From Data to Data games: Exploring Public Engagement with Scientific Information trough Serious Game Design Workshops

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Why Make Scientific Data Accessible?

- **Complex environmental challenges** (e.g., climate change) require **public awareness and engagement** [1].
- **Scientific data is often inaccessible** to non-experts, limiting its impact [6].
- Traditional communication tools **(scientific papers, reports, static infographics)** work well for communication between scientists but not to make scientific information accessbile to the general public.

Why This Matters?

- **Better Understanding → Informed Action**: Making data accessible empowers people to make **informed decisions** on environmental issues.
- **Public Participation in Science: Open Science and Citizen Science** promote collaboration between researchers and non-experts [4].
- **Serious Games as a Solution**: Gamification can **translate complex data** into **interactive, engaging experiences**, making learning more effective [2,3].

Our Approach

We explore **Serious Game Design Workshops** as a method to help **non-experts engage with scientific data** and create **educational game concepts** based on **forest ecosystem research**.

Workshop Format

4 workshops (88 participants, no prior ecology background).

2-hour sessions:
15 min: presentation on scientific context & data.
85 min: group-based game **design**.

Booklets provided with scientific data on:

- **Tree phenology**
- **Drought stress on trees**
- **Fruiting phenology of oak**

Participants used **storyboards** to develop their game concepts.

Facilitators supported the process but encouraged **autonomous creativity**.

Results

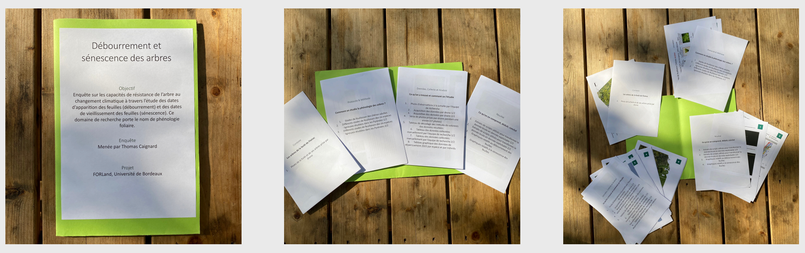

Figure 1: Example material from the booklet “Tree phenology” [5]

20 Games Created

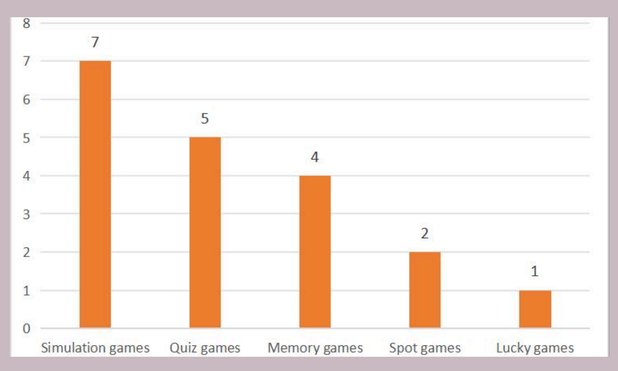

Figure 2: Distribution of winning strategies

Scientific Accuracy → Researchers confirmed **correct integration** of data.

Creativity & Engagement → **All groups** successfully developed unique concepts.

Figure 3: Game proposition using storyboards

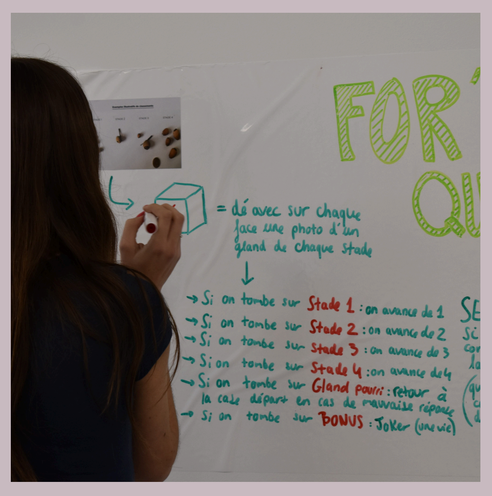

Figure 4: Hands-On Game Design During Workshop

Challenges

- **Short workshop duration** → No game developing and testing conducted.
- **Participant bias** → Prior exposure to data.

Key Takeaways

- **Engagement:** Workshops **enabled non-experts** to transform complex data into interactive formats.
- **Knowledge Transmission**: Serious games **may improve accessibility** of scientific concepts.
- **Potential for Outreach**: Some games could be adapted for **science communication**.

Future Work

- **Test game prototypes** with non-experts to evaluate their effectiveness.
- **Expand the workshop format** to other scientific topics and datasets.
- **Assess participant impact** by including individuals with no prior familiarity with the data.

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References

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