



DESIGNING A THEORY OF CHANGE IN LESS THAN AN HOUR ENABLING RAPID, COLLABORATIVE DEVELOPMENT WITH A CONTEXT-INDEPENDENT CARD-SET

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ABSTRACT

The increasing focus on societal impact in academia calls for effective tools that can help to address grand challenges through interdisciplinary and transdisciplinary collaboration. While Theories of Change are widely used to plan and evaluate the societal impact of research projects, applying this approach often proves to be time-consuming and resource-intensive, especially in the academic context with rigid structures and competing priorities.

To address some of these challenges, the Evaluating Societal Impact team at Erasmus University Rotterdam (the Netherlands) applied user-centred design to develop a card game that supports the development of Theories of Change in a more accessible, efficient and engaging way. The cards can be used in different contexts and without prior training or knowledge to understand envisioned change processes, significantly reducing the time needed to create a first Theory of Change and making the process fun through gamification.

Trialled with a range of partners in academia, government organisations and municipalities, it has proven to be effective in fostering co-creation, overcoming power imbalances in a group setting and helping to accelerate the development of a shared vision. The tool is gaining widespread interest in

the Netherlands and internationally as it offers a context-independent, time-efficient and user-friendly approach to embedding societal impact practices within academia. By providing a concise and engaging experience, the game is used to introduce diverse groups to Theories of Change, fostering interest and engagement with the method. This journal contribution describes our approach and experiences in developing and using the card game. We discuss the possibilities and limitations of the Journey of Progress card set with the aim of inspiring future comparable approaches and solutions in policy evaluation.

Keywords: Theory of Change, user-centred design, card game, project development, impact evaluation, impact planning, impact strategy

1. INTRODUCTION

Academic organizations play a pivotal role in shaping society through becoming more responsive to societal challenges. Researchers are encouraged to address and demonstrate their contribution to solving large societal challenges (de Jong et al., 2022; Global University Network for Innovation, 2017; Perkmann et al., 2020;). Around 7.500 grant applications are submitted to the Dutch Research Council (NWO, 2024) and 35.000 to the European Commission (European Research Council, 2024) annually, which often include societal impact as a cornerstone requiring academics to carry out impact planning and evaluation activities.

Rather than focusing exclusively on research excellence rooted in scientific and commercial impact, literature suggests that focusing on societal impact may benefit from a process-oriented approach based on shared learning and reflection (see for instance Spaapen & Van Drooge (2011) and D'Este et al., (2018)). However, the more complex a project becomes, the harder it is to bring people together and ensure shared ownership and responsibility. Different viewpoints and conflicting priorities need to be managed to ensure that everyone can effectively contribute to a common goal (see Cundill et al., 2018; Kalinauskaite et al., 2021). The endless meetings and dry, bureaucratic processes that are supposed to guarantee synergy can make people lose motivation (Snooks et al., 2023). Facilitating impact activities and collaborating with partners from other disciplines (interdisciplinarity) and beyond academia (transdisciplinarity) calls for alternative methods and practices in many organisations (see D'Este et al., 2018; Perkmann et al., 2020).

In this praxis-oriented article, we demonstrate how we are applying user-centred design to the context of impact evaluation in the academic context. By developing tools that facilitate engaging work processes, the uptake of evaluation methods can be promoted, as we see in an example of a context-independent and hands-on card game based on the Theory of Change method.

2. INTEGRATING THEORETICAL AND PRACTICAL PERSPECTIVES

Many frameworks and methods have been proposed that provide the theoretical background to plan, enact, evaluate and demonstrate one's positive contribution to society (see Smit and Hessels, (2021) for a review of such frameworks e.g., SIAMPI (Spaapen & van Drooge, 2011), ASPIRA (Joly et al., 2015) or see Design for Social Innovation, Transition Design (Irwin et al., 2020)). However, despite the growing demand, the use of theoretical methods across disciplines seems to fall behind their potential (de Jong et al., forthcoming). Although many scientists are motivated to solve societal problems, applying impact evaluation methods can be difficult and time-consuming. Many obstacles, such as financial and time constraints, competing priorities and the lack of available resources (Hughes et al., 2016) make these activities difficult in a context riddled with rigid structures and evaluation cycles.

2.1 THEORIES OF CHANGE IN HIGHER EDUCATION

Within the context of research projects, we see Theories of Change (ToC) (e.g. Belcher & Claus, 2020) as a dominating formative evaluation method. It is widely used in evaluations (Mayne, 2017) and in research proposals, like the Impact Pathway in Horizon Europe application forms (European Commission, 2024). Many public research organisations, funding organisations and consultancy firms in the higher education and research sector as well as independent trainers and facilitators use ToC. At Erasmus University Rotterdam (the Netherlands), we have also seen increased interest towards applying this method. Members of different organisational units and initiatives are looking to develop their ToC in the context of strategy formulation, grant applications or even general project planning.

2.2 EXPERIENCES FROM THE FIELD

A common approach to develop ToCs includes a workshop setting where participants 'build' their ToC; a shared narrative of how and why an intervention is expected to lead to a desired change (Belcher et al., 2020). While there are different ways to approach the development of a ToC (see Mason & Barnes, 2007) we have chosen to do so by means of a joint back-casting exercise, that links a sequence of outcomes and outputs back to activities and inputs.

Many challenges arise when developing a ToC in a group setting. Our experience has shown that the workshops were perceived to take too much time and effort and felt as an additional chore to the research teams, leading to low turnout numbers. The terminology confused participants as terms such as 'theory' and 'assumptions', have a different meaning within the context of the ToC method and the everyday working lives of researchers. The words 'output' and 'outcome' are often a cause for confusion for those who are not versed in impact theory. Additionally, senior researchers tended to dominate discussions, resulting in lower support for the resulting ToC from junior researchers. While these observations are based on the authors' context, these issues seem to be a shared experience across higher education institutions as we have found during peer-learning and networking conversations with many professionals in the field, for instance during a panel at the conference of the European Forum for Studies of Policies for Research and Innovation in 2023.

Thus, the ToC framework is seen as complex, confusing with its jargon and the development requires excessive time investment. This can lead to misalignment, gaps in stakeholder relations, inefficient use of resources or even failing to attract funding. Alternatives to ToC workshops, such as templates and dedicated software's (e.g. TOCO (n.d) or Changeroo (n.d.)) are available yet many of these tools pose similar or additional challenges such as relatively high costs or a steep learning curve which can have similar demotivating effects on potential users. How can we engage people more fruitfully, and align their limited availability with the high demands of the ToC approach to enable its benefits?

2.3 USER-CENTRED DESIGN WITHIN ORGANISATIONS

Design thinking is making its way into public policy due to its ability to approach 'wicked problems' (such as complex societal questions and challenges) from a creative perspective (Van Buuren et al., 2019). Public organisations such as higher education institutes with a focus on societal

relevance can benefit from applying designedly approaches to be more responsive to emerging challenges (Muñoz et al., 2023; Vaugh et al., 2020). According to Herbert Simon (2019), design thinking is a process that leads to the creation of any type of intervention that changes existing situations into preferred ones. The particular strand of design known as human-centred design puts people's wants and needs at the centre and aims to fully understand the problems and experiences of those involved in a particular context (van der Bijl-Brouwer & Dorst, 2017). With an emphasis on the users and usability, we can enable the development of new tools and impact evaluation processes that align with people's needs, making these activities more convenient for academics. Taking this approach one step further, gamification (applying elements of game design in a non-game context (Deterding et al., 2011)) has the potential to enhance engagement with diverse tasks and processes (Gupta & Gomathi, 2017).

Several initiatives explore the application of design practices and principles at Erasmus University Rotterdam (EUR), an organisation that does not traditionally offer a degree in design sciences. Design methods are applied in teaching and research, as well as in the operation of the university. Within the Evaluating Societal Impact (ESI) project the role of user-centred design was explored in developing tools that enable the EUR community to maximize their (positive) societal impact. The project ran from 2020 to 2024 within the Strategy Office.

3. APPROACH

Organizations have an important role and the power to shape the impact practices of their community (de Jong & Balaban, 2022). The ESI project at EUR proposed that hands-on tools and gamified solutions can facilitate impact activities within large traditional organizations and contribute to organizational change. By incorporating usability principles and creating new and alternative work processes, the project was hoping to increase the uptake of impact-related methods such as Theory of Change.

3.1 JOURNEY OF PROGRESS – A CARD GAME FOR RAPID TOC DEVELOPMENT.

The ESI team at EUR has taken a user-centred approach to translating the ToC method into a hands on tool for the context of inter- and transdisciplinary projects. 'Journey of Progress' (a card game based on the ToC method, see

Figure 1), addresses the challenges of transformative collaborations and the traditional workshops that we have encountered within our practice. The development of the card game followed the design thinking approach, incorporating frequent iterations based on the feedback and testing with experienced workshop facilitators and future users at the university. The aim of the tool is to empower and enable projects, initiatives and various organisational units to develop a Theory of Change autonomously, discussing their impact and desirable long-term changes (Evaluating Societal Impact, 2024b).



Figure 1: Photo of the card game Journey of Progress, showcasing the content of the game

Using the Journey of Progress card set, members of a group can take a first step towards formalising their understanding on how and why change is expected to occur within their specific context (Evaluating Societal Impact, 2024b). The card game is designed to streamline the ToC process, allowing groups of two to six people to develop an initial ToC in just 40 minutes. Through backcasting and collaborative discussions about a shared goal and the different ways to reach it, participants construct pathways linking their desired future to the specific actions necessary for change.

The game provides a structure for engagement with short, to the point instructions that guide 'players' step-by-step through the construction of their ToC. In the first phase, each player receives six cards to start with, deliberately limiting the number of cards to highlight the resource constraints of real-life practice. Everyone starts with one blank card for a vision statement and three 'change cards', which are outcomes that support their vision. One 'how card' is used to describe an activity to set the desired changes in motion, and

one 'what card' to write down what is the output of this activity. In the first ten minutes, each player works out their individual contribution by backcasting (See Figure 2). Simple, jargon-free questions and examples on the back of the cards help players articulate their vision for the future, envision future outcomes and identify necessary actions. For example, the 'how card' prompts the players by asking *"What do you need/can you do to realise the required change?"*. The back of the card reads: *"A resource, an action, or an intervention within your control that can contribute to change."* with the example *"Making employees aware of current developments within the organisation."* to help them envision potential activities.

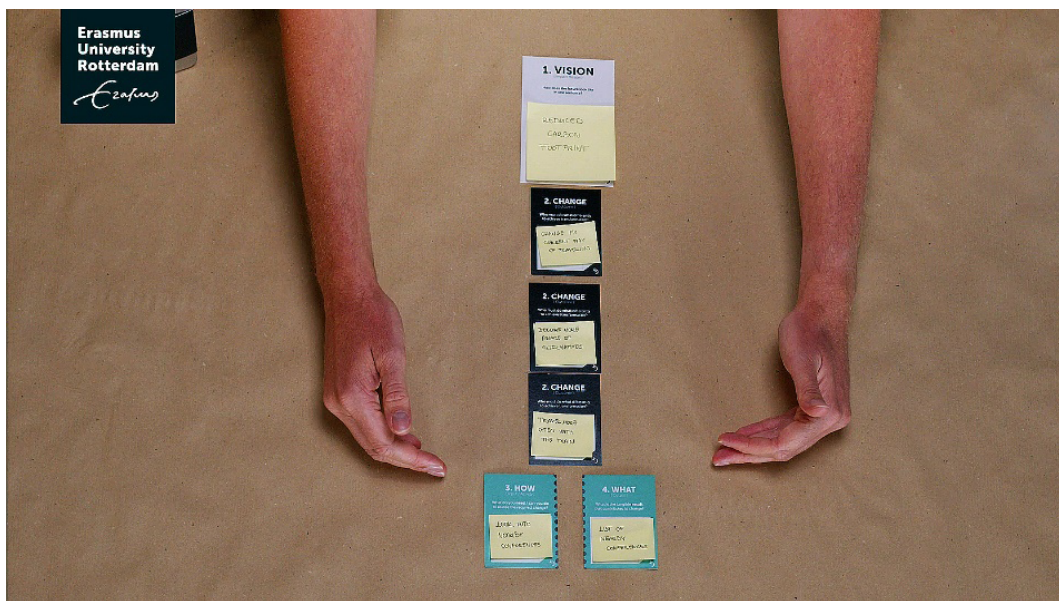


Figure 2: Still from the video *'How to play Journey of Progress'* (Evaluating Societal Impact, 2024c) showing an individually built pathway after the first phase.

In the second phase, players review everyone's input and integrate different perspectives through a structured conversation. By systematically reviewing the different cards (first reading out all vision cards, then all change cards, etc.) players build on each other's input and merge their contributions, discharging cards that do not fit the joint ToC. The structure of individual work and group discussion encourages contributions from everyone around the table, as ideas are first made explicit on the cards. This approach is designed to avoid the phenomenon of groupthink, where everyone accepts the ideas of the first speaker without ownership of the discussion and its results. With carefully determined time limits and using sticky notes on the cards, creating the first draft of a ToC becomes a time-bound yet productive and flexible activity.

The standard game tackles the basics of autonomously building a ToC including a vision statement, different outcomes and outputs, inputs, and activities. Accompanying short videos explaining the basics of the ToC

approach and the use of the card game support the players. Additionally, a 'how-to guide' with instructions and tips is available for project leaders and facilitators ('game masters'). While the game does not explicitly go into the details of power relations, trade-offs and other contextual issues relevant to the development of a ToC, those wanting to refine the results of the standard 40-minute session can do so by extending the duration of the session. Further extensions are envisioned, such as cards for defining stakeholders or bringing specific assumptions to the surface. Another extension of the game helps users to focus on developing specific indicators for monitoring and assessing their planned changes.

The card game can be used in various contexts to understand envisioned change processes. While the primary target audience are people with limited to no experience in impact evaluation, the cards can be used by experts and facilitators of impact evaluation to introduce and apply the ToC approach with various target audiences in a short, effective way. The card game, just as other ToC tools, can serve as a basis for developing relevant indicators for measuring societal impact of research projects, organisational strategies, as well as social innovation within transformative R&I policies.

4. RECEPTION AND FEEDBACK

The tool has been extensively trialled and tested across multiple types of use cases. The writers have used Journey of Progress in different projects, with a variety of stakeholders (Figure 3). Examples include various academic and administrative organisational units within the university, municipalities such as Amsterdam, the Hague and Rotterdam, and governments and government agencies, such as the Dutch Ministry of Science and the Dutch Research Council.



Figure 3: Impressions of the Journey of Progress card game in use.

Feedback has been positive and the demand for the card game indicates a wide interest. By the end of April 2025, over 290 boxes of Journey of Progress have been distributed to more than 105 organisations in 20 countries (see Table 1 for an overview). Users include the Swiss National Science Foundation, Poland's National Science Centre, the Italian Presidency of Ministries and Germany's Standing Scientific Commission on Education Policy, using this tool for organisational change management and discussions on societal impact. We see use cases ranging from project level applications to departmental and organisational level discussions on strategy, planning and evaluation. However, we lack detailed data on how all these users apply the tool in terms of their level of facilitation and the use of supporting materials. Evidence of the tool's effectiveness is primarily drawn from qualitative feedback based on more than 20 sessions by ESI team members, where we experimented with different levels of facilitation of the players.

People experience the card game as *"enjoyable"* and recommend the game to others in their network. One player described the session as *"a good combination of individual contribution and collective discussion"* and the quick format seems to be appreciated by users. *"The best part was that it never felt like a compromise. The co-creation process left us more energized than at the start."*, as commented by a member of a cross-European educational network. The tool has been highly sought after, with colleagues from higher education institutions and public research organizations wishing to purchase the tool, as well as requesting workshops using the card game, which indicates its perceived usefulness by users.

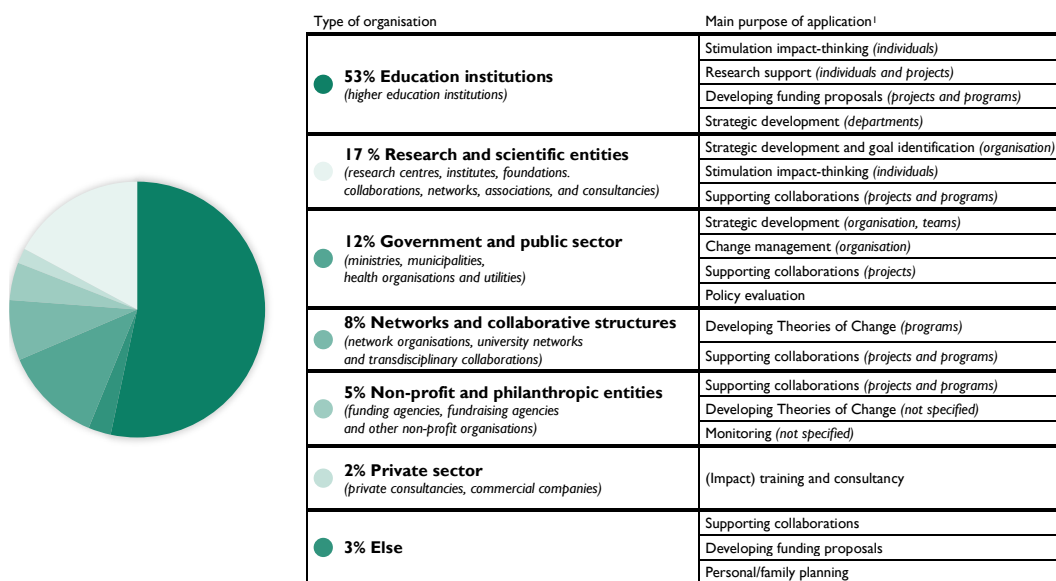


Table 1: Overview of the type of organisations and their main purpose of using the game based on orders and workshops given to 105 organisations between May 2024 and 2025.

5. DISCUSSION

Reflecting on the first-hand experiences of our team as well as early adapters of the game, we foresee that user-centred tools such as the Journey of Progress card game have potential in the impact evaluation space. The feedback of players as well as facilitators confirms our initial observations that the 'traditional' ToC workshops, across different providers, are experienced as 'dry' and 'boring' as opposed to a gamified approach that accounts for the user's needs. Our experiences indicate positive outcomes in terms of quickly developing a shared vision with different groups and in complex environments, overcoming power differences between participants and providing immediate value to researchers and other users with quick results, as well as to ToC facilitators by increasing participation and engagement. The card game can be an effective way to collect required input for funding applications or systemically integrate impact thinking in an organisation.

When compared to other tools the Journey of Progress card set presents some practical benefits including accessibility, time efficiency, adaptability and cost efficiency. The game can be used autonomously and does not require users to have previous knowledge of the ToC method which may support broader uptake, though this simplicity might limit the depth of discussions and reflection typically expected in ToC development. The game is context independent and suitable for a wide range of domains, unlike fixed-context alternatives, (e.g. CESVI's (2020) card set or the Theory of Change Game by Tribaldos and Schneider (2021)). Journey of Progress also allows for easy iterations, as opposed to fixed formats (such as the CUBISS worksheet (Jans et al., 2019)). Reducing the time requirement can potentially enhance participant's motivation while also reducing costs, as the hourly fees for facilitators and participants can rapidly add up during traditional, multi-hour workshops. These observations are based on our self-assessment of the strengths and limitations of JoP compared to these other approaches and we have not conducted an in-depth comparison with users.

5.1 LESSONS LEARNED AND LIMITATIONS

Translating theoretical methods into hands on tools for impact evaluation brings its unique challenges. The ESI project has developed multiple tools for enabling impact, for different organisational levels and phases of impact-related activities (Evaluating Societal Impact, 2024a). The development of such tools using user-centred design requires engagement from the community

(‘end-users’) to ensure their usefulness. Stimulating co-creation from within while avoiding research fatigue of the target audience and negotiating one’s span of control (Should we ensure the use of such tools?) can be a challenge. Drawing upon the international community of impact and policy evaluation has been useful to gather similar experiences, inspiration and feedback.

Both in regular workshop settings as well as when using the Journey of Progress card game, there are many factors influencing the quality of the session results. We acknowledge that using a card game in just 40 minutes, especially without an experienced facilitator, might not produce the same depth or quality results as for example a two-day long facilitated workshop, where each contribution is carefully reviewed. The real merit of the game is giving a ‘taste’ in a concise, interactive way so that research groups and initiatives are more likely to engage with the ToC approach. Players are advised to photograph and revisit their ToC after a game session and to extend and build upon it – just as with a ToC constructed in another ways.

We found the total autonomy of players being a difficult goal to reach. We understand total autonomy in this context as a group of non-experts organising themselves and applying a tool without external guidance (an expert facilitator). On the one hand, workshop participants expect guidance when an external party is present, as they are used to have so in the context of a workshop. Usually someone takes charge to lead the group at a table, but we encourage assigning a ‘game master’ who’s explicit role is to keep an eye on the time and the scope of the discussion. On the other hand, we see improved results when participants are introduced to the approach through the accompanying videos - or better, through a presentation where they could ask questions about the method. A session also benefits from a joint reflection on the results, therefore, as of current we do not support fully autonomous approaches and advise the presence of a facilitator or an experienced ‘game master’.

5.2 NEXT STEPS

The game was developed as part of a strategic project, with no additional funding allocated for further validation. At present we cannot say that the use of Journey of Progress would lead to more successful or higher quality grant applications, better evaluation practices, let alone societal impact. A systemic comparison across the effect of different methods of constructing a ToC is an interesting future venue. Furthermore, we acknowledge that using the above-described card game might not offer an advantage in every single setting and

the game's usefulness in a much broader context (such as policy evaluation) could be a potential future research topic.

Journey of Progress has the potential to be expanded and scaled to different applications. The above-mentioned extensions (focusing on stakeholders, assumptions or indicators), while they might extend the timeframe of a session, could be beneficial in many settings. Moreover, in situations in which all partners cannot be physically present (which is often a case with inter- and transdisciplinary, cross-border projects and initiatives), users can benefit from a digital version of the game. While the physicality of the exercise allows for a more profound experience and fun interaction, we have successfully trialled Journey of Progress in an online collaborative environment (Miro). Furthermore, the tool can be also supported with interviews that allow for the perspectives of those who cannot be in the (virtual) room: they still get represented in the design of the shared ToC.

6. CONCLUSION

Theory of Change (ToC) workshops remain a popular method of formative impact evaluation of research projects, with many challenges that can hinder the application of this approach. We have seen that observing the issues that people face during ToC workshops and providing solutions for those issues can result in novel solutions that not only pique people's interest but contribute to the use of methods that are otherwise seen as dull or too theoretical. The card set described in this article allows for a more interesting, structured and time efficient approach to developing a ToC. The results have been positive as reported by multiple teams who have used the game to get acquainted with the method or to develop their ToC, positioning this solution as a valuable asset in a broader set of tools and activities related to impact evaluation. In this praxis-oriented journal contribution we describe our experiences to invite and inspire academics and practitioners of impact- and policy evaluation to consider alternative methods, such as the use of the Journey of Progress card game in their work that can allow members of a wide range of projects and initiatives to talk about complex processes in a concise, effective way.

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