PRATITI 2022

…becoming aware

WEBINAR SERIES

on

Simulation and Gaming

Organized by

Centre of Excellence on Simulation and Gaming (*CoE_SG*)

SHRI VAISHNAV VIDYAPEETH VISHWAVIDYALAYA, INDORE

Campus: Indore – Ujjain Road, Indore – 453111 (M.P), INDIA
City Office : Shri Vaishnav Vidyaparisar, 177 JawaharMarg, Indore (M.P), INDIA
Web Address – https://www.svvv.edu.in/

The rising flame
epitomises leadership
through enlightenment

The bright orange colour
represents brilliance

The colour blue reflects
serenity and infinity

तमसो मा ज्योतिर्गमय
Lead me from
darkness to light.

SHRI VAISHNAV VIDYAPEETH VISHWAVIDYALAYA
श्री वैष्णव विद्यापीठ विश्वविद्यालय
तमसो मा ज्योतिर्गमय

PREAMBLE

The university successfully organized 28 webinars between October 3, 2020 and August 21, 2021. The presentations were compiled in the form of a Book that was named **PRATITI**, which means **becoming aware**. It was well taken and appreciated by the ISAGA fraternity. The University has established the ***Centre of Excellence in Simulation and Gaming (CoE_SG)*** to promote Simulation and Gamification as pedagogy and undertake research in this upcoming multidisciplinary area of interest. All of us felt that enthusiasm and tempo should be maintained and members of the ISAGA fraternity should meet regularly to exchange learnings. With this thought, the University decided to continue the Webinars under the CoE_SG in the form of Webinar series with the name **Pratititi …becoming aware**. The webinars were conducted once every month and a total of 13 webinars were conducted between December 17, 2021 and December 03, 2022. We are grateful to all the presenters for having accepted our invitation and sparing their valuable time. We are thankful to the members of ISAGA and faculty as well as students of Shri Vaishnav Vidyapeeth Vishwavidyalaya for having attended the webinars. We are also grateful to Dr. Sebastiaan Meijer and Ms. Marike for their help in finalizing the speakers. The presentations have been compiled with a brief profile of the presenters in this volume that has been named ***PRATITI-2022 …becoming aware***. We are confident that this compilation will be found useful by interested members of the fraternity.

We wish happy learning to all!

Upinder Dhar
Jigyasu Dubey
Anand Rajavat

Date: May 12, 2023

विद्या नाम नरस्य रूपमधिकं प्रच्छन्नगुप्तं धनम्

विद्या भोगकारी यशः सुखकरी विद्या गुरुणां गुरुः।

विद्या बन्धुजनो विदेशगमने विद्या परा देवता

विद्या राजसु पूज्यते न हि धनं विद्या-विहीनः पशुः।।

English meaning-

Knowledge is the beauty of person that is a beauty. It is secretly Hidden wealth.

Vidya gives us many pleasures. Vidya is the Guru of the Gurus.

If we ever go foreign, then the work comes only. Vidya is the biggest Goddess.

Vidya is worshiped in kings, not wealth. Therefore,

The person who is without education is an animal.

About SVVV

Shri Vaishnav Vidyapeeth Vishwavidyalaya is a state private university established under Madhya Pradesh Niji Vishwavidyalaya (Sthapana Avam Sanchalan) Adhiniyam in 2015 at Indore MP (India). The University has been established with a vision to be leader in shaping better future for mankind through quality education, training and research. The University Commenced its first academic session from July 2016 with Undergraduate, Postgraduate, Integrated, Dual degree and Doctoral programs in various disciplines through the following constituent institutions:

- Shri Vaishnav Institute of Technology and Science
- Shri Vaishnav Institute of Information Technology
- Shri Vaishnav Institute of Textile Technology
- Shri Vaishnav Institute of Architecture
- Shri Vaishnav Institute of Computer Applications
- Shri Vaishnav Institute of Forensic Science
- Shri Vaishnav School of Management
- Shri Vaishnav Institute of Journalism and Mass Communication
- Shri Vaishnav Institute of Fine Arts
- Shri Vaishnav Institute of Science
- Shri Vaishnav Institute of Social Sciences, Humanities and Arts
- Shri Vaishnav Institute of Commerce
- Shri Vaishnav School of Law
- Shri Vaishnav Institute of Agriculture
- Shri Vaishnav Institute of Home Sciences & Research
- Shri Vaishnav Institute of Paramedical Sciences
- Shri Vaishnav Institute of Planning
- Faculty of Doctoral Studies and Research

About CoE_SG

Gamification is the application of game-design elements and principles in non-game contexts. A large body of research focuses on the interplay of self-awareness, causal attribution, and action. Researchers have focused on how individuals perceive their involvement in the cause of events leading to either success or failure. Experiments have shown that when people are induced to be more self-aware, they are likely to attribute the success to themselves. The researchers have also reported that gamified events were very effective at engaging Gen Z and that team-based gamification events were particularly engaging. The University has established the Centre of Excellence in Simulation and Gaming to promote Simulation and Gamification as pedagogy and undertake research in this upcoming multidisciplinary area of interest. The Centre will be coordinating with ISAGA and other such professional bodies for global networking.

The COE_SG of this University is organizing a Webinar series "PRATITI …becoming aware" on gaming simulations in association with International Simulation and Gaming Association (ISAGA). Our key speakers will be ISAGA members and other GS professionals. Under this Series, a total of 28 webinars have been conducted in the Year 2020-21 and a total of 13 webinars have been conducted in the Year 2022.

Patrons	**Shri Purushottamdas Pasari**, Hon'ble Chancellor
	Dr. Upinder Dhar, Hon'ble Vice Chancellor
Mentors	**Dr. Santosh Dhar**, Rector and Dean - Faculty of Doctoral Studies and Research
	Dr. Anand Rajavat, Director – Shri Vaishnav Institute of Information Technology
Coordinator	**Dr. Jigyasu Dubey**, Professor – Shri Vaishnav Institute of Information Technology

Index with YouTube Link

विद्या नाम नरस्य कीर्तिरतुला भाग्यक्षये चाश्रयः

धेनुः कामदुघा रतिश्च विरहे नेत्रं तृतीयं च सा।

सत्कारायतनं कुलस्य महिमा रत्नैर्विना भूषणम्

तस्मादन्यमुपेक्ष सर्वविषयं विद्याधिकारं कुरु।।

English Meaning-

The Glory of wisdom. Vidya is the only Human being and is about to fulfill the desires. If someone's fate does not go together, then, in that case, education is the only support. In the case of disconnection, love is love. If someone has wisdom, then he always gets respect you. The glory of vidya progeny and the jewelry of gems are also there. Therefore, we should gather and expend more than all the things, and also spend it because it also increases by spending.

Webinar – 01

Date, Day & Time: December 17, 2023 (Friday)
03:00 – 04:00 p.m. (IST)

Invited Speaker: **Prof. Sebastiaan Meijer,** Professor, Vice Dean, KTH Royal Institute of Technology

Country: Sweden

Title: Gaming, Simulation and Participation: A Systems Approach to Mental Health and Wellbeing.

Webinar Topic

Gaming as a Method to Innovate Between Organizations and Systems

Abstract

The design of the future society from the perspective of sustainability is more urgent than ever. However, it is notoriously difficult to bring together the different perspectives of stakeholders, systems and organizations, each with their own logic and goals. Gaming as a method provides a unique opportunity to become the meta integrator, but needs to be positioned in a concerted effort with data-driven analytics and computer simulation. In this talk, Sebastian Meijer provides some frameworks on how this can be done, and illustrates from a set of research and innovation projects from the past two decades.

Speaker Profile

Sebastiaan Meijer is full professor of Health Care Logistics at KTH, Stockholm, Sweden. He is specialised in simulation, gaming and other participatory methods to capture real-world complexity in innovation processes. His interests are in theory of design of complex adaptive systems and the backbones of society. Working mostly on health care, health prevention and promotion systems, but equally interested in other large-scale questions. He is currently serving as head of department for Biomedical Engineering and Health Systems (MTH), and vice dean for the school of Engineering Sciences in Chemistry, Biotechnology and Health (CBH).

Understanding where to go:

Gaming as a method to innovate between organisations and systems

Prof.dr.ir. Sebastiaan Meijer
KTH Royal Institute of Technology

1

2

What is Gaming Simulation?

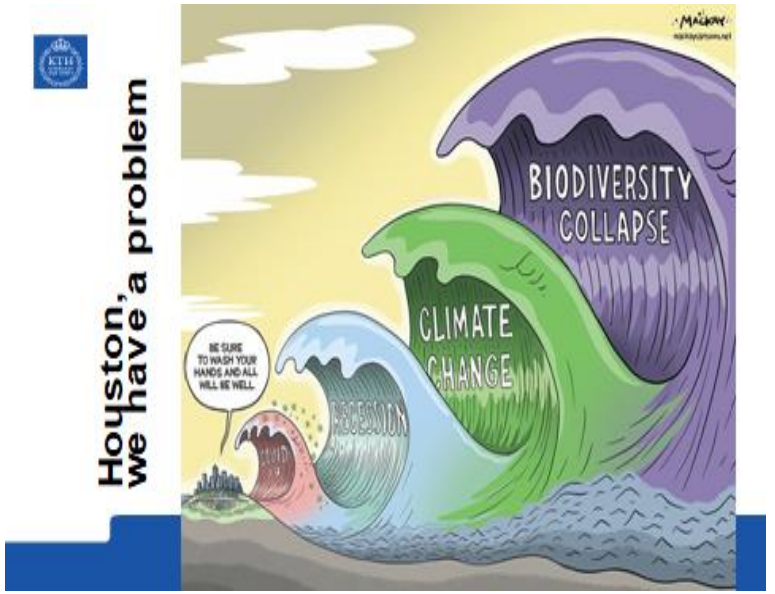
A gaming simulation session:

- Mimics the behaviour of a real-world system
- Uses real people as decision makers
- Combined with (computerized) simulation models

A broad range of simulations in which the role of a human decision maker is enacted by a real human participant instead of a computer.

Technology is not essential, but driven by the goals of the gaming simulation. From table-top to 3D immersive.

3



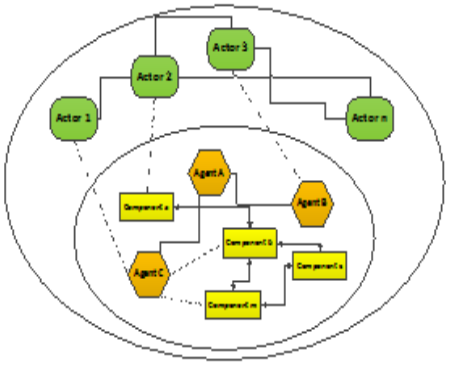
4

Theoretical basis

Complex adaptive systems
- Emergent behaviour due to
  - Adaptive agents
  - Dynamic relations

Sociotechnical systems theory
- Performance of systems has dependence on:
  - Technological capabilities
  - Human performance of control

Soft Systems methodology (Checkland /Scholes)
- Combine the quantitative with contextual richness



5

Two extremes of complexity

Technical-physical complexity	Socio-political complexity
Many interdependent "variables" (system complexity)	Many interdependent loosely coupled stakeholders (policy network)
Cognitive uncertainty	Disputed knowledge, values & norms
Design phases (steps, structure)	Dynamic rounds and arena's (fluidity)
"Best" solution, best available knowledge	"Accepted" solution, Negotiated knowledge
Hard tools: simulation, models, DSS	Soft tools: participation, process management

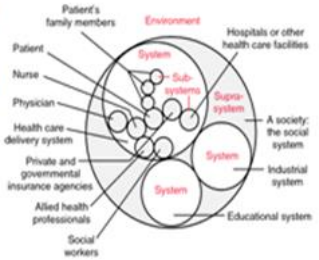
6

Aspect system vs subsystem

7

From aspect systems to sub systems

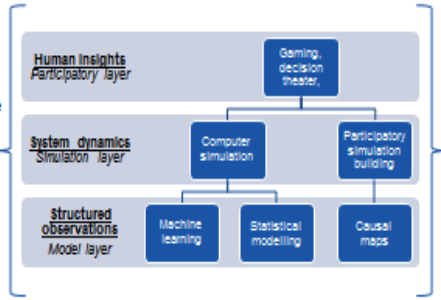
Taking CAS seriously implies to take a focus on agents and their interrelated behaviour:
- Take entire life of people in social context into account
- Optimisation on aspect system (transport, health care, energy, etc) is relatively pointless
- Change systems through their recursion with other systems.



8

Methodological development towards a new sciences of systems challenges...

Scientific:
- *Systems of systems*
- Human expertise
- Analytical vs design science
- Lab = reality
- Contextual <-> Universal theory



System development:
- TRL levels mixed
- Test early
- *Blue collar* involved
- Adapt management
- Subsystems sufficiently large (effectiveness), and sufficiently small (individual)

9

Russ (2010):Programmatic and Participatory: Two Frameworks for Classifying Experiential Change Implementation Methods

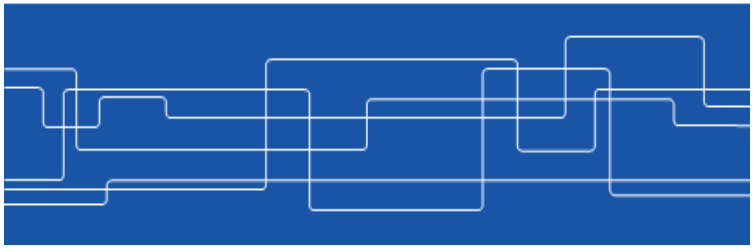
Table 1. Fundamental Differences Between the Programmatic and Participatory Frameworks

Programmatic Framework		Participatory Framework
Fixed implementation	⟷	Flexible implementation
High direction from leadership	⟷	Low direction from leadership
Low/no stakeholder collaboration	⟷	High stakeholder collaboration
Autocratic organizational climate	⟷	Democratic organizational climate
High communication efficiency	⟷	Low communication efficiency
A priori evaluation of "successful" change	⟷	Retroactive evaluation of "successful" change

10

KTH ROYAL INSTITUTE OF TECHNOLOGY

Design as a paradigm of science



11

Designing: a definition

Designing is a **cognitive** and a **social activity** for sense making that is **emergent over time** at the individual and social levels, **punctuated by temporary closures** for the requirements of the artifact being designed.

Designing involves **the evolution of the artifact, the social system, language and the information embedded** in the **social context**.

(Subrahmanian, 2015)

12

Recent Studies in Philosophy of Science

New insights into:

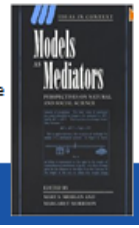
1. How complex sciences differs from classic sciences (even there, there are issues of scale/phase changes) – **pluralism**
2. Explicit study of the role of models in science and social sciences – revealing the nature of models as **dialogical devices** among **people** and **the phenomena** that is being studied or manipulated.
3. Reasoning with models.

13

Reasoning with Models

Models' (cognitive devices) functions:

- Mediators (Morgan el al.)
- Scaffold that allows for codification both syntactically and semantically as well
- Play an epistemic role in both encoding and creating new knowledge
- Including temporary physical models



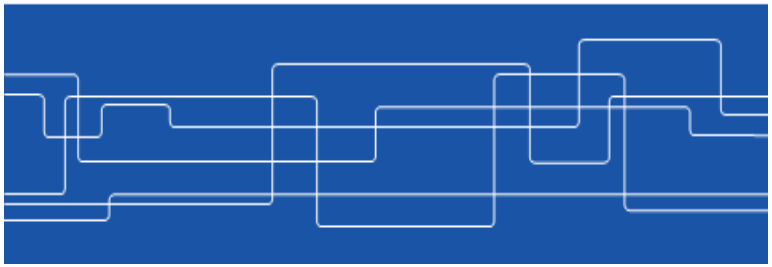
Models' properties:

- plastic while providing stability of knowledge

14

KTH ROYAL INSTITUTE OF TECHNOLOGY

Gaming as a method to design real-world systems



15

Designing a transportation system

ProRail: Dutch railway infrastructure manager
(Traffic control, but no train operator)

Major uncertainties in design of higher frequency time table

Role of operations
Complexity

10 years research TU Delft

ProRail

16

The Challenge

100% extra trains 2020
50% in 2012 regional

First: major corridors
"Untimetabled traffic"
- Like a metro system

All within 10% of the budget required in the 'old' way

17

Gaming in Railway Traffic Control: System Level Design with Operators

Traditional design in railway operations is top-down
- Testing in computer simulations
- Then push to *operations?*

But will it work in practice?
- Current robustness and resilience is already under pressure
- Engineering has many assumptions about the operations.
- The difference between theory and practice exists only in practice

Talking with operations doesn't help: do it with them!
- Reason is found in implicit, but very effective, mental
- ...ls



18

40 experts playing new logistics!

19

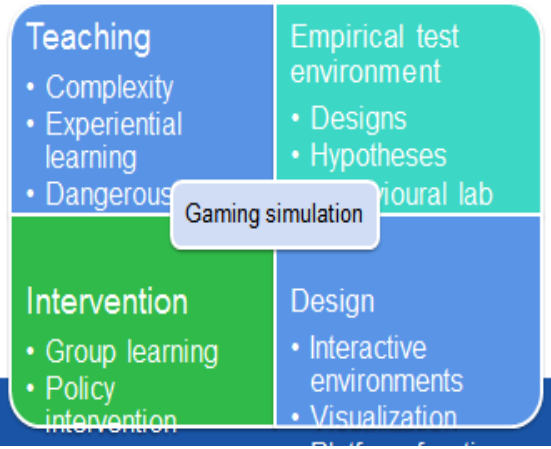
Model types

'Iconic' representation: relevant elements
'As-if-real' representation: crucial elements
'Playful' representation: non-relevant elements



20

Gaming has 4 applications



21

Need for 'realistic behaviour'

Model type/ Beneficiary	Player	Principal
Closed world	Learning: Games are used as experiential teaching and learning methods to develop and enhance the acquisition of knowledge, skills and competencies.	Quasi Experiment: Games are used as environments and scenarios to empirically test, develop and justify theories in specific domains.
Open world	Policy Games: Games are used to as intervention in policy process.	Games for Design: Games are used as a method for the design of and within complex adaptive systems.

22

Need for 'realistic behaviour'

Model type/ Beneficiary	Player	Principal
Closed world	Learning: Games are used as experiential teaching and learning methods to develop and enhance the acquisition of knowledge, skills and competencies.	Quasi Experiment: Games are used as environments and scenarios to empirically test, develop and justify theories in specific domains.
Open world	Policy Games: Games are	Games for Design: Games are

Players bring unformalised complexity

23

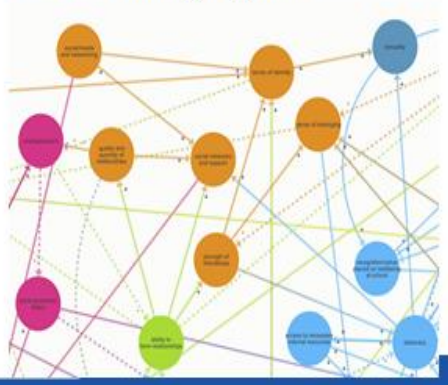
Need for 'realistic behaviour'

Model type/ Beneficiary	Player	Principal
Closed world	Learning: Games are used as experiential teaching and learning methods to develop and enhance the acquisition of knowledge, skills and competencies.	Quasi F used a scena devel spec
Open world	Policy Games: Games are used to as intervention in policy process.	Game used a of and system

Players bring their own role and behaviour

24

Steering in Systems



From complex to manageable

- Reasoning with models and stakeholders
- Real-time dashboards
- Monitor vicious and virtuous cycles
- Bridge abstraction levels

25

Health care: Policy and Medical Operations

26

Designing a transportation system – part 2

Pluralism:

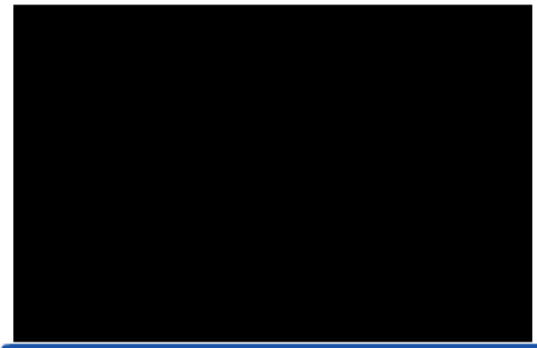
- many simulations of many systems
- Flexible coupling and sandbox approaches
  - Model is not correct, but dialogical device

- Levels of aggregation
  - Operators and Strategy speak different KPIs
  - Multi-scale modelling

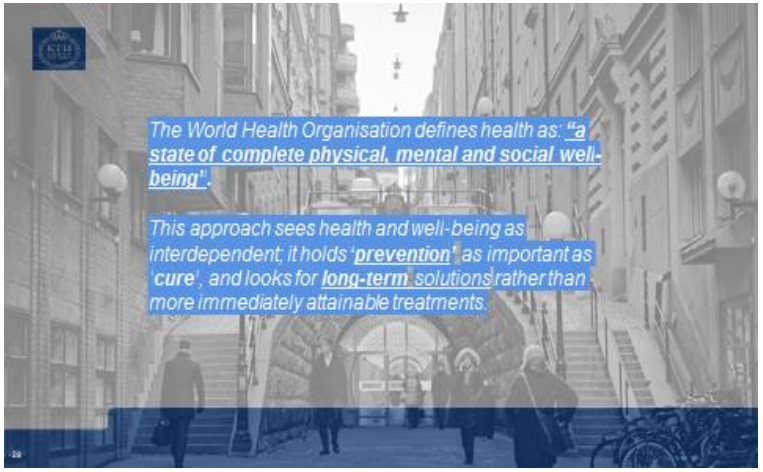
- Game engine as the ultimate integrator

27

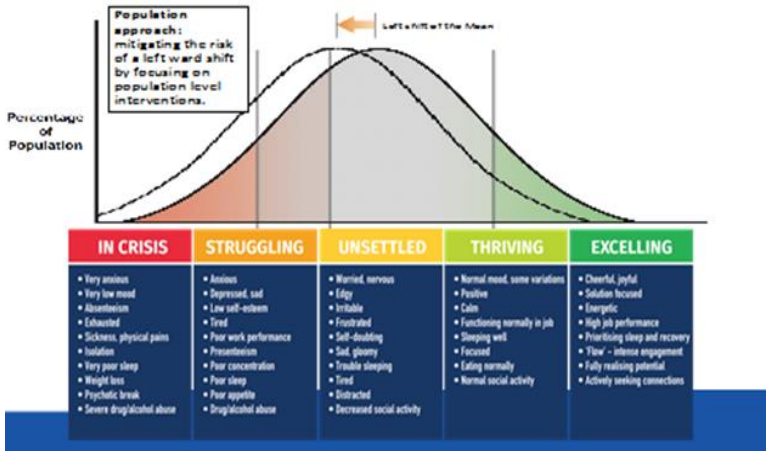
Innovation between Tourism, City and Religion



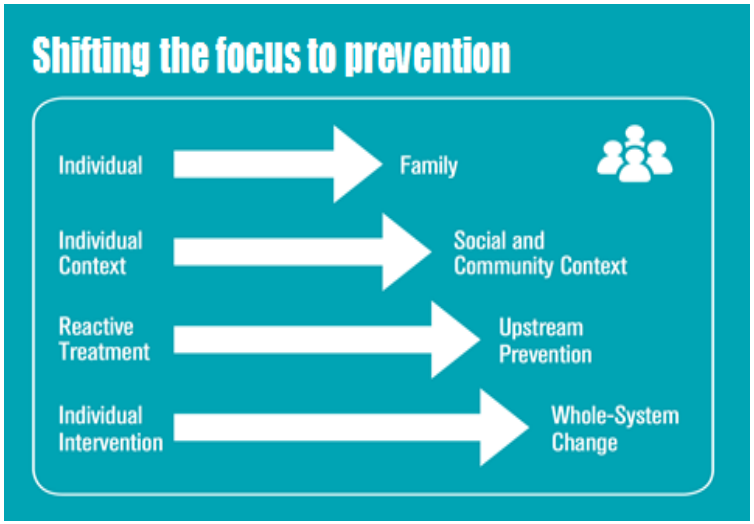
28


The World Health Organisation defines health as: "a state of complete physical, mental and social well-being".
This approach sees health and well-being as interdependent; it holds 'prevention' as important as 'cure', and looks for long-term solutions rather than more immediately attainable treatments.

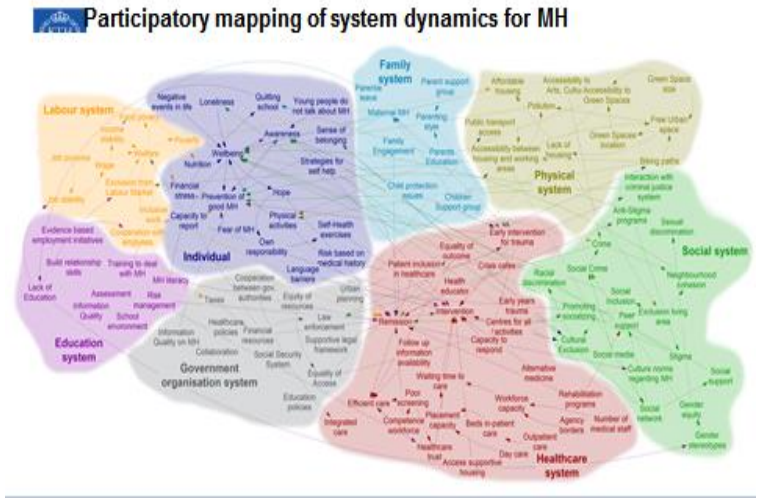
29


Population approach: mitigating the risk of a left ward shift by focusing on population level interventions.
Percentage of Population
IN CRISIS
STRUGGLING
UNSETTLED
THRIVING
EXCELLING

30


Shifting the focus to prevention
Individual
Family
Individual Context
Social and Community Context
Reactive Treatment
Upstream Prevention
Individual Intervention
Whole-System Change

31


Participatory mapping of system dynamics for MH
Family system
Labour system
Physical system
Social system
Individual
Education system
Government organisation system
Healthcare system

32

Work just published

Proceedings of the 2019 Winter Simulation Conference
N. Mustafee, K.-H.G. Bae, S. Lazarova-Molnar, M. Rabe, C. Szabo, P. Haas, and Y.-J. Son, eds.

SENSITIVITY ANALYSIS OF POLICY OPTIONS FOR URBAN MENTAL HEALTH USING SYSTEM DYNAMICS AND FUZZY COGNITIVE MAPS

Elhabib Moustaid
Maksims Kornevs
Sebastiaan Meijer

Department of Biomedical Engineering and Health Systems
KTH Royal Institute of Technology
Halsovagen 11, 14 152, Huddinge, SWEDEN

33

If you like: have a look

https://kumu.io/jayanthkth/mhsystems

34

Playing with own SD models

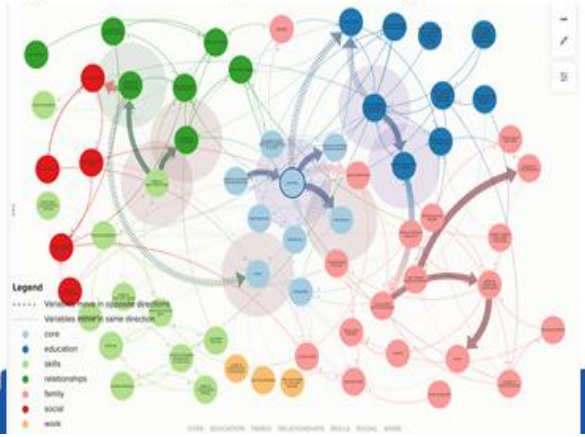
Positioning ourselves in 2025

Making the case backwards
- Take policy example
- Reason with other stakeholders
- Using the SD models
- And own data

Photo: Norrtälje 20200928

35

Right now: CS based approaches to analysis



36

Experiences

Making operators game is not trivial
- Always challenging level of detail
- Spot easily difference between reality and simulation

- Very willing to express their expertise
- When rightly facilitated: accept imperfections in sim
- Formal test of design =not classic theory-proof
- Sense-making, pluralistic assessment

- Debriefing essential!

37

Summarizing

Gaming is a proven method for design
- Complex systems
- Bridging insights, boundaries, in between organisations and (sub)systems.
- The exact mechanics are subject of research

- Examples from transport, smart cities, health care
- Moves towards integrated sustainability.

38

Questions, participation?

Open source approach

- Attribute, share-alike (CC4.0)
- LGPL software licenses
- Github: SebastiaanMeijer/ProtoWorld

Sebastiaan Meijer

- smeijer@kth.se
- +4687908071

39

Webinar – 02

Date, Day & Time: January 29, 2022 (Saturday)
03:00 – 04:05 p.m. (IST)

Invited Speaker: **Dr. Elyssebeth Leigh**,
Life Member – ISAGA

Country: Australia

Title: Educating through Non-interference and No-words

Webinar Topic

Educating through Non-interference and No-words

Abstract

This 2022 webinar for the series "PRATITI…becoming aware" for COES&G at SVVV will report on developments raised by issues in our 2021 webinar which asked the question If simulation is so useful why isn't there more of it in use? (https://www.youtube.com/watch?v=-Rkz87yFoWI) Two questions of concern to educators considering simulations and games for learning are a) how am I supposed to manage a learning process when I am not in control? and b) why would such an approach be better than one which supports me to be in charge? In this webinar we focus on how to understand and manage shifts in the exercise of power, authority and control that occur in learning contexts once it is decided to use simulations and games for learning. Conventional educational practices assume that educators have the sole prerogative of authority and control in learning contexts. However, simulations and games give learners the opportunity to take charge of the action, thereby unsettling familiar assumptions, creating uncertainty and unpredictability. This can be a real and anxiety-generating problem for educators more familiar with orderly learning contexts. Managing a learning process through the transition from being 'in control' to being an observer and bystander requires thoughtful attention to both the learners' and one's own capabilities and emotional states. Doing so provides everyone involved with conditions that are active, engaging and emergent, all of which have great potential for transformative learning. Getting there is a journey through fun, stressful, challenging and exuberant times. Education and learning become an adventure with risks and rewards built on playfulness and exploration. Webinar participants will play with some of these ideas as we explore the kinds of learning that can emerge from Non-interference and No-words.

Profile

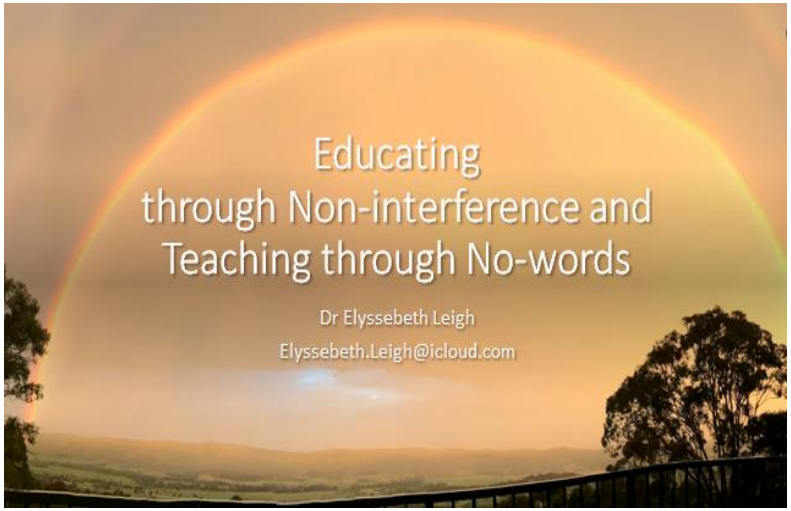
Dr. Elyssebeth Leigh is academics working in different disciplines who share a passion for the experiential learning potential of simulation.

Dr Elyssebeth Leigh has more than 30 years as an educator and learning designer in workplaces and academic settings. As an experienced facilitator of adult learning she has published four books and numerous articles and conference papers on learning and teaching. Much of this work concerns the use of simulation for learning, and research.

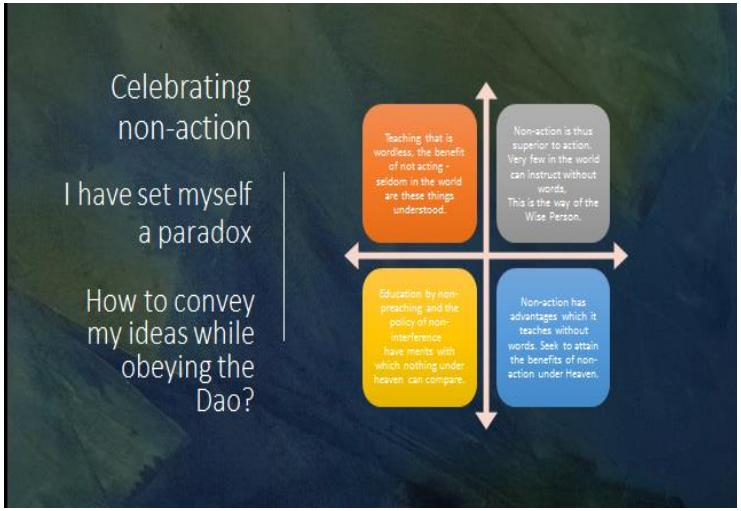
Elyssebeth has worked in many countries and in both the public and private sectors in Australia, and her work is characterised by action-oriented and experiential learning for facilitating knowledge acquisition and individual development. As an academic supervisor and research examiner she is familiar with the complexities of planning, creating and completing research work at Masters and Doctoral level.

Elyssebeth has been involved with Simulation Australasia since 2000 as both scientific programs director for SimTecT for some years, and a member of the board for the past five years. She is also a member of the Professional Development Committee and is a member of the team leading the Human Factors Specialist Community.

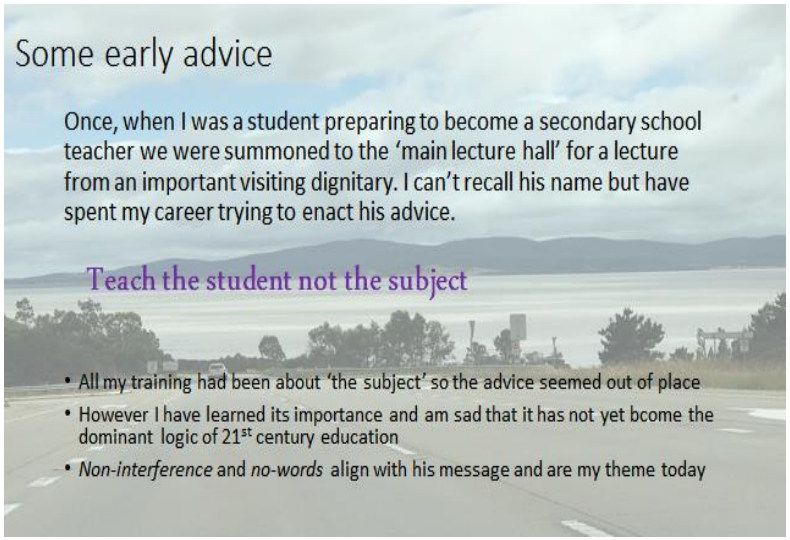
She received Ray Page award for lifetime achievement in simulation in 2017. She is a Life Member – ISAGA and Simulation Australasia.



1



2



3

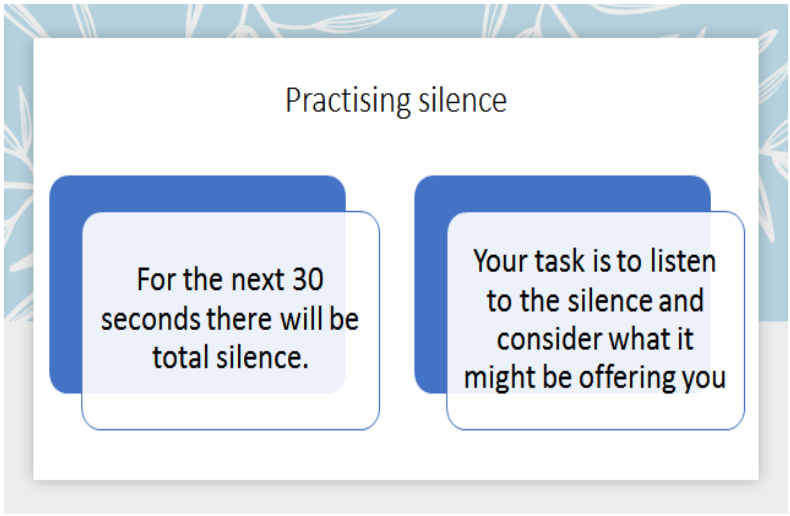
Silence isn't empty it's full of answers.
Gautama Buddha

Mauna (Silence) has a voice of its own, referring to peace of mind, inner quietude
Hindu texts emphasise understanding silence by *experiencing* it.

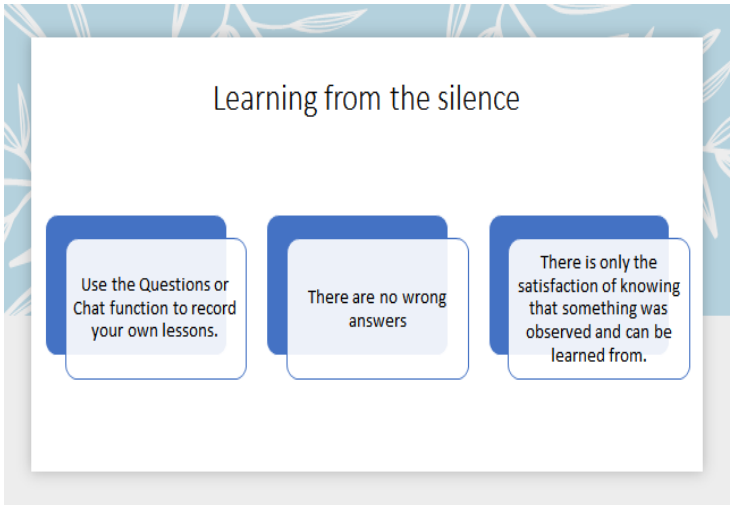
When both our interior and exterior are quiet, God will do the rest.
Christian contemplative practice

Someone who speaks less often actually embodies more wisdom.
Islam - Imam Ali ibn Abi Talib

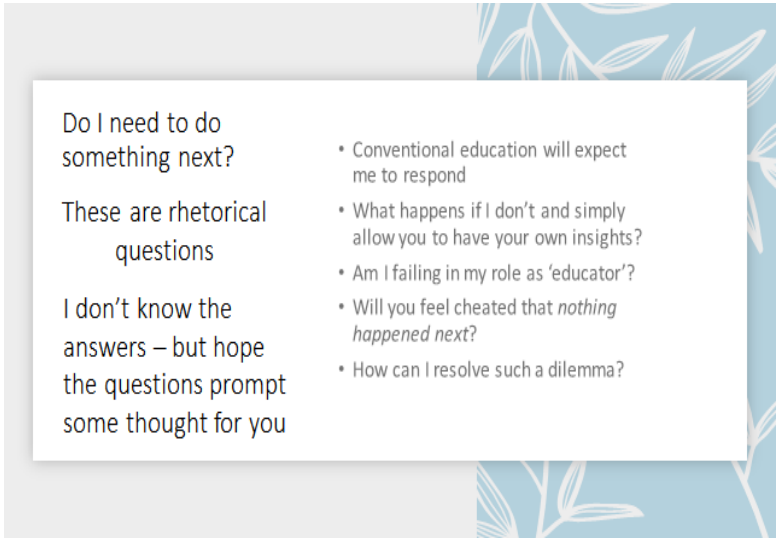
4



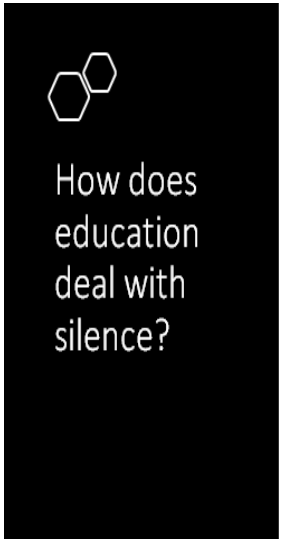
5



6



7



- Teaching involves a great deal of talking and telling

  Mostly one way FROM teacher TO learner
- That message from an unknown speaker and the Dao advice guide this excursion between talking and no-talking

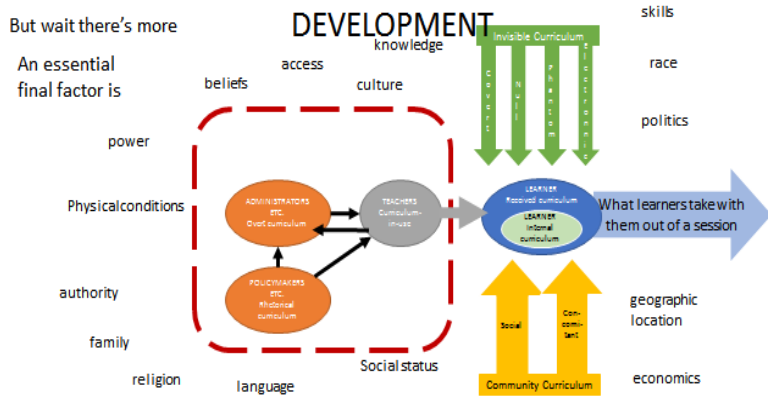
My desire is to emulate

- A good leader whom people barely know exists, and when my work is done, my aim fulfilled, you will say: we did it ourselves.

  Lao Tsu

8

WHAT GOES INTO CURRICULUM DEVELOPMENT



10

Using simulations and games for learning creates questions like these -

- How am I supposed to manage a learning process when I am not in control?
- Why would such an approach be better than one which supports me to be in charge?
- Why would I need to shift the power, authority and control?
- Does anyone have sole prerogative of authority and control?
- How do I get learners to take charge of the action?
- What happens when we unsettle familiar assumptions? Uncertainty and unpredictability are created – why do that?
- How do I transition from being 'in control' to being an observer and bystander?
- Why chance the risks and rewards of playfulness and exploration?

11

How am I supposed to manage a learning process when I am not in control?

1. I can learn to let go of the need 'to manage' and take on the stance of guide and mentor
2. I must know the sequence and particulars of every simulation/game I use – but do not need to tell it all
3. I must learn to catch the learnable moments and be ready to use them when the time comes
4. There will be fear risks and unknowns – I must be steady and stay calm within myself

(Silence is golden – remember?)

(Hint) The educator is inevitably always in [some kind of] control. It just looks different

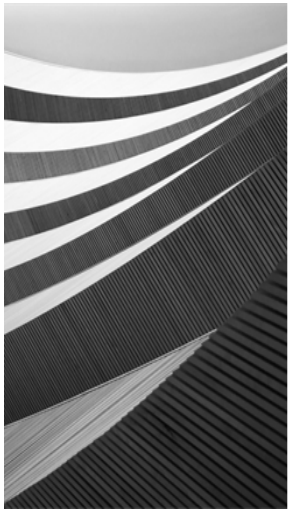
12

Why would such an approach be better than one which supports me to be in charge?

Is the task here *'to teach'* or to help people *'to learn'?*

- Remember *only the learner can learn*
- So if you think the task is 'to teach' who is missing out?
- It will be messy – few people yet know how *'to learn'* once they are dumped in formal educational settings. They will expect *'to be taught'* but can learn perfectly well when left alone to do so
  - What a paradox? Learners can learn without us – but think they need us. So when we appear they give up on their learning and wait for the 'teaching' to begin.
- So who is 'in charge' of what? And how do we each understand what that means?

13



Shifts in the exercise of power, authority and control

Shifting power, authority and control to be the responsibility of learners happens in slow motion	Briefing – power is not yet with the learners. The educator knows what lies ahead and introduces that carefully – including specifying how and when power will be given over to the learners.
	Action – now the learners have control – within the constraints of the activity. So there are boundaries to guide the interactions and shape progress
	Debriefing – power to speak belongs to everyone. Authority to define experiences belongs the owner of the experience. Educators may provide guidance and shape the form of the discussion.

14

Does anyone have sole prerogative of authority and control

- The answer to this question depends entirely on each individuals' mindset and beliefs about education, learning and teaching.
- I know my answer.
- What is yours?
- Is it unsettling to think that there is more than one answer?

15

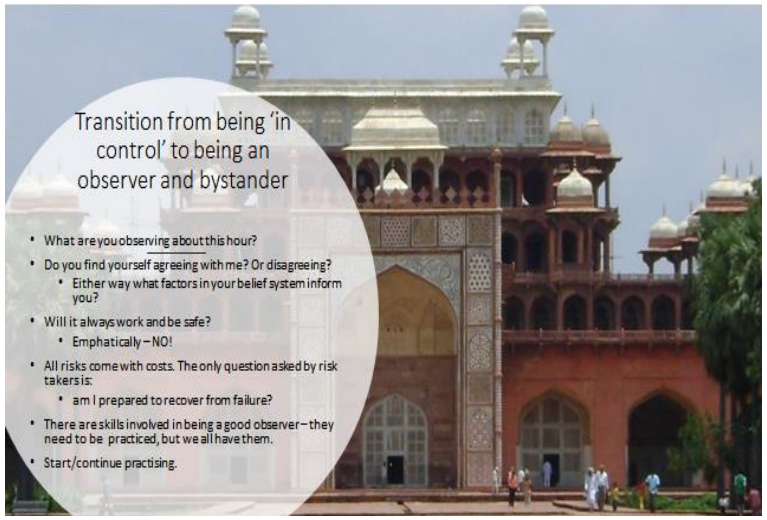
What happens when we unsettle familiar assumptions? Uncertainty and unpredictability *emerge*!

Not *emerge*

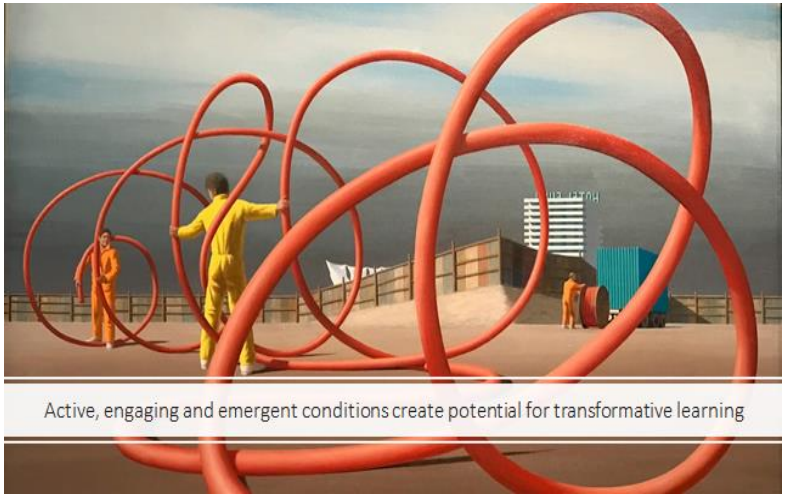
Uncertainty and unpredictability are *already present*

Most of us live in direct contradiction to how the world works. Its chaos and disorder create a sense of fragility and thus we fear risk. But thing that are *antifragile* grow because when they are stressed they adjust to the pressure. By being *antifragile*, we cope with shocks and become stronger as a result. (Nassim Taleb)

16



17



18

Your task

In this game you arrange ten elements into a formula (using the letter below each word) to create a statement about your understanding of how they interact to create an education program.

Use all/any mathematical/physics signs to create your formula.

When you are ready put your formula into the Q&A or the chat

LEARNERS L

QUANTITY Qa

LEARNING OUTCOMES LO

EDUCATOR E

CONSTRAINTS DEPENDENCIES CD

PROCESSES P

MATERIALS M

INTERACTIONS I

YOUR CHOICE Y

QUALTITY Qu

For this task you have 4 minutes

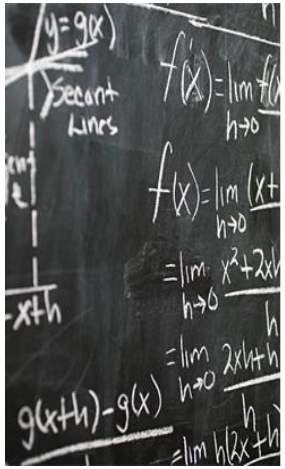
Remember to observe what is happening for you

19

Three solutions to the problem of building a formula about learning
(there are many more to be built)

- Qa + Qu +L + T (M+P) = LO (Elyssebeth)
- LO = (P+QA+Qu) * [(1/CD) * (L + E + M) * (I + Y)] (JB)
- YxL(QA+QU)+ E- CD+(M+P) = LO (Rishika Mishra)

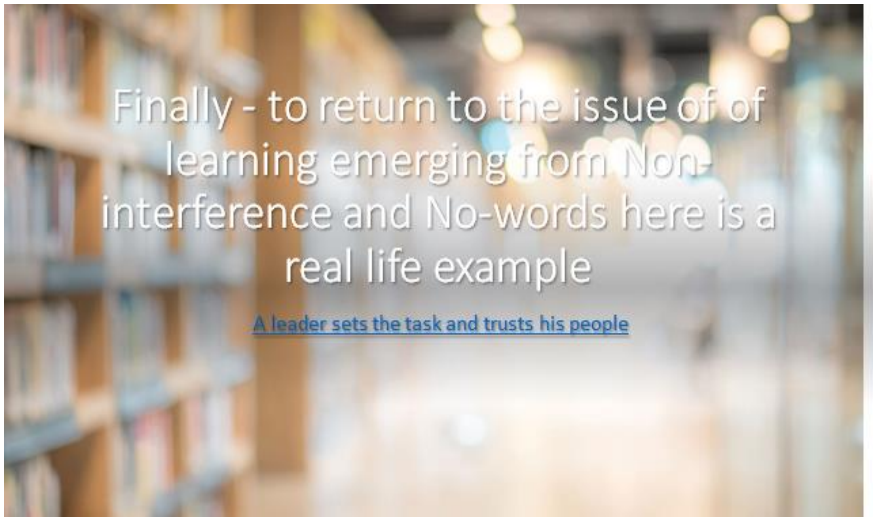
20



Was this fun? Stressful? Challenging?

- I have more than 100 formulas using just these ten terms and all of them are valid statements about how learning can be developed.
- The 'trick' of this game is that we can think of a sentence that will describe how we think about designing learning, but when we have to use a formula it requires us to think of the ***relationships among*** – not ***sequences of*** – words!
- So our familiar thinking framework is unsettled and we have to step into the unknown to find a way through.
- Whether it was fun or stressful, puzzling or challenging the game has given you a small insight into your thinking patterns that can help you 'thinking differently' some other time when it is needed.

21



22

Thank you for being here

I hope I have

- challenged and engaged you
- lived up to my principles of working with(not-teaching) you as much as I could
- Illustrated the value of simulations and games as times when non-interference and not-teaching can guide learning
- Caused you to think more deeply about the processes of teaching and learning

23

Webinar – 03

Date, Day & Time: February 25, 2022 (Friday)
03:00 to 4:05 p.m. (IST)

Invited Speaker: **Dr. Paola Rizzi**, Professor of Techniques of Urban and Regional Planning at University of Sassari

Country: Italy

Title: Acts of Citizenship for Civic Spaces: The Role of Urban Gaming Simulation

Webinar Topic

"Acts of Citizenship for Civic Spaces: the Role of Urban Gaming Simulation"

Abstract

The urban public space is the collective space and it is the one where the sense of belonging or rather citizenship is built. It is also the space where urban planning and design create the conditions for this to be to a greater or lesser extent possible. This awareness has given more space to participation in projects at different scales of planning. In this context the UGS has had and is getting back an important role. It is useful to recall how there are two important points of view in UGS: that of the player/user and that of the planner. This in turn refers to the role assumed by the final decision-maker, who is often also the client. The contribution will emphasize how these different points of view can simultaneously direct and orient both the physical and the social and economic definition of urban areas.

Profile

Paola Rizzi graduated in Urban Planning at the IUAV in Venice, is professor of Urban Planning Techniques at the University of Sassari and is visiting researcher of Disaster Mitigation for Urban Cutlural Heritage of Ritsumeikan University, Kyoto. His research focuses on the themes of participatory planning, planning of cities and fragile territories, planning for risk reduction and disaster mitigation, with particular attention to gender issues. He deals with innovative techniques and tools including urban playosimulation. He founded the research and teaching laboratory Diver s City in2006 and is a member of several international organizations. she has been Visiting Professor in several countries including: Japan, Thailand, Poland, Romania, Austria, USA.

#shareEU

urban gaming simulation: design and practice.
acts of citizenship for civic spaces

Paola Rizzi // Diver s City urblab
Department of Design, Architecture and Urban Planning // University of Sassari // Italy
UDDI, TDS, Thammasat Uniersity // Bangkok // Thailand
DMUCH // Ritsumeikan University // Kyoto // Japan

1

…starting form…

01 About urban space /public /common space

02 UGS elements

03 Civitas and Urbs

04 Future...

2

The urban public space is the collective space and it is the one where the sense of belonging or rather citizenship is built.

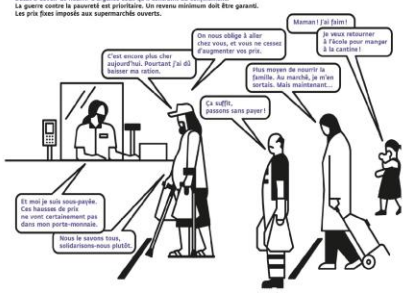
3

It is also the space where urban planning and design create the conditions for this to be to a greater or lesser extent possible.

4

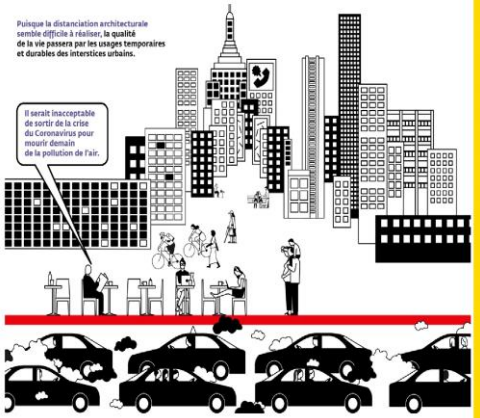
Space and society. Who is left behind?

Photo Gigi Eusebi, Piazza Palazzo di Città, Torino, may 2020



@Ruedi Baur and Odissea Khorsandian

5



@Ruedi Baur and Odissea Khorsandian

6

This awareness has given more space to participation in projects at different scales of planning.
In this context the UGS has had and is getting back an important role.

Three Types of Participatory Design

@Image: MIT D-Lab

7

...starting form...

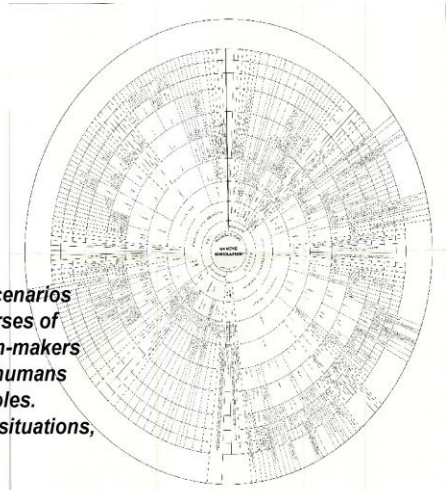
01 About urban space /public /common space

02 **UGS and its elements**

03 Civitas and Urbs

04 Future...

8



"will have a series of scenarios depicting possible courses of action. Various decision-makers will be represented by humans acting out significant roles. By acting out "what if" situations, alternatives futures can be explored."

(Duke,1974)

9

gaming simulation is…

GS is the simulation of the effects of decisions made through a role playing subject to rules: a more or less balanced mix of ROLE, SIMULATION and GAME.

simulation=model's manipulation, that is a static model transformation in a dynamic situation;
game=set of rules, which means less than a real game (*play*)
role=part or function played in dynamic situations subjected to rules, that is: role playing turns a game in a played game.
(Rizzi, 1997, 2001, 2004, 2011, 2012)

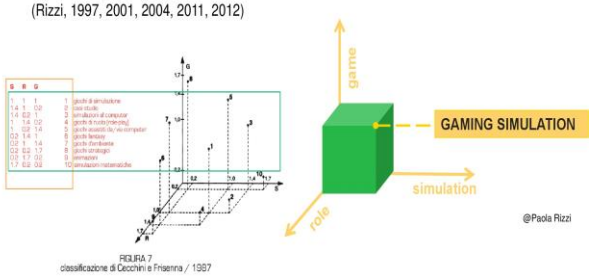


FIGURA 7
classificazione di Cecchini e Frisenna / 1987

10

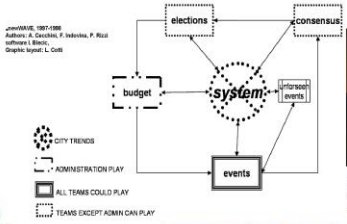
newWAVe

The term "utopia" is not to be understood in relation to its geographical inexistence but in relation to its nature as **a virtual reality**.

For example New WAVE is a gaming simulation where **utopia** is not the absence of geographical coordinates, as Venice is a real place, but it is the capacity to construct an **ideal city of Venice**, which does not exist and it is what results from that alternative reality of Venice which is to be discussed by reconstructing possible courses to work for and to design a desirable Venice.

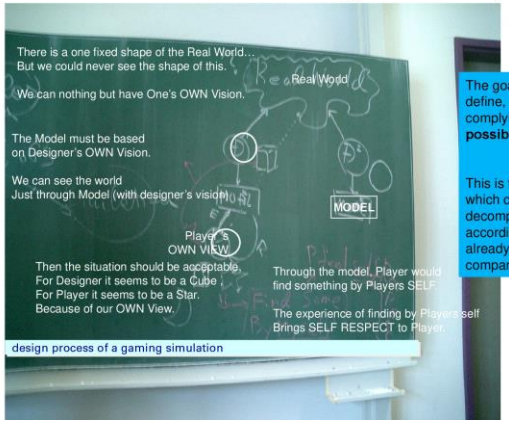
11

newWAVe



12

UGS …is design Utopia?



The goal of gaming simulations is to define, solve or design a situation complying with its **potentiality** and **possible future** evolution.

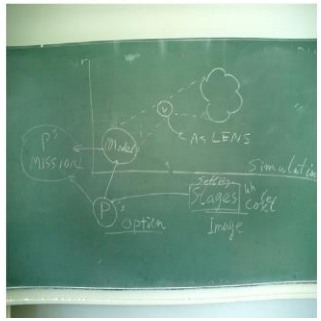
This is the definition of **utopia**, which complex design is analysed, decomposed and recomposed according to the process of the already mentioned process of comparison.

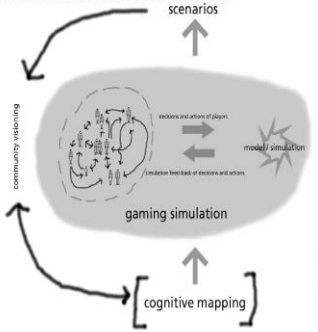
13

UGS …is design Utopia?

The design of a GS requires the definition of a **theme or problem** and therefore perception and understanding of these by the designer become crucial.

Her task is not to pre-define specific and rigid behaviours but to define the boundaries within which participants can act and interact.





14

UGSs and…RP & CS

The **role-play RP** is, in a certain way, the dynamics of the case study because it involves not only
the examination and the discussion of elements but seeks the direct involvement of the participants who change
their role from spectators of the case study to performers. Its characteristics:

1-information and personal expectations on society (observe yourself);
2-interpersonal relations and ways of living (watch the other people's behavior and actions);
3-relations with data and the knowledge of daily situations (watch the world in general and social life in particular)

The **case study CS** is a systematic record of an event or a series of events, that has the aim to teach a lesson and is based on experience. **CS** has three characteristics

1- it allows the identification with specific persons or defined roles;
2- sets in motion emotions and dynamics proper of an evolutionary dynamic;
3- separates description from theorization and generalization.

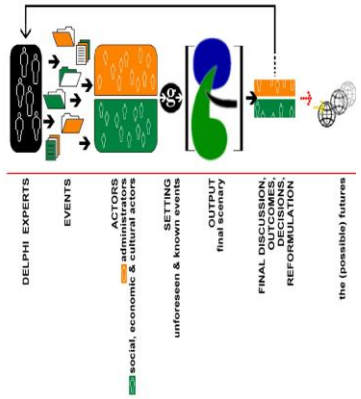
(Taylor and Walford, 1987)

15

UGSs design / Scenario

Last but not least among the objectives is to allow the creation through interaction between participants/players and participants/play-simulation of scenarios that are possible and at the same time are shared at least at a generic level.

Basically the GS helps the designer and participants in analysing and confronting more or less problematic situations, while illustrating the complexity of outcomes by providing a co-exploratory platform for solutions and definitions.



16

UGSs and language

The method used by Jan Klabbers deserves deep attention as it is exactly through a gaming simulation that he constructs a common language in order to design environments or to face and solve problems.

It is a structured confrontation in which the participants, following the rules, contribute to the definition of a common linguistic basis, according to one's own background and competences. This method allows to avoid misunderstandings, but it also promotes alternative visions of reality.

Even though apparently there is a contradiction, construction of a utopia is intrinsic to the gaming simulation and in the same time it adds pragmatic implementation to the visionary.

17

UGSs and Participatory Planning

The practice of urban design is characterised by this hybrid process and is one of major problems which have to be faced in teaching, in designing and in the practice of the so called participatory planning.

The main problem to face is that of the use of highly expert and specialised languages with non-experts, therefore also the presentation of "utopias" or pre-defined models seems of little effectiveness.

Teaching and research are in fact characterised by the necessity to exchange information. In a situation of communicative imbalance between interlocutors, this exchange of information encounters a difficult obstacle to overcome.

18

…starting form…

01 About urban space /public /common space

02 UGS elements

03 **Civitas and Urbs**

04 Future...

19

URBAN

Urban
masc. proper name, from Latin urbanus "refined, courteous," literally "of a city"

urban (adj.)
"characteristic of city life, pertaining to cities or towns," 1610s (but rare before 1830s), from Latin urbanus "of or pertaining to a city or city life; in Rome," also "in city fashion, polished, refined, cultivated, courteous," but also sometimes "witty, facetious, bold, impudent;" as a noun, "city dweller," from urbs (genitive urbis) "city, walled town," a word of unknown origin.

The word gradually emerged in this sense as urbane became restricted to manners and styles of expression.

In late 20c. American English gradually acquiring a suggestion of "African-American." Urban renewal, euphemistic for "slum clearance," is attested from 1955, American English. Urban sprawl recorded by 1958. Urban legend attested by 1980.

20

*c. 1200, from Old French cite "town, city" (10c., Modern French cité), from earlier citet, from Latin civitatem (nominative civitas; in Late Latin sometimes citatem) originally "citizenship, condition or rights of a citizen, membership in the community," later "community of citizens, state, commonwealth" (used, for instance of the Gaulish tribes), from civis "townsman," from PIE root *kei- (1) "to lie," also forming words for "bed, couch," and with a secondary sense of "beloved, dear."*
Now "a large and important town," but originally in early Middle English a walled town, a capital or cathedral town. Distinction from town is early 14c. OED calls it "Not a native designation, but app[arently] at first a somewhat grandiose title, used instead of the OE. burh" (see borough).

Between Latin and English the sense was transferred **from the inhabitants to the place**. The Latin word for "**city**" was urbs, but a resident was **civis**. Civitas seems to have replaced urbs as Rome (the ultimate urbs) lost its prestige.
[…]
A different sound evolution from the Latin word yielded Italian **città**, Catalan **ciutat**, Spanish **ciudad**, Portuguese **cidade**.

London is the city from 1550s. As an adjective, "pertaining to a city, urban," from c. 1300. ***City hall*** *"chief municipal offices" is first recorded 1670s; to* ***fight city hall*** *is 1913, American English.* ***City slicker*** *"a smart and plausible rogue, of a kind usu. found in cities" [OED] is first recorded 1916 (see slick (adj.)).* ***City limits*** *is from 1825.*
The newspaper ***city-editor****, who superintends the collection and publication of local news, is from 1834, American English; hence* ***city desk*** *attested from 1878.* ***Inner city*** *first attested 1968.*

21

The growth of interest in Italy and Europe for citizenship education can, however, be linked to the international recognition of the need to address injustices and inequalities through education. Moreover, the process of globalization and the consequent migrations have then led to the promotion of an idea of democratic citizenship as the foundation of multicultural societies and as a way to "manage diversity". This is evident as it has been carried forward over the years by European education policies. […] the European Charter on Education for Democratic Citizenship and Human Rights Education (EDC / HRE), with Recommendation CM / Rec (2010). By adopting this Charter, Member States have committed themselves to offering every person in their territory the opportunity to educate about citizenship and human rights in an effort to promote democratic values. This Charter had the strength to be further strengthened by further documents for the development of policies and practical tools to support democracy, human rights and the rule of law through education.

Natalini, Nuzzaci, Rizzi, 2022

22

improve responsibility // increase bottom up approach

From Governance to Governanza?

23

UGSs why?

goals	expected results
stimulate involvement	Individual involvment
stimulate communication	Inter-personal, intra-groups
stimulate participation	groups of actors/stakeholders are involved in active participation
information and training	trough explicit decription of inter-intra-relationships, connections, links and processes of complex socio-economical and ideological systems…
research	to find possible "frequencies" of the component of the social behaviour in the context of different multi-layered systems
planning (the plan)	design and development of strategical master plan
planning (evaluation of the plan)	Evaluate and verify the possible application and development of the master plan

byPaola Rizzi

24

...starting form...

01 About urban space /public /common space

02 UGS elements

03 Civitas and Urbs a case study

04 Future...

25

EMILIA EARTHQUAKE

20th May 2012
29th May 2012
3rd June 2012

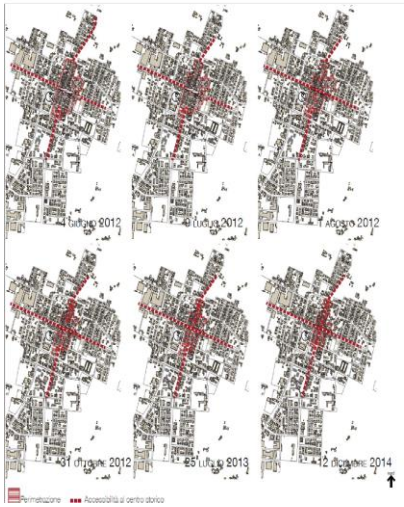
- Magnitude: 20th May 2012: **5.9**
  29th May 2012: **5.8**
  3rd June 2012: **5.1**
- Buildinding destroyed: 7'700
  Homeless: 41'000
- Affected people: 552'312
- Dead people: 29
- Secondary death: 500

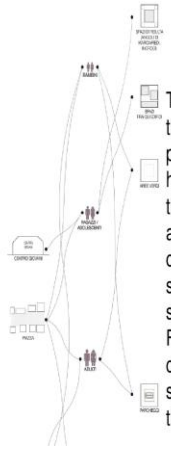
NOVI DI MODENA

- Foundation: IX sec. ca.
- Population 2011: 11'476
- Medieval architecture
- Demographic increase due to economical activities

26

Red areas and Public Spaces





The loss of identity and the sense of disorientation produced by the sisma have been accentuated by the lack of possibility of accessing the historical center and the daily public spaces, in particular square *1 maggio*.
For this reason the community has spoken spontaneously to take back their Own public space.

27

COME RICONFERIRE IDENTITÀ A UN LUOGO?

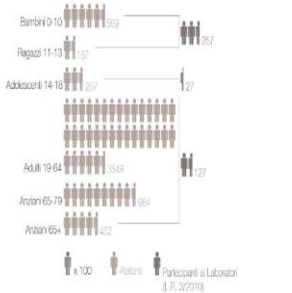
LET'S START FROM PUBLIC SPACES!

PROCESSI DI PARTECIPAZIONE

RICOSTRUZIONE PARTECIPATA

PROGETTO PILOTA

COME RI-GENERARE, RI-VITALIZZARE, RI-CONQUISTARE LO SPAZIO PUBBLICO E L'IDENTITÀ DOPO IL TERREMOTO?



28

30


SINAPSI
Connessioni urbane e territoriali
Vie abitabili e Ciclorete
L'ACQUA LA VA A LA BASA
Specificità architettonica
Documento Programmatico della Qualità Urbana
Statuto dei Luoghi
TUTTI I COLORI DEL VERDE
Trame verdi e naturali
Parco Campagna
RIPARTIAMO DALLE PIAZZE
RITORNO AL FUTURO
Rigenerazione urbana
MIMO Momenti Interattivi per Muoversi Oltre
ISOLE TRA IL VERDE
Usi provvisori ed eventi
Spazi inFestati
INCONTRARSI NEL FARE
Legameria sociale
Patti di Collaborazione
SERVIZI 3.0
Innovazione dei servizi e governance
C'era una Svolta
Qui ci serve un po' di magia
CULTURE IN CIRCOLO
Rete culturale e artistica
Luoghi Comuni
Fonte: Piano Organico Comune di Novi di Modena
Autore: Monia Guarino

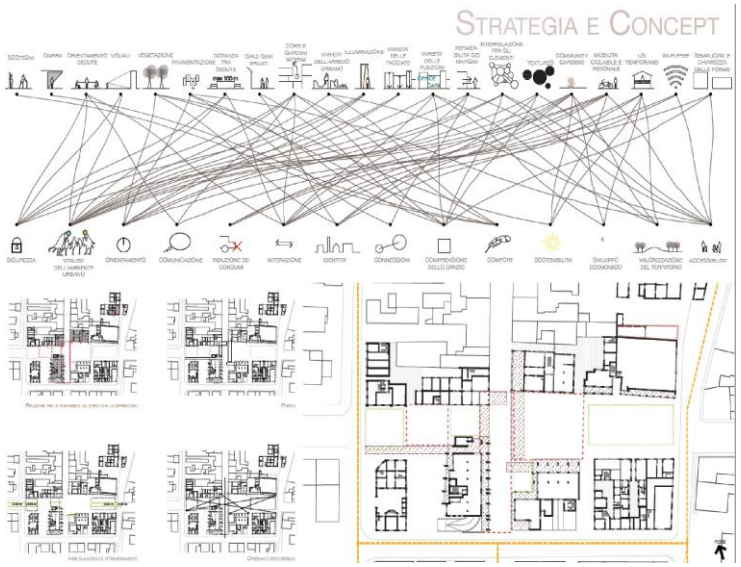
29


FATTI IL CENTRO TUO!
percorso partecipativo per la
RICOSTRUZIONE
Monia Guarino architect + Diver s City 2014
Fatti il Centro Tuo!
Participation to Reconstruction Plan
top-down initiative & stimuli
participative pilot programme
community planning
bottom-up feedback
One of the most important goals of the Reconstruction Plan was to support and help the population to overcome the
social trauma of the post-disaster by revitalizing urban areas and identifying and/or creating new spaces and places as reference point for the community.
Parcobaleno
Prof. Paola RIZZI
DICEAA University of L'Aquila
Arch. Monia GUARINO
Principi Attivi NGO

30


IL PIANO DI RIGENERAZIONE URBANA
Urban Regeneration Plan
Diver s City,
Urbanlab
M. Chiappe

31


STRATEGIA E CONCEPT

32

Among the proposals one was considered with a lot of care: the reconstruction of the elementary school, its playground and park.

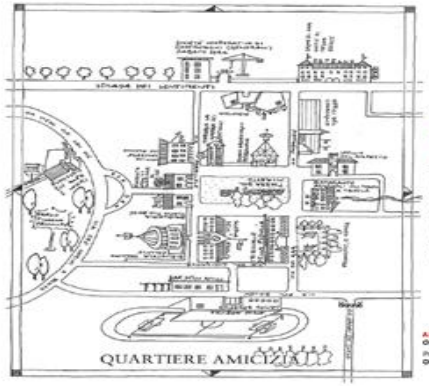
It involved children and families: their home were destroyed or have to be repaired and the only element that was still standing was a tree in front of the collapsed school.

- 40 hours of UGS and design workshops
- with students 8-9 years divided into 6 classes (3rd grade and 4th grade A,B,C sections) of elementary school
- January-April 2014
- 3 meetings with parents and teachers
- 2 public hearings with the presentation to the community of the guidelines.

Children's use of space / place in Novi di Modena

It is important to understand that the children before the earthquake used as playground the public space especially the main square and their home gardens, after the earthquake they use what was left of greenery and parking.

Therefore is understandable why they were really looking for a place where they can enjoy activities and play games.



A bit of "Magic" is needed!
This was the slogan of the participation to the design of the new school in 2014.

The city of Emotions

The idea behind the game "City of Emotions" is that places and spaces can generate emotions or are associated with emotions. These might vary from individual to individual, or between different groups of people.

The "City" shifted into "Park" and *The Park of Emotions* project started.

The *park of emotions* was used in three phases:

- identification of the feeling/emotion
- composition of the different corners designed
- discussion and evaluation on the final scenario.

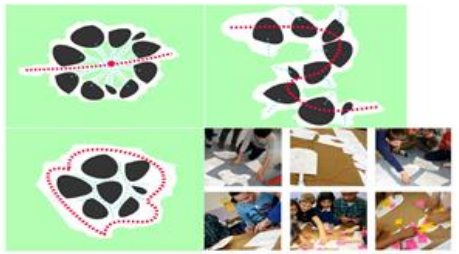
The 1st phase
was to work on emotions given to
a future life after reconstruction

With the support and suggestion of the teachers the children were divided into groups according with their sensitivity.

The children:
•draw a map of the corner
•made a presentation to the
•other teams
•discussed and select the features of each corner.

Parcobaleno

37



ARISING HOPE AFTER DISASTER: THE PARCOBALENO PROJECT
ON UGSs, PARTICIPATORY DESIGN AND PLANNING IN RECONSTRUCTION AFTER EARTHQUAKE
Prof. Paola RIZZI — DICEAA University of L'Aquila
Arch. Monia GUARINO — Principi Attivi NGO

The 2nd phase was
Composition.

Evaluation of 3 hypotheses of how to put together all of the different corners:
•a shape as a star
•distributed along the path
•merged.

Discussion and selection of the **most suitable solution**

Parcobaleno

38

The third phase **Discussion and final model.**

After the discussion of the proposed scenario each class designed a physical model that was composed with the others in one big model.

Each corner was designed following the suggestions originated from an emotion or value identified by children as fundamental for community life.

Parcobaleno

39

Last but not least: give the name to our new Park!

The final model was presented to the parents and citizens of Novi and a referendum to give to it a name was launched.

An "urban picnic" was organized in the main square and all the families of the pupils and all the citizens were invited.

The name chosen was Parcobaleno a combining the words Parco (Park) and Arcobaleno (Rainbow).

Parcobaleno

40

Parcobaleno

At the opening the children recognized that all the emotions were recognizable in the settings and
features of the new park.
For the children the logo of a **tree** and the **house on the tree** in the park, were the means of a

41

Aim of Park of Emotions Project
1- to overcome the social "trauma" generated by earthquake
2- reactivating places and giving and creating new reference points for the community life
3- to enhance the creative competencies of children accommodating - in the Park design- their original contents without manipulation.

Challenges
The facilitators and designers had **to accompany** the long time of design and work in progress procedures **without losing or dimming** the enthusiasm and interest fully grown during the participation.

Strengths
•the guidelines shared and decided by the entire community
•originality and feasibility of the project proposals
•the attention and care of future users with different needs and abilities
•finally the innovation and sustainability of the materials used.

The UGS "City of Emotions" has proven to be a powerful tool for
initiating and emphasizing participation in real life urban planning processes especially in healing social trauma after disasters.

As result the process achieved two important goals

1
to increase the collaboration and cooperation
of citizens including the youngest

2
the guidelines are applicable to other similar situation

Parcobaleno

42

…starting form…

01 About urban space /public /common space

02 UGS elements

03 **Civitas and Urbs & citizenship**

04 Future…

43

Citizenship and citizenship's education: two evolving concepts

Education for democratic citizenship includes training, awareness, information, practices and activities that aim to provide students with knowledge, skills and understanding, developing attitudes and behaviors capable of giving them the power to exercise and defend their rights and responsibilities in society, value diversity and play an active role in democratic life, in order to promote and protect democracy and the rule of law. The awareness and information practices and activities that aim, providing students with knowledge, skills and understanding and developing their behaviors and behaviors, to enable students to contribute to the construction and defense of their rights and duties, reinforce the idea general citizenship, but do not exhaust it.

Natalini, Nuzzaci, Rizzi, 2022

44

Apparently, sports and games are a propaganda tool good for any dictatorship: parades and winners, emphasized victories, precocious stereotypes and so on. Games were used (are used) as propaganda tools: baby weapons for young fascists, toy soldiers and wargames… There is a perverse pedagogical idea behind the possibility of incorporating in the rule of a game some “rule of the society”. Games are also part of any mind control system since the roman era, as the Latin motto “panem et circenses” (*bread and plays*) states for.

Beniamino Sidoti, 2022

“Bread and circuses”
Juvenal, who coined the phrase, used it to decry the "selfishness" of common people and their neglect of wider concerns.
The phrase implies a population's erosion or ignorance of civic duty as a priority

45

We had a sort of a movement to introduce games in education as system of organized competition, with scores, objectives and prizes, normally known as **“Gamification” – that have taken a very different route from, for instance, educative games as designed in Gaming Simulation.**

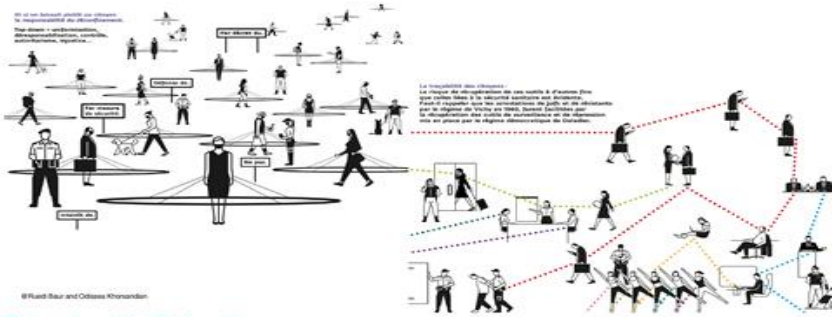
It’s a matter of nuances. All the games have some play, some tolerance between elements, less or more evident.

Every game creates its own universe, full of possibilities within a given set of rules: some games are more “democratic”, because they give all players similar chances to succeed, and some are giving to a part of the players tiny possibilities. And sometimes those tiny possibilities are going against all odds, and against the will of the dictators, as happened in the fictional universe of Hunger Games.

Games are there to explore possibilities. And through possibilities we experience the fact that another world is possible.

Andreas Brasol, Grand Paris

46



Distance is safe but it’s A-social.

47

#shareEU

SHAPING OF THE EUROPEAN CITIZENSHIP IN THE POST-TOTALITARIAN SOCIETIES. REFLECTIONS AFTER 15 YEARS OF EU ENLARGEMENT

Partner organisations:
UNIWERSYTET JAGIELLOŃSKI (PL)
UNIVERSITÀ DEGLI STUDI DELL'AQUILA (IT)
UNIVERZITA MATEJA BELA V BANSKEJ BYSTRICI (SK)
ŚWIĘTOKRZYSKIE CENTRUM DOSKONALENIA NAUCZYCIELI (PL)
POWIAT KIELECKI (PL)

Co-funded by the Europe for Citizens Programme of the European Union

Europe for Citizens

48


Koinè a game about citizens and participation
Koinè
Europe for Citizens

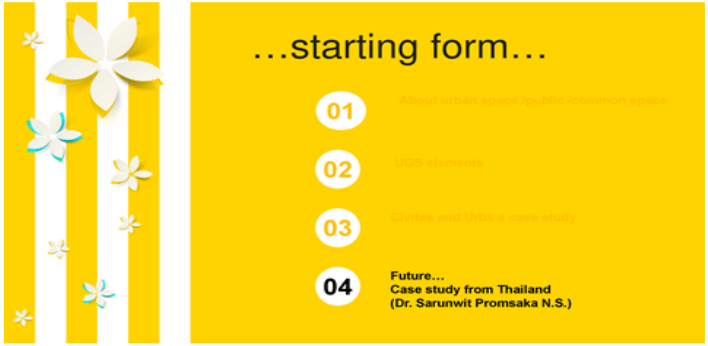
49


Phase 3 - Assigning auctioned cards
Briefing hints
Europe for Citizens

50


Credits:
Europe for Citizens

51


…starting form…
01
02
03
04
Future…
Case study from Thailand
(Dr. Sarunwit Promsaka N.S.)

52

Game-based learning

Academic service programs
Faculty of Learning Sciences and Education
Thammasat University, Thailand

53

The use of educational games in social development

Designing games- redesigning society program (2015 – 2021):
Using a boardgame designed by youth to communicate social issues
Facebook page: www.facebook.com/tu.banpu

Clean energy teacher program (2020 – present):
Developing learning materials with schoolteachers for enhancing energy literacy of youth
Facebook page: www.facebook.com/TU.CleanEnergy

54

Designing games- redesigning society program (2016 – 2021)

Project duration: 2 cohorts (each cohort took two years) under the MOU between Thammasat Univ. and Banpu Cooperation

Goal: Developing social innovative mindset of youth (Grade 11-12)

Methods: Youth-led educational game design based on social issues in their local context

1. **Training and game development (13 months):** A series of training program and consultation slots on educational game design based on design thinking process
2. **Implementation (3 months):** The youth brought their game to play with their target.
3. **Innovation dissemination (2 months):** Conducting "Games and Learning Festival" to promote the games to the public. Some games had granted external funds for publication. The funders were Ministry of education, universities, etc.

55

Designing games- redesigning society program (2016 – 2021)

Outcomes:

1. A training program for youth on educational game design (a design thinking approach)

2. Self-development of participants: the skill set involves empathetic communication, grit, teamwork, social awareness, co-leadership.

3. 34 Educational games on various issues: i.e. social bullying, teenage pregnancy, sexual harassment, waste management, environment issues related to agriculture and fishing industry, financial investment, road safety, Thai literature, the individual right, international corroboration.

56

Designing games- redesigning society program (2016 – 2021)

Game: Lost in Eros
Topic: Safe sex guides for LGBTi
By: Bodindecha Sing Singhaseni 2 School

Game: Survivors from black snow
Topic: The affect of sugar cane burning leading to smog or "Blank Snow"
By: Watcharawittaya School

Game: Pick herb up
Topic: Thai herb and the health benefits
By: Prachinkallayanee School

Designing games- redesigning society program (2016 – 2021)

Game: Durian farm
Topic: Introducing Naturally-occurring biological control of pests for Durian farm
By: Sawi Witthaya School

Game: Safe or unsafe
Topic: Road safety (Speed, Safety, Traffic rules)
By: Benchamaracharungsarit School

Game: The literature
Topic: Communicating the values of Thai literature
By: Srinagarindra the princess mother (Lopburi) School

Clean Energy Teachers (2020 – present)

Project duration: Two years under the MOU between Thammasat Univ. and Power Development Fund By ERC

Goal: Developing energy literacy of high school students

Methods: Teacher-led learning material design based on green energy and carbon footprint

1. **Training and game development (8 months):** A series of training program and consultation slots on educational game design
2. **Implementation (3 months):** The teachers applied their learning materials (i.e. web app, boardgames, explainer video, CAI: computer-assisted instruction) in their classroom or extra curriculum activities
3. **Innovation dissemination (4 months):** Conducting "Clean Energy Teacher Showcase" to promote the learning materials to the public. We also uploaded all 50 learning materials and instructions to an online learning platform. On this platform, the project participants produced an online course on how to apply their materials into the youth learning.

Game: Power Hunting
Topic: Renewable Energy (The comparative cost of generating electricity by sources)
Designed by: Arunothai Wittayakom School
Target group: Grade 11-12 students

Game: Power Plant Factory
Topic: The possible alternative energy in the Northern Thailand (Raising awareness in generating electricity from local resources)
Designed by: Stri-Sri-Nan School
Target group: Grade 10-11 students

61

VADDI Vallo A Dire Al Dinosauri –
An urban gaming simulation on climate change

https://www.arrr.it/-/educare-ai-cambiamenti-climatici-si-puo-con-la-giocosimulazione-vaddi-vallo-a-dire-ai-dinosauri-

62

VADDI Vallo A Dire Al Dinosauri –
An urban gaming simulation on climate change

byPaola Rizzi
https://www.isprambiente.gov.it/it/attivita/formeducambiente/educazione-ambientale/file-educazione-ambientale/manuale-completo

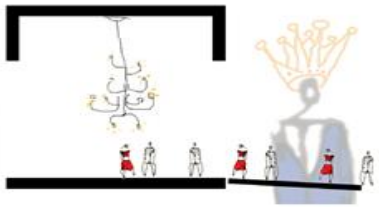
63

Help me Project Gs on risk preparedness

http://www.formazionetecnica.it/europrogettazione/help-me-project/?fbclid=IwAR3PqN5K8mhEuoj5H4jAW_2G5LszDZ8OlkvdJVJmfqLIcMVeuX82ri_yp1E

64

Citizenship…place and space



65

If we consider cities as the living space of a organized local society, designing the city is an activity that brings opportunities to envision new configurations of the physical space through a communicative and interactive process and in which quality and desirability of the design increases with the improvement of the organizational behavior of the whole system.

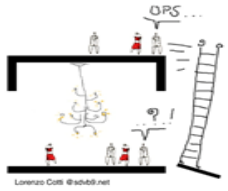
66

16. the content of physics concerns only physicists, its effects concern everyone.

17. what affects everyone can only be solved by everyone.

18. every attempt by an individual to solve on his own what concerns everyone is doomed to failure.

Friedrich Dürrenmatt, *21 points on "the physicists"*, 1962



Lorenzo Cotti @sdvb8.net

Paola Rizzi // Diver s City urblab
Department of Design, Architecture and Urban Planning // University of Sassari // Italy
rizzi@uniss.it

67

#shareEU

Thank you

urban gaming simulation: design and practice.
acts of citizenship for civic spaces

Paola Rizzi // Diver s City urblab
Department of Design, Architecture and Urban Planning // University of Sassari // Italy
IJDDI, TDS, Thammasat University // Bangkok // Thailand
DMUCH // Ritsumeikan University // Kyoto // Japan
rizzi@uniss.it

68

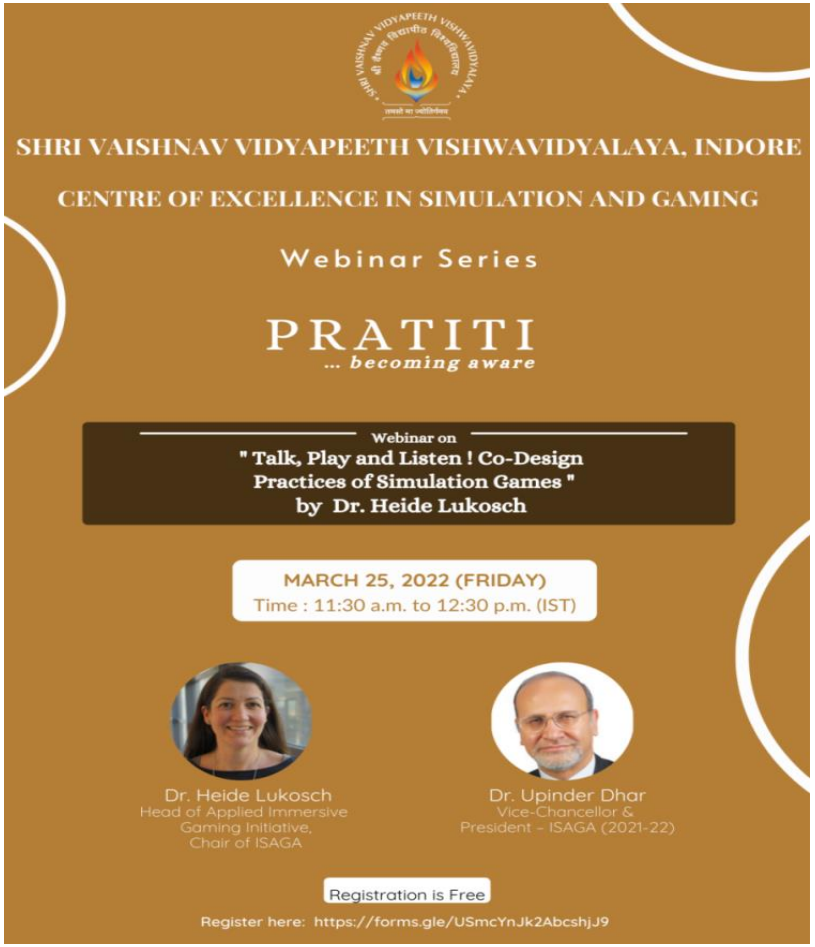
Webinar - 04

Date, Day & Time: March 25, 2023 (Friday)
11:30 a.m. to 12:35 p.m. (IST)

Invited Speaker: **Dr. Heide Lukosch,** Associate Professor and Head of Applied Immersive Gaming Initiative (AIGI). University of Canterbury and Chair of (ISAGA), Christchurch

Country: New Zealand

Title: Talk, Play and Listen! Co - Design Practices of Simulation Games



Webinar Topic

"Talk, Play and Listen! Co - Design Practices of Simulation Games"

Abstract

Designers of games come from a multitude of disciplines. Their backgrounds can be computer science, education, psychology, design, arts, or business studies. With their games, they strive for a balance of relevant real-world context, a meaningful experience, and a playful time for the participants. But how do designers make sure that the game represents the elements of a real system that are relevant? And how to identify these in a complex system? How to ensure that participants experience the game as meaningful? Which game elements work motivating? These are questions that can be addressed by co-designing games with a target group. Yet sometimes, engagement with the target group comes with constrains and distinct challenges – professionals with tight schedules, children with special communication needs, or policy makers with a clear agenda. This talk discusses examples, approaches, and failures to co-design of applied games, while talking, playing and listening to the target group.

Profile

Dr. Heide Lukosch is an Associate Professor at the Human Interface Technology Laboratory (HIT Lab NZ) at the University of Canterbury, Christchurch, New Zealand. She has more than 12 years' experience in designing, applying and evaluating simulation and applied games. She is interested in understanding how games have to be designed to address challenges of individuals and organizations in a complex world. With a group of PhD and postdoc researchers, she works in the domains of education, (mental) health, disaster preparation and resilience. Heide is head of the Applied Immersive Games Initiative (AIGI) and chair of ISAGA. She lives with her family in the south of Christchurch and enjoys the beauty and kindness of her third home country Aotearoa New Zealand.

A/Prof. Dr. Heide Lukosch

Talk, Play, and Listen!
Co-Design Practices of Simulation Games

UC UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

HITLabNZ

APPLIED IMMERSIVE GAMING INITIATIVE

1

2

Disclaimer

APPLIED IMMERSIVE GAMING INITIATIVE
HITLabNZ 20 YEARS
www.hitlabnz.org

GO TU Delft Gamelab

All work presented here is the result of wonderful collaborations with students and colleagues at TU Delft, NL, the HIT Lab NZ, and other places!

HITLabNZ

3

Why co-design?

Simulation or applied games

utilize game elements for motivation, engagement, collaboration

support learning, training, research, and policy/decision-making

HITLabNZ

4

Why co-design?

But: Simulation or applied games

are often made by game designers, scientists, artists…

and require the input (at least!) of content-matter experts

or better: should **become co-designers!**

CharlaPaga project; TU Delft
ITRack project; TU Delft

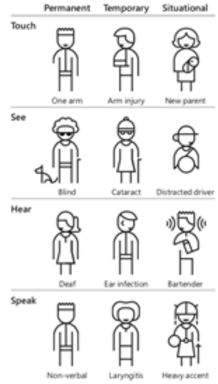
Zoi Sadowski-Synnott; stuff.co.nz

5

Why co-design?

Design with one specific target group may also help other groups

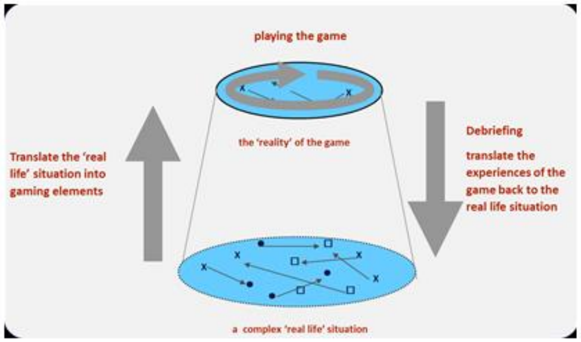
"…it's through living and critically engaging with diverse groups of people that we're best able to cultivate empathy generally and constantly, not just selectively and discretely, and to design inclusive solutions that will work better for us all."
Amelia Abreu, 2018



Microsoft Inclusive Design Tool

6

Realistic representations



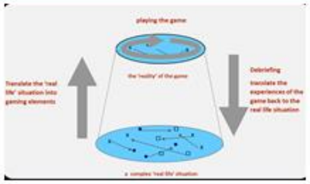
Relationship between complex systems and simulation gaming; Peters et al., 1998

7

Realistic representations

Applied (Simulation) Games

- Allow to experience complexity
- Direct feedback and interaction
- Enable observation and meaning creation -> qualitative insights



Complex Systems

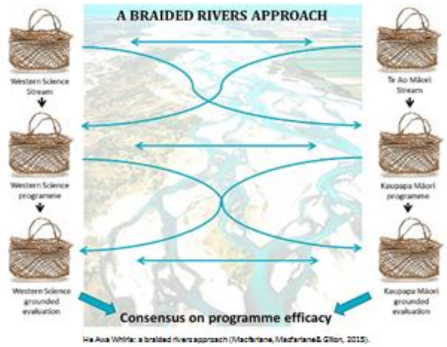
- Dynamic and emergent
- Risks and Uncertainties
- Need for innovative solutions -> address social factors

Relationship between complex systems and simulation gaming; based on Peters et al., 1998

8

How to turn this process into action?

1. Design specifications
2. Systems analysis
3. Game design
4. Game construction
5. Implementation



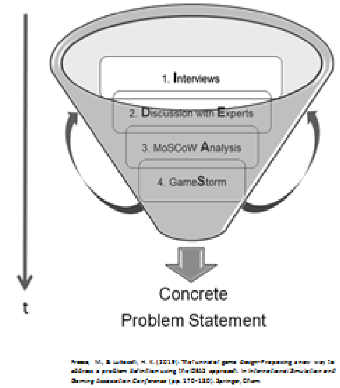
HITLabNZ

9

How to turn this process into action?

One approach:

The Funnel of Game Design



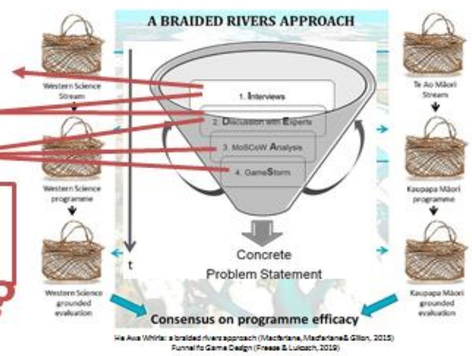
HITLabNZ

10

How to turn this process into action?

1. Design specifications
2. Systems analysis
3. Game design
4. Game construction
5. Implementation

? ? ?



HITLabNZ

11

Let's go!

1. **Design specifications**
2. Systems analysis
3. Game design
4. Game construction
5. Implementation

- The background of the problem
- The objective of the game
- Conditions for the design process
- Requirements and requests for specific game elements
- The use of the game

Outcome → report with specifications

HITLabNZ

12

Co-Development of design specifications

CharliePapa

What were the specifications?

- Police 'wanted' a highly realistic VR game
- Single player, online game
- Easy to play for non-experienced players
- Learning goals situational awareness and communication

CharliePapa project
Pieken in de Delta
Serious Gaming for close protection

Trigion · Politie · TU Delft · e-semble

CharliePapa, TU Delft

HITLabNZ

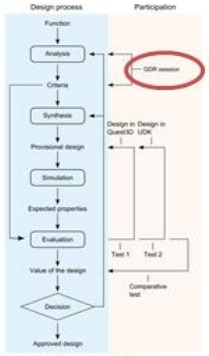
13

Co-design process

CharliePapa

What did we do?

- Talk
- Listen
- Engaged in role-play, very helpful!
- Used too complex questionnaires for validation



Lukosch, van Ruijven & Verbraeck 2012
Participatory design based on design process by Rozenburg & Eckels, 1995

CharliePapa play test The Hague, 2012

HITLabNZ

14

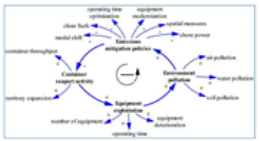
Co-design in complex systems

MoBinn

1. Design specifications
2. **Systems analysis**
3. Game design
4. Game construction
5. Implementation

- Elements of the system and their (complex) relationships
- Actors, their roles, actions, decisions, power
- Context of the system

Outcome → model of the system



Namazi, Huang, Jin, & Chang, 2019; TNO Report R11299, 2017

HITLabNZ

15

Talk, listen…

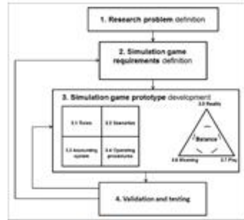
Real-life truck platooning test NL, 2019

HITLabNZ

16

…and play!

1. Design specifications
2. Systems analysis
3. **Game design**
4. Game construction
5. Implementation



Game design process Kurapati, 2017

First ideation for MoSiInn,
Roukouni, A., Lukosch, H., Verbraeck, A., & Zuidwijk, R. (2020). Let the game begin: enhancing sustainable collaboration among actors in innovation ecosystems in a playful way. Sustainability, 12(20), 8494.

HITLabNZ

17

…and play!

MoSiInn game material, Roukouni, 2019

MoSiInn game session with experts, Amersfoort, NL, 2019

MoSiInn game session with (game design/transportation) students, Delft, NL, 2019

MoSiInn game session with professionals, Rotterdam, NL, 2019

HITLabNZ

18

Co-design with a small number of experts

From CharliePapa to SnowsportsNZ

…use of qualitative data, pictures, stories
Case-study research with a small number of actors
Useful for exploration of technology

Zoi Sadowski-Synnott, stuff.co.nz

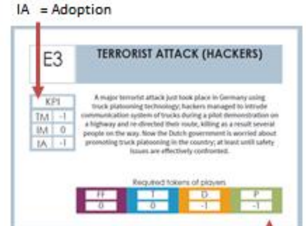
Wu, Y., Lukosch S., Lukosch, H., Lindeman, R., MacKee, R., Fukuden, S., Ross, C. & Collins, D. (2021): Feasibility of Training Elite Athletes for Improving their Mental Imagery Ability Using Virtual Reality. Poster presented at IEEEVR 2021 Conference, Christchurch, NZ

HITLabNZ

19

…don't forget to… listen!

How does the event impact scores?
TM = Technology
IM = Infrastructure
IA = Adoption



How does it influence players?
FF = Freight Forwarder, T = Transporter
D = Technology Developer (OEM),
P = Policy Maker (Government)

HITLabNZ

20

Co-design in complex system – or: that is 'easy' -

But what about co-design

...with a small group of (busy) experts?

...with children?

...with individuals with special needs?

...or with special interests?

...across cultures?

21

Co-design with children

How is this difficult?

- **Ethics:**
  Children are a vulnerable user group
- **Age:**
  Children may not understand well-designed, validated research instruments
- **Context:**
  Children are socialized to provide 'correct' answers

Malika Seker, HIT Lab NZ, VR math game user study with Primary school children

22

Co-design with children

Designing a VR game for children in school

- **Success:**
  - A bunch of happy children, interested in the technology
  - Data collected
  - Understanding how VR could be implemented in school
- **Failures, Limitations, Learnings:**
  - Ethical approval took VERY long
  - F2F experiments in times of COVID-19 are ...difficult... to organize
  - Play phase went well, listen – not so much...

Seker, M. & Lukosch, H. (2021): Towards Virtual reality Gaming for Children with ADHD in Formal Education, presented at SIGGI 2021 conference, Indore, India.

23

Co-Design with children

Understanding social cohesion in neighborhoods

- **Success:**
  - Co-design workshop with multiple material and engaged children
  - Direct outcome: a number of creative game ideas
  - Understanding of their game element preferences
  - PhD degree for Xavier!
- **Failures, Limitations, Learnings:**
  - Didn't understand the target group well enough
  - Used too difficult material
  - Teachers hand-selected students to participate

Tenorio, K., Bingenheimer, B., Lukosch, S., & Brazier, F. (2021): Designing for meaningful social interaction in digital serious games. Entertainment Computing, 38, 100383.

Tenorio, K., Lukosch, S., Lukosch, H. G., & Brazier, F. (2021): Requirements for Location-Based Games for Social Interaction. IEEE Transactions on Games.

24

Co-Design with individuals with special needs

How is this difficult?

- **Ethics:**
  Some groups may be a vulnerable user group
  Ethics approval, and consent from both the individual (and the care giver)
- **Yes, special needs:**
  Well-designed, validated research instruments may not be applicable
- **Context:**
  Is it appropriate to research
  a group you don't belong to?
  How valid will your results be?

Talktowngame.net / Zoe Hector, HITLabNZ

25

Co-Design with individuals with special needs

Designing games for adolescents with social anxiety

- **Success:**
  - Youth group / individuals with lived experience committed to participate
  - Group leaders committed to the collaboration
- **Failures, Limitations, Learnings:**
  - Ethical approval is complicated
  - F2F experiments in times of COVID-19 are ...difficult... to organize
  - Research process is messy

Zoe Platt-Young, HITLab NZ, eufico.nz

26

Co-Design with individuals with special interests

Designing games for urban resilience

- **Success:**
  - Created a deep understanding of urban resilience
  - Game play sessions conducted with graduate students at UC
- **Failures, Limitations, Learnings:**
  - Policy makers have their own agenda
  - Can games really
    - influence a policy making process?
    - help professionals to understand complex problems?

Bryann Avendano, UC ICivil Engineering, HITLab NZ

27

Co-Design across cultures

Designing games for disaster awareness

- **Success:**
  - Applicability of Hofstede's cultural dimensions in related work
  - Understanding of the meaning of words and symbols
  - Schools are committed to the research
- **Failures, Limitations, Learnings:**
  - How can we make sure that game design is
    - appropriate?
    - meaningful?
    - multi-perspective?

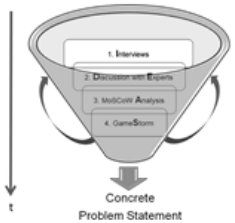
... Can we???

Maori representation in Civilization, The Spinoff, 12-07-2021; Beneath the Waves research project, Misha Mirza, HITLab NZ, Designing games for disaster awareness

28

So: How to… co-design?!

Co-Design as a process



Presse & Lukosch, 2019

Co-Design as activity

GameStorm session structure, © Groen & Lukosch

Co-Design of instruments

Age	32
Gender	Male
Occupation	Journalist
Family	Married, 2 kids, lives in Zwolle
Ethnicity	Polish
Genealogy	Parents met somewhere and still the same

Idea: project Persona by Kris Tong, HITLab NZ, 2021

HITLabNZ

29

Talk!

TTRPP project 'GameStorm' meeting, Delft.

HITLabNZ UC

30

Play!

MasterShipper, Student projects, Destination The Hague, TU Delft gamelab

HITLabNZ UC

31

and listen!

"The exercise perfectly simulated the human side. Our work is all about paperwork and relationships.

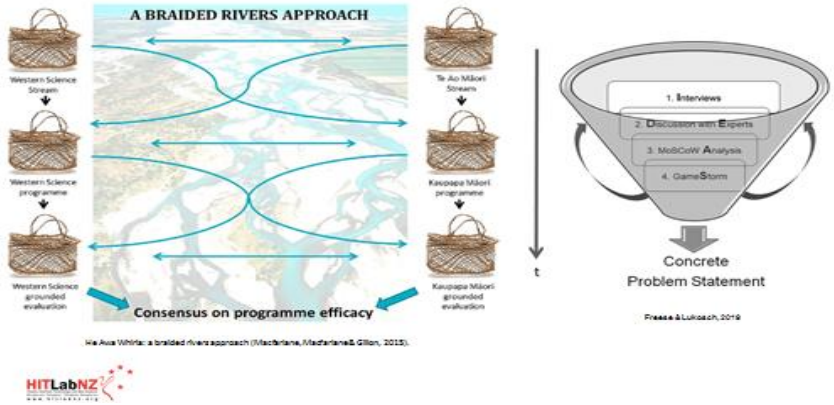
We think it's all digital, but the human side is much more important!"

iTrack project, TU Delft gamelab, EU Commission

HITLabNZ

32

… to co-design great games!



33

34

Webinar - 05

Date , Day & Time:	April 23, 2023 (Saturday) 03:00 to 04:00 p.m. (IST)
Invited Speaker:	**Ms. Marieke de Wijse-van Heeswijk**, Researcher, Radboud University, Nijmegen
Country:	The Netherland
Title:	“Facilitation Techniques to Enhance Learning Effects”

Webinar Topic

"Facilitation Techniques to Enhance Learning Effects"

Abstract

"Facilitation techniques to enhance learning effects" With this presentation I take you along best practices on introduction, time out reflection and debriefing didactics that enhance learning taken from many years of in depth case study (international) and mixed method research. I share with you the latest study findings in this area that have much practical relevance for enhancing learning effects in simulation game whether analogue or digital. By making use of a didactically sound and logical introduction, reflection and debriefing learners are in charge of their own learning and this directly affects their motivation, immersion and learning effects. Many ISAGAns and NASAGAns helped me in this quest on how to optimize learning in simulation games in the past ten years and its time I bring back the results to you so we can all benefit in many ways from these new insights. Naturally all simulation games take place in an influential context therefore any didactical design needs to be embedded in the specific situation. The insights I bring on a meta level are customizable to specific learning and cultural needs of participants.

Profile

Marieke de Wijse-Van Heeswijk is PhD researcher at Nijmegen school of Management (Radboud University, the Netherlands, promotors Prof. Etienne Rouwette and Prof. Sander Meijerink). Marieke studies the effects of interventions in and around game simulations on learning/change with participants. Marieke is a member ISAGA board (from 2004-2008 and 2021 until now) and community (since 2004) and member of the Dutch ISAGA branch Saganet (since 2004) and NASAGA (since 2020). Marieke was guest editor for the special issue facilitation of

simulation games in the Game and Simulation Journal. Marieke was a change and learning consultant and game designer/facilitator for GITP International from 2004 until 2015. From 2015 she started her research on the effects of different facilitation approaches in various types of simulation games. Marieke uses both Qualitative, quantitative and action research methodology and is used to a multidisciplinary research approach taking in perspectives from sociology, organizational sciences, public administration and philosophy.


GAME DESIGN FOR POLICY SIMULATIONS
MARIEKE DE WIJSE-VAN HEESWIJK
INTERVENTION METHODOLOGY RU FACULTY OF MANAGEMENT SCIENCES

1


PROGRAM SET UP
Part I WHY AND WHAT
sharing experience and offering inspiration (before the break)
Dennis Meadows short policy games and S.T.U.P.I.D. formula
Part II HOW GAME DESIGN tips and tricks
Macro/micro and examples from practice

2


WHAT: THE MAIN TYPOLOGY
CLOSED SIMULATION GAMES
Rule based
Predetermination on what is the 'right' outcome for example a policy test
Potential loss of acceptance of results because of
Lack of autonomy/agency
Differences with the reference system can be enlarged
OPEN POLICY GAMES
As little rules and pre set conditions as possible, just the rules that are needed for realistic gameplay
Allows for accessing assumptions
Players experience a lot of agency and therefore will accept results with higher probability

3


EXAMPLE OPEN POLICY GAMES (WHAT)
Start scenario
Role structure of players resembles reality
Ask players to act as in reality
Ensure pacing and flow
• a predetermined time frame max 1 hour per game round
Possible expert (role players) and or stakeholders present

4

EXAMPLE: POLICY GAMING FOR ORGANIZATIONAL CHANGE

Structure based on the viable systems model (Stafford Beer)

Findings:
- Functional and dysfunctional
- aspects of organizational culture
- Experimentation with effective behavior in a more adaptive/responsive organization

5

WHY: PURPOSES OF SIMULATION GAMES

		Performance criteria defined in advance?	
		yes closed simulation	no open simulation
Who has to learn from the simulation game?	participants	training / education	development / exploration
	others	assessment	research

Table 1 Applications of simulation games

- Peters and Vissers typology 1998
- Caluwé 2012 Functions of policy games
  1. Exchanging perspectives
  2. Understanding uncertainties and dynamics
  3. Ex ante evaluation
  4. The double learning experience

6

WHY & WHAT: CATEGORIZATION OF POLICY GAMES BY VAVIER 2014

Table 4-1: Policy games categorisation

Author:	(Geurts and van Wierst, 1991)	(Mayer and Veeneman, 2002)	(Bots and van Daalen, 2007)	(Geurts et al., 2007)
Categorized on:	Field of application	Applications in Infrastructural projects	Policy analysis activities, based on analyst roles (Mayer et al. 2004)	Actual contribution, based on evaluations of game sessions
Categories	Research Teaching Policy support	Research Learning Intervention	Research & Analyze Clarify values and arguments Design & Recommend Mediate Democratize Strategic advice	Communication Complexity Consensus Creativity Commitment to action

7

WHY: POLICY GAMES AS MULTI PURPOSE RESEARCH AND INTERVENTION TOOLS (VAVIER, 2014)

Figure 4-2: Perspectives in serious game design: (Mayer & Warmelink, lecture notes)

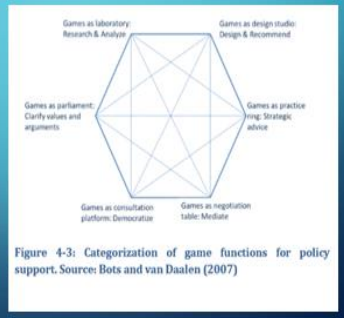


Figure 4-3: Categorization of game functions for policy support. Source: Bots and van Daalen (2007)

8

WHAT&WHY VAVIER 2014
THESIS NEGOTIATED APPROACH AND GAMING

Participation without actual power redistribution only frustrates stakeholders

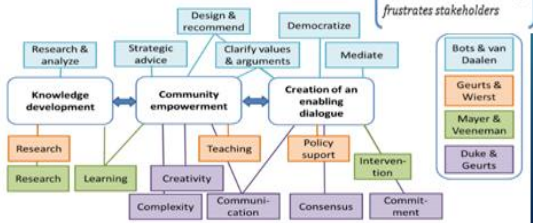


Figure 4-8: Linking the policy gaming categories to the NA building blocks

9

WHEN **NOT** TO USE POLICY GAMES

I. Easy problems
II. few variables
III. Ethical pressure
   'voluntary' participation
IV. When there is a push for
V. a particular outcome

10

SOME REASONS WHY ARE GAMES INTERESTING AS **CHANGE INTERVENTION /DIDACTICAL TOOL?**

- **Intrinsic learning,** understanding the challenge from the inside
- **Scaffolding** and finding own learning paths
- Optimized conditions for learning and research
  - **Short cycled feedback** based on players own actions
  - Connections between **short term and long** term consequences
- Able to transform tacit knowledge such as systems competence
- **Connections between intentions and real consequences**

11

EXAMPLES OF POLICY GAMES

Hexagon by Richard Duke

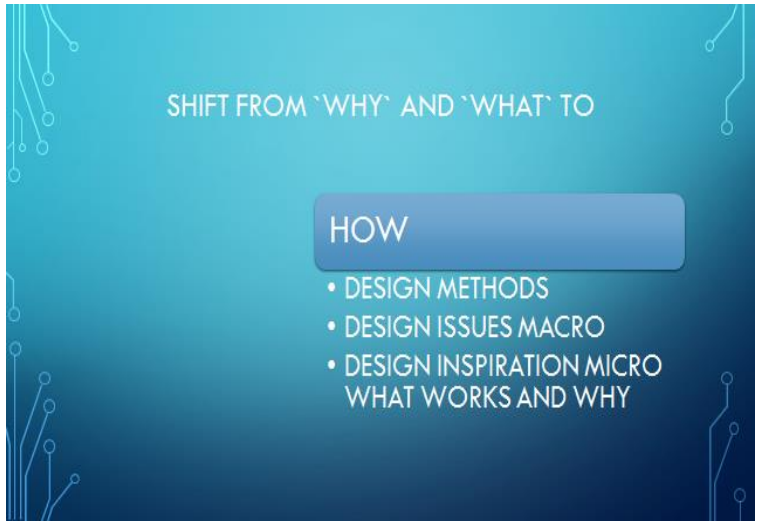
A 3 layered game board
Metaphorical game depending on the players
Developed for unesco 60 years ago
Experience how difficult it is to implement policy in an organization in crises

Paper pushing game Arabic law system

12


SOME REASONS WHY GAMES ARE INTERESTING AS RESEARCH TOOL
Social systems in action on different levels
Micro observations and macro
Condensed time
Multiple scenarios under multiple fairly realistic conditions
Often short design and low investment cost as opposed to risk in reality

13


SHIFT FROM `WHY` AND `WHAT` TO
HOW
• DESIGN METHODS
• DESIGN ISSUES MACRO
• DESIGN INSPIRATION MICRO WHAT WORKS AND WHY

14


1 GOLDEN RULE
Always start with a thorough systems analysis
(and in practice check consistently with your client(s))
Risks of not conducting a proper systems analysis:
Design around the wrong problems/challenges
Loss of commitment of stakeholders because they miss realism

15

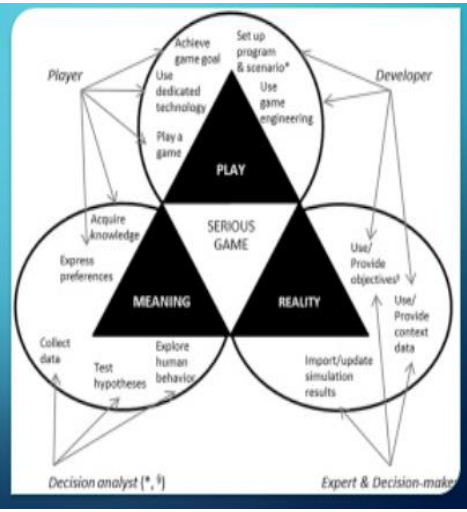

DESIGN METHOD DR. E. LEIGH
• Adapted from Elyssebeth Leigh 4 design questions
1. What do the learners have to learn/what problem needs to be investigated?
2. With what is the challenge simulated?
3. How do the players aim for the goals of the game (teams, individuals, recourses)
4. What will they do when in the game cycle? What kind of decisions and feedback?

16

DESIGN METHOD 1:

TRIADIC GAME DESIGN ELABORATED

HARTEVELD, C. (2018, AUBERT ET AL.)



17

DOES THE STRUCTURE OF THE GAME MATTER? (RULES, ROLES, RESOURCES, PROCESS FLOW)

- influence of structure and influence of people (Giddens, duality of structure)
  - Complex structures generate internal disturbances
  - making the game hard to play
- Keep in mind cognitive load, make use of framing
- It helps to have knowledge on what you design

Book tip: Achterbergh and Vriens, Organizations social systems conducting experiments (2009)

18

THE ROLE OF SCOPE AND DISTANCE

- Scope (handling space in relation to abstraction model)
- Distance
  - Experienced meaning of the game
- Are always relative to the players reality/experience

19

THE ROLE OF SKILL

- **Reflection skills** for meaningful interaction
  - Reduce risk of the gamer mode
- **Decision making skills**
  - Facilition/game design for realistic decision making

Facilitate participation

Use open structured questions if you notice participants are not playing the game realistically

What do you miss? What do you need?

20

EXAMPLE: ORGANIZATIONAL CULTURAL CHANGE

- Big city municipality, budget cut of 2 million coming
- Autonomy versus collectivity
- Lack of decision making skills
- Outcomes:
  - new word usage, collectivity wasn't a bad word anymore
  - Support for collective policy
  - Systems insight into effects of new policy

21

HOW MACRO DESIGN TIPS: KEEP IN MIND

Company culture and (intra) organizational dynamics

conduct short design cycles with quick follow up

Walking creates the path

Work agile, start prototyping day 1

22

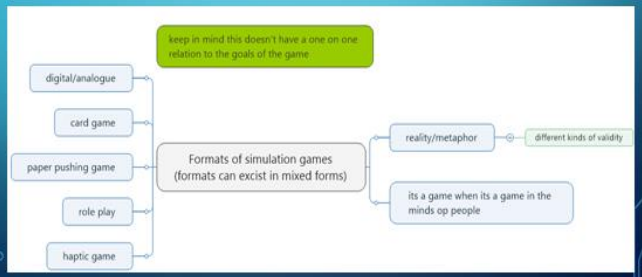
HOW: MACRO LEVEL DESIGN TIPS

- Don't design trap games
- Participative game design as super intervention
  - Think trough who should be in the group
- Maybe not use the word game
- Design for realistic play careful with winning
- Dont impose roles
- Don't create pure calculation games
- Choose format of game last
- Ethics
- Who reports what to whom and how

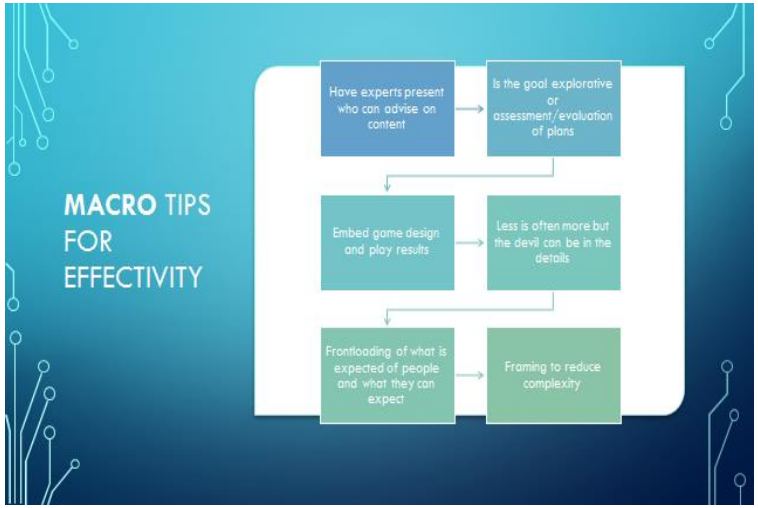
23

DOES THE FORMAT OF THE GAME MATTER?

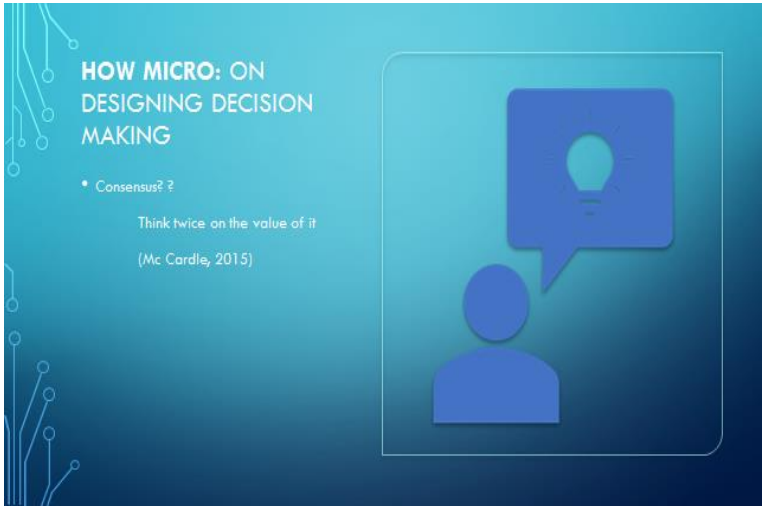
In essence game simulations are socio technical systems (Bekebrede, Mayer Tu Delft)



24


MACRO TIPS FOR EFFECTIVITY
Have experts present who can advise on content
Is the goal explorative or assessment/evaluation of plans
Embed game design and play results
Less is often more but the devil can be in the details
Frontloading of what is expected of people and what they can expect
Framing to reduce complexity

25


HOW MICRO: ON DESIGNING DECISION MAKING
• Consensus? ?
Think twice on the value of it
(Mc Cardle, 2015)

26


LESSONS FROM PRACTICE: OUTCOMES OF POLICY GAMES
Improved coordination via collective budget decisions
Preparing for the future
Worst case scenario Results of a policy game that aren't accepted by all stakeholders
Duality of structure Hex with extra layers, assumptions become reality
Communication is a big challenge Building bridges, communication is a concern and challenge
Evaluation risks It can be a political hazard to evaluate..
Game overshoot It was fun and insightful and now....nothing really happens

27


MOVING ON TO MICRO DESIGN
Translation of design in the large to design in the small
The basics
• Rule of three for speed and quality
• Less is more (reversed complexity Asbhy)
• Incorporate excisting theory and research
Keys to designing safety and commitment

28

USUALLY GAMES NEED

1. A scenario (not too complex!!)
2. Time frame in process flow
3. Rules and roles can decomplexify if design well
4. A feedback system
   - Think about whether this should resemble reality or not

   (this depends on the purpose)

29

Why is human behavior often suboptimal (in systems)?

DENNIS MEADOWS S.T.U.P.I.D. FORMULA

Social norms
wanting to compete is part of our social norms

Time pressure

Usage of the words

Poor example…bad start

Investigation limited, delay in experienced effects

Demonstration, not giving the right example

30

PRACTICAL ONLINE DESIGN TIPS

- Use zoom
  - put in links in chat (for ex. Link to shared link google docs)
  - Be aware that the chats in breakout rooms are erased, so you can copy them to a word file
  - If you send a message as facilitator to break out rooms it appears very short in a blue line, if you want it to be a message they can read back then post in it their chat or for example google docs

31

WEBSITES AND ORGANIZATIONS

- Saganet www.saganet.nl (Dutch game simulation association)
- ISAGA www.isaga.com (international game simulation association)
- DIGRA www.Digra.com (digital gaming association)
- ABSEL experimental learning organization
- www.thiagi.com for games and inspiration
- TU Delft repository https://www.tudelft.nl/en/ee/research/publications/ for interesting thesis on simulation gaming (Bekebrede, Bekius, Harteveld, Omecan)
- On youtube dennis for gameplay meadows, extra credits for game design
- Want to be part of a game Jam? Game didactics conference January 29, 2020

  https://learnbygames.hu.nl/conferentie/

32


GAME SIMULATION
BOOKS AND JOURNAL
• Simulation and gaming journal (from the '60)
• The magic circle prof Jan Klabbers
• Gaming the future's language prof. Richard Duke
• Policy games pathways into the unknown Duke and Geurts (is not available anymore but we have a free digital copy for your email Linda or m.dewijsevanheeswijk@fm.ru.nl)

33

Webinar - 06

Date, Day & Time: May 13, 2022 (Friday)
11:00 a.m. to 12:05 p.m.(IST)

Invited Speaker: **Mr. Hans Luyckx**, Director at IJsfontein,

Country: The Netherland

Title: The Relationship between Play and the Academic World

Webinar Topic

"The Relationship between Play and the Academic World"

Abstract

The Dutch serious game industry has approximately 300 companies and that is no coincidence. Dutch culture is playful, Erasmus and Huizinga were the first academics focussing on game, play and playfulness. The Netherlands has an excellent academic/educational infrastructure "producing" around 2000 game designers/developers per year. Every year game developers like IJsfontein are asked to take part in an Dutch and or European academic consortium and IJsfontein employees even co-writes academic research papers. Researchers need evidence that games work. In order to make a substantial contribution in such a consortium IJsfontein developed an evidence based game design methodology, resulting in 24 academics gaining their Ph. D. researching the games we developed.

Profile

After a long corporate career Hans on-boarded IJsfontein, a company specialized in Playful Learning, in 2012 as Operations Director. Hans studied economics and informatics at the University of Amsterdam and wrote his masters theses about the Economic Implications of the Arts in Amsterdam. Already as a junior programmer at KLM Royal Dutch Airlines he has been interested in the way companies develop innovative products. Both at Targus (computer hardware supplier) and at UPC (telecommunications) he has worked on the cutting edge of technology and its application. At IJsfontein the focus has been first at the internal company culture of creativity and innovation, the right people and the right (agile) procedures. The motto is: Culture eats strategy for breakfast. Later he moved his attention to business development, sales and he developed an ecosystem of partnerships for IJsfontein. Hans has been active as board member in the Dutch Game Association and the Federation of Creative Industries.

The relationship between play and the academic world

A survey of the Dutch playful learning, serious gaming industry and its relationship with universities and colleges in The Netherlands.

1

A short story of IJsfontein

- Playful learning, serious impact
- 25 years in business
- Active in education, health, museums, and corporate
- Learning, awareness, and behavioural change
- Europe, Africa, and the Middle East
- 40 employees
- BAFTA, Serious Play, many Dutch awards

2

Five Projects

- Masters of the Elements
- abcdeSIM
- Into D'mentia
- Delirium Experience
- STEPWISE

4

Project 1: Masters of the Elements

- One of the first serious games ever to be developed.
- Children 9 - 14 years are introduced to physical phenomena through assignments.
- This game positioned IJsfontein on the serious gaming market.

5

Project 2:
abcdeSIM

- Medical simulation game to practice ABCDE method
- Collaboration with Erasmus MC & technical department of the University of Twente
- Doctors have less time to educate students. No doctors needed for this practice.

7

Project 3:
IntoD'mentia

- Into D'mentia helps to create understanding for people with dementia.
- For informal caregivers and family members.
- Built in a mobile container with audio-visual means.
- Now working on new version: a 3D experience.

8

Project 4:
Delirium
Experience

- Online simulation-based experience.
- For healthcare professionals.
- Learn to recognize and treat a patient with a delirium.

9

Project 5:
STEPWISE

- An app to motivate Parkinson's patients to move more.
- Chat with virtual coach for motivation.
- Provides insight into the progress of the participant. Registers the number of steps (link to Apple Health & the Google Fit app).
- "Hooked on a walk around the block".

10

25 PHD's

- Validation
- Co-creation
- Design methodologies

11

How is this possible?

- History
- Culture
- Educational infrastructure
- Research grants
- Industrial policy
- IJsfontein methodology

12

Playful learning history

- **Erasmus**: children learn most when there is a certain intrinsic motivation. Skilled teachers should focus on conveying their lessons in such a way 'that the children won't be under the impression that they are actually working, but rather believe that it's all about games.' The ideas of Desiderius Erasmus embraced principles of encouragement, low stress and playful learning.
- **Huizinga**: in his book Homo Ludens, all human beings interested in games and playing. Everybody likes to play. In Huizinga's definition, playing can be any voluntary activity that takes place under set conditions and results in excitement and joy. To be able to play, people need a space where they feel secure and embedded. It could be any kind of space, whether it be an arena or a podium, a pool table or a temple.

13

Dutch design is playful

- Dutch Design shifts from aesthetically pleasing to focussing on playful interactive design with a deeper message aiming to contribute to solutions to real life issues.
- Dutch Design shifts to more teamwork and collaboration between different disciplines: researchers , government and companies. It is less about the autonomous designer.

14

Educational Infrastructure

- 56 universities and colleges teaching game design and game development.
- 1600 students with a game master or bachelor per year.
- Resulting in approx. 300 serious games companies and 300 entertainment companies.
- Most of them smaller then 10 FTE.

15

Dutch mission driven Top Sector and Innovation Policy

- Entrepreneurs, Scientists, and the government have joined forces in nine top sectors i.a. the creative industry!
- 25 missions address 4 social themes: energy transition and sustainability, agriculture water and food, health, security.
- Government invests in research, entering public private partnerships, providing financial arrangements, etc.
- Entrepreneurs like IJsfontein, play a key role in converting innovation to concrete applications and products.

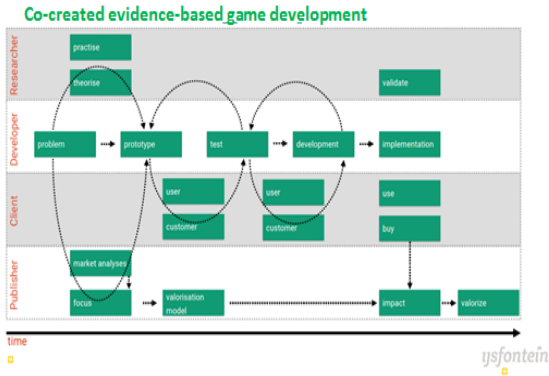
16

Academic Research Grants

- Many European and Dutch research grants require a consortium which includes an SME.
- SME's like IJsfontein have an active role in designing the application.
- Research grants have low hourly rates but have long horizons of 3 to 5 years. This lowers our development Volatility. Contributing to a healthy company.

17

Evidence Based Design



18

Missing link

- No Dutch serious gaming publishers.
- Universities sitting on their IP without active marketing.
- Lack of VC interested in serious games.
- Researchers can't make up their minds.

Webinar – 7

Date, Day & Time: June 24. 2022 (Friday)
03:00 to 04:05 p.m. (IST)

Invited Speaker: **Dr. Femke Bekius**,
Assistant professor, Department of Methodology, Business Administration, Radboud University, Nijmegen,

Country: The Netherland

Title: Unravelling the Complexity of Decision-Making Processes by Using Game Concepts to Support Game Design

Webinar Topic

Unravelling the Complexity of Decision-Making Processes by Using Game Concepts to Support Game Design

Abstract

Game theory and gaming simulations are two terms used to describe two seemingly unrelated fields. However, both game theory and gaming simulations aim to describe and interpret the behavior of actors in complex systems. The two fields could benefit from one another and thereby (potentially) increase their effectiveness in supporting decision-making. In this talk, the resource person explains how game theory and gaming simulation can be combined and can be used in participatory interventions with stakeholders to support decision-making.

Speaker Profile

Dr. Femke Bekius is an assistant professor in the Department of Methodology, Business Administration, at Radboud University, the Netherlands. Her research focusses on understanding and supporting complex decision-making by using participatory methods. These include game theory, gaming simulation, Multi-Criteria Decision Analysis and Group Model Building. Particularly, she is interested in the application of these methods to assist decision makers in (public) organizations. The domains of application vary from mobility, health care and safety and security to European Union decision-making. The interdisciplinary nature in the form of bridging between formal theories and methods and applications in real-world situation is what drives her research.

Unravelling the complexity of decision-making processes using game concepts to support game design

Webinar series "PRATITI...becoming aware" hosted by CoE_SG
24th June 2022

dr. Femke Bekius
femke.bekius@ru.nl
Radboud University

1

Outline

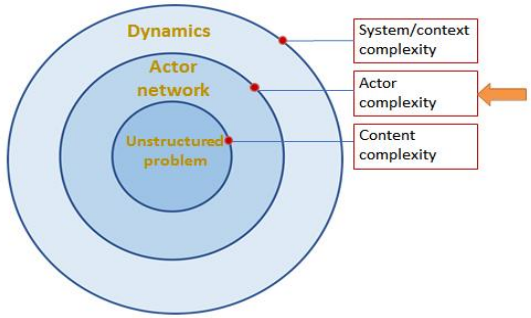
- Complex decision-making
- Game theoretical concepts
- Descriptive versus prescriptive way of using game concepts
- Game theory & game design
- How to do this in practice?

2

Complex decision-making

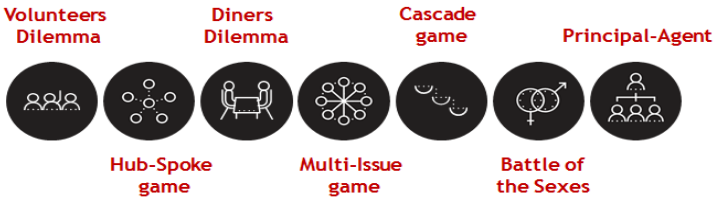
3

Complexity of decision-making



4

Approach: game theoretical concepts



5

Game theory: the basics

"Game theory is a bag of analytic tools designed to help us understand situations of strategic decision-making" (Osborne, 1994)

- Characterizes **strategic** decision-making situations
- Includes **multiple actors** with different **incententives** and preferences
- Shows the **interdependency** between actors: choice of actor A depends on the choice of actor B
- Analyses different **scenarios** and **outcomes**
- Gives perspective of **action**: get 'grip' on the situation, determine **strategies**

6

Game concepts

Describe **decision-making** situations in which **actors** perform **actions** based on **information** to reach a certain **outcome**.

Originate from different fields – from formal game theory to political science to public administration.

Address **actors' agency** and **dynamics** of the process.

7

Game concepts

Describe situations in which **actors** perform **actions** based on **information** to reach a certain **outcome**.

Originate from different fields – from formal game theory to political science to public administration.

Address **actors' agency** and **dynamics** of the process.

8

Battle of the Sexes

	Ballet	Football
Ballet	2, 1	0, 0
Football	0, 0	1, 2

9

Game concepts

Describe situations in which **actors** perform **actions** based on **information** to reach a certain **outcome**.

Originate from different fields – from formal game theory to political science to public administration.

Address **actors' agency** and **dynamics** of the process.

Multi-Issue game

10

Multi-Issue game

11

Game concept characteristics

		Multi-Issue	Cascade Game	Volunteer Dilemma	Principal-Agent	Hub-Spoke	Diners Dilemma	Battle of the Sexes
Actor	relation	network	network	group	hierarchy	group	group	network
	power asymmetry	yes	yes	limited	yes	limited	limited	no
	information asymmetry	yes	yes	limited	yes	yes	limited	yes
Process	order	sequen-tial	sequen-tial	simulta-neous	sequen-tial	sequen-tial	simulta-neous	sequen-tial
	coordinator	no	no	no	yes	yes	no	no
	content	multiple issues	limited issues	limited issues	limited issues	limited issues	limited issues	limited issues
	outcome	collective	collective	individual collective	individual collective	collective	individual collective	individual

12

Application of game concept approach

- Domains: transport, finance, security, health care
- In different forms: descriptive (afterwards) versus prescriptive (real-time)
- Descriptive
  - **Characterize** the process of decision-making
  - Interviews, participatory observations, documentation
  - Explain underlying mechanisms/patterns
- Prescriptive
  - *With* stakeholders
  - Action perspective
  - Scenarios, possible outcomes

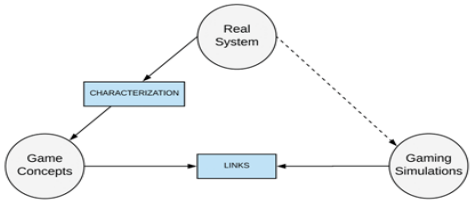
13

Application of game concept approach

- Domains: transport, finance, security, health care
- In different forms: descriptive (afterwards) versus prescriptive (real-time)
- Descriptive
  - Characterize the process of decision-making
  - Interviews, participatory observations, documentation
  - Explain underlying mechanisms/patterns
- **Prescriptive**
  - *With* stakeholders
  - Action perspective
  - Scenarios, possible outcomes

14

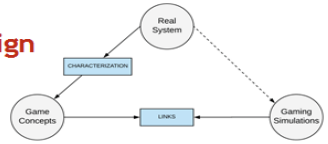
Translation to simulation and gaming



Reference: Roungas, B., Bekius, F., & Meijer, S. (2019). The game between game theory and gaming simulations: design choices. *Simulation & Gaming*, *50*(2), 180-201.

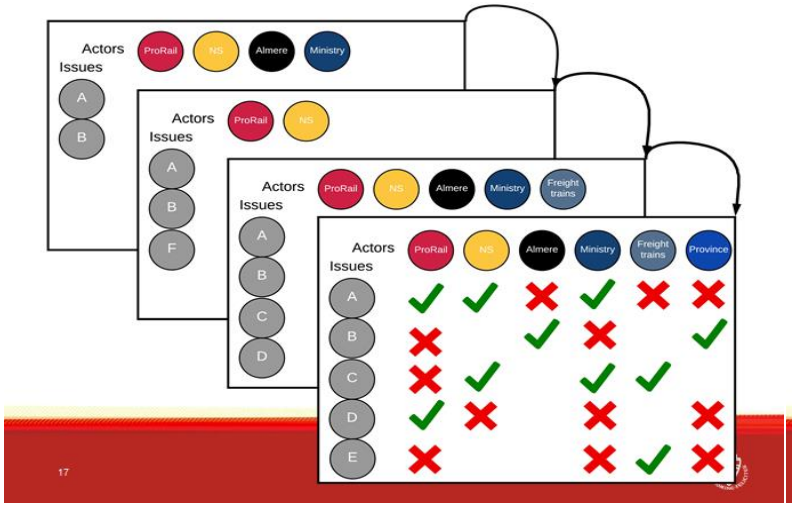
15

Game theory & game design



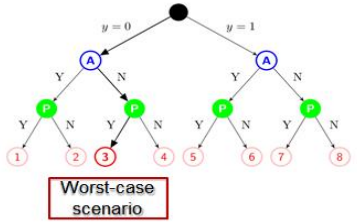
- Game concepts characterize decision-making process in terms of
  - Actors, actions, strategies, pay-offs, information, …
- **Game theory elements** can be translated into **game design choices**
- How?
  - Direct
  - Indirect
- Does it lead to a *meaningful* game design?

16



17

Game theory & game design

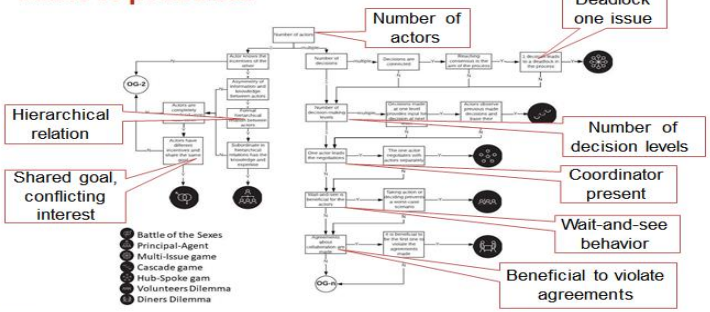


Reference: Roungas, B., Bekius, F., & Meijer, S. (2019). The game between game theory and gaming simulations: design choices. *Simulation & Gaming*, *50*(2), 180-201.

Radboud University

18

Make it practical!



Radboud University

19

Use of tool with stakeholders

- Stakeholders **identify** different game concepts for decision-making
- Stakeholders engage in a discussion on the **different perspectives**
- This results in **concrete actions:**

Create overview of issues and opinion of actors on each issue to design decision-making agenda

Involve strategic level of the organization at earlier stage

Include Principal earlier in game

Use Multi-Issue complexity to structure the process

Reach agreement on decision internally before communicating it externally

Create awareness among actors on the urgency of the decision window

Create option for Volunteers to step-out

Prevent misalignment or blockade of the Cascade game

Radboud University

20

Conclusion

- Addressing complexity is key to support decision-making
- Game concepts can assist in unravelling the complexity
- Link between game theory elements and game design choices can be *direct* or *indirect*
- Game concepts contribute to a *meaningful* game design
  - Game purpose, worst-case scenario, possible outcomes
- Future work: unravel the complexity *during* the game
  - Which dilemmas do participants face?
  - What do they learn?

21

References

- Bekius, F., Meijer, S., De Bruijn, H. (2018). Collaboration patterns in the Dutch railway sector: Using game concepts to compare different outcomes in a unique development case. *Research in Transportation Economics,* 69, 360-368.
- Roungas, B., Bekius, F., & Meijer, S. (2019). The game between game theory and gaming simulations: design choices. *Simulation & Gaming*, *50*(2), 180-201.
- Bekius, F. A. (2019). *Towards Understanding and Supporting Complex Decision-Making by using Game Concepts. A Case Study of the Dutch Railway Sector.* PhD thesis, Delft University of Technology.
- Bekius, F.A., Meijer, S.A. (2020). Selecting the right game concept for social simulation of real-world systems. Springer Proceedings in Complexity, Springer International Publisher.
- Bekius, F., Meijer, S., & Thomassen, H. (2022). A Real Case Application of Game Theoretical Concepts in a Complex Decision-Making Process: Case Study ERTMS. *Group Decision and Negotiation*, *31*(1), 153-185.

22

Webinar – 8

Date, Day & Time: July 29, 2022 (Friday)
03:00 to 04:05 p.m. (IST)

Invited Speaker: **Dr. Toshiko Kikkawa**, Professor at Keio University

Country: Japan

Title: Subtle Manipulation in Games

Webinar Topic

Subtle Manipulation in Games

Abstract

The resource person has discussed the issue of manipulation. First, she has introduced several cases involving ethical issues, which are common in gaming due to their importance and/or playability. Second, she has discussed the relationship between ethics and fidelity and the reasons why people cannot easily give up ethically problematic games. Third, the issue of intentional manipulation is explored, as people must recognize the darker side of game use for propaganda purposes. Fourth, subtle types of manipulation are discussed. Finally, she has noted the changing attitudes on the part of the game industry and an increased awareness of ethical issues in game design.

Profile

Toshiko Kikkawa (PhD, Kyoto University) is a professor at Keio University, Japan. She is a social psychologist and specializes in risk communication and Simulation and Gaming. She has been a vice-chair of Japanese Association of Simulation and Gaming (JASAG) since 2015.

She was Executive Board member of International Simulation and Gaming Association (ISAGA) from 2012 to 2016. Since 2010, she has been a co-editor in chief of The Jounal “Simulation & Gaming” since 2021.

Subtle Manipulation in Games

Toshiko Kikkawa
Keio University

1

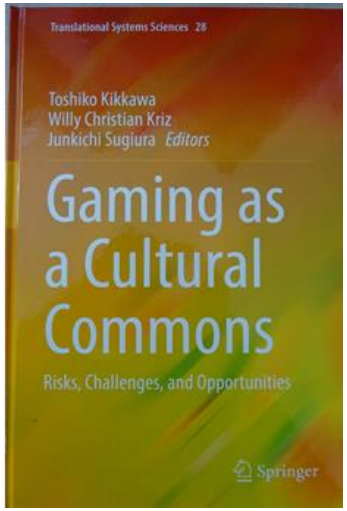
Key points of today's presentation

1. Games can be used for many educational purposes and also for fun
2. However, at the same time, we have to be careful for the subtle manipulation contained in games, whether intentionally or unintentionally

2

Today's talk is based on a chapter of this book: Gaming as a Cultural Commons: Risks, Challenges, and Opportunities.

https://link.springer.com/book/10.1007/978-981-19-0348-9



3

Ethics of Games

- Rethinking classic educational games or experiential learning:
  - BLUE EYES-BROWN EYES
    - Learning purpose: prejudice-reduction
  - BAFÁBAFÁ
    - Learning purpose: cultural differences

- They are effective...but contains ethical issues: Too close to real life experiences?

4

Games played for fun is also used for educational purpose

- WEREWOLF: Improving communication skills
  - The game needs communication and deductive skills to win.

6

7

8

Potential downsides of WEREWOLF

1. Terms used in the game like “killing”, “hanging”, etc. may have negative connotations.
2. In the early stages of the game, players who have salient characteristics could be targets of suspected werewolves.
3. Players who are relatively silent during the play could be victims and excluded from the game.

8

9

Subtle manipulation of games

- Games can be used for educational use.
- However, we must scrutinize the “winning conditions” of the games, which is closely connected to the purpose of education.
  - E.g., Game of Life, Monopoly

9

10

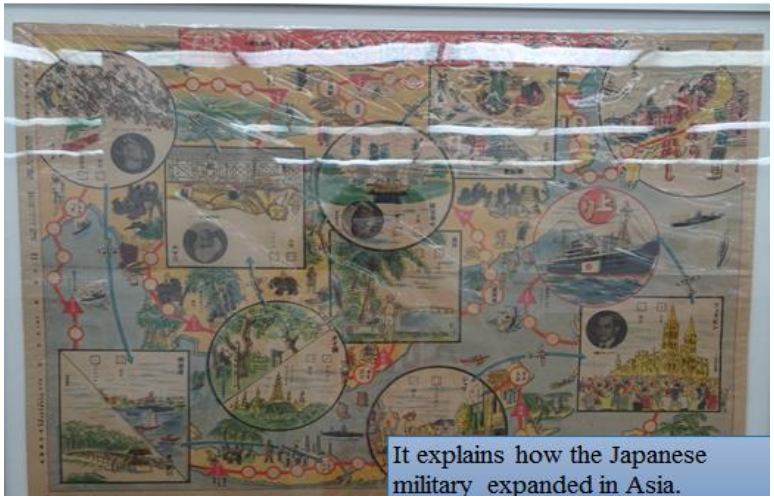
Traditional games have been frequently used for propaganda purpose in Japan

- *SUGOROKU:*
  - Similar to SNAKES AND LADDERS or GAME OF THE GOOSE” as it uses a linear race track along which players race by throwing dice.
  - It has frequently been used for educational purposes, as well as played for fun, as information can be added to the squares (spaces) of the board.

10

11

12



13

Traditional games have been frequently used for propaganda purpose in Japan

- *KARUTA:*
  - Card game played with a deck of cards.
  - The deck consists of two types of cards: reading cards and grab cards. Reading cards are read by a reader and players find, as quickly as possible, corresponding grab cards among the cards spread on the floor.
  - Given that memory is the key to winning, the game provided a viable medium for disseminating war propaganda.

13

14

15

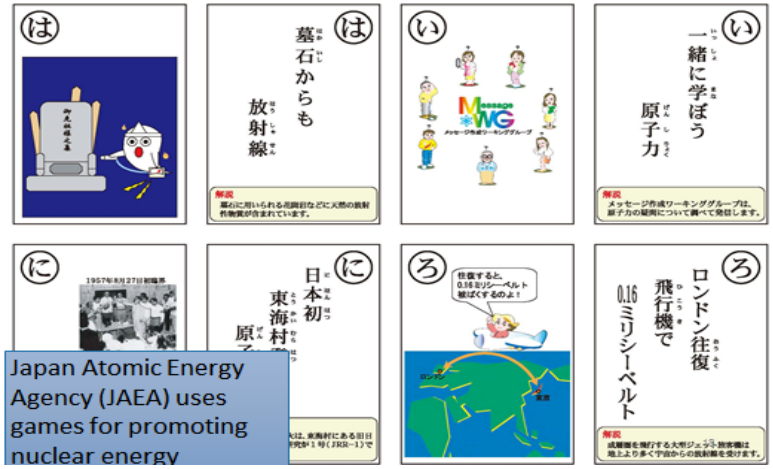
16

17

Propaganda is not history

17

18



Japan Atomic Energy Agency (JAEA) uses games for promoting nuclear energy

18

It also use games for promoting nuclear fuel cycle

19

Subtle manipulation of games

- We must be careful to guard against manipulation using games whose true purpose, i.e., propaganda, are hidden.
  1. Games which involve manipulation that operates in a more refined or subtle way
  2. Games which involves manipulation that is unintentionally put into practice by facilitators or teachers
- Even if a game is educational on surface, e.g., SDG games, we must be careful when using it.

20

20

We should ask ourselves the following when we use games for educational purpose

- Is there an alternative game that can be used to teach the same pedagogical goal if there is any doubt regarding the ethical issues of the existing game?
- We must scrutinize the rules of the game, especially the conditions of winning, from the perspective that they could be used, unintentionally, to manipulate the participant.

21

21

Webinar – 09

Date, Day & Time: August 27, 2022 (Saturday)
03:00 to 04:05 p.m. (IST)

Invited Speaker: **Dr. Ramesh Sharma**, Director of Human Resource Development Centre and a faculty for Instructional Design, Dr. B. R. Ambedkar University, New Delhi

Country: India

Title: Designing Interactive Game-based Learning through the lens of Cognitive Load

Webinar Topic

Designing Interactive Game-based Learning through the lens of Cognitive Load

Abstract

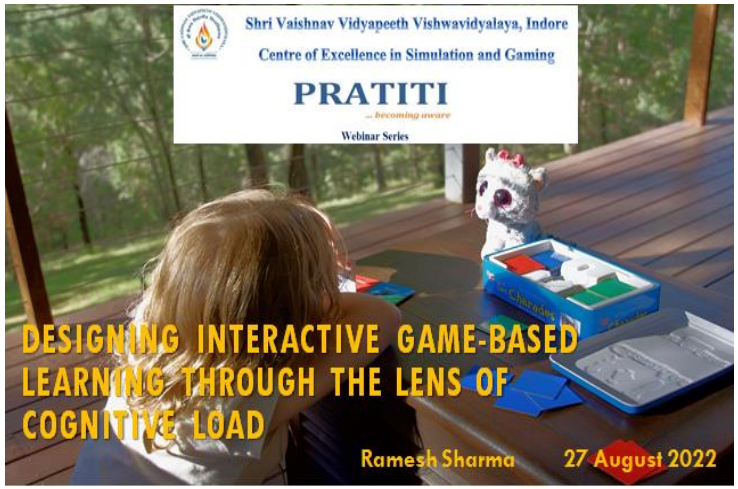
The game based learning (GBL) is experiencing a rise on two fronts: its increasing adoption in educational teaching and learning transactions and emergence of new market players to the extent that the GBL market valued at 11 billion USD in 2021 is poised to grow to USD 55 billion by 2030 (with a CAGR of 21 %). Education sector, governments, enterprises and consumers are creating and adopting these for learning enhancement, competency building and source of revenue. GBL has demonstrated its pedagogical potential and impact on learning performance. Cognitive load theory has an important bearing on the learning performances and guides the learning designers on designing effective learning scenarios and constructs. This presentation discusses the implications of cognitive load on the designing of game-based learning interactions.

Speaker Profile

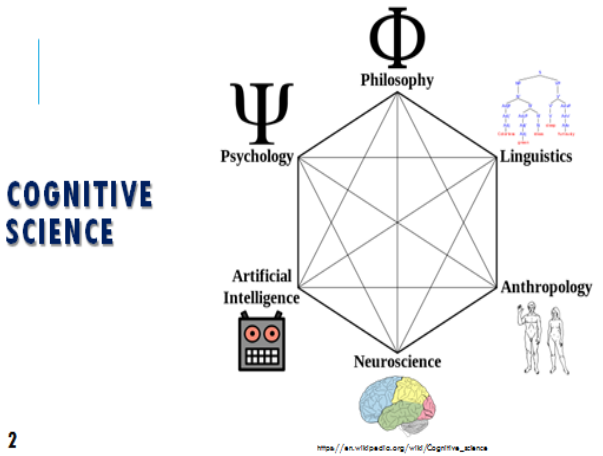
Dr Ramesh Sharma is Director of Human Resource Development Centre and a faculty for Instructional Design and Chairperson of the Committee to facilitate adoption of MOOCs for SWAYAM MOOCs platform of the Govt of India, at Dr.B.R Ambedkar University Delhi Earlier he has taught Educational Technology and Learning Resources at Wawasan Open University, Malaysia. He is an expert in open and distance and technology mediated learning and has served as a visiting Professor at Universidade do Estado da Bahia, UNEB, Salvador, Bahia, Brazil, visiting Professor at University of Fiji, Fiji, Commonwealth of Learning as Director of the Commonwealth Educational Media Centre for Asia, New Delhi, Regional Director of Indira Gandhi National Open University, India and Director of Distance Education at University of Guyana, Guyana, South America.

He has been a member of Advisory Group on Human Resources Development for the United Nations Conference on Trade and Development (UNCTAD). While at University of Guyana he also collaborated with UNDP for its Enhanced Public Trust, Security and Inclusion (EPTSI) project, Volunteer Service Overseas (VSO) and United Nations Volunteer (UNV) to develop suitable educational opportunities for communities and youth. He is the Editor of Asian Journal of Distance Education (launched in 2003) and has been associated with several other peer reviewed journals including

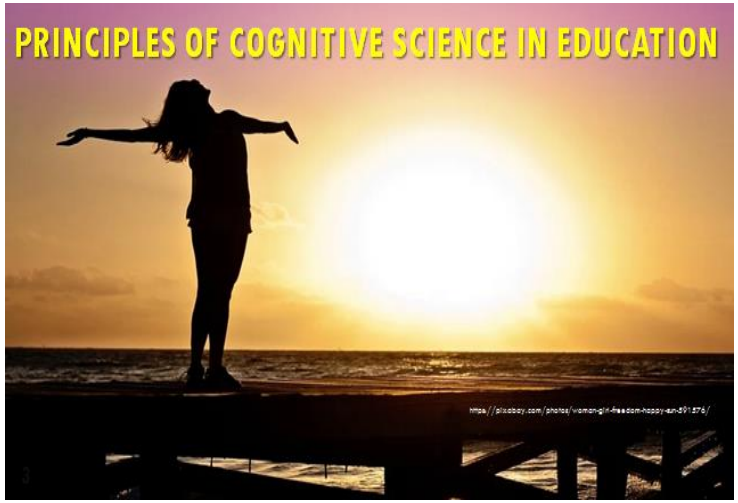
SSCI / SCOPUS Journals as Reviewer, Editor and Editorial Advisory Board member in the field of Open and Distance Learning. An author/editor of several books and research papers on educational technology, educational multimedia and eLearning, Dr. Sharma is a practitioner promoting Open Educational Resources (OER). He has been a trainer and capacity builder in the field of educational technology, and has supervised doctoral research in the field. He has conducted workshops and evaluation activities for Indira Gandhi National Open University; Commonwealth of Learning, Canada; Commonwealth Educational Media Centre for Asia, New Delhi; United Nations Conference on Trade and Commerce (UNCTAD), Geneva; and Aga Khan Foundation, amongst others.


Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
Centre of Excellence in Simulation and Gaming
PRATITI
... becoming aware
Webinar Series
DESIGNING INTERACTIVE GAME-BASED LEARNING THROUGH THE LENS OF COGNITIVE LOAD
Ramesh Sharma
27 August 2022

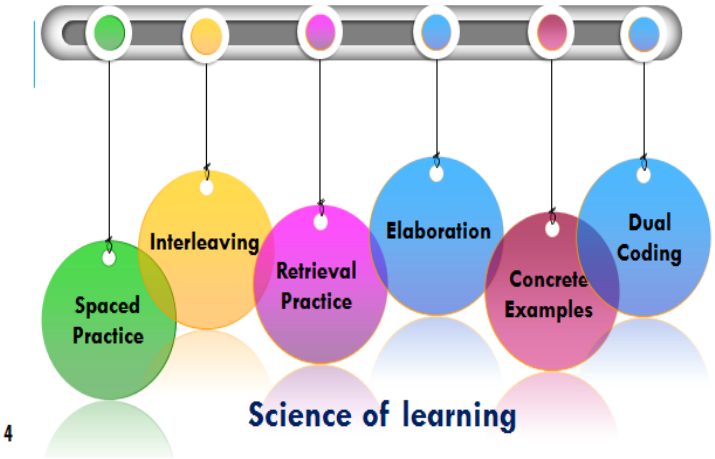
1


COGNITIVE SCIENCE
Philosophy
Psychology
Linguistics
Artificial Intelligence
Anthropology
Neuroscience
2

2


PRINCIPLES OF COGNITIVE SCIENCE IN EDUCATION

3


Spaced Practice
Interleaving
Retrieval Practice
Elaboration
Concrete Examples
Dual Coding
Science of learning
4

4

SIX STRATEGIES FOR EFFECTIVE LEARNING, EACH ILLUSTRATED WITH AN IMPLEMENTATION EXAMPLE FROM THE BIOLOGICAL BASES OF BEHAVIOR

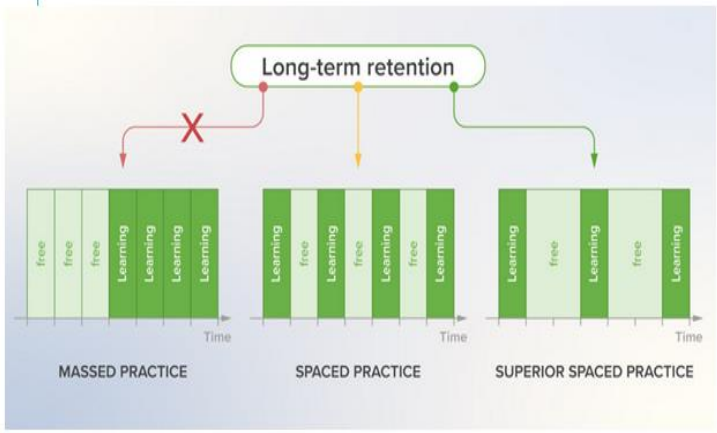
Learning strategy	Description	Application examples (using biological bases of behavior from basic psychology)
Spaced practice	Creating a study schedule that spreads study activities out over time	Students can block off time to study and restudy key concepts such as action potentials and the nervous systems on multiple days before an exam, rather than repeatedly studying these concepts right before the exam
Interleaving	Switching between topics while studying	After studying the peripheral nervous system for a few minutes, students can switch to the sympathetic nervous system and then to the parasympathetic system; next time, students can study the three in a different order, noting what new connections they can make between them
Retrieval practice	Bringing learned information to mind from long-term memory	When learning about neural communication, students can practice writing out how neurons work together in the brain to send messages (from dendrites, to soma, to axon, to terminal buttons)
Elaboration	Asking and explaining why and how things work	Students can ask and explain why Botox prevents wrinkles: the nervous system cannot send messages to move certain muscles
Concrete examples	When studying abstract concepts, illustrating them with specific examples	Students can imagine the following example to explain the peripheral nervous system: a fire alarm goes off. The sympathetic nervous system allows people to move quickly out of the building; the parasympathetic system brings stress levels back down when the fire alarm turns off
Dual coding	Combining words with visuals	Students can draw two neurons and explain how one communicates with the other via the synaptic gap

https://cognitiveresearchjournal.springeropen.com/articles/10.1186/s41235-017-0087-y/tables/1

5

5

SPACED PRACTICE



https://www.lecturio.com/pulse/how-to-apply-spaced-practice-to-make-learning-in-medicine-more-durable/

6

6

SPACED PRACTICE

Hermann Ebbinghaus

German psychologist

Hermann Ebbinghaus was a German psychologist who pioneered the experimental study of memory, and is known for his discovery of the forgetting curve and the spacing effect. He was also the first person to describe the learning curve. He was the father of the neo-Kantian philosopher Julius Ebbinghaus. Wikipedia

Born: 24 January 1850, Barmen, Germany

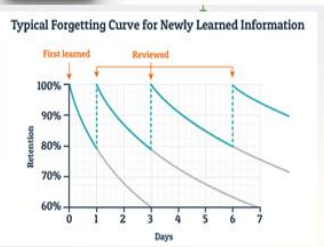
Died: 26 February 1909, Halle (Saale), Germany

Long-term

Learning free Learning free

MASSED PRACTICE

SPACED PRA



https://www.lecturio.com/pulse/how-to-apply-spaced-practice-to-make-learning-in-medicine-more-durable/

https://blog.wranx.com/ebbinghaus-forgetting-curve

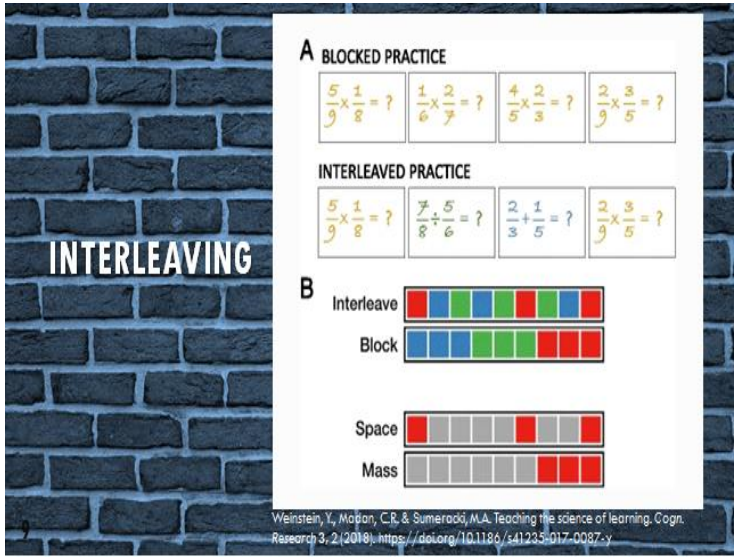
7

7

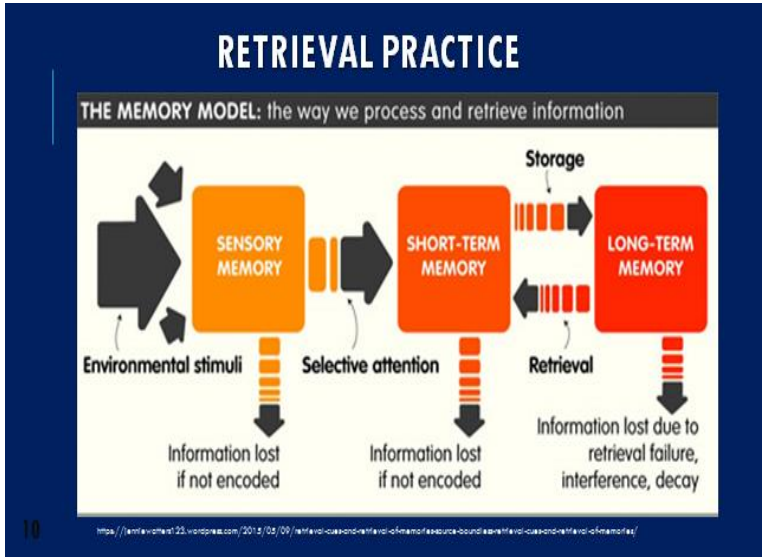
https://pixabay.com/photos/alone-sadness-loneliness-man-person-1869997/

8

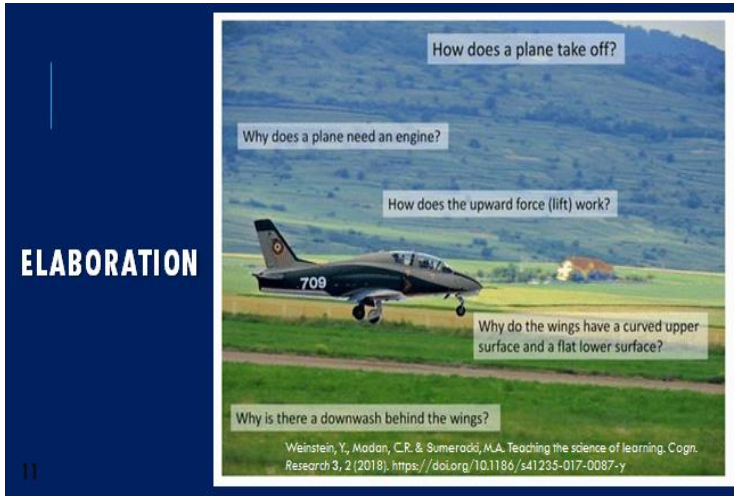
8


INTERLEAVING
A BLOCKED PRACTICE
INTERLEAVED PRACTICE
B
Interleave
Block
Space
Mass
Weinstein, Y., Madan, C.R. & Sumeracki, M.A. Teaching the science of learning. Cogn. Research 3, 2 (2018). https://doi.org/10.1186/s41235-017-0087-y

9


RETRIEVAL PRACTICE
THE MEMORY MODEL: the way we process and retrieve information
Storage
SENSORY MEMORY
SHORT-TERM MEMORY
LONG-TERM MEMORY
Environmental stimuli
Selective attention
Retrieval
Information lost if not encoded
Information lost if not encoded
Information lost due to retrieval failure, interference, decay

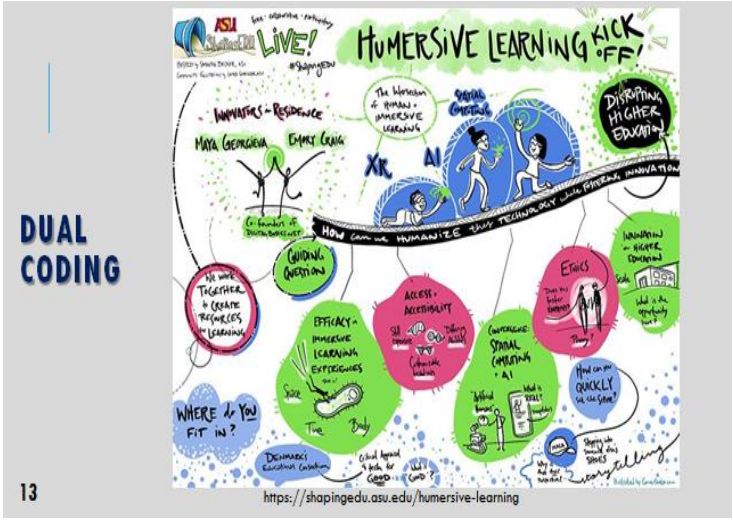
10


ELABORATION
How does a plane take off?
Why does a plane need an engine?
How does the upward force (lift) work?
Why do the wings have a curved upper surface and a flat lower surface?
Why is there a downwash behind the wings?
Weinstein, Y., Madan, C.R. & Sumeracki, M.A. Teaching the science of learning. Cogn. Research 3, 2 (2018). https://doi.org/10.1186/s41235-017-0087-y

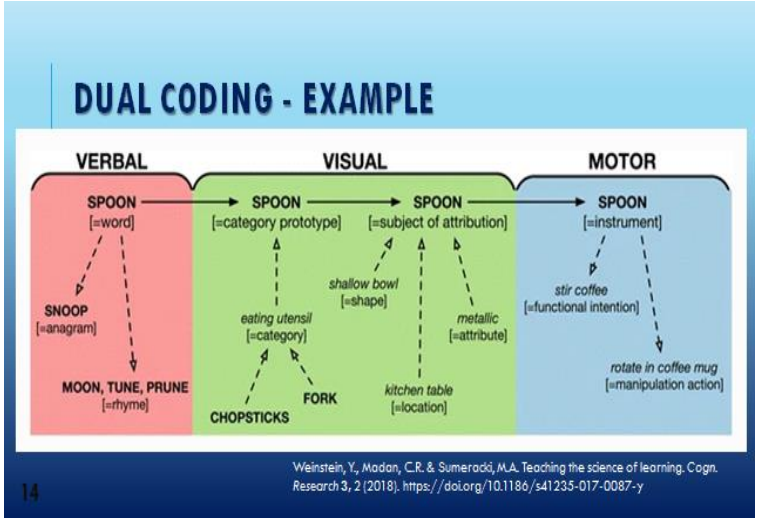
11


CONCRETE EXAMPLES

12


DUAL CODING
ASU LIVE!
HUMERSIVE LEARNING KICK OFF!
https://shapingedu.asu.edu/humersive-learning
13

13


DUAL CODING - EXAMPLE
VERBAL
VISUAL
MOTOR
SPOON [=word]
SPOON [=category prototype]
SPOON [=subject of attribution]
SPOON [=instrument]
SNOOP [=anagram]
MOON, TUNE, PRUNE [=rhyme]
eating utensil [=category]
shallow bowl [=shape]
metallic [=attribute]
CHOPSTICKS
FORK
kitchen table [=location]
stir coffee [=functional intention]
rotate in coffee mug [=manipulation action]
Weinstein, Y., Madan, C.R. & Sumeracki, M.A. Teaching the science of learning. Cogn. Research 3, 2 (2018). https://doi.org/10.1186/s41235-017-0087-y
14

14


COGNITIVE LOAD THEORY (CLT)

15


LEARNING OR MOTIVATION PROBLEMS

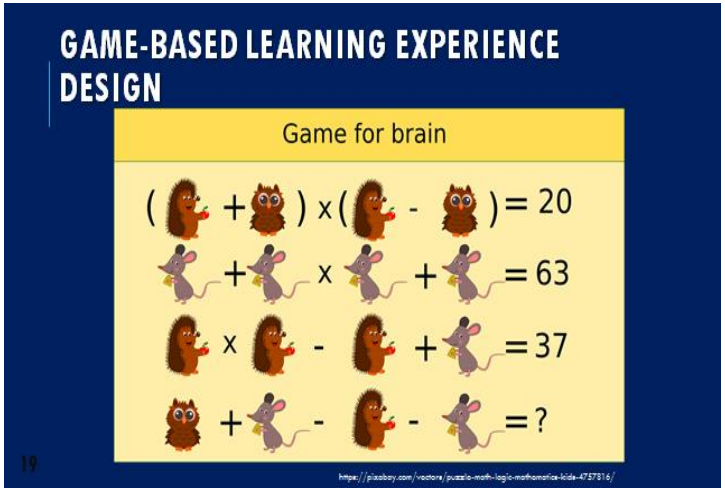
16


COGNITIVE
DEVELOPMENT
17

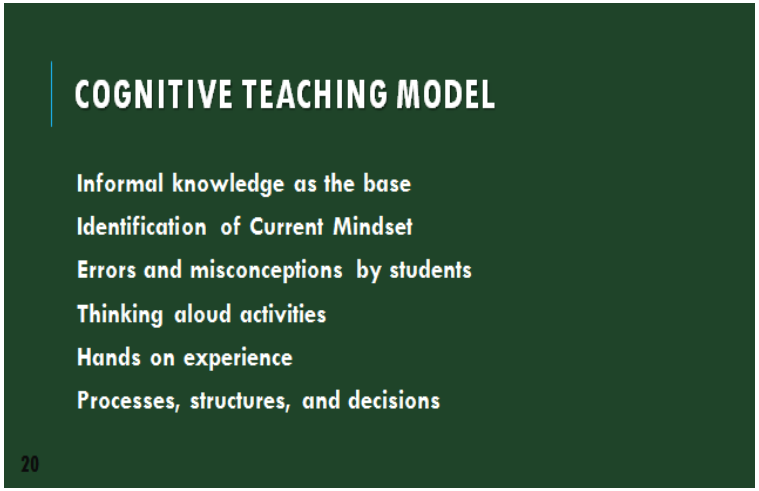
17


INSTRUCTIONAL PSYCHOLOGY
INNOVATION
IDEA
18

18


GAME-BASED LEARNING EXPERIENCE
DESIGN
Game for brain
(+) x (-) = 20
+ x + = 63
x - + = 37
+ - - = ?
19

19


COGNITIVE TEACHING MODEL
Informal knowledge as the base
Identification of Current Mindset
Errors and misconceptions by students
Thinking aloud activities
Hands on experience
Processes, structures, and decisions
20

20

PRE-REQUISITES FOR COGNITIVE STRATEGIES

Type of learning outcomes	*Essential prerequisites*	*Supportive prerequisites*
Intellectual Skill	Simpler component intellectual skills (rules, concepts, discriminations)	Attitudes, cognitive strategies, verbal information
Cognitive Strategies	Specific intellectual skills	Intellectual skills, verbal information, attitudes
Verbal Information	Meaningfully organized sets of information	Language skills, cognitive strategies, attitudes
Attitudes	Intellectual skills (sometimes) Verbal information (sometimes)	Other attitudes, verbal information
Motor Skills	Part skills (sometimes) Procedural rules (sometimes)	Attitudes

Source: Gagne, Briggs and Wager (1988)

21

21

22

23

24

THREE TYPES OF COGNITIVE LOAD

25

25

COGNITIVE LOAD

Intrinsic	Extraneous	Germane
• load on memory needed at the time of doing the current task	• Teacher's presentation, external distractions, textbook instructional format, etc.	• To process this new learning into the next higher level of advanced schema

26

Intrinsic + Germane + Extraneous = Total Cognitive Load

26

IMPLICATIONS FOR GAME-BASED LEARNING DESIGNERS

Reduce the levels of extraneous cognitive load

Controlling the elements of to-be-learned information

Increase the germane (schema related) cognitive load

Minimize the total cognitive load

Focus on problem-solving skills

27

27

DESIGN FOR HOW PEOPLE LEARN

CHAPTER 9: DESIGN FOR HABITS

Habit: "an acquired behaviour pattern regularly followed until it has become almost involuntary."

ANATOMY OF A HABIT

- Acquired: need to learn behaviour
- Behaviour = motivation + ability + trigger [BJ Fogg]
- Trigger: activated behaviour
- Feedback: visible benefit
- Practice or repetition
- Environment: supplies readily available, social supports, accountability

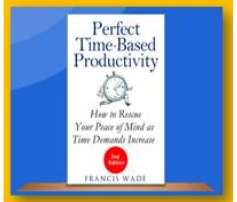
IDENTIFYING HABIT GAPS

- Is this something that people need to do consistently & automatically?
- Do habits become visible when I break this behaviour down to its smaller components?
- What is the specific context or trigger that is involved?
- Is there an undesirable habit that needs to be undone first?

IMPLEMENTATION INTENTIONS

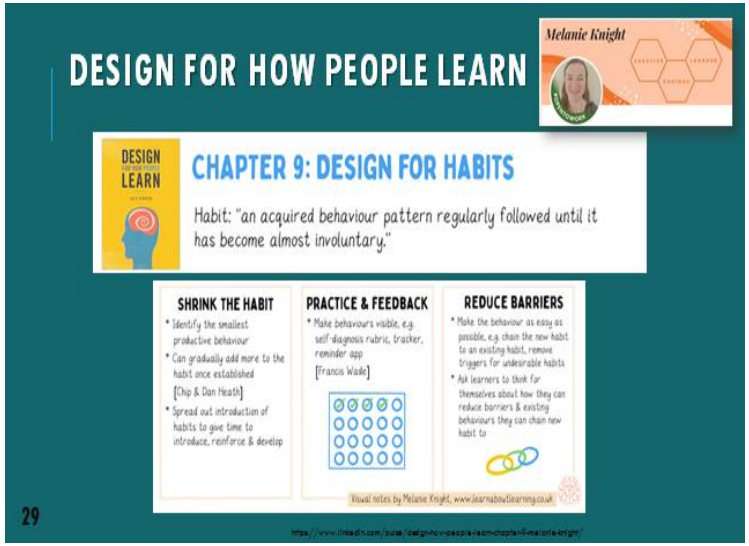
- "If..., happens, then I will..."
- Make the decision ahead of time [Peter Gollwitzer]
- Give learners opportunity or template to create their own implementation intentions

If... → then...

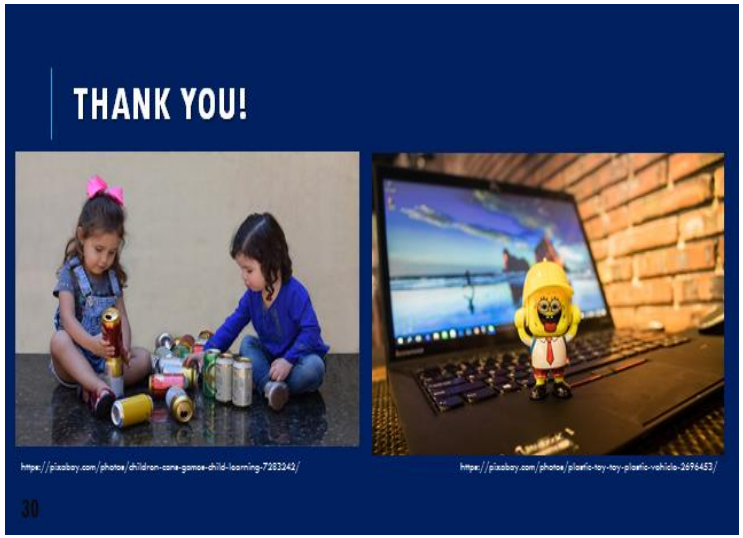


28

28


DESIGN FOR HOW PEOPLE LEARN
Melanie Knight
DESIGN FOR HOW PEOPLE LEARN
CHAPTER 9: DESIGN FOR HABITS
Habit: "an acquired behaviour pattern regularly followed until it has become almost involuntary."
SHRINK THE HABIT
* Identify the smallest productive behaviour
* Can gradually add more to the habit once established
[Chip & Dan Heath]
* Spread out introduction of habits to give time to introduce, reinforce & develop
PRACTICE & FEEDBACK
* Make behaviours visible, e.g. self-diagnosis rubric, tracker, reminder app
[Francis Wade]
REDUCE BARRIERS
* Make the behaviour as easy as possible, e.g. chain the new habit to an existing habit, remove triggers for undesirable habits
* Ask learners to think for themselves about how they can reduce barriers & existing behaviours they can chain new habit to
Visual notes by Melanie Knight, www.learnaboutlearning.co.uk
29

29


THANK YOU!
https://pixabay.com/photos/children-care-games-child-learning-7282242/
https://pixabay.com/photos/plastic-toy-toy-plastic-vehicle-2696453/
30

30

Webinar – 10

Date, Day & Time: September 24, 2022 (Saturday)
03:00 – 04:05 p.m. (IST)

Invited Speaker: **Dr. Kengo Suzuki**, Faculty of Engineering, Information and Systems, University of Tsukuba, Ibaraki

Country: Japan

Title: Gaming for Energy and Sustainability; How to Share Perspectives of the World

Webinar Topic

Gaming for Energy and Sustainability; How to Share Perspectives of the World

Abstract

This lecture consists of four contents below. First, the role of gaming in the field of energy system education is discussed based on practices in the University of Tsukuba. Second, the unique value of gaming as a social simulation is identified through a comparative review with other multi-agent methods. Third, the results of experimental study focusing on the energy transition in the competitive market is reported as an example of gaming as a social simulation adopting retroductive methodology. Finally, the future direction of S&G studies for energy and sustainability issues are suggested through the introduction of current projects by the speaker.

Profile

Kengo SUZUKI; Ph.D., Assistant Professor, Division of Engineering Mechanics and Energy, Faculty of Engineering, Information and Systems, University of Tsukuba. He has experienced survey and analysis of Japanese and world energy economics in the Institute of Energy Economics, Japan (IEEJ), studies in fuel cells and local energy systems in the Hokkaido University. His current work in the University of Tsukuba is interdisciplinary energy system modeling and energy education by applying the simulation and gaming.

筑波大学 University of Tsukuba

24, September 2022

Centre of Excellence on Simulation and Gaming

Webinar series "PRATITI…becoming aware"

Gaming for energy and sustainability; how to share perspectives of the world?

Kengo SUZUKI

Department of Engineering Mechanics and Energy, Faculty of Engineering, Information and Systems, University of Tsukuba, Japan

1

Topics

Slide 2

1. **The role of gaming in the field of energy system education**
2. **Gaming project exploring a sustainable future vision**
3. **Unique value of games in terms of energy and sustainability**
4. **Experimental Study of Energy Transition**

2

Topics

Slide 3

1. **The role of gaming in the field of energy system education**
2. Gaming project exploring a sustainable future vision
3. Unique value of games in terms of energy and sustainability
4. Experimental Study of Energy Transition

3

University of Tsukuba

Slide 4

Tsukuba City:

60 km northeast from Tokyo (1–1.5 hour by bus or train)

University of Tsukuba:

Diverse range of schools and colleges

Natural Science, Social Science, Humanity, Art, and Sports

9,797 Undergraduate students

6,789 Graduate students

World ranking 501-600th (THE)

Japan ranking 9th (THE)

4

College of Engineering Systems

Slide 5

Re-organizing specialized and fragmented disciplines in engineering

Fostering human resources with creative talents and new perspectives in engineering

80 faculty members

528 students (bachelor course)

5

Introduction to Energy Study

Slide 6

Study energy-related issues from holistic viewpoints

1. What is Energy Studies
2. Accelerating Climate Change Measures
3. Issues Concerning Fossil Fuel Phase-Out
4. Nuclear Power and Radioactive Waste
5. Dream of 100% Renewable Energy
6. Economic Evaluation of Energy Systems
7. What is Sustainability
8. Gaming Exercise (1)
9. Gaming Exercise (2)
10. Energy System in the Future

6

Risk Factors in Energy Systems

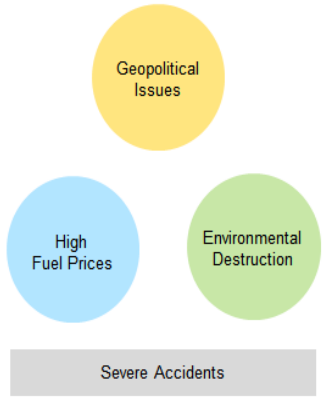
Slide 7

Energy Systems Engineering:
aims to contribute to technology selection and policy design that can ensure stable energy supply over the long period.

The sustainability of the energy system is hindered by multiple risk factors; these risk factors raise the social unrest through various mechanisms.

Furthermore, there are trade-offs between these risk factors; a measure to eliminate one risk raise the risk of another.

Without understanding these trade-offs, energy systems cannot be operated in a reliable manner.



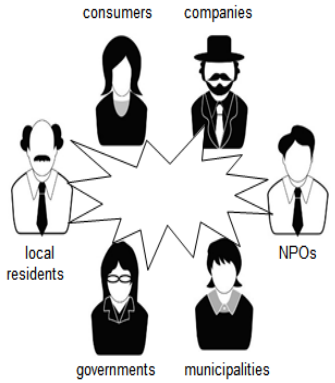
7

Conflicts of Interests between Stakeholders

Slide 8

Further, actors of energy systems have different priorities for these risk factors.

Policy makers need to consider not only the trade-offs between risk factors, but also the conflicts of interests between stakeholders.



8

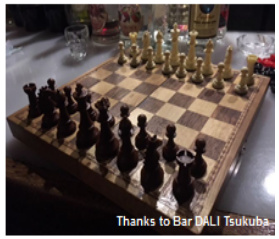
Mapping and Metaphor

Slide 9

I need to teach both **the objective aspect of tradeoffs among risk factors** and **the subjective aspect of conflicts of interest and value among the actors**.

I started the study of gaming simulation to help university students learn the complex structure of energy systems because games are media that can simultaneously express both objective and subjective aspects of the real world as Kaneda (2021) points out.

> Chess is a game that represents war. The rule of Chess such as the move pieces and the winning conditions represent the objective structure of the real battlefield. On the other hand, the experiences of players, such as excitement, impatience, triumph, and despair, represent the subjective experience of the commanders in the real world.



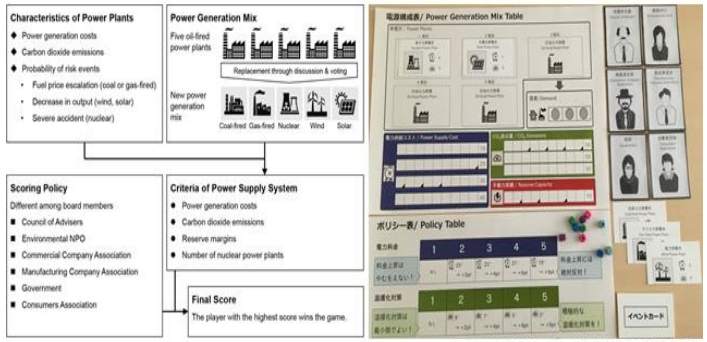
Kaneda T. Simulation and Gaming as Instrument for Social Design. Translational Systems Sciences, Kaneda, T., Hamada, R., Kumazawa, T., Eds. 2021, 25, 3–26, Springer. https://doi.org/10.1007/978-981-16-2011-9_1

9

Power Generation Mix

Slide 10

5-6 participants play the roles of board members of the electric power company; their task is to decide the types of power plants to replace the aged oil-fired power plants through discussions and voting.



Suzuki et al. (2021) https://doi.org/10.1007/s11625-021-00912-3

10

Game-Based Class

Slide 11

First week class
- Opening lecture (15 min)
- Gameplay (60 min)

Survey and reflection 1 week

Intermediate report
1. Report progress of game from subjective viewpoints
2. List criteria to evaluate power supply system
3. List advantages and disadvantages of a power generation technology

Second week class
- Debriefing (120 min)
  1. Share subjective viewpoints and discuss improvements for the decision-making process
  2. Share the list of criteria surveyed by students
  3. Share the list of characteristics of power generation technologies by students
- Closing lecture (30 min)

Survey and reflection 1 week

Reflection report
Report what you learned in this class
2,000 to 3,000 characters in Japanese
* equivalent to approximately 1,000–1,500 English words

May 2019 © University of Tsukuba

Suzuki et al. (2021) https://doi.org/10.1007/s11625-021-00912-3

11

Contents Analysis

Slide 12

Learning Targets

(1) cultivate a perspective to overcome the trade-offs among policy issues

(2) cultivate students' abilities and attitudes to build a consensus by overcoming conflicts of opinions.

Data

128 reflection reports

Procedure

(1) All paragraphs in all reports were given temporal labels that briefly explained the kinds of learnings reported in each paragraph

(2) Temporal labels with similar meanings were combined into singular labels, which were defined as a set of homogeneous contents

(3) The number of reports including each topic was counted.

12

Six Topics Identified

Slide 13

From: Effectiveness of a game-based class for interdisciplinary energy systems education in engineering courses

	Topics	Definition
1.	Complexity of system	Descriptions related to the complexity of energy systems such as a variety of criteria to evaluate a power supply system or differences in the advantages and disadvantages among power plants
2.	Improvement of system	Descriptions on the efforts to improve whole energy systems such as optimization of energy mix and research and development of new technologies
3.	Usage of nuclear power	Comments and opinions related to the usage of nuclear power including the changes in opinions and new findings for the duration of the class
4.	Social dilemma	Descriptions related to social dilemma: a conflict between individual benefit in present and social welfare in the future
5.	Subjective reality	Descriptions of the plurality and instability of subjective realities such as differences in subjective interpretations of objective facts among stakeholders and the changes in the perception of risk before and after incidents
6.	Consensus building	Descriptions of the efforts and attitudes to build a consensus about the future energy system including mutual understanding, knowledge and information sharing, communication between professionals and non-professionals, and political supports

Topics 1 to 4: relevant to the cultivation of the perspectives necessary to overcome the trade-offs.

Topics 5 & 6: relevant to the cultivation of the students' abilities and attitudes to build a consensus.

Suzuki et al. (2021) https://doi.org/10.1007/s11625-021-00912-3

13

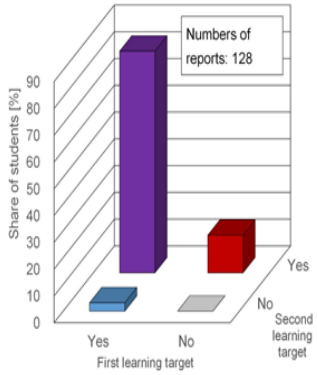
Learning Effects of Game-Based Class

Slide 14

83% of students simultaneously learned something relevant to both learning targets.

The result suggests that a significant number of students learned the trade-offs among policy issues and conflicts among stakeholders in an integrated manner.

These findings are consistent with the conclusions of earlier studies: game-based learning is effective for interdisciplinary education on the sustainability of society.



Suzuki et al. (2021) https://doi.org/10.1007/s11625-021-00912-3

14

Topics

Slide 15

1. The role of gaming in the field of energy system education

2. Gaming project exploring a sustainable future vision

3. Unique value of games in terms of energy and sustainability

4. Experimental Study of Energy Transition

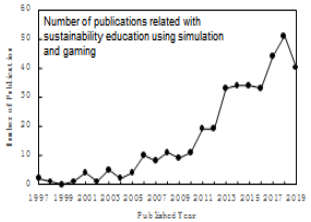
15

World Trend of Sustainability-Related S&G

Slide 16

Literature of education and communication in the context of sustainability has increased significantly in the 2010s.

- natural resources, water resources, climate change, energy, cities, foods
- analog board games, digital games, online games, and hybrid forms of them



Hallinger et al. (2020) DOI: 10.1016/j.jclepro.2020.120358

Most of these studies were taken place in European and North American countries.

Professionals of S&G in Asian countries need to improve the profile of gaming and revitalize the community of gaming in their countries.

https://doi.org/10.3390/su7055592

https://doi.org/10.3390/su11020310

16

A Gaming Project in Japan

Slide 17

We launched an interdisciplinary gaming project aimed at exploring a sustainable future vision for our world with the support of the Toyota Foundation.

The goal of this project is education and scientific communication through the design and practice of analog board games.

The project team is composed of experts in such diverse fields as **Energy Engineering**, **Virology**, **Agricultural Economy**, **Philosophy of Education**, **Jurisprudence**, and **Design**.

Our goal is

(1) to overcome disciplinary barriers through game design

(2) to create communication tools that are reviewed from multifaceted perspectives.

THE TOYOTA FOUNDATION

17

Parasite Wars

Slide 18

Participants play roles of viral species who aim to maximize the population of their own species.

The number of hosts is finite, and a host parasitized by a large number of viruses will become sick and eventually die.

This game represents a social conflict between the private interest of increasing the population and the public interest of protecting the host.

18

Dialogue with the Future

Slide 19

Participants play the role of past generations enjoying economic growth and future generations suffered from environmental destruction.

The goal of past generation player is to increase population and wealth.

Future generation know the mechanism how the activities of the past generation bring the world to the catastrophe. They sends a message to the past generation using a hyper-technology called a time travel phone; the volume of messages is strictly limited.

This game represents a temporal conflict between short-term and long-term interests.

19

The House

Slide 20

Players take on the roles of a human who lives in a house and a kind of fairy who inhabits the house.

The human player repeatedly chooses to work to earn money or consume to achieve happiness.

The fairy player assists the human player in their activities by controlling the disasters the house encounter.

The sustainability of the house represented by the game is a metaphor for global sustainability.

20

Contribution of Our Project

Slide 21

These games will be completed next year following hearings with students and the public.

This project is an experiment in diffusing game design techniques in the academic community.

The presenter have concentrated on supporting other members who model the sustainability-related issues from their own perspectives

These experiences of our team may contribute to both interdisciplinary communication and the promotion of gaming.

21

Topics

Slide 22

1. The role of gaming in the field of energy system education
2. Gaming project exploring a sustainable future vision
3. **Unique value of games in terms of energy and sustainability**
4. Experimental Study of Energy Transition

22

Three Directions of S&G

Slide 23

1. Learning Opportunity Oriented

School education, Science communication, Cooperate training

2. Problem Solving Oriented

Military, Urban planning, Business management, Sustainability-related issues

3. Science Theory Oriented

Social psychology (e.g., prisoners dilemma, public goods game)

* Behavioral Economics, Environmental Economics, Environmental Psychology, ...

T. Kanoda: Simulation and Gaming as Instrument for Social Design, T. Kanoda., M. Hamada, T. Kumasawa (Eds) Simulation and Gaming for Social Design. Translational Systems Sciences vol. 25, 3-26, Springer, Jan 2022.

23

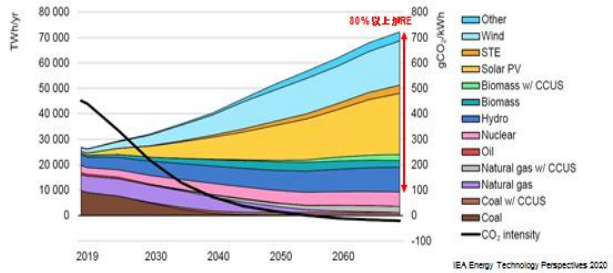
How Should We Promote Energy Transition

Slide 24

Current decision of energy mix affects the distant future (long life of power plants)

How should the policy makers promote desirable decisions?

Figure 3.2 Global power generation by fuel/technology in the Sustainable Development Scenario, 2019-70

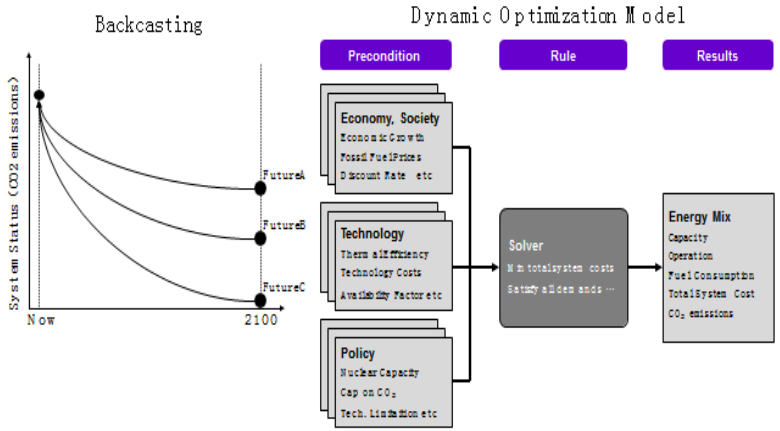


IEA Energy Technology Perspectives 2020

24

Idea of Scenario Analysis (Deductive)

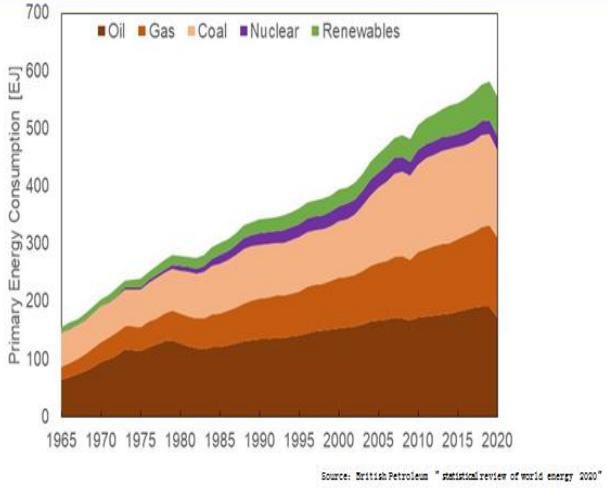
Slide 25



25

Were Ideal Scenarios realized?

Slide 26



Source: British Petroleum " statistical review of world energy 2020"

26

What are Barriers to Energy Transition?

Slide 27

Nationalist Dilemma

This structure where one country pays for the benefit of another creates an incentive to free-ride. Governments benefit from both their own inaction and the efforts of the international community to reduce carbon emissions.

Trade-offs Across Generations

Climate change policies require costly emission reductions in the short term to mitigate dam ages in the distant future (about a half-century).

Political Motivation

There are gains and losses in the world from ambitious global warming policies.

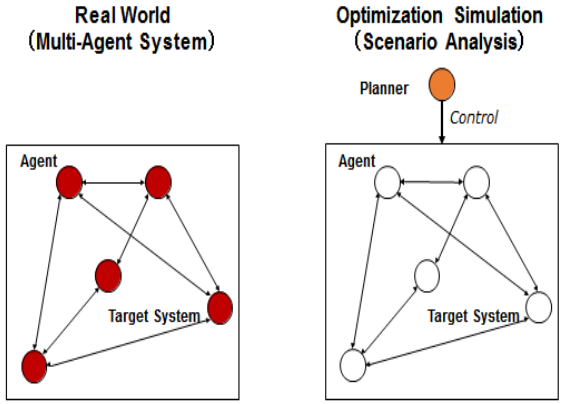
Producers and heavy users of fossil fuels suffer from the rapid energy transition.

Nordhaus, W. (2015) The Climate Casino : Risk, Uncertainty, and Economics for a Warming World.

27

Perspective of Multi-Agent System

Slide 28



28

Review of Studies Using Games

Slide 29

(1) What is the unique value of game as a model of real world?

(2) How is S&G different from other methods using games:
Game theory, Agent-base simulation, and Experiments

29

Slide 30

(1) What is the unique value of game as a model of real world?

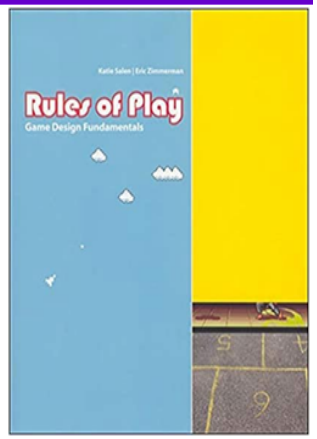
30

Design of Experiences

Slide 31

"Game is the second-order design problem. Designers of games indirectly design the experiences of players by directly design the rules."

Games are media to design experiences of players.
In a practical use, games express the difficulties and conflicts perceived by decision makers in real world.



Salen K, Zimmerman E. (2004) "Rules of Play: Game Design Fundamentals", MIT Press.

31

Mapping and Metaphor

Slide 32

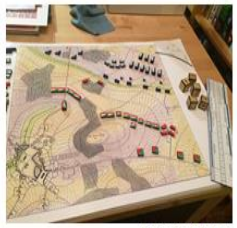
The gaming model has two sides: **Mapping** and **Metaphor**

Mapping: Representation of the objective structure of the target system

Metaphor: Subjective experience of stakeholders involved in the target system

Games are media simultaneously represent objective structure and subjective experience.

Thanks to ZenDALI Tsukuba



Wikipedia: Wargame

Kaneda T. Simulation and Gaming as Instrument for Social Design. Translational Systems Sciences. Kaneda, T., Hamada, R., Kumazawa, T., Eds. 2021, 25, 3–26, Springer. https://doi.org/10.1007/978-981-16-2011-9_1

32

Uncertainty

Slide 33

The essence of games is uncertainty.

Other interactive things aim to minimize uncertainty, but games enjoy uncertainty.

1. Performative Uncertainty	Physical Skill	Caused by Players
2. Solver's Uncertainty	Mental Skill	
3. Player Unpredictability	Behavior of Others	
4. Randomness	Randomness	Caused by Environments
5. Analytic Complexity	Size of Decision Tree	
6. Hidden Information	Lack of Information for Decision	
7. Narrative Anticipation	Unknown Story	Caused by Developers
8. Development Anticipation	Late of Development etc.	
9. Schedule Uncertainty	Specific to Social Games	
10. Uncertainty of Perception	Perception by Players	Integrative

Costikyan G (2013) "Uncertainty in Games", The MIT Press.

Games are media that model decision-making under uncertainty.

There are two types of uncertainties: these caused by players and by environments.

33

Value of Game as Model of Real World

Slide 34

Represent dynamic interactions between **objective structures** and **subjective experiences**

In the contexts of energy transition…

Objective structures

Trade-offs: Each energy technology has their own advantages and disadvantages.

Hidden information: Energy companies do not know when alternatives of fossil fuels will advance enough.

Subjective experiences

Strategic context: Gains from adopting renewable tech. are subject to selection of others

Imaginary: Decisions without necessary information depends on the subjective perspective of each actor

By using game, we can answer the questions like …

How are energy policies and market rules perceived by economic entities in the real world?

Are these rules change the perception and behavior of them?

Do theoretically good rules really succeed under the influence of strategic circumstances and subjective perspectives?

34

Slide 35

(2) How is S&G different from other methods using games:

Game theory, Agent-base simulation, and Experiments

35

Categorize Methods in terms of Logic

Slide 36

Logic (in the context of Philosophy of Science):

Procedure of Inference to generate new knowledge

- Deduction $p \Rightarrow q$
- Induction $p \Rightarrow\!\!\!\!\!= q$
- Retroduction $p \Rightarrow q$

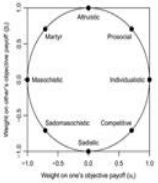
36

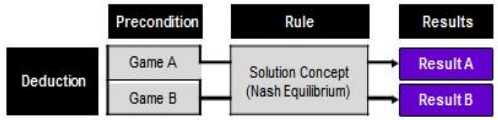
Deduction: Game Theory

Slide 37

How values of players affect the Nash Equilibrium of two-player competitive games?

Punishment cannot lead cooperative solution between players who prefer comparative advantage



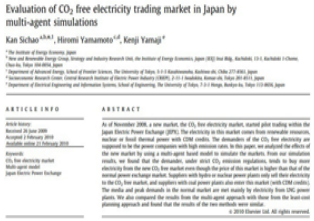


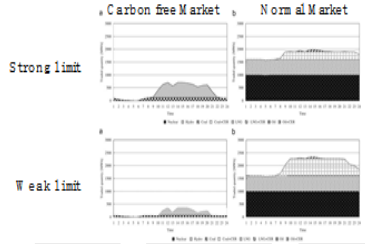
https://www.nature.com/articles/s41598-020-60349-z

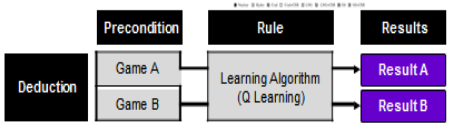
37

Deduction: Agent Base Model

How the limitation of CO2 emissions affects the energy mix in competitive electricity markets?







https://doi.org/10.1016/j.enpol.2010.02.002

38

Induction: Experiments

The Detrimental Effects of Punishment and Reward on Cooperation in the Industrial Waste Illegal Dumping Game

Yoko Kitakaji and Susumu Ohnuma

Abstract

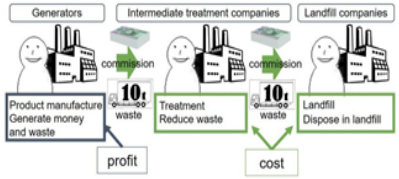
Effects of reward and punishment on illegal dumping

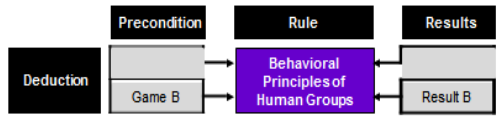
Condition 1: Reward to Rapid completion of dumping procedure

Condition 2: Mutual watch and punishment

Condition 3: No punishment and rewards

Illegal dumping increased in condition 1





https://doi.org/10.1177%2F1046878119880239

39

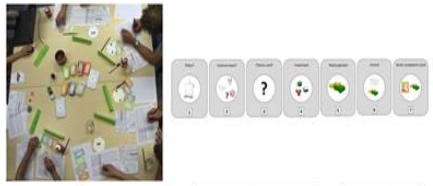
Retroduction: Gaming Simulations

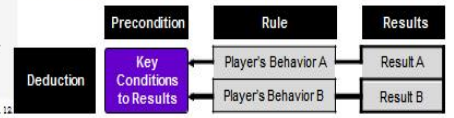
Game of pig farmers investment strategy

Game was played multiple times under the same conditions

Analyze the relation between game results and communication

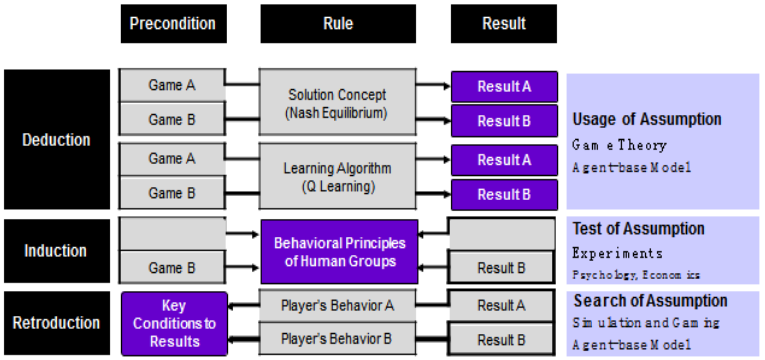
Point out the importance of positive talk and opinion leaders





40

Logic of Studies Using Games



Suzuki (2022) DOI:10.1007/978-981-16-2011-9_7 (slightly revised)

41

Discussions

Slide 42

1. Unique value of gaming may be to find assumptions by retroductive procedure.

We need assumptions about what are the critical barriers to realize sustainable world.
For the purpose, we need to understand the relationships between technology, society, and environment considering volatility, uncertainty, complexity, and ambiguity inherent in the sustainability-related issues.
S&G can contribute to form such assumptions by modeling complex reality as they are complex.

2. Gameplay by humans nay heuristically find hidden issues of current situations.

In the real world, individuals and organizations change their behavior based on their observations.
Gameplay by human players can model such dynamic interactions between subjective realities of actors and objective status of complex systems.
S&G is suitable to heuristically find limitations and side effects of current situations and future plans.

42

Topics

Slide 43

1. The role of gaming in the field of energy system education
2. Gaming project exploring a sustainable future vision
3. Unique value of games in terms of energy and sustainability

4. Experimental Study of Energy Transition

43

Background

Slide 44

Energy transition from fossil fuels to renewables plays a key role to mitigating catastrophic climate change.

However, large part of world primary energy is still covered with fossil fuels.

Carbon tax is one of the most fundamental climate change policies.

The raise of carbon tax rate is expected to promote renewables by two mechanisms:

(1) Direct effect by raising the procurement cost of fossil fuels
(2) Indirect effect by the notice of future tax rates
The policymakers expect that the economic entities will progress decarbonation in advance when they are noticed the raise of carbon tax rate in the future.

These mechanisms includes the dynamics of multiple agents who have

1 Rational thinking
2 Subjective assessment of future uncertainties

How to estimate the dynamics of such multi-agent systems?

44

Purpose

Slide 45

Experimentally investigates the direct and indirect effects of carbon tax on energy transition in a competitive market by applying game-based experiments.

The experiments consisted of **gameplay** and **questionnaire surveys.**

(1) Records of gameplays represent **objective** aspects of the market

(2) Answers to questionnaire surveys represent **subjective** aspects of the market.

By comparing the results of games under **two conditions**,

1 Without carbon tax

2 With carbon tax

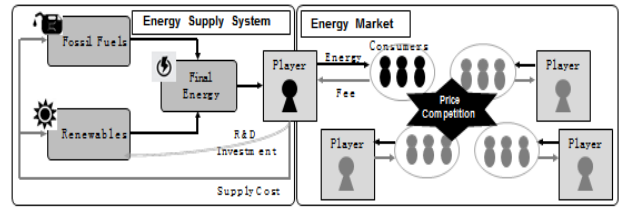
we infer **the mechanism by which the carbon tax influences the selection of energy sources by market players.**

45

Multi-Player Game "Energy Transition"

Slide 46

- Each company make a profit by selling final energy produced from fossil fuels or renewables.
- In every round, the participants decides the energy mix, selling price, and the amount of R&D investment in renewables.
- At the beginning, the cost for renewables is higher than that of fossil fuels while it decreases depending on the amount of investments. On the other hand, the price of fossil fuels rise over time.
- Consumers move from companies with higher selling price to these with lower selling price in every round.

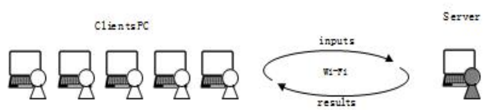


Suzuki, K.; Nakai, K.; Ogihara, A. Translational Systems Sciences, Hamada, R., Soranastaporn, S., Kanegae, H. et al., Eds.; Springer: Singapore, 2019; Vol. 18; pp. 201–210. DOI: 10.1007/978-981-13-8039-6_19.
Suzuki, K. Translational Systems Sciences, Kaneda, T., Hamada, R., Kumazawa, T., Eds. 2021, 25, 125–147, Springer. DOI: 10.1007/978-981-16-2011-9_7.

46

Experimental Environment

Slide 47

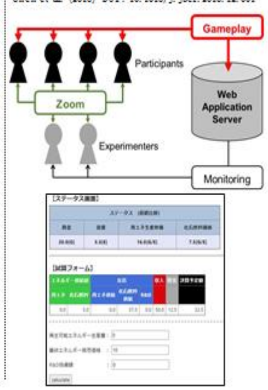


Excel VBA Applications

Results of games were recorded on the server

Perfectly remoted by using oTree

Chen et al. (2016) DOI: 10.1016/j.jbef.2015.12.001



47

Summery of Findings by Experiments

Slide 48

(1) Effects of subjective anxieties on objective behaviors

High anxieties -> Games become competitive and the energy transition is slowed down.

Low anxieties -> Games become cooperative and the energy transition proceeds.

(2) There are two types of barrier to energy transition

Competition: High anxiety of all players

Free Rider: Low anxiety but one greed player

(3) Effects of carbon tax (punishment to fossil fuel usage)

The carbon tax rule accelerated the energy transition after taxation

Information of future taxation did not accelerate energy transition.

* Carbon tax may prevent freeriding, but may not reduce anxieties about uncertainties in the future.

Suzuki et al. 2019. DOI: 10.1007/978-981-13-8039-6_19
Suzuki 2021. DOI: 10.1007/978-981-16-2011-9_7
Suzuki, Ishiwata 2022. (under review)

48

Topics

Slide 49

1. The role of gaming in the field of energy system education
2. Gaming project exploring a sustainable future vision
3. Unique value of games in terms of energy and sustainability
4. Experimental Study of Energy Transition

49

How Does Gaming Contribute to Sustainability-Related Issues?

Slide 50

Method for Experimental Learning

Participants learn both the objective and subjective aspects of complex issues.

Method for Interdisciplinary Communications

Co-design of games can be a process to share the worldviews of each other.

Method for Future Mining

Gameplay represents dynamic interactions between subjective realities of actors and objective status of complex systems.

Such gaming simulations heuristically seek possible futures cannot be reached by other methods.

Acknowledgement

Topics of this presentations are based on studies supported by the Fusion of Science and Technology (FOST), JSPS Kakenhi (19K12440, 22H03807), and the Toyota Foundation.

50

Webinar – 11

Date, Day & Time: October 14, 2022 (Friday)
03:00 – 04:05 p.m. (IST)

Invited Speaker: **Prof. Mieko Nakamura**, Professor of Psychology, Faculty of Sociology, Ryutsu Keizai University

Country: Japan

Title: "Facilitator in Simulation and Gaming - an Example of Project Management Game

Webinar Topic

Facilitator in Simulation and Gaming – an Example of Project Management Game"

Abstract

In simulation and gaming (S&G), participants are often expected to have a serious discussion within a team, and it is difficult sometimes. First, there are many distractions physically and mentally. Second, participants need to be motivated to go in the right direction. Facilitator's job is to reduce difficulties as much as possible and encourage participants to engage in a serious discussion. Facilitator should do one's best to make the physical and mental environment suitable to the participants and search for a better way to encourage participants in the S&G. The resource person talked about what facilitators are supposed to do in S&G.

Speaker Profile

Prof. Nakamura is Professor of Psychology, Ryutsu Keizai University, JAPAN, Her recent published work is Nakamura, M. (2022) Code of conduct for facilitators and the ethics of debriefing. In Kikkawa, T., Kriz, W., & Sugiura, J. (eds.) Gaming as a Cultural Commons: Risks, Challenges, and Opportunities, Springer Nature: Singapore.

FACILITATOR IN SIMULATION AND GAMING

– AN EXAMPLE OF PROJECT MANAGEMENT GAME –

MIEKO NAKAMURA

Faculty of Sociology,
Ryutsu Keizai University, Ibaraki, Japan
mnakamura@rku.ac.jp

1

Background / Self-introduction

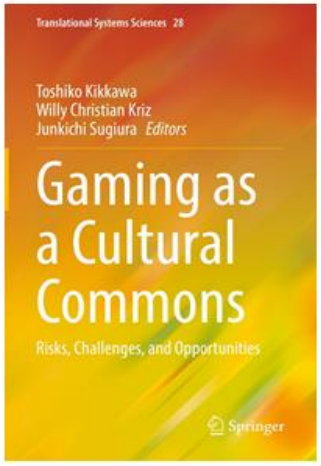
- Today, I would like to talk about the role of facilitators in gaming simulation.
- I am a professor in a small private university in Japan, lecturing "industrial and organizational psychology " and "the method of psychology". I am in charge of several seminars such as "facilitation" and "risk communication". I also teach "project management and decision making" as a part time lecturer at another university.
- I make the most of an opportunity to facilitate games in all types of classes. Because I like games and I believe that games have power to make people think deeply on the topic given to them.

2

Facilitator's responsibility

- I learned a lot from my experiences of facilitating games and I thought it might be helpful for others to share my 30 years.
- I think facilitators are responsible to ensure that participants are provided with ample opportunities to learn through gaming simulation in safe environments.
- Focusing on facilitators' role, today I will think about the following questions:
  - What is facilitation?
  - What should facilitators do or not do?
  - What should facilitators consider for a fruitful gaming session?

3



Book
© 2022
Gaming as a Cultural Commons:
Risks, Challenges, and Opportunities

Editors:
Toshiko Kikkawa,
Willy Christian Kriz, and
Junkichi Sugiura

4

Conference proceedings © 2022

Gaming, Simulation and Innovations: Challenges and Opportunities

52nd International Simulation and Gaming Association Conference, ISAGA 2021, Indore, India, September 6-10, 2021, Revised Selected Papers

Editors:
Upinder Dhar,
Jigyasu Dubey,
Vinod Dumblekar,
Sebastiaan Meijer, and
Heide Lukosch

5

CONTENTS

6

1. Introduction

You, today's listener, might have a lot of experience or little experience in this filed. For example, you would be a professional facilitator, an experienced game designer, or a person who encountered S&G (Simulation and Gaming) recently and became interested in facilitation. Either you have a lot of experience or not, I hope that this session will be an opportunity for you to think about facilitation.

The goal of this session is to help the listener
Being more interested in facilitator's role and
Being motivated to facilitate a game

1. Knowledge and experience generate a synergy effect.
2. Knowledge makes us feel safe.

7

2. The four phases of facilitation

Phases	What to do	Time
☆ ☆ ☆ 1. Preparation	Gathering information and preparing games (selecting, adjusting, or designing games, and preparing materials)	Before Game run
2. Briefing	Clarifying the purpose of the session, explaining the rule, and organising teams	
3. Game execution	Observing the flow of the game and handling troubles if needed	During Game run
☆ ☆ ☆ 4. Debriefing	Escaping from the game world, looking back what happened, sharing opinions, deepening thoughts, and building up the connections to the real world.	After Game run

8

3. "Preparation"

3.1 Preparation is the key for gaming simulation

- "Preparation" is the most important phase.
- I spend the most time for preparation, imagining what will happen "during game run" and "after game run".
- I start gathering information related to the participants, equipment, assistants, and environment (room size, mobility of desks and chairs, noise level, weather, temperature, etc.), and try to prepare a better environment for the session, both physically and psychologically (more on this later).
- I usually create a checklist of materials for a gaming session. While making a checklist, I write up a detailed plan of the session (from briefing to debriefing) and make sure all materials are in the checklist.

9

Preparing materials and preparing oneself

- Following the checklist, I prepare materials: game kits, a personal computer (to present an instruction on a screen), the timer, a deck of number cards (to allocate participants to teams at random), etc.
- I check the contents of instructions and debriefing and revise these if necessary.
- Then, I run through what I am supposed to do during the session. Reading the instructions, I rehearse the session in my head and imagine what will happen as much as possible.

10

3.2 Physical Environment and the Facilitator's Role

- Physical environment affects participants.
- I like a bigger room than a smaller room.
- Several years ago, I happened to have an opportunity to see the effect of room size on the participants' perception.
- I was requested to change the place of classes for the second consecutive year, and each room I was assigned was smaller than the last, that is, 2015 > 2016 > 2017
- In other words, I experienced three different types of rooms, which made me think about the effect of physical environments on my participants.

11

Table 1. Rooms and participants in 2015, 2016, and 2017

Year	Size	Seats	Movability (desks, chairs)	Number of People in two classes
2015	500m²	140	Middle (immovable, movable)	39–43 47–52
2016	170m²	160	Low (immovable, immovable)	48–53 49–55
2017	120m²	128	High (movable, movable)	47–52 48–56

12

Image 1. Size and movability of three classrooms (9:3:2)

Study hall with **middle movability**	Lecture room with **low movability**	Active learning room with **high movability**

13

Preparation

Course content

- Each course comprised 15 classes, during which several S&G were conducted. The topics of games were communication, leadership, team-building, production management, etc.
- Three classes were scheduled as a unit. The 1st and 2nd classes were to run games, and the 3rd was a debriefing session.
- After completing the game run in the 1st and 2nd classes, the participants filled out a debriefing form individually and shared opinions within the group.
- In each class, students were assigned to different groups with different classmates.

14

Preparation

Research outline

- Data were collected from the students who had registered for the course from 2015 to 2017.
- The questionnaire was distributed at the beginning and end of each course.
- Data from those who filled out both the pre- and post-surveys were used
- Participants were asked to rate their perception (image) of S&G on a 7-point scale.
- The Semantic Differential Method was used with 15 pairs of words related to S&G.

15

Table 2. Means from 2015 to 2017 *: p<.05, **: p < .01

7-point scale: 1-2-3-4-5-6-7	2015 (n=87)		2016 (n=102)		2017 (n=103)	
	Pre	Post	Pre	Post	Pre	Post
Q1 bright-dark	2.25	2.39	2.35	2.51	2.03	2.10
Q4 necessary-unnecessary	2.43	2.66	2.45	2.92**	2.38	2.54
Q15 interesting-uninteresting	2.44	2.31	2.58	2.91	2.54	2.42
Q8 important-unimportant	2.63	2.69	2.65	3.11**	2.56	2.82
Q14 deep-shallow	2.95	2.72	3.21	3.20	3.42	2.71**
Q2 light-heavy	3.14	3.14	3.05	3.28	2.74	3.08*
Q3 hot-cold	3.24	3.16	3.41	3.46	3.01	2.97
Q5 loud-quiet	3.39	3.03**	3.44	3.31	2.93	2.88
Q11 intellectual-nonintellectual	3.44	2.87**	3.61	3.48	3.90	3.17**
Q6 serious-unserious	3.51	3.68	3.46	3.53	3.54	3.58
Q7 rational-emotional	3.84	3.43*	3.57	3.82	3.79	3.39*
Q13 intensive-mild	3.87	3.78	4.07	3.85	3.64	3.49
Q10 difficult-easy	4.20	3.79*	4.29	3.92*	4.48	3.74**
Q12 complicated-simple	4.36	3.32**	4.25	3.53**	4.59	3.46**
Q9 tough-enjoyable	5.20	5.05	4.92	4.72	5.25	4.86*

16

Preparation

S&G was bright, necessary, and interesting, and enjoyable, easy, and simple

- As shown in Table 2, the three lowest mean scores in the pre-survey showed that S&G was perceived as bright, necessary, and interesting all three years. This perception remained the same in the post-survey except in 2016, when respondents perceived S&G as less necessary.
- At the same time, the three highest mean scores in the pre-survey showed that S&G was perceived as enjoyable, easy, and simple all three years. This perception changed in the post-survey; S&G was still perceived as enjoyable but was no longer perceived as easy or as simple as before.

17

Preparation

The image of S&G became less necessary and important in 2016

- At the end of the course, S&G was viewed as significantly more "rational and intellectual" in 2015 and 2017, and as less "necessary and important" in 2016.
- What was unique about the course in 2016 was the small room with low movability.

In 2016, many participants had to sit in cramped postures to form a group, and the groups were all seated close together. The participants were constantly distracted in terms of both sound and sight.

18

Preparation

Suggestions for facilitators

- Having the use of an appropriate room is the best; if this is not possible, the second-best solution is to arrange the room as appropriately as possible.
- Let's visit and check the room beforehand and think about how to arrange the desks and chairs! It seems to help participants to focus on S&G more.
- When the room is big, the facilitator can decide where each group should sit and reduce the number of obstacles and distractions.
- When the room is small, the facilitator should attempt to make the conditions as optimal as possible for the participants; move and arrange chairs and desks so that participants can concentrate on their works.

19

4 "Briefing"

- The facilitator may meet the participants for the first time.
- The participants may encounter with gaming simulation first time.
- The expression "game" has a wide range of meanings.
- The facilitator is responsible for fostering a certain level of sense to the session among participants in common before explaining the content of the game.
- After the explanation of gaming simulation, the facilitator clarifies the purpose of the session: the reason why the gaming simulation method is used, which game is going to be played, and what the connection is between the present session and other sessions.

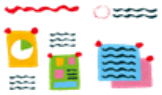
20

Briefing

Explaining the rules, goals, procedures, roles, etc.

- Normally, I arrive at the site of a gaming session an hour before the game commences, check the room equipment, and move the desks and chairs as I like. Then, I set the handouts and materials by team in order. If I expect approximately 60 people coming and assigning them to groups of five, I need twelve sets of handouts and materials ready for distribution. I will spend approximately half an hour to set these. The effort is rewarded for the smooth flow of the session, minimizing the distraction caused by a long waiting time.
- Visual explanations through examples would be very helpful.



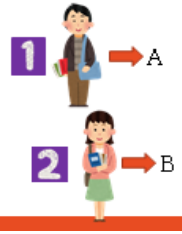


21

Briefing

Organizing teams and distributing the materials

- I usually use cards with sequential numbers to organize teams. I distribute a numbered card to each game participant, grasp the total number of participants, and use it to determine the number of teams.
- For example, if there are 60 participants and a group of five is desirable, I then show a five-by-twelve contingency table to the participants on a screen that indicates which number is assigned to which team.



A	B	C	D	E	F	G	H	I	J	K	L
1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60

22

5 "Game execution"

- Immediately after the beginning of the game play, participants may need some help to understand what to do. Facilitators see how the participants react and provide supplementary explanations if many participants seem lost.
- Once participants understand what to do and start working by themselves, facilitators keep a certain distance from them and observe the flow of the game carefully.
- When a problem occurs, facilitators handle the situation. If they can spot a potential problem early on, they nip the problem in the bud before it becomes serious.

23

Execution

Facilitators observe the flow of the game carefully

- In case of an emergency—such as a certain participant becoming mad at someone's behavior and seeming to lose control—the facilitator should intervene before that participant starts cursing the other participant.
- However, if conflicts are under control and within the scope of prior assumptions regarding how the game is expected to play out, facilitators should observe vigilantly.
- During the expected conflicts, the facilitator should not take any visible action.

24

Execution

Who is responsible, a facilitator or a designer?

- Let me talk about the boundary between game designers and game facilitators in terms of the responsibility to the users/participants.
- According to Duke (1974, 2014) and Duke and Geurts (2004), how to involve participants in the game is one of the important tasks for game designers. Good games are deliberately shaped and tested during the design process.
- Designers are responsible for providing a fine manual for facilitators, as they can run the game as intended.
- Facilitators must become thoroughly familiar with the game: reading the manual repeatedly, practicing each step by themselves, preparing for answers to possible questions from participants, etc.
- The facilitator is the one who selects the game for the session. If anything should be adjusted or modified, the facilitator should have carried this out before the session.

25

Execution

Who is responsible, a facilitator or a designer?

- There are four periods during which a facilitator can avoid or adjust a mismatch between a game and participants: selecting the game, preparing the game, running the game, and debriefing.
- Facilitators are required to be sensitive to a feeling of slight strangeness and be ready to do everything to deal with it.

26

6 "Debriefing"

6.1. Debriefing is essential for learning

- Usually, "debriefing" is performed immediately after a simulation game. Thiagarajan (1993) raises other alternatives regarding the timing of debriefing:
  - -Before the experiential activity
  - -During a lengthy experiential activity at logical intervals
  - -In emergency settings when the simulation game goes awry
  - -A long time after the experiential activity
- Recently, I started with a method of awareness-raising questions; I asked informative questions between briefing and game execution to increase the level of participants' recognition of the core problem. Those questions seemed to motivate participants to have serious discussions among team members (Nakamura 2022).

27

g

We should start from planning the phase of debriefing

- If we perform gaming simulation in the setting of education or training, we should start from planning the phase of debriefing, that is, taking time for the plan of debriefing in the phase of preparation.
- Honestly speaking, I have tended to spend most of preparation time to select and adjust a game and to prepare materials and myself for the session.
- However, nowadays, I spend more time for preparing debriefing.
- Through trials and errors with feedback from participants and colleagues, I would say my debriefing style is evolving.

28

The flow of debriefing

- We can utilize a common flow in the literature, starting from concrete experiences during the game, generalizing them, and applying them to real-world behaviors.
- Keeping in mind the common flow, we can create a list of basic questions before the session and arrange it during the session.
- Preconceived questions focus on what happens commonly or generally, but they cannot cover uncommon or one-time-only events. If such an event would provide an opportunity for learning, the facilitator should pose questions to analyze the event.
- The facilitator and participants only experience the event together; there must be a special one-time-only event for both.

29

The role of facilitator for debriefing

- The facilitator needs to carefully observe what happens during the game play. However, not everything can be observed.
- The facilitator decides what to monitor with great attention, based on the purpose of the session. Then, the facilitator selects things to be focused on during the game play and debriefing.
- Nowadays, I put more weight on debriefing but still struggle with how to carry it out.
- My basic style of debriefing is to ask questions in the form of a questionnaire, making small groups share opinions within the group, and assigning report writing as homework.
- For the content of questions for debriefing, I seek help from many existing examples of questions.

30

6.2. The Facilitator's Role

- After the game, people are expected to review their experiences and understand what happened during the game.
- With the help of a facilitator, people may be able to extract some strategies applicable to real-world issues in the future.

- The stage of "thinking" is better to include what-if scenarios.
- What-if scenarios help participants look at the situations from a new point of view.
- "Thinking" ensures that participants expand their minds and think about situations more carefully.

31

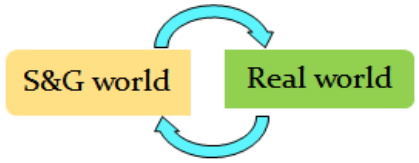
What facilitators should do for debriefing

- Explain why the topic is important and why the S&G is played.
- Help participants review what happened in the S&G and extract a strategy applicable to real-world issues based on their respective degrees of readiness.
- Prepare small steps for those who have difficulty with taking a panoramic view.
- A list of questions will provide small steps; starting with asking participants to express their feelings, look back the events, and reflect by asking questions. The past-oriented question would be better to be asked prior to the future-oriented question, so that it can be a bridge from the S&G to the real world.

32

Examples of questions for debriefing

- "How are you feeling?"
- "What do you think about your response?"
- "What did you learn from this S&G?"
- "In what kinds of future situation do you think you can apply what you learned in this experience?"



33

Let's emphasize the purpose and the benefits of debriefing

- Filling out the debriefing form provides time to cool off and allows participants to look back what happened during the S&G.
- Sharing opinions in the team imparts a wider view.
- Collecting fodder for a report and writing a report connect what the participants have learned to real-world issues.
- Assigning homework, specific details are desirable:
  - Review what happened
  - Write what would you have done differently
  - Explain how the strategy you extracted from this experience can be used to deal with real-world issues and
  - Predict the results of your strategy.

34

7. An example of Project Management Game

- OPT SCHEDULING GAME by Legg (1994) simulates a mechanism of optimized production technology.
- Participants work in teams of about ten people.
- The goal of the game is to make as high of a profit as possible by producing airplanes with plain A4 paper.
- Individual members have eight tasks, as shown in Figure 1.

35

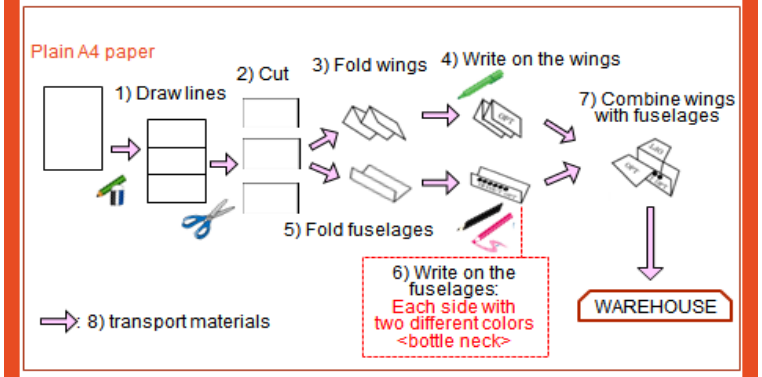
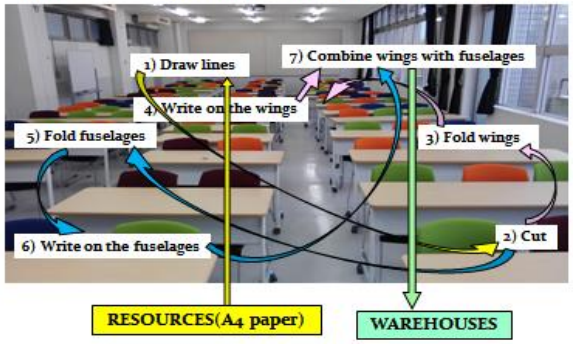


Fig.1 Operation process

36

Image 2. Room environment (flow diagram)



37

Table 3. Costs

Items	Cost
Initial cost	¥200,000
A4 plain paper	¥3,000/sheet
Additional staffassignment	¥500,000/staff
Changing the location	¥200,000/location
Process improvement	¥50,000/improvement

Table 4. Profits

Items	Profit
Airplane	¥20,000
A pair of wings	¥5,000
A fuselage	¥10,000

Table 5. The number of participants in two consecutive sessions

Year	Session 1	Session 2	Common members	teams
2019	105 participants	103 participants	99 participants	11 teams
2020	116 participants	119 participants	116 participants	12 teams

38

Questionnaire **before** and **after** the game run

Session 1 (preparation & rehearsal)

↓

participants individually answered several informative questions

※ Informative question would help participants understand the meaning of information, promote the depth of understanding in individual levels, activate serious discussion, and increase team performance.

↓

Session 2 (game run & debriefing)

↓

participants individually answered 12 questions

39

Questionnaire **before** the game run

(1) Do you understand that the initial cost is ¥200,000?

"Yes, I do" "Now I understand"

"Neither yes nor no" "I have no idea"

(2) Can you correctly estimate the minimum number of airplanes required to recoup the initial cost?

"Yes, I can" "Now can"

"Neither yes nor no" "I have no idea"

(3) Which task do you think is the hardest? Please choose one from the following alternatives:

Draw lines Cut Fold wings Write on the wings

Fold fuselages Write on the fuselages

Combine wings with fuselages Transport materials

(4) Please estimate the net profit gain (sales minus costs) of your team.

(5) Please explain how you calculated the net profit gain. **(only in 2020)**

40

game

Questionnaire **after** the game run

Q1 Please give us your feedback on this game run in two lines.
Q2-1 How much did you understand the process of producing the airplane?
Q2-2 Which task looked the hardest?
Q3-1 How well did you understand your team's plan?
Q3-2 Please explain your team's plan.
Q4-1 Did you predict your team would end up with this result?
Q4-2 What result did you predict?
Q5-1 How satisfied are you with the result of this game?
Q5-2 Why do you think so?
Q6 What do you think should have been done better?
Q7 If you were to participate in the same game again, what would you like to do?
Q8 If you were to apply what you have learned from this game, what would it be?

※ Alternatives for yellow-colored questions are on a 6-point scale ranging from 1 (never) to 6 (fully).

41

game

How to organize teams in OPT SCHEDULING GAME

- The teams were organized as an aggregation of small groups of close friends.
- For example, if a few participants wanted to be on the same team, they requested that they be given the same suit of a deck of playing card.
- I agreed to their requests on condition that I had the same suit remaining in my hand. Thus, most members have someone in a group who was acquainted with each other.

- This semi-autonomic procedure was employed to avoid direct interaction among the participants after COVID-19 pandemic.

42

- Before COVID-19, participants formed a team by oneself or I arranged teams at random.
- These styles seemed to create too friendly atmosphere or too cold one during a discussion.
- On the other hand, teams organized as an aggregation of small groups of close friends seemed to create a little tension among members and make a serious discussion possible.
- I am not yet sure which is more powerful for team performance, either the method of organizing teams or the content of questionnaire before the game.

43

How can we train ourselves as facilitators?

- Fortunately, we can obtain helpful advice and suggestions on how to develop ourselves as facilitators from books and colleagues.
- Unfortunately, these advice and suggestions often seem contradictory and confusing because the situation at play differs, case by case.
- Therefore, facilitators need to sort out the information and compare them to their own experiences so that they can feel confident about what they do. Feedback from the participants during and after the gaming session can be very useful in modifying the style of facilitation employed.

44

Recommendations for facilitators

We can accelerate our learning cycle: reflect our own styles, be flexible and careful, enjoy new experiences, and continue experiential learning.

- Let us use existing methods effectively.
- Let us look for an appropriate method for our own facilitation.
- Let us consider how to apply general advice to our own facilitation.
- Let us reread basic books to rediscover the deep meaning of the advice.
- Let us join ISAGA or local associations and attend gaming sessions.
- Let us share what we got with each other to accelerate our learning cycle.

45

References

Duke, R. D. (1974). Gaming: the future's language. Beverly Hills, CA: Sage.

Duke, R. D. (2014). Gaming: the future's language (Reprint). Bielefeld: W. Bertelsmann Ver-lag

Duke, R. D., & Geurts, J. L. A. (2004). Policy games for strategic management. Amsterdam: Dutch University Press.

Nakamura, M. (2017) The effect of a physical environment on participants in gaming simulations [in Japanese]. Presentation given at the 18th Conference of the Japan Association of Experiential Learning, June 17–18, Nagoya, Japan.

http://www.nittaiken.net/wp/wp-content/uploads/2017/11/18th_programfull.pdf

Nakamura, M. (2022) Code of conduct for facilitators and the ethics of debriefing. In T. Kikkawa, W. Kriz, & J. Sugiura (Eds.), Gaming as a cultural commons: Risks, challenges, and opportunities, 127-147, Singapore: Springer.

Nakamura, M. (2022) The Effects of structured instruction on team performance. In U. Dhar, J. Dubey, V. Dumblekar, S.Meijer, & H. Lukosch (Eds.), Gaming, simulation and innovations: Challenges and opportunities: 52nd International Simulation and Gaming Association Conference, ISAGA 2021, Indore, India, September 6–10, 2021, Revised Selected Papers, 15-27, Switzerland: Springer Cham.

Thiagarajan, S. (1993). How to maximize transfer from simulation games through systematic debriefing. In F. Percival, S. Lodge, & D. Saunders (Eds.), The simulation and gaming yearbook 1993, 47-52, London: Kogan Page.

46

Webinar – 12

Date, Day & Time: November 05, 2022 (Saturday) 03:00 – 04:05 p.m. (IST))

Invited Speaker: **Prof. Per Backlund,** Professor of Informatics at University of Skovde .

Country: Sweden

Title: "Serious games design knowledge"

Webinar Topic

"*Serious Games Design Knowledge"*

Abstract

Serious games is an effort to combine the engagement and motivation from games with some sort of utility beyond mere entertainment. In this talk Per Backlund will revisit and analyze a set of SG development projects to explore the design space for serious games and derive design guidelines for serious games. By analyzing these projects as well as their outcomes a set of design principles for serious games can be generated to conceptualize of the design space for serious games. One main contribution is to explicate the game design component in serious games and relate it to the utility dimension. Doing so, adds to the understanding of serious games from a game perspective, which is relevant to any development effort intending to use the persuasive and motivational power of games. The talk will offer several examples and experiences from practical serious games development.

Speaker Profile

Per Backlund (https://www.his.se/en/about-us/staff/per.backlund/) is a professor of informatics at University of Skövde in Sweden. He has been active in the serious games community since 2005. His primary interest is in the development and application of serious games in various domains, such as: education, vocational training, traffic education and rehabilitation. Per Backlund is also co-founder, in 2008, of the Serious Games Master Program at University of Skövde.

PRATITI... becoming aware seminar.

WEBINAR-XII
SERIOUS GAMES DESIGN KNOWLEDGE

PER BACKLUND, 2022-11-05

1

ABSTRACT

Abstract
Serious games is an effort to combine the engagement and motivation from games with some sort of utility beyond mere entertainment. In this talk Per Backlund will revisit and analyze a set of SG development projects to explore the design space for serious games and derive design guidelines for serious games. By analyzing these projects as well as their outcomes a set of design principles for serious games can be generated to conceptualize of the design space for serious games. One main contribution is to explicate the game design component in serious games and relate it to the utility dimension. Doing so, adds to the understanding of serious games from a game perspective, which is relevant to any development effort intending to use the persuasive and motivational power of games. The talk will offer several examples and experiences from practical serious games development.

2

A FEW WORDS ABOUT ME

- Professor of Informatics
- Background in business informatics and information systems
- Active researcher in serious games since 2005
- Specific focus on organizational implementation and usefulness
- Program diretor and teacher in our master program in serious games since it started in 2008

3

UNIVERSITY OF SKÖVDE

4

UNIVERSITY OF SKÖVDE

- Strong focus on game development
- + 600 students in game development
- + 50 teachers and researchers focusing on games
- Scandinavian style and international profile

5

OUR WORKING DEFINITION OF SERIOUS GAMES

Serious games are games that engage the user and contribute to the achievement of a defined purpose other than pure entertainment (whether or not the user is consciously aware of it). This purpose may be formulated by the users themselves or by the game's designer, which means that a commercial off-the-shelf game used for non-entertainment purposes, may also be considered a serious game.

6

A SERIOUS GAME IS A UTILITY SYSTEM

Some key words from the MIS sphere:

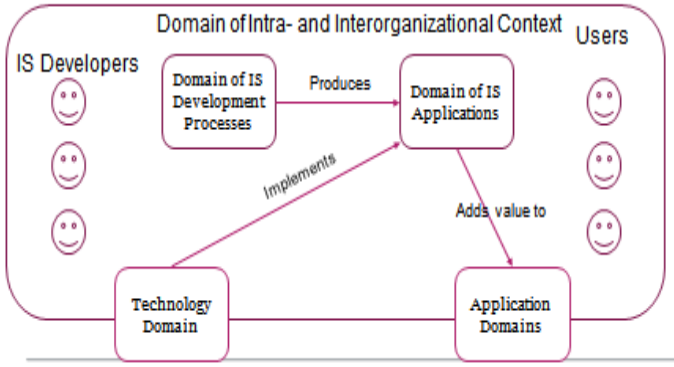
- Typically IT based
- Utility and organizational value
- Human-in-the-loop

7

https://openclipart.org/

8

THE IS BODY OF KNOWLEDGE (IIVARIET AL. 2004)



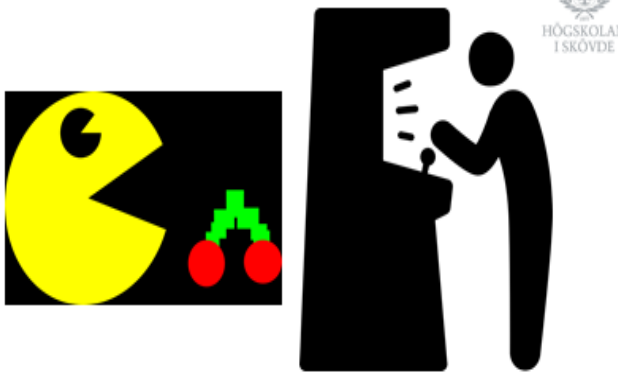
9

BUT A SERIOUS GAME IS A GAME

- Voluntary and enjoyable
- Separate from the real world
- Unproductive in that the activity does not produce any goods of external value
- Part of human culture
- Important social function
- A meaningful activity in its own right

...

10



https://openclipart.org/

11

SERIOUS GAME?

https://openclipart.org/

12

AND A GAME IS A GAME

- Voluntary and enjoyable
- Separate from the real world
- Unproductive in that the activity does not produce any goods of external value
- Part of human culture
- Important social function
- A meaningful activity in its own right

...

Conflict ?

Serious Games

- Effectiveness
- Usefulness
- "Productive"
- Organizational value
- Business value
- Work
- Additional purpose
- ...

13

GAME DEVELOPMENT

Game design knowledge

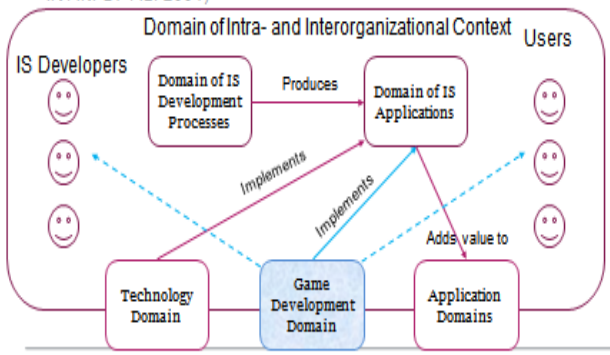
14

GAME DEVELOPMENT

Game design knowledge

15

THE ADAPTED IS BODY OF KNOWLEDGE (BASED ON IIVARI ET AL. 2004)



16

ELINOR

- Application: stroke rehabilitation
- Partners: Regional neurology rehabilitation unit, neurology researchers
- Time span: 2007-2009
- Goal/vision: home-based stroke rehabilitation for non-typical players

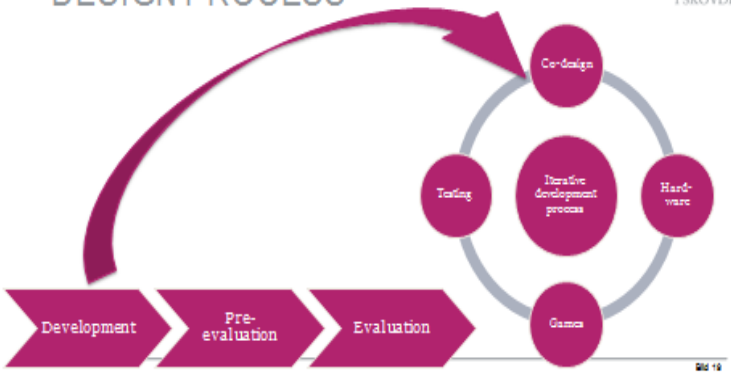
17

STROKE REHABILITATION

- Stroke is the most significant cause of adult disability in the United States and Europe. In Sweden, the incidence for stroke is around 30,000 cases annually.
- Rehabilitation has an effect even a long time (6 months +) after the stroke. However, experiences show that motivation for training drops already after a few weeks.

18

DESIGN PROCESS



19

EVALUATION PROCESS

Start-up	Week 1-5	Week 6
• Screening test • Introduction to the Elinor system • Tests by rehabilitation specialists • Semi-structured interview • Delivery of Elinor machine	• Weekly follow up at the clinic	• Tests by rehabilitation specialists • Semi-structured interview

20

EVALUATION ASPECTS

Gaming behavior	Rehabilitation effect	Acceptance
• Time • Flow	• User experiences • Measurements	• AdaptedTAM • Patients • Healthcare professionals

21

EVALUATION ASPECTS

Gaming behavior	Rehabilitation effect	Acceptance
• Time • Flow	• User experiences • Measurements	• AdaptedTAM • Patients • Healthcare professionals

22

SAREK

- Application: medical simulation and training
- Partners: Regional ambulance unit, prehospital researchers
- Time span: 2012-2017
- Goal/vision: Develop a simulator training environment to improve live-role play training in a prehospital context.



23

THE PREHOSPITAL PROCESS



24

EXPLORING IMMERSION IN SERIOUS GAMES

- The concept of immersion is frequently used in the game development community

Defined as: "Immersion is the subjective impression that one is participating in a comprehensive, realistic experience" by Dede (2009)

- Building on the work of Jennett et al. (2008) we aimed to transfer this concept into the prehospital training domain

25

CONTEXTUALIZATION

26

MAIN TAKEAWAYS

1. A novel way of medical simulation training for prehospital contexts
2. A new interpretation of the concept of immersion applied to the prehospital simulation training context
3. Higher immersion in the contextualized version of the medical scenario
4. A follow-up study of the effect of immersion on team performance in simulation – it seems that contextualization matters in expert decision making

27

HIDDEN IN THE PARK

- Application: risk-awareness
- Partners: Change Attitude, World Childhood Foundation,
- Time span: 2014-2015
- Goal/vision: addressing sensitive topics with the help of a game

28

HIDDEN IN THE PARK

- Online grooming is an increasing societal problem
- Lower and lower in ages
- Challenging to address and inform about – target groups from 7 years of age.
- How to address such a topic in a game?

29

GAMEPLAY

30

GAMEPLAY

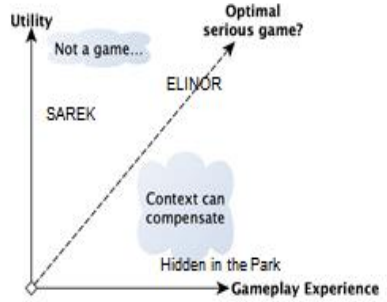
31

MAIN TAKEAWAYS

- The game worked as a game for the target group – the combination of board game and AR was appreciated.
- AR worked well as a "wow-factor" – but it is a double edged sword...
- The game worked well as a basis for discussion and the kids could relate to the patterns
- The teacher manual is an important part of the concept

32

DESIGN SPACE FOR SERIOUS GAMES



33

SUMMARY OF DESIGN PRINCIPLES

#	Design principle
1	Game design expertise is crucial and needs to be an integrated part of the process of developing serious games.
2	Games are not typical IS applications and cannot be understood as such. There is a conflict between the fundamental tenets of games and organisational IS applications that needs to be considered.
3	The gameplay experience and the utility of a serious game are determined by the organisational usage situation. This entails that the design space for serious games is different from both games and utility software.
4	The "wow-factor" of serious games may drive technology use for the sake of technology. This is not optimal from a utility perspective and needs to be considered during development.
5	Developers of serious games should convey some understanding of game design to the client.
6	Serious games is a distinct domain outside game design as well as IS design. This entails a new ontological domain with specific contributions to IS development.
7	Serious games aim to introduce concepts and ideas from the game design domain into the IS domain. The underpinnings and goals are different and not necessarily transferrable without adaptation.

34

REFERENCES

- Backlund, Söderholm, Engström et al. (2018) Breaking Out of the Bubble Putting Simulation Into Context to Increase Immersion and Performance. *Simulation & Gaming*. 49(6). https://doi.org/10.1177/1046878118772612
- Björk, S. & Holopainen, J. (2004) Patterns In Game Design. Charles River Media.
- Bogost, I. (2007) Persuasive Games The Expressive Power of Videogames. MIT Press.
- Engström and Backlund (2021) Serious games design knowledge - Experiences from a decade (+) of serious games development. *EAI Endorsed Transactions on Serious Games*. DOI: 10.4108/eai.27-5-2021.170008
- Dede, C. (2009) mmersive interfaces for engagement and learning. Science. 323, pp 66–69.
- Hagiwara, Backlund, Söderholm et al. (2016) Measuring participants' immersion in healthcare simulation: the development of an instrument. Advances in Simulation. 1:17
- Hevner et al. (2004) Design Science in Information Systems Research. MIS Quarterly, 28(1), pp. 75-105.
- Iivari, J. et al. (2004) Towards a distinctive body of knowledge for Information Systems experts: coding ISD process knowledge in two IS journals. Information Systems Journal. 14(4), pp. 313-342.
- Jennett C. et al. (2008) Measuring and defining the experience of immersion in games. International Journal of Human-Computer Studies. 66(9), pp.641–661.
- Slijper, A., Svensson, K.E., Backlund, P. *et al.* (2014) Computer game-based upper extremity training in the home environment in stroke persons: a single subject design. *J NeuroEngineering Rehabil* 11, 35. https://doi.org/10.1186/1743-0003-11-35
- Wilhelmsson, U., Susi, T. & Torstensson, N. (2021). Merging the analogue and the digital – Combining Opposite Activities in a Mixed Media Game. Media and Communication, 9(1), 17-27.

35

THANK YOU FOR YOUR ATTENTION!

36

Webinar – 13

Date, Day & Time: December 03, 2022 (Saturday)
03:00 – 04:05 p.m. (IST)

Invited Speakers: **Herman van der Bij**,
Game Designer
Maarten Versteegh ,
Master Trainer at Farelli TCCM,
Ms. Marijne Vos,
Co- Author of the serious Book of Play

Country: The Netherlands

Title: "Game Design and Facilitation: The Mutual Connection"

Webinar Topic

Game Design and Facilitation: The Mutual Connection

Abstract

This presentation is about game simulations. By game simulations, we mean deliberately created learning environments in which we imitate the daily reality of a business process. An essential feature of game simulations is that players' decisions matter. We distinguish between the game as a thing and the game in use. If you talk about the game as a thing, then the target audience, the story, the duration, the number of players, the roles, and the gameplay, are topics of discussion. But with a game in use, other issues come into play: relevance, psychological safety, the personality of the game leader, adaptability to group size, and group dynamics. Design and use are not separate but influence each other. In this presentation, we will explain how to set up the design and use in such a way that you obtain a stable prototype in 3 test sessions and a sound finished product in 5 to 10 sessions.

Speakers Profiles

Mr. Herman van der Bij

Herman van der Bij is game designer and concept developer at Imagine Management Games. He has over 35 years experience in education, consultancy and business gaming. He has initiated and developed many business simulations, which have been attended by more than 100.000 people. Herman has a Master's in Mathematics and Information Sciences from the University of Groningen as well as a Master's in Change Management from SIOO. He worked as university lecturer, program advisor and management consultant, before he founded Imagine Management Games in 1994.

Mr. Maarten Versteegh

Maarten is a Master Trainer at Farelli TCCM. He grew up in a small village in the Centre of Holland. He attended the University of Leiden where he studied History. For a number of years he worked in local government rising through the various management positions where he eventually became a self employed interim manager. In 1994, he teamed up

with his business partner Herman van der Bij to start their simulation-game company. He turned out to be a natural simulation facilitator. Keen on having his participants learn about things like communicating, working together and ensuring they have fun! Maarten has run hundreds of Simulations all over the world. And, over the years he has trained many others to be Simulation facilitators.

Ms. Marijne Vos

"The work of Marijne Vos was best summarized by her son Tom: ‘Mama creates games for adults, because work can be so much more joyful’. She is an organizational advisor and facilitator, and has experience in change management, appreciative inquiry, business model canvas, design thinking. She combines her experience to create playful working methods. Marijne is co-author of The serious book of play (het Grote Fröbelboek for adviseurs) in the Netherlands. This book describes How to create playfulness in organizations.

Webinar Transcript

(Ms. Marijne Vos)

thank you thank you thank you rupali I'm sorry I started too soon with my um with my conversation so I'm sorry for about it but um welcome everybody um it's I think it's my enthusiastic uh uh um statue that I uh that I I startedtoo soon but um so it's no what I already told my name is Marina thank you for the introduction and um it's no handmade story so please ask your questions in the Q a but before that um maybe first a small word from Hermann and and Hermann because I know you can tell very enthusiastic about play why are you so passionate about play maybe you can introduce yourself by that oh you're in mute

(Mr. Herman Van der Bij)

um that's not well actually as far as I remember I was interested in games and play and for the last 30 years especially I'm conservative games that that you can use his experiential learning environments um and it's not really an answer on your question but I'm especially interested in games that have many runs because when you have many runs it allows you to study the effects and see what works and what doesn't and so our most successful game is more than seven thousand uh runs all over the world and we have a revised it twice and it's still not finished um things will never end there's always something new that you find out in the even if you have played again many many times and that keeps it's intriguing yes and we will tell you something more

(Ms. Marijne Vos)

about the context what kind of games you want to play but firstly I I will ask Martin can you Marty can you tell me uh maybe uh your most interesting game session and why you find it so interesting your most interesting session over the all these years you facilitate games

(Mr. Maarten Versteegh)

well um that would take a while because many many sessions have been very interesting especially the ones where something went wrong because that's when I learned to improvise and to make sure that everything goes well in the end

anyway and that will help me tell Hermann how he how he could sort of change the game to make sure that doesn't happen again or to make sure that it does happen again so there you have the inter inter uh well intercourse is not the right word of course but I'm sorry about that but this is how?

(Ms. Marijne Vos)

heaven and I work together yeah yeah so this this seminar of this webinar is about the relation between game designing and facilitation and we try to make it yes we try to tell you something but before we start maybe it's smart if we talk about a game what we mean because there are a lot of different kind of games so can you tell uh can you start Martin by explaining what kind of games you make in facilitate then I will share my screen or hair mom it's just it's this one yeah

(Mr. Maarteen Versteegh)

okay well what you see here is um uh difference uh pictures from our games you can see people in despair people talking to each other working and phoning at the same time so we try to make them very realistic and so no computers it's it's all uh bits and that's maybe yeah

(Mr. Herman Van der Bij)

well you you see people at work and you see it's not real uh especially the one in in when you look closer at a guy and you see he's pushing a paper-made container and a parts in it and he's very engaged well it's not real because he's he's having a conversation with the customer service if people that they are desperate and they have people that go through thick and thin to get things done and and that's that's very special about um about about games um they they trigger emotional learning processes and it makes them completely different from other experiential learning environments for what you have learned in in an emotional context you will never forget and this is what um no no that's that's I think it's that's enough as an impression of games the games that we that we are using

(Mr. Maarteen Versteegh)

about people not forgetting the the experience I've met people uh 10 years after and they immediately say hey Martin you remember the game so after 10 years it's still very in their minds and that is the quality of Hammond's games of course and why is that can you tell me a little bit why why do they still remember it it's not real as you can see on the left picture there and the other pictures as well but it's it's design is so realistic that people immediately recognize uh that it's about them you know it's a metaphor like the the service management game is about logistics firm but everyone immediately recognizes aha this is about us so it's it's realistic and it's irrelevant to their own environment

(Ms. Marijne Vos)

and you play uh what you're what I hear is that it's realistic you play it in several rounds yeah you don't play one round you play circle of rounds and uh it's the business stimulation so you stimulate the context about what kind of give us a little bit an

(Mr. Maarten Versteegh)

example of uh what are you stimulating well in this case like I said it's a logistics game but we also have a game with an insurance company or an amusement park so we always use a metaphor okay and what are the layering outcomes well it's in the end it all comes down to communicating and working together sharing knowledge and the experiences that uh people will find out that that is not just something we can start with tomorrow you need to work on it every every day because it's it's difficult it sounds easy let's communicate better yeah okay but how and who and when yeah yeah

(Mr. Herman van der Bij)

Martin they mentioned to you the realism and the relevance and and that that's really a very important design issue uh because we believe that players should recognize their daily work in the game always and therefore we start by describing the work organization we identify all the actors the interaction interaction between the actors and and the activities they perform and the tools they use and any meaning give to to their activities to this is a slightly based on Peter checklin's catalog analysis Pizza well known from the soft systems methodology and the ghetto acronym stands

for a customer the the one who has Advantage actor who is performing the transformation activities in as the input output well done shown this is what is the meaning of what they're doing the owner environment and uh when you hit then you have a a global view of all the actors and actor actor diagram actually and then we determine a list of claims and concerns and issues and events to to be addressed in the game and this list helps you to simplify the initial description you determined with which actors you can omit and which actors you can represent through events and with activities you can combine and so on so this is very helpful and this way you you lay the foundation of a of a realistic and and a relevant game and realistic because people recognize their day-to-day work in the in the game and and relevant because the issues that arise in the game match their learning needs and it takes you just uh uh four 90-minute meetings with your client to to get this done and and that's that's really a good start

(Ms. Marijne Vos)

yeah and I already have a question also about uh uh this relevance and enthusiastic and engaging of players from Elizabeth in the chat because she asked her about photo that's one man is kneeling and that is very engaged and she he's asking about what happened next do you still remember it this was probably can I see the picture again yes I will share my screen

(Mr. Maarten Versteegh)

that's always nice to uh he's kneeling on the table ah yes well they were building some kind of amusement park attraction and they had only about two minutes to finish it and they really went for it but unfortunately I know they were too late so they learned for example to start on time next time so it's it's people can go really well and what happened next is that they all sort of side and said oh no we didn't make it and then like I said we do the games in rounds so we evaluate the the things that happened in like say the the second round and then they get the chance for about 20 30 minutes to improve their organization to improve their way of working together to make new Arrangements you do this I do that and etc etc and then we do another round to see if their plan is working

(Elyssebeth Leigh)

thank you I I just saw that he must have been so engaged I'm sure he probably was

(Mr. Maarten Versteegh)

unaware that he was kneeling on the table oh absolutely yeah absolutely yeah and and to get to get a group of people to be so engaged in the game you need to have a very good introduction yeah so you can take them with you in the story of the metaphor and this particular game is about project management and uh participants need to build up the amusement park and there's all kinds of rules and regulations that have to be met and so they really get into it and and that story of taking them into the story is something you build in a series like Hermann already mentioned in a series of games of executions of that game so you learn every time okay this word that works I need to say this I need to touch that to show something and you build that story over the weeks and months and even years because you know after after 25 years you still learning hey what happens next that's this for me that's the fun part there's always something else

(Elyssebeth Leigh)

I I agree and I love the uh I love your term of taking them with you into the metaphor that's a really lovely way of thinking about it thank you yes vital I

(Ms. Marijne Vos)

would say yes I agree and thank you very much Elizabeth I hope uh pronounce your name and name right now okay asking these questions because that is really help helping us in this webinar um so uh please stay do so uh ask question in the chat then we bring them to the um and we have again immediately a question so how can we produce a simple game so a simple game they say do you have to like simple games everyone Marta do you do you play Simple games with 15 30 minutes and what elements do you what elements must be considered if you play a simple game or make a simple game can you tell me something about that

(Mr. Herman van der Bij)

Paramount maybe start actually I don't know how to make a simple game all our games are complex and with a reason with a reason uh that that's

about um games are are a typical example of learning through experience and and we believe in yourself determination theory is the basis for this type of learning processes and and therefore we apply this theory in in our game design so um we have no simple games because we want the games to be complex and challenging uh that is that's regarding competence of people and regarding relatedness players cannot do it on their own they always need others to to uh you have to cooperate with other players regarding autonomy uh the players determine the learning objective and and and the order in which the which they reach these objectives there's no predefined goal and we have no hardcore scenario um metaphorically speaking you could say that players make a journey along issues that they experience in a daily work so the game is nothing more than than a mirror of what they they have in in the daily work and so simple games we don't have them in our portfolio well let me add something to that because

(Mr. Maarten Versteegh)

our games are also very flexible because they are complex but they need to be flexible because not every group is capable of the highest level of complexity so you have to have means as a facilitator to vary in the the level of complexity because people need to be challenged but then don't want to be over challenged because then they will say oh we can't do this and then they will learn nothing so you need to be able to create the right level of complexity for the level of the group so to speak yeah so you can vary in in play your games but is it also that you add on complexity in the next round so you start simple and then some games like the amusement park game that starts with a simple uh Target with and the complexity growth over the route yes but normally um we tend not to add complexity during the game because people would feel maybe manipulated all right and that's not something we want to happen so in general we we have rather strict rules at the beginning and then see how they work and if they are too complex you can say oh well never mind that you know or it's it's better to uh tax people you may you make sure there's uh suppose there's money involved in the game uh if they have too much money they can start buying their way out of trouble and that is not when you learn something so you need to make sure that the money is short an Airman is a master of doing that and to make sure that they're just all the time not have enough money so they need to go to a bank for example and when you go to the bank you need to have a plan and if the plan is good there's always money but they have to have a plan in that case to making that plan will help them learn so those are the elements that make a game uh as good as it is

(Ms. Marijne Vos)

one more because I'm very curious about this manipulation and honest games because I I know you find this very important to have honest games how do you take care for that as a facilitator that is that people don't feel manipulated well there's the trick

(Mr. Herman van der Bij)

no it's also a design issue I think it's very important the honesty is is part of the uppsychological safety uh the overeating literature that the games provide a safe environment or experiment and that's only partial through uh if you if you limit safety to to system safety and the company doesn't go bankrupt and the reacted as not overheat uh but psychological games are not often no safety at all with a bad facilitator that easily uh lead can lead to Excellence and from a design perspective we have with several options one of this is is the honesty so uh the game is honest it is not saying one instruction that something is is written and the other instruction is something that's blue we don't need it and and people don't have to feel for that

(Mr. Maarten Versteegh)

like Cameron said the instructions are fair and true and also if they ask me a question I will give a straight answer so no uh nothing in the sleeve as they say this is this is important for people to feel safe yeah all the information they need to do it right first time is there but of course they need to get experience and you need at least one round for everyone to understand what he or she should do so they learn again and again and again one of the things you meant Mark to mention is is you you build it up so that that's also uh for psychological safety you you prevent information overflow some people don't like to to read too much so uh so we're building a trial around and do not explain more than strictly needed necessary for the trial around and then uh the things they do have meaning and then it's much easier to uh to think of themselves what what they can do in the next round you don't have to explain that anymore and text or whatever so in our early games we we had through three four pages of instructions and now it's no more than some simple bullets and that's enough in in most cases yes

(Mr. Maarten Versteegh)

and you have to tell you like I said before bring him with you in the metaphor so you explain the whole thing rather than write it all down and the more you write down the more uh chance people have to interpret it and that leads to misunderstandings so the shorter the instruction the better a little bit about the game and also how

(Ms. Marijne Vos)

to facilitate and there are some more questions about the facilitation because um Elizabeth is asking uh what what do you think are essential skills of knowledge of the future gaming facilitator or to afford to be a bad facilitator and he says he already mentioned quality safety but what else do you think is important um what else is important

(Mr. Herman van der Bij)

um flexibility the flexibility of the game is very important yeah I think that's that's the core of our business simulations that they're very very very flexible flexible in time flexible in group size flexible in learning levels and

(Elyssebeth Leigh)

learning needs I'm particularly I'm particularly interested in what you two as the facilitators of the game have as skills and knowledge that supports and sustains the flexibility of the game so within yourselves as simulation professionals so you you also mentioned catwo which I understand Peter checklin's work um I love the phrase nothing up your sleeve but that's that's a really interesting phrase how if considering today there is lots of people who are learning to manage simulations what are the things they need to know or be able to do to sustain that flexibility of the game any game well I think the most important thing is not to be a perfectionist

(Mr. Maarten Versteegh)

if you are a perfectionist you will be very disappointed every time because things will always go wrong yes so thank you the Hermann always says he's a fly on the wall he just watches observes and then gives the team feedback after the

rounds well you can see this here but I'm two meters tall and it's very hard for me to be a fly on the wall so my style is slightly different but the end result is normally the same [Music]

(Ms. Marijne Vos)

there it also um making the game eh you've told me when we prepared this consultation that that's also very important can you tell us a little bit about you two different kind of styles because I think we can also learn a lot about that how you facilitate games because you work so long together so you know each other so, maybe uh Martin because uh herma you could tell something about the style of Martin and why he's so good as as a facilitator and uh well the other way

(Mr. Herman van der Bij)

around yeah well Martin is very good in provoking people uh and provoking it in a nice way you can explain that better than I am and um yeah I don't care much about what is happening in in in in in the game well not really but I I let people uh when they they take better okay with me uh we always try to help them to get out of it but I I don't care if they they they work themselves in in trouble and never mind lets them hit the bottom

(Mr. Maarten Versteegh)

whereas I sort of tried to avoid the absolute bottom but it's also good when people get into real trouble because then they need and of course we help to get them up again

(Ms. Marijne Vos)

and can you tell us an example because you know I like that about provoking what do you do if you provoke people in a game without manipulating them what do you do um when people are working in in the simulation

(Mr. Maarten Versteegh)

and suppose I noticed two people who are sort of waiting not doing much then one uh way of getting them back into the game is to walk over and say Hey listen you see these three people over there they are planning something that you

will not like so get over there and make sure they don't do that so in in that way I sort of help people to uh stay engaged in the game

(Ms. Marijne Vos)

you you can have a different kind of style as a facilitator also some people are a little bit more laid back and some people are more provoking and what what what is a bad facilitator who the one who is too perfect or she likes too much control yeah she won't control you you bet you better become a teacher or something you never should be a facilitator if you strain conductor you have to follow yeah we have to follow the flow and and follow what people are doing and they're deciding uh which direction you go and and and of course you you like that they they they uh uh see some topics that that are a part of the part of the game but if they miss the topics okay then um but in the end you could you can tell something about it or as long as they are playing uh uh you just have to follow them and I know about you about your games

(Ms. Marijne Vos)

that you if you evaluate a lot between rounds you told me that is very the the in your game she do a lot of evaluation and transfer in the rounds or can you

(Mr. Herman van der Bij)

tell us a little bit about that well I wrote every week I I write a small uh we'll call it on LinkedIn just 150 words something about what's puzzling me and and once when Once people start playing they step into the magic circle and if you step out of this message Circle then the spell is broken and the game ends and some facilitators take this very literally and um they believe players should not talk about the daily reality before the game has ended and in our earlier years I followed this recommendation uh if you skipped lunch lunch time and had sandwiches delivered because they should stay in the game and not out of it but it was inevitable that after each round players began talking about what happened and in a game and how that relates to their work they it was it was happening every time and they say oh okay uh-huh so this is how it is and this is why this is happening in our daily reality and and they found Solutions in the game and they were eager to implement this daily reality Solutions and easy to implemented in this in the game and and we found out that you don't have to skip lunch uh even the symptoms dinner with with wine could not disrupt the

process they they after an hour they came back in the game and they just uh jumped into it again um and so from a design perspective I'm I'm I don't have the answer actually and I'm still thinking of it um I've played classical games like hexagon and uh fish bank's slogan and these are uh it works best if you stay in the game for for all these three type of games I think um and then I compare these games with with our games the main difference is that it's harder to to rate the activities in in hexagon with the daily reality uh more difficult than than it is in in the games we make um and this is intriguing because we use the same design principles to design a game and and still you have this this these differences so there is something uh in our games that makes people uh to become very very engaged and no we're still puzzling on it but but so API understands they them in your games they make a quicker move from the magic circle in out in it again and out it

(Ms. Marijne Vos)

again and do you do something uh in your facilitation Martin to stimulate this

(Mr. Maarten Versteegh)

of course we explain as good as we as as well as we can what to do how it works but not how they decide to have their decisions that's up to them but um the games we design are so uh well I think they're so good that people are okay let's start again you know here we go and but but working for about say 20 25 minutes and then stop and discuss what happens because it's fresh they are ah this happened five minutes ago you see you can even call for a time out during the round when something very special happens that you want to share with everyone Hey listen up everyone this happens here now what to do so you have even in between within the round you can have a discussion on certain topics but I think I've done a timeout about four times in 35 years so normally okay it's thinking about my hockey

(Ms. Marijne Vos)

practice they also do timeouts and saying where is everybody standing in the field then we are standing too close or that I understand it's a little bit like working like that like okay what is going wrong or what is happening here what's very successful yeah um and maybe I don't know how we are in time we're probably what's what is what time we end with question between it uh yes ma'am you can continue your session okay at 2

30 but we have started late that's why okay okay okay because I wanted to also ask you a little bit about the outcomes and the learning objectives and Elizabeth also ask a very good question I hope I uh say it right a little bit otherwise you have to intervene me but how do you convince businesses who play this game or um uh um or that there's uh you use a longer time or wait one more or maybe you can

(Elyssebeth Leigh)

ask them themselves or questions sorry I will give you a context recently I spoke to a potential client about the design of a game about uh encouraging uh well attitudes to to ability and disability um and I I failed to have them pay attention to it that instead they just did a panel and discussion so because it seemed like it was going to take too long so how do you what are your rationale for having a business take on those longer timing periods that that you've been talking about in your game but what is what is the sales pitch I suppose so let me tell you

(Mr. Maarten Versteegh)

Elizabeth it's not an easy thing to do uh yeah especially over the years uh we have we have had to sort of alter the games a little bit to make it shorter because people don't take the time anymore and so we have through experience uh found out that we can do for example the service management game that used to take a full day and now we could do it in four or five hours still a bit long for something yes yeah you know the the you need to convince them that they will really really learn something one of my uh slogans is one day of Gaming will skip 20 meetings of two hours wow I love that it's an argument what takes more time you see so it is a very intensive uh experience rather than just sitting down and talking about the same topics over and over and over again rather than okay let's do it so and and let's do it you is in a safe environment things can go wrong but the business will survive so it's it's not it's not easy but after uh let's say I'll sell I'll I'll send sell them one game for as an experiment and then at the end of that day or afternoon they will say aha they should do this game too and they should do this game too and then you know things get easier thank you I love that I love that equivalence sorry Herman

(Mr. Herman van der Bij)

all right and maybe we should take more time for it because uh four hours is too short actually the return of learning is is more when you have six hours or seven hours yeah so the convincing is is doing actually showing them not telling thank you yeah yeah you have another question about this Elizabeth not at the moment no thank you I I love the idea of saying one hour of gay or one day of gaming is equivalent to 20 hours of meetings because that then puts it it makes it a very it's a good metaphor and it makes it very concrete they see the the value of the time saved yeah thank you and

(Ms. Marijne Vos)

what what do we do about because he talks about perfection in the facilitation but you also have like Perfection uh from the uh from the business the the assigner of your of your um who wants the game so how do you um because I I think sometimes they want to know what is the outcome of the game so what do we do about that

(Mr. Maarten Versteegh)

um well um that's unpredictable of course because you don't but in in general terms you can tell make sure next day you have your doors wide open because your people will have brand new ideas that they want to share with you so it's there's always something people always learn something and about this learn yes sorry Martin a hair mom

(Mr. Herman van der Bij)

uh I I love games with an open ending I said before we never use fictionaries of course you use scenarios but they're not not really you can decide to not to follow it and we let place we prefer to that place the take a journey and I said along a variety of topics and um and there's no ideal solution so in our games uh there is no no there's no best option of best way or for example in our service management game the customers determine whether the service organization is doing a good job like in real life so we make the games as realistic as possible and in real life there is no no uh one person says this is the right decision this is the right solution people have to discuss them uh this themselves they have to grip on and what is good and when they when they are successful or not and it's not that's something the facilitator should do or is always the the of course you can you you can uh tell them that there are other options you know the possibilities that in in the core uh the players themselves decides what is uh when you're successful open-ended and no

no perfect solution that that's that's typical typical for our games and how does it relate to the learning objectives of a game well as I said before when you design a game then you make a list of topics and claims and concerns and issues and things and events and and some of these claims come back you see the some or some issues you will see in the game when you play it and others you don't see it because that's dependent of what what the group what the decisions because the decisions people take do matter there isn't so they can take bad decisions and good decisions that that's that's equal to me actually um so the learning the learning objective is that they have conversations about things that that worries them in their in their in their daily work actually and um and and these worries differ from from group to group from business to business and but what you can say is you know in in a project management game that we address some uh project management issues or that we can address it which one uh that that's up to the uh up to the the players themselves um okay this is this I asked another question that you have conversations

(Mr. Maarten Versteegh)

yeah yes I understand that's one thing we we ask uh businesses that hire us as what do you want them to talk about and yeah then we try to make sure that they do talk about that so and they normally will although it sometimes happens that uh uh a business director uh talks about a problem that they have and then during the game you find out that there's another problem it's quite a different problem and so that then it's a bit difficult because you have to go back to the direct and say hey you don't have a clue of what's going on here yeah then after that he has to pay us you know yeah and for and I think it's difficult for and directors that are very much controlled and have a lot of perfection in them so I have another question I want to ask you in the chat

(Ms. Marijne Vos)

so um I don't know if that Dr finoth is asking a football tennis hockey and similar probably popular games are not simulation the players use strategy and show teamwork how can we debrief such a game to understand a strategy teamwork skills Etc that's interesting one of the

(Mr. Herman van der Bij)

things is these are sport games and they're competitive and uh in our our simulations you don't have competition because there is a business and then you have competition in business in general it's not not very uh very good for the business actually you have to cooperate um that's the first thing that comes up Martin even

(Mr. Maarten Versteegh)

well I'm uh not the manager of the Dutch Football team but uh I'm sure excuse me I'm sure would have a very lengthy answer to your question but this is is the question is is very

(Mr. Herman van der Bij)

interesting and and I don't have an answer I have to think about this this uh um as I said our games do do not use competition and these are and and I think these are you can uh debrief this these these games the football tennis Etc um but I have no idea how to do that I'm sorry it you don't play a soccer Hammond

(Ms. Marijne Vos)

nice because I think we are almost on time so uh though to our camera to give a chance to to get to answer this question um I just will read it to you um it's like a PhD candidate a researchers about gamification for adults in working environments to create and I know Innovative mindset so he's making games to create an Innovative mindset and he's very keen on deepening the relation game time meeting time so are there any thoughts about the relation one hour of Team game 20 hour of meeting or anyway something

(Mr. Herman van der Bij)

experiments about information yeah I I that there's there's something to say about it I've made some notes about his uh maybe if you look up to your notes maybe Martin already yeah I'm very fast in in finding notes okay um in general it's about how much time it takes to to develop a game is that correct I don't know if that is the question I think about the relation yeah you help us out Elizabeth the

(Elyssebeth Leigh)

question uh goes back to the comment that I think uh Martin made about one hour of like a day of games is equal to 20 meetings which I um was a a metaphorical comment but I can see that this doctoral student is very keen to see if there is literature we've researched that and and my personal answer is I'm not sure um my instinctive answer is I would totally support that so maybe it's Adriano so maybe this is adriano's research coming to life to to to work out ways to demonstrate that I'm not sure it it for me while you guys think about it that's one of those hindsight questions you can only really answer a question like that sometime after the game uh because if you're looking at uh time equivalence people will often measure just the well I've told you and it took me 15 minutes to tell you so that's all you needed to know and it doesn't do what I'm seeing you two talk about which is the the physical emotional psychomotor cat whoa you know structured engagement that then changes the behavior um so I I don't know Adriana for me I don't know if there's an answer I would but I think that's what what the question is about so do you two have do you know of any research or maybe that's something you could construct some research around your own work that's right though it has it no I'm sorry yeah yeah and I think I I think what what they're saying is also you don't if

(Ms. Marijne Vos)

there's a presentation or stuff or or training then you don't know if people get the information but in a game you see what they do so you also see I think what if they are getting uh the information or behaving like it or um and that's also bringing me to another question if like does people also also experiment in your games do they experiment more because it's a game or do you think they they they they they they they they stay um they stay with their common Behavior Martha can you say something I remember a time when uh there was a consultant at a company and he invited us to run a game

(Mr. Maarten Versteegh)

because he was wondering if people were actually doing what they said they were doing and so in the game he could watch them and he said to me afterwards he said now I know what they're doing it's completely different from what they say they're doing so in this case the game gave him an insight about what people were really doing see and uh so we have a game called A Hard effort that's the question and answer game and if you do that for one hour again it saves

you 25 interviews of an hour to get to know what people think about things so you see that the the time you spend is very effective which uh no no we are not assessors we are not psychologists uh but you know over the years I've learned a few tricks yeah yeah there's another question and that's about why is it why and that's my own translation of this question why why

(Ms. Marijne Vos)

don't we use these games in in education or uh why is it uh wide yeah I think we

(Mr. Maarten Versteegh)

do but why do we do it so let in educational settings well we do um we get hired by institutions uh universities uh blood Sciences uh but that's a different uh different thing altogether because people are there to learn a specific uh way of project management for example and the game helps enormously I do three or four times a year for an educational firm a day of Process Management and these people they can enroll in the course and they don't know each other that is a completely different setting from a group of people that is used to work together and then you get comments like oh Charles that's exactly what you do all the time and I hate that stop doing it and with the other uh open group they don't know each other so those comments will not uh come up which makes it less fun really hmm um Dr ramash did I explain your question right or you have something to add on maybe yes me I'm sorry I was I was I was thinking about other questions so I didn't no no no no yeah can you explain what was that the question or did you mean some meant something else no it's okay I wanted to

(Dr. Ramesh Sharma)

say that uh people in the educational institutions uh including the teachers as well as the administrators they don't treat the uh including the games as their pedagogical measure or a tool they mostly consider it either as an extracurricular or co-curricular so but the research has indicated that these games in two forms either as game based learning or as gamification they hope they both have lot of potential but still we prefer to go with the usual talk and talk lecture methods and these things hence in addition to a change in the mindset and as Elizabeth has rightly pointed out that we need to draw the parallels on how because learning that scenario means uh what can be done to bring it as a mainstream methodology so I

(Elyssebeth Leigh)

promise I have both for everyone I've I've put in the chat I have recently read Malcolm Noel reread an article by Malcolm Knowles and I think what for me what Martin and and Herman are talking about uh Malcolm began addressing in 1977 uh if you might find it a useful explanation of why we are where we are perhaps not so good for answering your question about how do we uh how do we change that because for me workplaces are easier to use games in than formal education and I think yeah so I because we expect classrooms to be formal so it's okay to do games at work but but not in not in universities unfortunately I don't know what Martin and Herman would or my own what do you think about that that games are less welcome maybe that's why students they feel that education is boring oh of course they do like I said before uh there are a couple of universities in the Netherlands that use our games in their curriculum ah you have made a breakthrough well done yeah well we train the teachers to run the games for them because otherwise it will be too costly but that that works quite well maybe maybe I can add a little story because I'm new in this the world of

(Ms. Marijne Vos)

games and I just made a big mistake to do a game in the educational context and it was very nice they played the game and they had a lot of fun but they didn't really childish so they did role playing and they didn't learn so much about it and when I asked them about reflection there was like a gaze in their eyes like reflection about what so I called Herman who asked him what kind of mistakes I made in my design and maybe Henry you can tell me a little bit about it because I think it's interesting what I did wrong when you

(Mr. Herman van der Bij)

make a game from for educational purposes well there's there's only one thing importance relevance relevance relevance it has to be relevant for the for the people that you uh had in your game the the most something in the game that that triggers them and and say oh did this uh this is what I want to know more about it and that takes time because that's not not obvious all the time sometimes you have to explain that so you have to take your time uh and and the next thing is that you I prefer to have when you had a a one or two time run of the game or it was very short it was it wasn't sure you had a little time so that that's another another thing you have to take you have to ask for enough time to to do

it and it's playing around so that they learn to reflect reflect something you can't uh uh you have to learn you have to help them to reflect and it it's it takes time but the first thing is relevance if if a game is not relevant for for the students then they are they think they're playing Monopoly or something or or anything and then you see it as a game so it's not it's not something you can learn from

(Ms. Marijne Vos)

with a simulation about business and these students didn't know what business are about yes so it's just also not realistic for them so they were playing how they heard about what a business is and what an executive is doing so they were saying no I'm doing nothing because an executive doesn't do anything so that's why also I think it was a play and not playing a game to learn something so I learned a lot about it but I think there's a big difference in work settings than in educational settings but I think you have more knowledge about that than I do

(Elyssebeth Leigh)

right right at the beginning Martin said no Martin or Hermann said um I I learned most when things go wrong and yeah I I really agree with that so Milan you you have learned a lot when it went wrong and please keep doing that learning because I think it's important and you really didn't do anything badly wrong and but sometimes I think to answer Dr ramesh's question further uh for me there is a great fear of doing something wrong in an academic environment so that kind of closes down uh the the capacity to be open to learning whereas in the workplaces that Martin and Herman are talking about the need to be open is is stronger so don't don't let that problematic sessions stop you from keep going no no no and I have two very experienced persons around me so that's also helpful that's also helpful yeah um yeah maybe it's I think we are on time but maybe one last question now how are we I think yes is it already do we have to end this session or um do we have some time for a lot of questions we want to take class questions and okay so maybe to the participants do we have a last question for Herman or Martin before we end this question so maybe you you have to add something uh Harmon that we didn't discuss yet at the at the last thing to say I'd just like to thank you for the opportunity to uh to to share of you some on games and and get in game facilitating them um I've learned some I've learned something a lot thank you famous last words thank you for the opportunity again thank you I enjoyed it thank you thank you ma'am so we have a successfully completed with all the questions from the session.

Epilogue

The design of the future society from the perspective of sustainability is more urgent than ever. Gaming as a method provides a unique opportunity to become the meta integrator, but needs to be positioned in a concerted effort with data-driven analytics and computer simulation. Conventional educational practices assume that educators have the sole prerogative of authority and control in learning contexts. However, simulations and games give learners the opportunity to take charge of the action, thereby unsettling familiar assumptions, creating uncertainty and unpredictability. This can be a real and anxiety-generating problem for educators more familiar with orderly learning contexts.

Managing a learning process through the transition from being 'in control' to being an observer and bystander requires thoughtful attention to both the learners' and one's own capabilities and emotional states. Getting there is a journey through fun, stressful, challenging and exuberant times. Education and learning become an adventure with risks and rewards built on playfulness and exploration. The urban public space is the collective space and it is the one where the sense of belonging or rather citizenship is built. It is also the space where urban planning and design create the conditions for this to be to a greater or lesser extent possible. This awareness has given more space to participation in projects at different scales of planning. There are two important points of view in Urban Gaming and Simulation: that of the player/user and that of the planner. This in turn refers to the role assumed by the final decision-maker, who is often also the client. These different points of view can simultaneously direct and orient both the physical and the social and economic definition of urban areas.

Designers of games come from a multitude of disciplines. Their backgrounds can be computer science, education, psychology, design, arts, or business studies. With their games, they strive for a balance of relevant real-world context, a meaningful experience, and a playful time for the participants. By making use of a didactically sound and

logical introduction, reflection and debriefing learners are in charge of their own learning and this directly affects their motivation, immersion and learning effects. Naturally all simulation games take place in an influential context therefore any didactical design needs to be embedded in the specific situation.

The Dutch serious game industry has approx 300 companies and that is no coincidence. Dutch culture is playful, Erasmus and Huizinga were the first academics focussing on game, play and playfulness. Game theory and gaming simulations are two terms used to describe two seemingly unrelated fields. However, both game theory and gaming simulations aim to describe and interpreted the behavior of actors in complex systems. The two fields could benefit from one another and thereby (potentially) increase their effectiveness in supporting decision-making. The game theory and gaming simulation can be combined and can be used in participatory interventions with stakeholders to support decision-making.

There are several cases involving ethical issues, which are common in gaming due to their importance and/or playability. The issue of intentional manipulation is explored, as this must recognize the darker side of game use for propaganda purposes. The subtle types of manipulation are also there. The changing attitudes on the part of the game industry and an increased awareness of ethical issues in game design can address this. Education sector, governments, enterprises and consumers are creating and adopting Game Based Learning (GBL) for learning enhancement, competency building and source of revenue. GBL has demonstrated its pedagogical potential and impact on learning performance. Cognitive load theory has an important bearing on the learning performances and guides the learning designers on designing effective learning scenarios and constructs.

The role of gaming in the field of energy system education is based on practices. The unique value of gaming as a social simulation is with other multi-agent methods. The energy transition in the competitive market is reported as an example of gaming as a social simulation adopting reproductive methodology. In simulation and gaming (S&G),

Facilitator’s job is to reduce difficulties as much as possible and encourage participants to engage in a serious discussion. Facilitator should do one’s best to make the physical and mental environment suitable to the participants and search for a better way to encourage participants in the S&G.

A serious game is an effort to combine the engagement and motivation from games with some sort of utility beyond mere entertainment. To explore the design space for serious games and derive design guidelines for serious games a set of design principles for serious games can be generated to conceptualize of the design space for serious games. The understanding of serious games from a game perspective may be relevant to any development effort intending to use the persuasive and motivational power of games. By game simulations, we mean deliberately created learning environments in which we imitate the daily reality of a business process. An essential feature of game simulations is that players' decisions matter. We distinguish between the game as a thing and the game in use. If you talk about the game as a thing, then the target audience, the story, the duration, the number of players, the roles, and the gameplay, are topics of discussion. But with a game in use, other issues come into play: relevance, psychological safety, the personality of the game leader, adaptability to group size, and group dynamics. Design and use are not separate but influence each other.

Author Index

ABOUT UNIVERSITY

Shri Vaishnav Vidhyapeeth Vishwavidyalaya is a private university established under Madhya Pradesh Niji Vishwavidyalaya (Sthapna Avam Sanchalan) Adhiniyam in 2015 at Indore (India). The University has been established with a vision to be leader in shaping better future for mankind through quality education, training and research.

It shall pursue the mission to make difference in sustaining the growth of global societies by developing socially responsible citizens. Value based education being at the helm, the university is an activity driven institution.

VISION

To create an educational environment that engages deep intellectual, moral and spiritual stimulation, thereby nurturing leadership

MISSION

To pioneer a 'mentoring ' based education system with a culture of its own, rooted in Indian ethos and in tune with contemporary times; To impart learning through understanding- knowledge enrichment, skill development and positive attitude formation; To encourage innovative thinking with self discipline and social responsibility.

VALUES

Endurance, Excellence, Fairness, Honesty and Transparency

QUALITY POLICY

We, at Shri Vaishnav Vidyapeeth Vishwavidyalaya are committed to impart quality education by meeting stakeholder requirements and norms of regulatory authorities. We strive to continuously enhance the quality of our academic and research offering and effectiveness of teaching-learning process.

Shri Vaishnav Vidyapeeth Vishwavidyalaya

Campus: Indore – Ujjain Road, Indore – 453111, City Office : Shri Vaishnav Vidya Parisar, 177 Jawahar Marg,
Indore (M.P.), Mobile: 9303700163, 9303700164, 9303700165, 9303700166, 9303700167, 9303700168
Toll Free: 1800-233-9111, Helpline No.: 1800-102-9191