Role Play Games:
an Intervention Fostering Learning & Understanding of Environmental Challenges

Report from the scientific workshop
held at Wageningen University & Research
1st May 2017

This event was organized as part of the ALEGAMS research project (full title: *Assessing the Learning Effects of Games on Attitude of Stakeholders towards Sustainable Shrimp Farming in Vietnam's Mekong Delta*). The ALEGAMS project is funded by NWO-WOTRO.

The workshop organizing committee includes: Prof. dr. Bregt Arnold (WUR), dr. Roel Bosma (WUR), Ass. Prof. dr. Arend Ligtenberg (WUR), dr. Romina Rodela (WUR / SH), and Nguyen Thi Huynh Phuong (WUR/CTU).

Summary

This report provides a summary of the scientific workshop held at Wageningen University & Research, the Netherlands, on the 1st of May 2017 on the use of serious games, role play games, learning, and social learning in the context of environmental challenges. The workshop brought together the ALEGAMS team members with other researchers. Participants presented their current research and discussed the use of games in research and practice to address contemporary environmental challenges. Participants reflected on current practice and emphasised the potential of role-playing games to foster learning and explore alternatives in a safe environment. Also, participants noted while current research discusses the potential of serious games for learning as experienced by individual players, there seems to be comparably much less done about the potential of serious games in creating opportunities for social learning, and subsequently triggering change processes.

Keywords

Serious games, role play games, learning, social learning, ALEGAMS.

Introduction

Participatory processes in the context of resource use and management are a well-established topic of academic inquiry, which gained momentum in the 1990s, and is subject multitude of studies. These studies are reporting on the benefits participation may bring to local communities, and other disadvantaged groups, in terms of equity, fairness and better outcomes of decision-making (Beierle, 2002; Fiorino, 1990; Webler and 2000). A more recent development of that line of research is work done to explore if, when, and how participation bears potential to trigger and support transformative change processes. This is often in relation to change of practice, or viewpoints, towards sustainability (Baird et al., 2014; van de Kerkhof et al. (2005). Thus, different tools, methods and processes are being investigated to that end inclusive of serious games. Games are potential interest to the field of natural resource management as these offer the opportunity for the participants / players to explore, and test, in a safe environment what are the likely implication of their decisions on resource use and management. Literature reporting on use of games for serious purposes (as are research, education / training and fostering change) in the context of Natural Resource Management (NRM) is a novel area of work attracting an increasing interest by practitioners and academics.

The potential of games in terms of educating / training, and fostering learning and change is a topic in the research project ALEGAMS (full title: *Assessing the Learning Effects of Games on Attitude of Stakeholders on Sustainable Shrimp Farming in Vietnam's Mekong Delta*). ALEGAMS aims to investigate the potential, and performance, of the combined use of games with participatory agent based model (ABM) to tackle contemporary environmental issues. ALEGAMS is a collaboration between Wageningen University & Research (the Netherlands), Can Tho University (Vietnam) and IUCN (Vietnam) funded by NWO-WOTRO and IUCN (International Union of the Conservation of Nature). The project centres on the complex topic of mangrove governance in the Vietnamese Mekong Delta where the expanding shrimp-farming sector is pressing on mangrove forest which is being cut to make space for shrimp-farms. Loss of mangrove forest has major consequences on ecosystem services available, and the capacity to mitigate the impacts of climate change. Aware of this, Vietnamese policy-makers have approved programs promoting mangrove replantation and more sustainable forms of shrimp farming as is integrated-mangrove-shrimp farming (IMS). However, the adoption of IMS by local farmers beyond the original zone does not occur. ALEGAMS aims to address this challenge by developing and studying the effect of a board game meant to share information, foster learning about risks of different farming systems and eventually contribute to change regarding IMS. If research confirms the effectiveness, the game will be used as part of IUCN-Asia training and awareness programs targeting local shrimp-farmers.

In the view of above stated objectives and in the view of an increasing academic interest to use games for serious purposes we organized a one day expert-workshop at the premises of Wageningen University & Research, on May 1, 2017. The aim of that event was

to share experiences and gather feedback about challenges faced by researchers currently working with serious games. We were interested to gather also expert feedback on the pilot version of the board game we developed.

Workshop Format

The workshop was designed as one full day event. Work was organized in three parts. Two were thematic sessions where research and practice on games, in the context of transformative change and social learning, were discussed. The third part was a hands-on activity with the board game and subsequent feedback.

Session 1. Serious games as an Intervention: design & implementation

The first thematic session was opened by the presentation given by Giulia Salvini about her work on serious games as a tool for social learning. She introduced her work with local people in the Amazon and the transformative change that was triggered. Giulia mentioned that she used a game to collect and validate data needed as part of her research. However, she then observed that when participants gathered and got engaged in the game, and with one another, the process resulted into interesting learning processes and outcomes that were not planned. This matured awareness within the research team about the potential of games to trigger social processes and learning.

Then Merel van der Wal shared her experiences through a presentation titled *Facilitating a learning space*. Her work had focussed on learning beyond the game. Merel highlighted that learning from playing a game is not guaranteed and that researchers and designers need to take this into consideration when designing a game.

Picture 1: Giulia Salvini   Picture 2: Merel van der Wal

Session 2. Serious games, learning and transformative change: assessment of outcomes

The second thematic session was opened by the presentation given by Sanne Hettinga about her work on games as a tool to engage and involve young people on demanding topics. She introduced her work on games used for teaching pupils about renewable energy planning and noted the high level of engagement observed during the exercise. Her study showed that game can be an engaging and effective teaching tool but also a useful way to collect data about neighbourhoods. The latter can support planning process of the local government.

Then Mandy Doddema gave a presentation on the use of game to collect data. She shared experiences of her research on fishery management in Indonesia. Mandy talked about her experience in the field with locals and the way in which games allowed to access information.

Also, she stressed the importance of debriefing games before using them for data collection in research.

Picture 3: Sanne Hettinga

Picture 4: Mandy Doddema

Session 3. Hands-on activities

The third session was opened by Roel Bosma who presented the context of the ALEGAMS project and the work our project team has done on the serious game. Roel outlined the aims and objectives of ALEGAMS collaborative endeavour, the different stages of game development and the outcomes the project team expects from this board game. Information about the current situation of mangrove shrimp farming and challenges with its uptake was also given.

Then Phuong Nguyen Thi Huynh explained the materials and provided an overview of the board game and its guidelines. Participants split in two groups and played the game with the intention to give feedback and recommendations. After the gameplay, in a plenary discussion, the participants shared their impressions and gave feedback, that helped to refine the board game.

Picture 5: Roel Bosma

Picture 6: Hands-on game play

Conclusions

The participants to this event agreed that in the view of recent interest for *learning based transformative change*, serious games bear some potential but more research needs to be

done to explore when and how these could be used to that end. It was noted, that many cases of the use of games in teaching and training, and as tools for data collection have been documented, delivering well established guidelines. However, the potential of games to trigger change processes is less researched. The participants suggested that research could study the potential of games to support learning by local communities and stakeholders. They confirmed that while playing the game participants (i.e. community members, stakeholders) are exposed to new information, discuss own experiences with related issues and share opinions about positive and negative aspects. Participants can explore with real-world circumstances and reflect on implications of alternative decisions they may take in the course of a game.

To conclude, the aim of this workshop, to discuss the use of serious games among researchers with an interest in this matter, was largely achieved.

References

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ABSTRACTS

Serious game as a tool for social learning in the Amazon

Giulia Salvini, Wageningen University & Research

Addressing the global challenges of climate change (CC), food security and poverty alleviation requires enhancing the adaptive capacity and mitigation potential of land use systems. To this end, Climate Smart Agriculture (CSA) aims to identify land use practices that sustainably increase productivity, enhance climate change (CC) adaptation and contribute to CC mitigation. A transition towards CSA requires technical, but also socio-institutional changes, for improved smallholder agricultural systems. Such changes may be triggered by stakeholder participation processes that stimulate social learning and collective action. This article evaluates whether a role-playing game (RPG) is an effective participatory tool to encourage social learning and collective action among local stakeholders towards adoption of CSA strategies. We designed and implemented an RPG with three groups of farmers in Apuí (Southern Amazonas), evaluating the game's impact on social learning by interviewing each farmer before and after the RPG. Our findings show that the RPG induced not only technical learning, but also socio-institutional learning and engagement for collective action, though outcomes varied between different RPG sessions and among farmer participants.

Using a serious game to involve youngsters in renewable energy planning

Sanne Hettinga, Free Unviersity of Amsterdam, NL

Dutch local governments have to encourage their inhabitants to engage more in the renewable energy transition, to obtain their help to meet their renewable energy targets agreed to nationally and within the EU. So, the question is how people can be given insight into the available renewable energy measures they can implement in the built environment and how their ideas can be collected?

To get the people engaged to share their ideas, local governments need to educate their people about what energy solutions are available, and what the effects are. This education can take place efficiently using geo-information, as it is easy to interpret and it can present different information together by using overlays. Moreover, when presenting the information in a 3D environment that is recognizable as their own neighbourhood they can relate the information presented to this environment. But they also need to be able to share their ideas of what renewable energy measures have to be taken with the policy makers, such that they can come to a broadly supported energy plan. To motivate these youngsters to want to engage in learning about renewable energy and the renewable energy transition of their neighbourhood, they have to be made to feel responsible for that transition and see what they can do to further that transition. Engaging people using a 3D serious game offers an effective way. By playing a game in their own neighbourhood they can recognize and implement their own ideas there, the participants become more engaged. The winning element motivates people to consider their own views and judge whether they think it is a good decision. Using the input from the participants as input for geospatial models, the youngsters can learn how to model indicators such as energy production and investment costs. To stimulate people thinking creatively and sharing ideas even more, it is shown to be effective to engage people in a serious game. In this study, a game was designed to enable youngsters to share their view on renewable energy and energy saving measures in their neighbourhood in a simple 3D game environment. The output of this game can be included in the planning process of the local government.

Facilitating a learning space?

Merel van der Wal, Radboud Unviersity, NL

Learning from a game is often taken as a pre-set result of playing the game. Finding the right players, the technical support and physical space are a first step in reaching transformative learning. However, research on using simulations among students and professionals shows that learning from playing a game is not guaranteed. How can we make sure that these players (and in some cases, also the game-designers) take these results onboard when the game is over? In this short presentation, I present a number of aspects that, if facilitated sufficiently, can lead to learning beyond the game.

Serious game to assess Indonesian fishing traceability

Mandy Dodema, Wageningen University & Research, NL

Indonesian handline fishing practices - traceability interventions and responses Seafood traceability initiatives are increasing seen as an important tool to address concerns over Illegal, Unreported and Unregulated (IUU) fishing by improving efficiency and transparency of seafood value chains. There are unresolved questions about whether seafood traceability meets its potential and what traceability interventions mean for the ability of specific actors operating in seafood value chains to participate and benefit from transparency efforts. The goal of this paper to explore how traceability interventions are changing the practices of fishers and middlemen on the ground. Tuna fishers and middlemen are crucial actors who are relied upon to use novel technologies and to gather information that feeds into seafood traceability systems. Interventions and responses in the Buru Island handline tuna fishery in Indonesia are used to unpack the linkages and variations that exist between fishing & landing practices. Theoretically, the research draws on Global Value Chain analysis and theories of social practices to investigate how the different elements of the fishing and landing practices as well as their interconnections do or do not change as a result of specific traceability interventions. A two-step methodological approach was employed in the data collection. First, data was collected with practitioners who were subject to the traceability based technology intervention using participant observation of fishing and landing practices and interviews. Respondents at this phase of the research were fishers (including fishers that weren't engaged in the intervention), suppliers, traders, NGOs and local government. This first step helped to create a thick understanding of the fishing and landing practices, the traceability based technologies and the linkages between them. Based on the thick understanding a serious game was developed by the researcher and this game was used to collect data in the second round of data collection in Buru in communities where the technology intervention wasn't introduced. The serious game represented the fishing and landing practices and simulated the introduction of the traceability interventions in 6 gaming sessions. The post-game debriefing sessions and individual follow-up interviews were the main source of information to understand the variations in the practices, the responses to the interventions and the factors that contribute to the variation

PROGRAMME

09:00 - 09:15 Arrival and registration of participants

09:15 - 09:30 Opening and introducing each other and the workshop activities (Romina RODELA)

Session 1: Serious games as an Intervention: design & implementation (Chaired by Romina)

09:30 - 09:45 Giulia Salvini, **Serious game as a tool for social learning in the Amazon**

09:45 - 09:50 Questions

09:50 - 10:05 Merel van der Wal, **Facilitating a learning space**

10:05 - 10:15 Questions

10:15 - 10:45 Group discussion
1. What are the key aspects that need to be considered during the design of a serious game intervention?
2. Which are the recurring mistakes, done in serious game design and delivery, to be avoided?
3. How to reconcile with the need for a game to be playful, and entertaining, with the intervention objective to educate and seek change of practice?

10:45 - 11:00 COFFEE BREAK

Session 2: Serious games, learning and transformative change: assessment of outcomes (Chaired by Arnold)

11:00 - 11:15 Sanne Hettinga, **Using a serious game to involve youngsters in renewable energy planning**

11:15 - 11:20 Questions

11:20 - 11:35 Many Doddema, **Serious game to assess Indonesian fishing traceability**

11:35 - 11:45 Questions

11:45 - 12:30 Group discussion
1. What type of impact/outcomes we can expect from a serious game?
2. How to assess learning in relation to serious game play?
3. Which methodological approaches (qualitative *vs*. quantitative) work best for assessing the impact?

12:30 - 13:30 LUNCH (included in the workshop and served in loco)

Session 3: Hands-on with a role playing game (board game)

13:30 - 13:45 Roel Bosma, **Context of the ALEGAMS project and its serious game**

13:45 - 13:50 Questions

13:50 - 14:00 Phuong Nguyen Thi Huynh, **ALEGAMS – Board game for shrimp farmers in Vietnam: how to play**

14:00 - 15:00 Hands-on game play activity (two tables)

15:00 - 15:15 COFFEE BREAK

15:15 - 15:30 Reflect on the Hands-on experience and link back to issues / topics discussed in the morning.

15:30 - 16:00 Wrap-up of the workshop: pinning down major things that emerged and exploring opportunities for further / new collaborative activities.

List of participants

The workshop brought together experts on serious gaming, role play games, social learning, agent based modelling, aquaculture, and participatory methodologies.

	Name	Institution
1	Arnold Bregt	Wageningen University & Research, NL
2	Roel Bosma	Wageningen University & Research, NL
3	Arend Ligtenberg	Wageningen University & Research, NL
4	Giulia Salvini	Wageningen University & Research, NL
5	Mandy Dodema	Wageningen University & Research, NL
6	Romina Rodela	Södertörn University, Sweden
7	Kirsten de Ries	
8	Merel van del Wal	Radboud Unviersity, NL
9	Nguyen Thi Huynh Phuong	Can Tho University, Vietnam
10	Sanne Hettinga	Free Unviersity of Amsterdam, NL