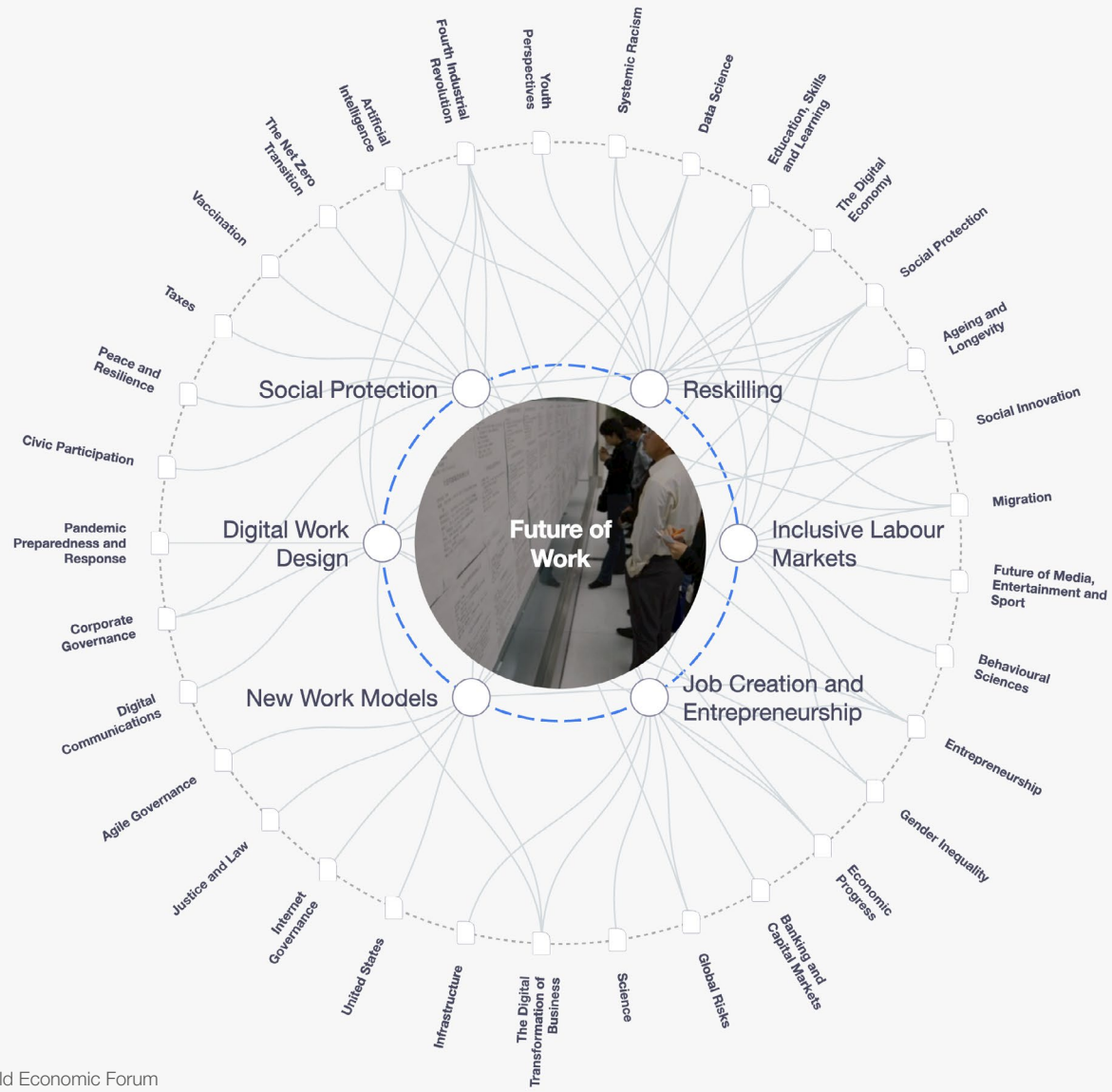
Learning activities and procedures

In this learning activity, the educator should begin by presenting students with a set of inquiry questions for them to ask themselves while working through the project, like "How are my future career opportunities shaped by current events?" The educator would then provide four pre-selected topics from the strategic intelligence transformation repertoire as a starting point for the learners. These topics include digital identity, the fourth industrial revolution, workforce and employment, and SDG 8. This helps students become familiar with the transformation map tool and explore the research question provided. The lesson should end with a reflective component for each project, where students reflect on how they used the tool in their research, make predictions about potential future industries based on reviewing the key and related topics, and, more specifically, what skills they should build to be career-ready in the future.

Outcomes and impact

This lesson builds skills in inquiry-based learning through the use of the strategic intelligence transformation map. It helps second-level career programme students identify and predict the essential skills relevant to their future careers. By encouraging critical thinking and research skills, students become more prepared and competitive in the job market, adapt to new challenges and make informed decisions about their education and career paths. The short-term outcomes are the development of research and critical thinking skills, while the long-term impacts are increased career readiness and adaptability in a dynamic job market. The reflective component of the lesson will encourage students to think about how to apply what they have learned to their own career planning and development.

FIGURE 10 | **Future of work transformation map**



Source: World Economic Forum

CASE STUDY 8

Social studies

Unpacking Puerto Rico's political status: crafting an argumentative essay

Summary

Curator and institution: Wendy Youngblood, EdD, Shepaug Valley School, Connecticut, USA

Subject(s): African American/Black and Puerto Rican/Latino Studies

Relevant SI feature: Transformation maps and Strategic Intelligence Premium feature: "Create Map"

Learner level: High school, grades 11-12

Time allotment: Two weeks, 1.5 hours/day

Assessment: Summative essay answering "What should the status of Puerto Rico be?"

Context: African American and Latino Studies is a year-long class, and this is one unit in the second semester of the class. Students have had instruction in informative and argumentative essay writing and have also taken classes in Western Studies, American Studies and Modern World History.

Learning objective

Students will be able to analyse the complex issue of Puerto Rico's political status and develop a well-supported argument by creating an essay map using the Forum's transformation map tool. Through this process, students explore various political, economic and social issues relevant to Puerto Rico's status and develop a claim based on their analysis.

Learning activities and procedures

Students are tasked with researching and formulating a stance on Puerto Rico's political status. This includes deciding whether it should become the 51st US state, gain full independence or retain its position as an unincorporated territory of the United States. This unit will guide students through a step-by-step process to explore Puerto Rico's economic, political and social landscape, as well as its global context. Students should start by accessing reliable sources provided by the teacher, such as the World Economic Forum's Latin America transformation map and related publications. Through research, students should identify various political, economic and social issues relevant to Puerto Rico's status.

Using the transformation map tool, they should create their own maps that illustrate the key issues and related topics they discovered. They should then turn their maps into an essay by:

1. Writing an introductory paragraph based on the "main topic" description section of their transformation maps

2. Identifying and explaining key issues as supporting paragraphs. To ensure a strong argument, students should also include five or six related topics as contributing forces supporting their claim.

Outcomes and impact

In the short and medium term, this lesson will help students develop research skills and understand Puerto Rico's economic, political and social landscape. This lesson fosters critical thinking and argumentative writing skills, which will provide learners with a strong foundation for engaging in informed decision-making and advocacy related to complex issues. Ultimately, these skills will enable students to deepen their understanding of the importance of global issues and the role of research and analysis in understanding complex, interconnected problems.

FIGURE 11 **"Create Map" feature, Strategic Intelligence**

Source: Strategic Intelligence, World Economic Forum

4 Looking to the future

The use of generative AI in education has the potential to both hinder and enhance the development of critical thinking, analytical, and problem-solving skills.

4.1 What do you want to be when you grow up? Or not…

As seen in the "developing a future-proof career" case study, a systems thinking approach to developing skills, abilities, attitudes and values can contribute to building a future-ready workforce. Students of the 1990s were not prepared for the skills required of the post-1998 Google revolution. While predicting the creation of Google itself could not have been expected, a horizon scan could have better prepared students with the aptitudes necessary for moving from an industrial society to an information society.

A big change to be expected, according to Nishant Singh, Fulbright Scholar and Strategic Projects Coordinator at the Harvard Centre for International Development, USA, is that "students will no longer be asked what they want to **be** when they grow up, but rather what they want to **do** when they grow up". Teaching systems thinking in classrooms will empower students to develop skills to identify various leverage points in evolving societies where they can contribute meaningfully based on their strengths and passions. In doing so, they can grasp the broader influence their contributions may have within the extensive systems that encompass communities, societies and nations. A skills-first approach prioritizes ability over job history and academic certificates and is seen as an important tool in bringing in new talent, improving workplace equity and addressing job shortages. Many more people, who might not have come up through traditional pathways, will be able to access the workplace and greater opportunities, empowerment and economic equity.

4.2 The classes of tomorrow

Rahmin Bender-Salazar, Founder of Creativo and Assistant Professor at the University of Limerick, is developing a module called "Strategic Foresight and Systems Change (SFSC)", which reimagines traditional education. His class rejects the notion of preparing students for the known world but instead takes a more proactive approach and emphasizes envisioning and adapting to the potential future world. The course focuses on addressing "wicked problems" in the context of the UN SDGs using future thinking and system change tools like SI and others. Learners collaborate in a non-traditional studio-based environment, emphasizing intervention before solutions and working towards sustainable, equitable and inclusive futures. By the end of the course, learners are expected to understand complex challenges from a systems perspective and apply methods from systems dynamics, strategic foresight and design science to frame interventions and change strategies.

This module, fuelled by systems thinking, fosters imagination and curiosity, an aptitude recognized in the Education 4.0 Taxonomy. As individuals gain insights into the complexities of a system, they become more open to reevaluating their assumptions and considering novel approaches. This mindset encourages a culture of curiosity and the development of imaginative, innovative and effective strategies to address complex problems. Modules such as this, which are both disruptive and innovative, can serve as a model to education and policy institutions looking to update practices in the classroom and future-proof their curricula and teaching methodologies.

4.3 The role of generative AI

Traditionally, people have turned to higher education to acquire the knowledge and skills to succeed in the world as it exists. The challenge today is that, because of generative AI, the world will exist in a radically different way tomorrow and again the day after. Therefore, educating people for reinvention in this fluid context will require the reinvention of higher education itself.

In the context of systems thinking, the use of generative AI in education can be both reductionist or holistic, contingent on how students and educators incorporate these tools into the learning processes. Recognizing this distinction is vital, as over-reliance on generative AI might hinder the development of critical thinking, analytical and problem-solving skills. For example, when students use generative AI to assist with specific tasks, such as generating ideas, solving problems or creating content, the AI model reduces complexity, leaving the learner unaware of the multiple components at play.

Conversely, generative AI has the potential to address complex problems and transform education in multiple positive ways. AI can adapt content and methods to individual needs, personalizing learning and therefore promoting knowledge retention and understanding. It can create high-quality content for all, enhancing global access to education and addressing inequities in socioeconomic backgrounds.[13] AI tutors can offer real-time feedback and guidance, supporting learning within the broader context of interconnected knowledge domains. It can also help analyse complex systems through simulation, enabling learners and educators to explore scenarios and comprehend interdependencies and dynamics.

AI's reinvention of the workplace will be ongoing, too. People will have to reinvent their roles to keep ahead of these evolving technologies, make the best use of their strengths, accommodate their weaknesses and work with them productively. It will be necessary to upskill and reskill on a continuous basis.

However, to employ generative AI ethically and sustainably in education, users should grasp how these complex models function, especially with regards to the impact of different approaches on learning within a systems thinking framework. Emphasizing the importance of a hybrid intelligence model, where generative AI advantages merge with human expertise and insights, can help provide enriching learning experiences.

"People will have to reinvent their roles to keep ahead of these evolving technologies, make the best use of their strengths, accommodate their weaknesses and work with them productively.

Conclusion and recommendations

Integrating systems thinking into education prepares a future-ready generation with skill sets that equip them to tackle the challenges of a rapidly changing world. Based on the case studies and research presented in this paper, it is recommended that teachers and/or learning institutions do the following:

- Build educators' capacity in systems thinking tools and innovative lesson and curricular planning through workshops, training programmes and knowledge exchange loops. These capacity-building efforts could focus on areas like using hybrid intelligence models that merge AI with human expertise.
- Develop and expand college credit or micro-credentials to train young and adult learners to understand and use systems thinking methodologies and tools for developing their skills and jobs.
- Initiate a community of practice and knowledge networks among educators and learners at the regional or city level to scale successful use cases.
- Provide media literacy training programmes for educators, embed cross-curricular media literacy skills using systems thinking frameworks and encourage a hybrid model where media literacy skills are augmented by technology rather than replaced with technology.
- Shift teaching and training from solution-led to problem-led learning methodologies to encourage critical reflection by emphasizing the need to identify underlying problems before seeking solutions. This approach leads to better decision-making, more effective resource allocation, and increased creativity and innovation.
- Adopt a dynamic approach to learning by restructuring curricula to integrate interdisciplinary projects or discussions and offer courses that emphasize connections between disciplines instead of promoting traditional, siloed subjects.
- Place less focus on standardized testing to measure student abilities and instead develop practical assessments that measure students' ability to apply their knowledge and skills in real-world situations through systems thinking methodologies.
- Equip learners with foresight and scenario-planning skills to explore potential career paths and identify the skills needed to succeed in those careers. This gives students the agency to plan for their futures and stay ahead of emerging trends in the job market.

Systems tend to resist modifications in a manner akin to how the human immune system repels foreign substances.[14] Essentially, when a system undergoes a change, it consistently strives to return to its original state. This inherent behaviour of systems clarifies why many innovations and interventions fail to become widespread beyond their initial pilot locations. To achieve any substantial impact, it is necessary to account for the numerous counteracting forces that will work to restore the system to its former state. Essentially, systems thinking methodologies should be used to integrate systems thinking in the classroom.

Implementing the recommendations, suited and modified per context, can reignite imagination, creativity and innovation in the classroom, making learning enjoyable and fulfilling for students.

Appendix

A1 Key definitions

Key word	Definition
Complexity	The difficulty involved in understanding, analysing or describing a system, process or phenomenon. Complexity can arise from various sources, such as the number of components or variables involved, the interconnectivity between those components or variables, the dynamic nature of the system, the degree of uncertainty or randomness in the system and the level of abstraction or detail required to capture its essential features.
Systems thinking	An approach to problem-solving that emphasizes understanding the relationships and interactions among the components of a system rather than focusing on the individual components in isolation. By looking at a system as a whole and examining how the different parts work together, systems thinking can help individuals better understand complex systems.
SI Platform	A World Economic Forum platform that provides interactive digital systems thinking tools for exploring insights and analysis on global trends and issues. It is designed to help businesses, governments and other organizations make informed decisions about the future.
Infodemic	The flood of misinformation, conspiracy ideologies, and fearmongering that comes as a result of uncertainty.[15]
Leverage points	Leverage points are strategic places within a system where a small change or intervention can produce significant and lasting effects on the entire system's behaviour. They are the critical points that, when adjusted or modified, can lead to substantial shifts in the overall performance or structure of the system. In the context of complex systems, like social, economic or environmental systems, leverage points can help identify effective ways to intervene and create positive change.
Feedback loops	Closed chains of cause-and-effect relationships that involve stocks (accumulations or resources), flows (rates of change) and rules or actions that determine how the system responds to changes in stock levels. Reinforcing loops amplify change, while balancing loops work to counteract or resist change, thereby promoting stability within the system.[16]

Instructional Plan

Name of Lesson/Unit

Curated by: _____

(Name, Institution)

Summary

1. **Subject(s):** *(Language Arts, History, Science, Manufacturing, etc)*
2. **Topic or Unit of Study:** *(Global Water Crisis, Safe Internet Behavior, etc)*
3. **Relevant SI Feature:** *(Circular Economy Transformation Map, Modern Slavery EarthTime Story, etc)*
4. **Grade/Level:** *(Primary Students, Master's Class, Newly Onboarded Employee, etc)*
5. **Key Skills Being Developed:** *(News Literacy, Future Planning, Critical Thinking, etc)*
6. **Time Allotment:** *(60 Minutes, 3-Day Training Module, 30-day unit, etc)*

Learning Plan

Objective

(*Learners will be able to...*)

> World Economic Forum tip: A good objective should provide a measurable and observable behavior, and describe the degree in which the learner will perform

Context & Purpose

(*100 Words or less*)

Method/Procedure

- Opening Activity
- (Teacher Lecture, etc)
- (Break-Out Groups, etc)
- Closing Activity (*Could be an assessment, an exit slip, etc)*

> WEF Tip: For opening, try to "hook" the learner - engage in an activity to spark curiosity or interest

Materials & Resources

(Internet, Computer, Video Clip, Worksheet, Poster Board...)

Assessment(s)

Formative: (Graded or ungraded assessment of a concept, sometimes used as a benchmark assignment)
Interim: (Graded assessment on several concepts within unit)
Summative: (Graded assessment of unit mastery through final essay, project, test, etc.)

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Endnotes

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