Bringing Mindset Shift with Gamification

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ABSTRACT

CONTEXT

While scientific and technological advances have made the world more convenient, it is also changing rapidly. Our society has entered the 'VUCA' era of volatility, uncertainty, complexity and even ambiguity. Climate change, extreme poverty, violent conflicts, human rights issues and many other challenges are occurring not only locally but also globally. In order to cope with these increasingly complex environments and challenges, we are more and more required to recognise and adapt to our own role as part of this dynamic system. Engineers, who already have specialist knowledge and skills, are no exception. However, opportunities to become aware of this connection and grow our mindsets in everyday life are still limited.

PURPOSE OR GOAL

In our study, we evaluated how gamification could provide such opportunities for people to first experience the connections, recognise their role in the global picture and then to continue to grow by welcoming the mindset shifts.

APPROACH OR METHODOLOGY/METHODS

An online simulation game, Possible World – Online Simulation, was introduced to experience the process of creating a world together. The several kinds of activities encountered during the gameplay were logged and quantitatively analysed to understand what happened within the game-play process. In terms of qualitative analysis of the players' experience of the simulation, surveys were carried out.

ACTUAL OR ANTICIPATED OUTCOMES

Deeper understanding of the connections in the world and the importance of the role that each has as a stakeholder of the world was realised through the gameplay. The game experience helped people build the connections between their mindsets and actions. This understanding catalysed the mindset shift.

CONCLUSIONS/RECOMMENDATIONS/SUMMARY

The gameplay experience, simulating how we act when creating a world together, helps people to comprehensively understand the connections of the world as well as the connections between their mindset and actions. Future research could examine larger cohorts to see if there is a tendency to be discipline-dependent.

KEYWORDS

Mindset shift, transformation, gamification.

Introduction

Based on a live, online simulation game session called Possible World, this paper evaluates how well gamification can provide an opportunity to first recognize one's role in a global perspective and then to affect a personal mindset shift. The evaluation proceeded by administering a questionnaire using a Likert scale approach (Jaaska et al., 2022; Joshi et al., 2015) during numerous sessions and using various data sets recorded during the game.

The sessions described above, were conducted in July 2023, included seven participants; four information technology professors and three information technology graduate students.

The contributions this paper brings are:

- Discussing the role of mindset shifts, including growth of inner development, in promoting sustainability and the SDGs

- Providing opportunities for professionals working in highly specialized fields to understand the significance of observing the inner development process from a broader perspective, not just from the perspective of their area of expertise.

- Presenting gamification opportunities to various fields that would benefit from further innovation in mindset shifts, including educational institutions and corporations.

The paper is structured as follows: The Background section discusses and reviews the current situations, mindsets, gamification and session designs of the Possible World - Online Simulation. In the section Possible World - Online Simulation, the history, characteristics and rules of the game are presented followed by Methodology, Results and Conclusions sections.

Background

The world has become more convenient with advances in science and technology. On the other hand, along with the progress of globalization accompanied by science and technology, the world is changing remarkably, and our society is becoming a 'VUCA' world with high volatility, uncertainty, complexity, and even ambiguity. Now that we have entered the VUCA era, various issues, such as climate change, declining birth rates, ageing populations, extreme poverty, intense conflict, and human rights issues, are experienced not only locally, but affect the entire world. The issues themselves are not considered to be separate entities, but rather dynamically interacting with each other.

SDGs and their challenges

Based on the idea that solving these challenges requires a global, comprehensive perspective and approach, and the appropriate cooperation of the international community, the Transforming our world: The 2030 Agenda for Sustainable Development (SDGs) was agreed upon by all UN member states at the 2015 UN Summit (UN General Assembly, 2015). While the SDGs are very powerful today, especially the 17 goals that summarize the entire set of activities gaining wide recognition, it is easy to fall into the traditional loop of trying to solve challenges individually.

To break out of this loop, realisations are growing about how essential it is to include a "change in individual consciousness," or mindset shift, that includes personal inner growth in every problem solving framework. As an example, the IDGs (Inner Development Goals) were proposed in 2021, and in light of the lack of progress on the SDGs, the IDGs attribute this to "a lack of inner capacity to deal with increasingly complex environments and challenges". The IDGs invite us to initiate shifts in our mindsets: that individual's inner growth is critical to bringing about global transformation.

Mindset shift for transformation in business, innovation, and leadership

"Your mindset is a set of beliefs that shape how you make sense of the world and yourself" (Cherry, 2022). Therefore, the mindset is deeply related to how we sense, think, feel and then

act; in other words, "mindsets matter" (Jankel, 2021). Jankel addresses that our mindset is our main driver and the only factor we have complete control of in this VUCA world.

The potential that mindset shift could transform business industry, innovation, and leadership has been discussed (e.g., Levy et al., 2007, Cohen, 2010, Kahane, 2007, Kania, et al. 2014) .

In terms of leadership, decision-making is one of the leadership tasks that naturally requires a choice between one; based on 'either/or' thinking. But Lewis and Smith suggest a shift in mindset to 'both/and' thinking; especially when dealing with tough problems creating a stream of dilemmas between conflicting pressures (Lewis and Smith, 2022). Problems are tough because they are complex and they don't usually get solved peacefully. But Kahane suggests a peaceful approach; simply shifting our minds to talking and listening with an open mind and an open heart.

Keller and Schaninger also indicate that making the shift both individually and institutionally, at the same time, is the key for the successful transformation in organizations (Keller & Schaninger, 2019).

Our mindsets can be updated when we learn new facts and hear someone's stories. Influential speakers can, of course, influence our beliefs. But how deeply will the effect reach and how long will the effect last?

Gamification - a powerful tool to bring mindset shifts.

To accomplish a level of mindset shift that is powerful enough to transform our beliefs, we proposed introducing gamification. Not only because it can create a powerful experience to influence our mindsets (Inchamnan & Chomsuan, 2020) but also that it helps us deal with real world problems (Oberprieler, 2017) and encourage users to support each other and work towards a global goal (Kahane, 2007). Fazey argues the usefulness of the personal experiences to develop better understanding of rather complex environmental systems.

In addition, having their own experience makes players feel motivated because they feel that they have a personal stake in the outcome. Through 'personal' experience a sense of 'ownership' emerges. Bartle indicates that experiential learning assists people to link their experiences to something they know from theory and previous experiences (Bartle, 2015).

Proactive and interactive learning has long been a focus of attention in the educational community, and gamification has gained attention as a way to induce this learning. Nemoto et al. (2014) have examined the impact of gamification on learning and demonstrated its potential. Regarding gamification, Terano and Koyama (2015) stated:

> It is a method for interpreting the world and designing new systems by viewing social and organizational actions and activities as games. This can be thought of as a method for companies and consumers to cooperate to create collective knowledge, as well as a method for building the value of co-creation platforms. This is an extension of the concept of Serious Game, which seeks to apply game concepts and methodologies to social problems, to the real world.

Koyama (2015) also explained that the learning process incorporating gamification has the following characteristics: ice breaking, which emphasizes the initial introduction to starting something; widening the frontiers because understanding about the rules and principles seems easier; and spontaneous behaviour, where the students continue to work on their own initiative and stay focused on the activities that are necessary in the real world, while also being fun.

Session Design - integrate thoughts, feelings, experience and action

We live in a world filled with easily accessible information. We are equipped with the quantity and means to systematise relatively tangible and measurable 'Knowing'. At the same time, we may be underestimating the value of intangibles such as "feelings". Now, however, the importance of these intangibles is beginning to be highlighted.

For example, when evaluating results, the emphasis tends to be on numerical and other visible factors, but there is also a clear need to understand the importance of less visible factors. Kim

indicates that quality of results are led by quality of relationship (Kim, n.d.). According to Tan, who uses the emotional intelligence for leadership program, the number of people putting the firm use of emotions for bringing transformation into practice in the business world is increasing (Tan, 2013). White states that organizational transformation is an "emotional journey" and that the role played by 'emotions' cannot be ignored (White, Smets, and Canwell 2022). The key to successful organisational transformation is how to handle the emotions of each person who makes up the organisation (Tan, 2013).

As mentioned earlier, the importance of 'experience' in terms of internalising or retaining understanding has also been discussed in the educational field.

Based on the concepts and theory discussed above, the Possible World – Online Simulation sessions have been designed to integrate knowing, feeling and experiencing to bring realization for transformation.

Possible World – Online Simulation

Game development, characteristics and application

Possible World – Online Simulation is an extension of a face-to-face card game called "2030 SDGs Game" developed by Imacocollabo (2030sdgsgame.com). The face-to-face card game is, as the name suggests, a game to experience why the SDGs are necessary in the world and what possibilities will be created by the introduction of the SDGs.

On the other hand, the 'Possible World - Online Simulation' session, offered by P-Lab, to which the authors belong, has been designed for participants to explore the possibilities, for themselves and the world, that emerges from their awareness of their individual ways of thinking and values; meaning their mindsets. It provides participants with measurable game outcomes that are linked to process performance through the act of reflection. The impact of their performance is demonstrated in real-time on a 'World Condition Meter' which has three measures; Economy, Environment and Society.

Players have the opportunity to go beyond their current boundaries of knowledge, and experience, to take risks based on the possibilities they can imagine. As protagonists in the game, players engage, explore and experiment in ways that may seem impossible in a 'real world' setting. Throughout the game, each player acquires essential insights and footholds for stretching into new possibilities through the authenticity of their own experience. Their gameplay experiences are then recalled in the following reflection sessions that follow further deepening and refining their insights which leads to a re-evaluation of what is possible, in reality.

Being able to pre-test and embed more innovative pathways of thinking and collaborative problem-solving, in the lab-like environment, helps build enthusiasm for more of this kind of collaborative innovation in the field. While gamification mechanisms allow users to pursue individual goals and choose different paths of progress, they can also tie users together to support each other and work toward a common goal (Kahane, 2007).

The game sessions have been applied in various fields, such as interdisciplinary university learning events, sustainability focused training, cross-industry exchange sessions, leadership trainings, etc.

Rules of the game

Every participant (or team) is given a direction by means of a goal which they are requested to aim to achieve throughout the entire duration of the play. To simulate a 'real world' scenario, there are five different goals in the game structure. This ensures, like the 'real world', that different people have different priorities and objectives.

All participants then receive an equal amount of set items as their initial resources. These include: a) Time (representing the finite time available until specific year), b) Money and c)

Project Cards describing various activities that can be run during the game play session. Each project has the following information:

- what they need to spend to run the project, both in terms of money and time;
- the return on investment;
- the socioeconomic and environmental impacts on the world; and
- the minimum requirements of the World Condition Meter for a project to be run.

Apart from the obvious limitations such as assigned goals and initially dealt resources, there are not many rules on how to play the game to create a world together. Each participant (or team) can decide how to invest their resources, which projects to run and who to communicate/transact with in order to work towards achieving their goals.

Methodology

Prior to the session, a meeting was held between potential participants and the authors to explain the research ethics of this study. At that time, the purpose of the study, data collection and analysis methods, and anonymity at the time of publication were explained, and only those who agreed to participate were asked to complete the application process.

Three tools were used during the session. First, Zoom, which was used as a meeting place for facilitators and participants for initial check-in, game description, post-game voice communication, and reflection. The next tool was Possible World – Online Simulation, an online simulation game platform. Here, as mentioned above, participants engaged in a variety of activities, using the resources at hand, with the goal of achieving their own goals. The last tool was Mentimeter, an online interactive presentation software program, which was used to create polls and visualize emotional changes recognised during the reflections.

As mentioned above, the session flow can be divided into the following four major parts: Part 1: The game host facilitates a check-in to create a place of psychological safety and security for participants, Part 2: A sharing of 'Knowledges' such as mindset shift, possibilities brought about by the mindset shift, and game rules. Part 3: Is the game-play session to gain 'Experience' and Part 4: The game-experience session with a reflection session that includes 'Feel'.

In this session, the game play was conducted twice. However, participants were not informed in advance that there would be a second session.

In the first session, participants experienced the process of shaping the world through words and actions that reflected their current mindsets. They then reflected on the results using numbers, images, and emotions and, through dialogue, exploring and recognising their mindsets as they emerged. The participants were then asked to engage in a dialogue about the possibilities that might exist outside of these identified mindsets. With the ideas that emerged, we asked them to play a second time and experience what kind of changes would occur in the world, and in themselves, in a second round of play.

Results and Discussions

To assess whether gamification can provide an opportunity to first recognise one's role in a global perspective and then to influence a mindset shift, several questions and various data recorded during the game were examined.

Current mindset of participants

At the beginning of the session, the survey was conducted to examine the current mindset of the participants using Mentimeter. The results (see Figure 1) show that at the time of their participation in the session, participants strongly agreed that being aware of the impact of technology on the world and its importance, how their technology-related work contributes to the world, and whether they are always aware of the people who will ultimately use their work, with a

score of 4.2 or higher out of 5. In other words, it appears that the participants were already at a high level of 'Knowing'.
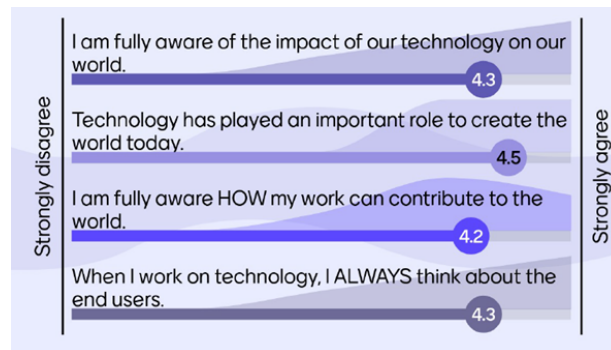

Figure 1: My mindset regarding Technology

Game Results

Two rounds of gameplay were conducted, each followed with a reflection session. The results of two gameplay and reflection sessions are shown in Table 1.

Table 1: Results of the gameplay

	Numerical goals achievement	Economy	Environment	Society
Round 1	43%	24	2	4
Round 2	57%	7	9	9

For Round 1, the economy meter grew tremendously, while the environment and society meters struggled showing an imbalanced world. Images of the world based on these meters were shared with the participants in the world condition report (on the left of Figure 2). For the achievement rate, it was 43% (3 people out of 7 achieved their numerical goals).

Figure 2: World Conditions – Round 1 and 2

Their answers regarding how they feel after the gameplay and World Condition Report are shown in the first column of Table 2. Those expressions indicate their experience of sadness, disappointment, struggles and regrets.

What the participants expressed regarding the world and gameplay reflect their mindset during the Round 1, indicating:
- short-sighted views;
- a lack of circulations regarding resources;
- a lack of interaction with other players.

Table 2: Past Play Feelings – Round 1 and 2

Round 1	Round 2
• sad	• Good
• bad	• more comfortable
• Pursue economic loss of life	• better, do something right
• we can do more...	• happy
• The environment is dirty	• GOOD
• The economy appears to be highly developed. But the environment cannot be maintained.	• happy because cooperation works
• need to find a balance between economy and environment	• we discussed for achieving more goals, but we didn't notice the project type that caused the different world
• Only focus on the target, ignoring other properties in the world.	• nice communication and share
• hard to achieve the goal only focusing personal situation	• cooperation worked, but it seemed we all ignored the project contents although this time the world looked more balanced.
• not easy to start a project cos keep looking for a project with the "demanded" feedback~sad	• a lot communication and share each other

At the end of the Round 1, their world had more than enough resources (Table 3) that would have allowed not only three, but five people, to achieve their numerical goals (three people with Money Goal and one with Time and the other with Blue Principle). Extrapolating, this indicates that there are more resources to utilise, in the real world, than are recognised. This highlights the potential that exists with a mindset shift to achieve more productive results without the requirement of more resources.

Table 3: Past Play Feelings – Round 1 and 2

	Money	Time	Blue Principle	Green Principle	Yellow Principle
Round 1	9800	43	26	9	7
Round 2	380	68	9	6	5

Their myopic view is also illustrated in Figures 3 and 4. In Round 1, both the frequency and duration of private chat use were much higher. This indicates that participants preferred to contact one person at a time. Round 1 also shows that participants spent more time working on projects on their own than interacting with others. These mindsets were reflected in the lack of communication and lost opportunities to share resources in Round 1. In the reflection after Round 1, participants were given the opportunity to look objectively at the consequences of their actions, to confront their feelings, and to dialogue about them. Applying the findings to Round 2, they spent more time interacting with others than running projects on their own. As a result, they ended up with fewer resources in the world than in Round 1 (see Table 2). However, more open interaction and information sharing was achieved, leading to happier and more encouraging feelings and creating a more balanced world. Note that the environmental parameters of gameplay, including platform, rules, players, and time, were set the same for Round 1 and 2. The only thing that changed was the mindset and behaviour of the players.
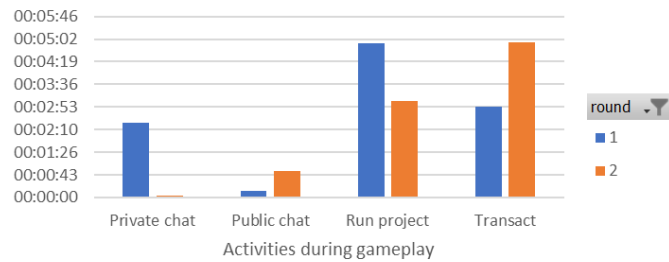
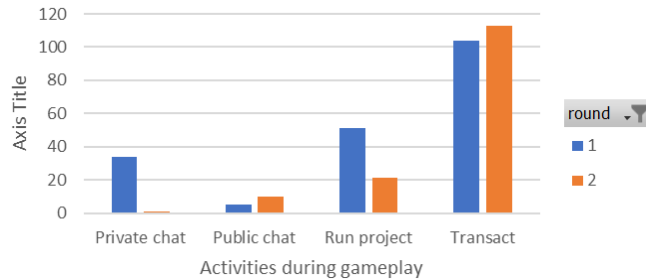**Figure 3: Duration of Activities – Round 1 and 2**

Figure 4: Frequency of Activities – Round 1 and 2

At the end of the session, the participants verbally shared their discoveries. Some of the comments regarding their mindsets shift are reported below.

> *The realisation of Round 1 is that instead of thinking only about what you can gain, you can switch to what you can do. Through discussion with others around us, some new insights, and opportunities to collaborate may emerge.*

> *The realisation is that as teachers, as implementers in industry and academia, we still need to understand the needs and challenges of the end users so that we can provide what they want. We can then consider the application of the resources we have as well as the resources of our peers around us already have. This can be an important power and strength for us.*

One of the participants addressed that he thought he already 'KNOWS' that he should consider the end user prior to this session. However, by reflecting on the first round of his gameplay experience where his attention was focused only on the numerical targets set for him, and on his own actions that resulted, he recognised that he had not actually considered the end-user due to his ingrained habits and mindset. The expressions indicated a shift in mindset to take the end-user into account in their work from now on.

Conclusion and recommendations for future research

Sessions incorporating gamification, which simulates how we think and act when we create a world together, proved to serve as a catalyst for a deeper understanding of the connections between the world and our mindsets, and hence our actions. Understanding making connections and changing mindsets can help people to recognise and adapt their role in an ever-changing and dynamic world picture. It can also open participants to possibilities and decision-making that make more efficient use of resources. Future research could examine larger cohorts to see whether there is a sector-dependent trend and the effects of applying this experiential learning in a cross-disciplinary or cross-industry environment.

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