

Outline of Panel

- Overview and Research Results Synthesis – Alicia LaValle
- Lessons Learned from the Classroom – Jeannette Angel-Fox
- Discussion with the Panel: Voices of co-designers; working together and moving forward – Facilitated by Stephen Sheppard





Delta, BC

North Vancouver

Vancouver

New Westminster

North Delta

Tilbury industrial

Fraser River

Ladner

Westham
Island

Boundary Bay

South
Delta

Strait of Georgia



2. Design Rationale



Integrating Approaches from	Example
Climate change scenarios	Time-travel – visualizing & modifying player’s own future
Climate change communications/psychology	Emotional engagement – player has vested interest in game outcomes
Landscape visualization theory	Place attachment , caring and identity – via realism in real places
Interactive arts	Social interaction and dialogue encourages sustainable behaviours
Experiential/Inquiry learning	Different pathways through the narrative – outcomes based on user choices
Commercial videogames	Fun – interactive engagement in various gameplay modes with rewards

CO-DESIGN PROCESS:

- 5 Expert Advisors from Government, NGO's and Gaming Industry
- 7 teachers from 4 schools
- 30 student volunteers

FUTURE DELTA 2.0

Meta-Narrative

END STATE: 2100



BUSINESS AS USUAL
(Entry to the Game)

ACT 1: 2075

PLAYER: Elderly Man/Woman

CC EVENT: Sea Level Rise

ACT 1: 2050

PLAYER: Professional (Scientist/Inventor)

CC EVENT: Drought/Heat Wave

ACT 2: 2020

PLAYER: University Student/Activist

CC EVENT: Winter Rains/Floods

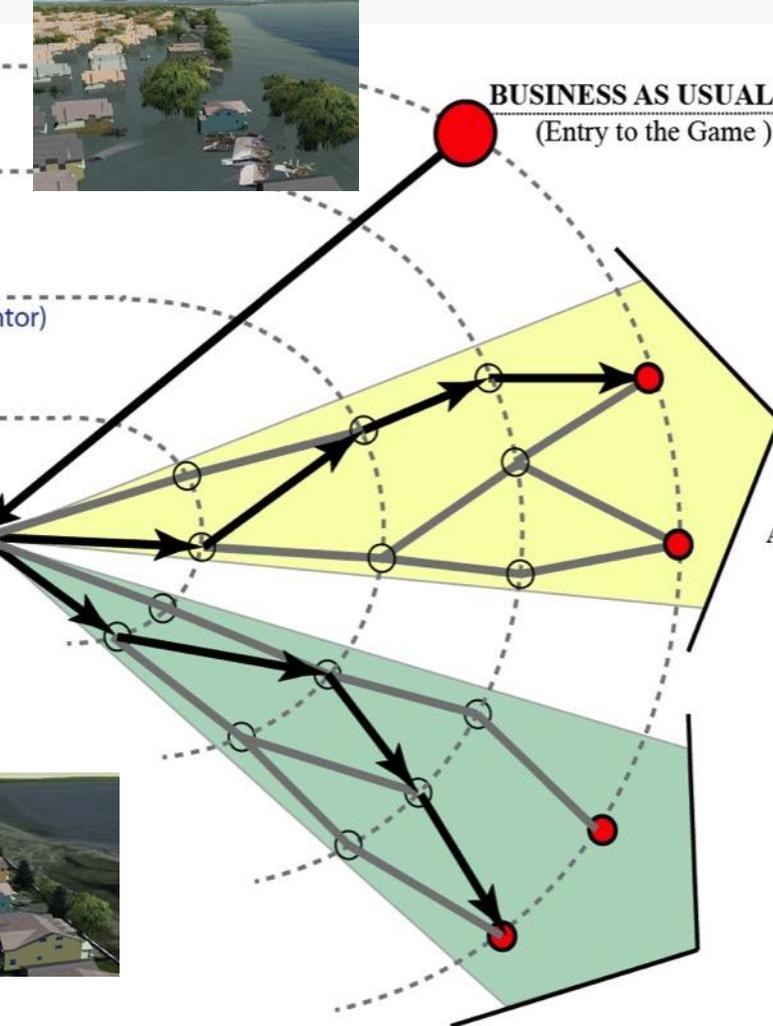
ACT 1: 2015

PLAYER: High School Student

CC EVENT: The "Black-Out"



(Game PLAY Starts Here)



ADAPT

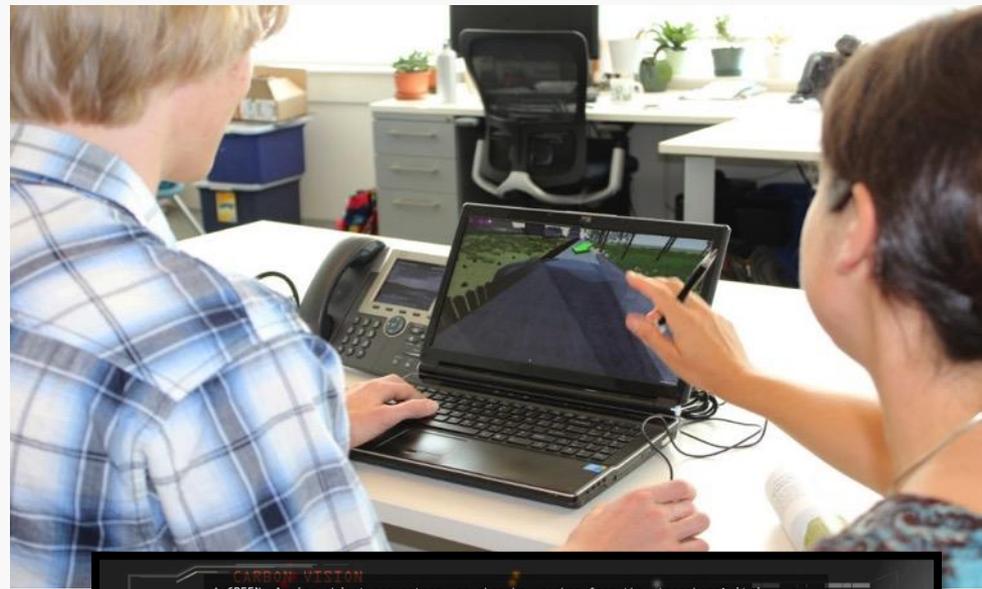
ADAPT & MITIGATE



Co-design outcomes:

- Carbon Vision especially popular
- Players need control over outcomes, eg. ability to swap high-carbon for low-carbon assets
- Internal debate over desirable gameplay modes
- Importance of dystopia in attracting attention

Carbon Vision tool

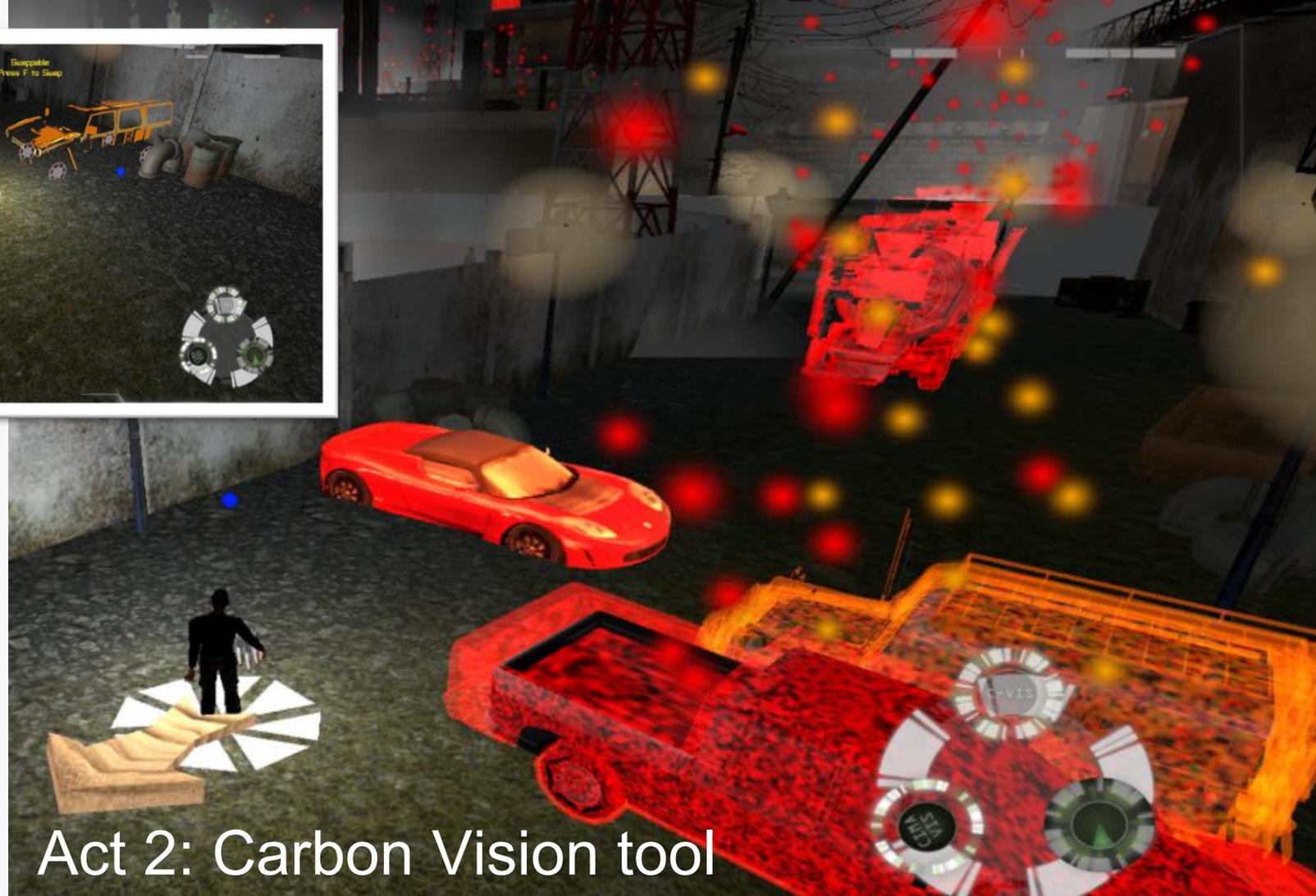


Act 1: Tagging everyday objects related to climate change (CIMA vision tool)





Swapping
Hummers
for Tesla's
influence
carbon
score



Act 2: Carbon Vision tool



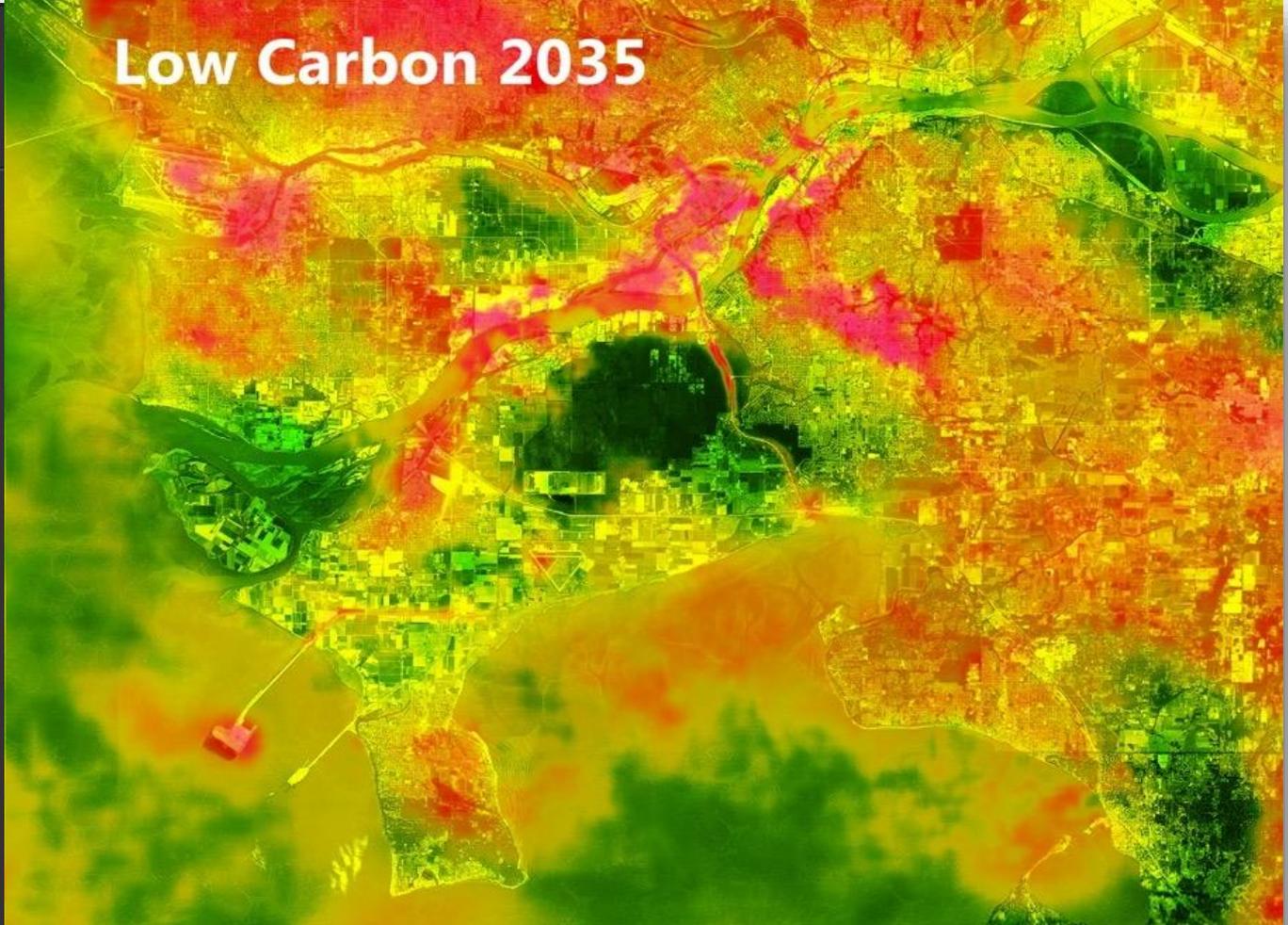
FD-2025

Low Carbon 2035

Ladner



Your community chose an option for that will help Delta adapt to climate change. This electrical substation is now on a higher foundation with a ring dike system. The construction of this type of renovation is costly and energy intensive. Use carbon vision to see implications.



FUTURE VISION

Sea Wall

Barrier Islands

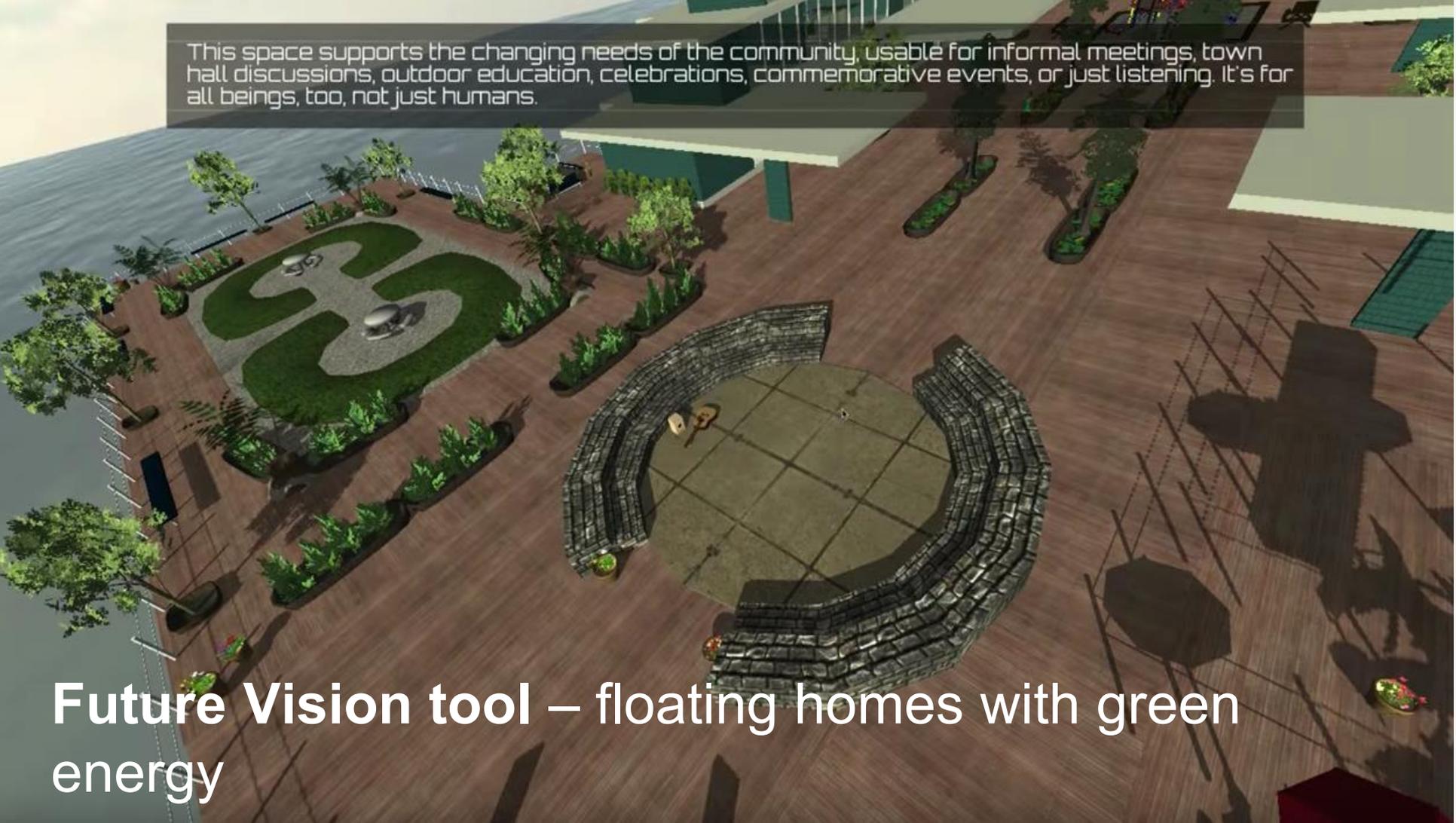
Floating Homes

Managed Retreat

Act 3: Boundary Bay 2035 – community dialogue theme
Future Vision tool – Managed Retreat outcome

This space supports the changing needs of the community, usable for informal meetings, town hall discussions, outdoor education, celebrations, commemorative events, or just listening. It's for all beings, too, not just humans.

Future Vision tool – floating homes with green energy



4. Game Evaluation and Results

TESTING IN SCHOOLS:

150 Grade 10 students in 5 classes (3 social science, 2 science)

- 2 teachers from 2 schools
- Delivered over 2-3 weeks (3-5 class sessions)



4. Game Evaluation Methods

Quantitative and Qualitative: Self – reported data from students as well as observational data from researchers

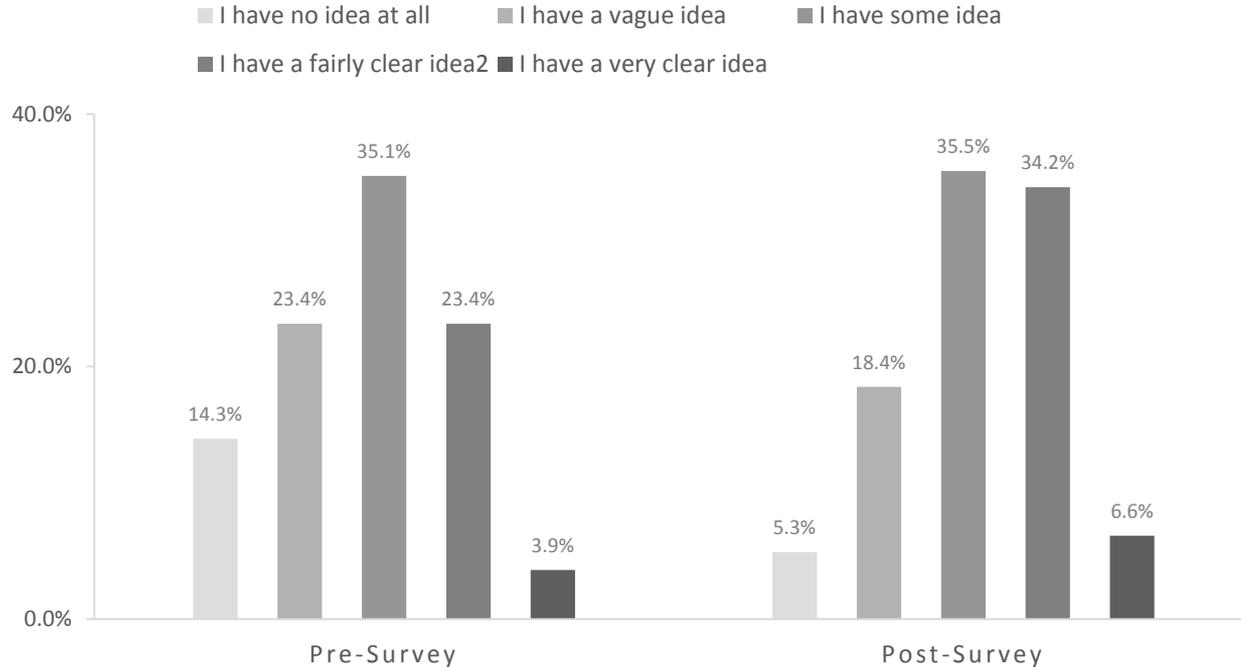
- **Pre and Post Surveys**
 - 16 quantitative variables that measure awareness, concern and learning
 - Open ended questions about learning and fun as well as other feedback
 - Other feedback (e.g. likes, dislikes, interest/experience with games)
- **Independent Feedback forms after each Act of gameplay**
- **Observational Notes**
- **Audio recordings (all) and video recordings (opt-in)**

***Note that methodology varied somewhat between schools based on variable such as teachers preference, classroom timing.*

Action research means adapting to existing classroom tools and techniques

4. Game Evaluation Results – Delta Secondary (Ladner)

Significant increase in student’s **knowledge of local impacts** of climate change after playing FD2

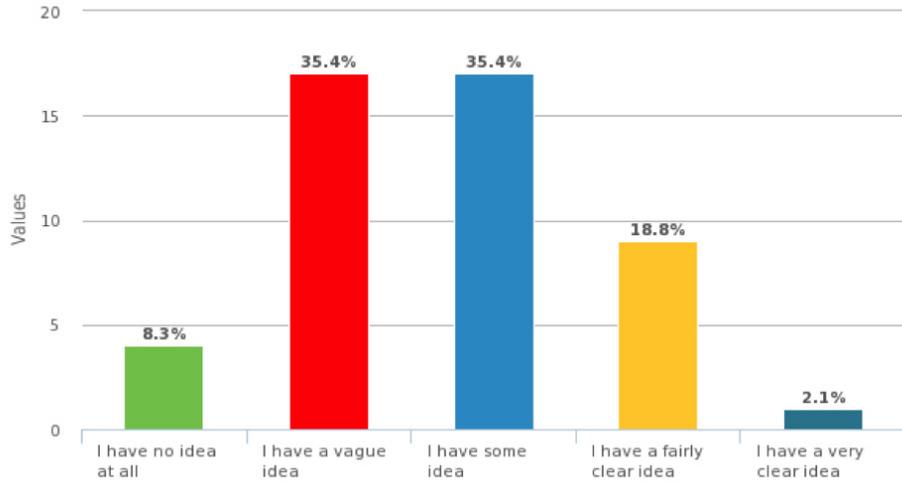


High accuracy of correct answers (71%) for local impacts found in post surveys. Also high diversity of accurate responses in post-survey.

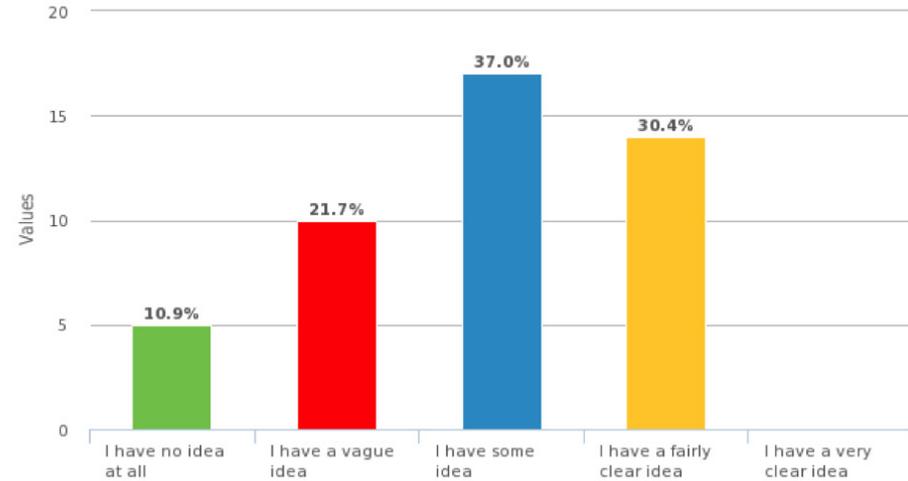
“How knowledgeable do you feel about the effects that climate change may have in your local area?”

4. Game Evaluation Results – North Delta Secondary

PRE



POST



“How knowledgeable do you feel about the effects that climate change may have in your local area?”

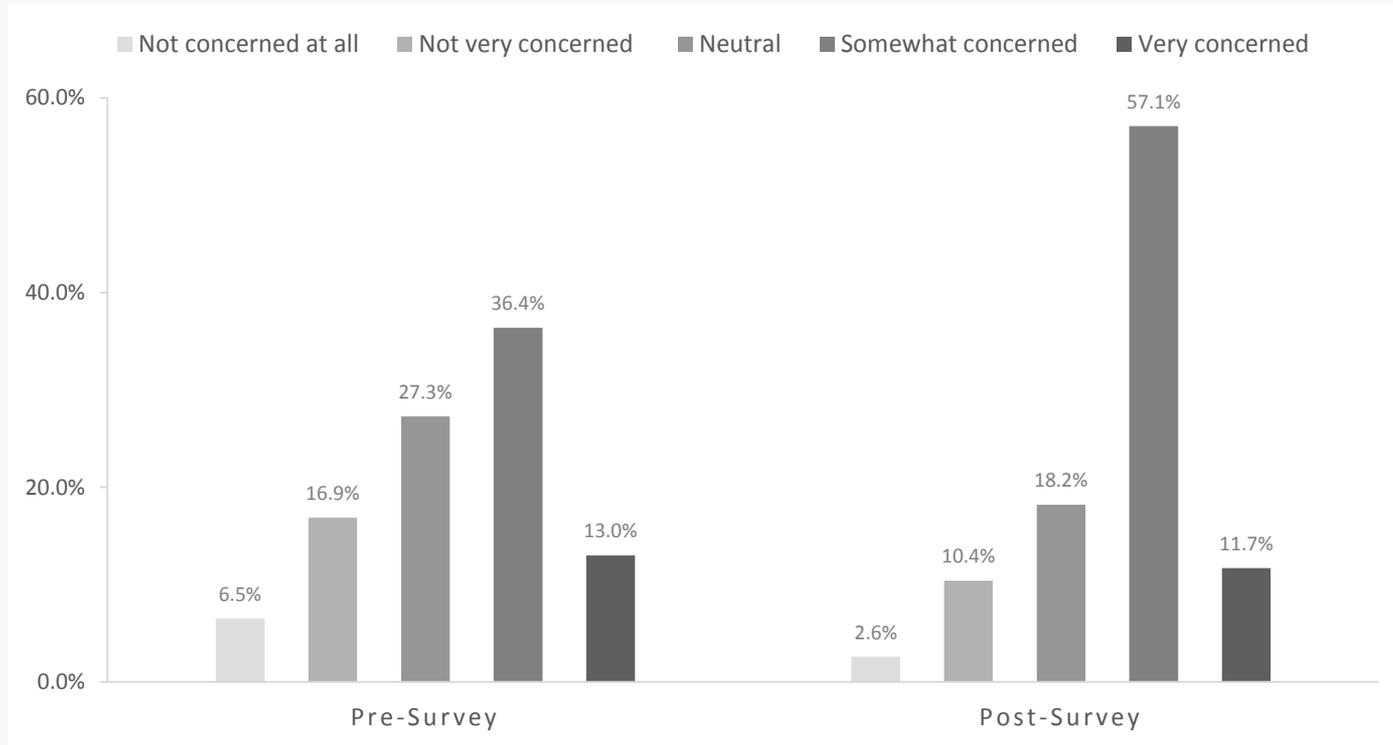
“Can you name one example of climate change MITIGATION that would be an option for Delta now or in the future?”

1. walking instead of driving cars more often
2. solar panels
3. Electric Cars or solar panels
4. Solar Panels
5. Solar Panels and PRIUS!
6. solar panels
7. bikes
8. N/A
9. Smart cars/Hybrids
10. composting
11. low carbon vehicles
12. Solar panels
13. solar panels
14. electric car
15. Solar Panels
16. Nissan leaf
17. Cars that run on electricity
18. solar panels
19. Hybrids
20. solar panels, electric cars
21. electric cars
22. Solar panels or vegetable gardens.
23. electric cars
24. hybrid cars
25. nope
26. growing plants
27. safe homes "floating homes"
28. people can start walking or biking places instead of using a car
29. People can put solar panels and use geothermal heating in the households. People can drive electric or hybrid vehicles.
30. using less electricity and cars. walking and bicycling more
31. wind turbines
32. Buy electric cars
33. na
34. i dont know
35. renewable energy source
36. ?
37. idk
38. Electric cars (Smart cars, and Tesla's)

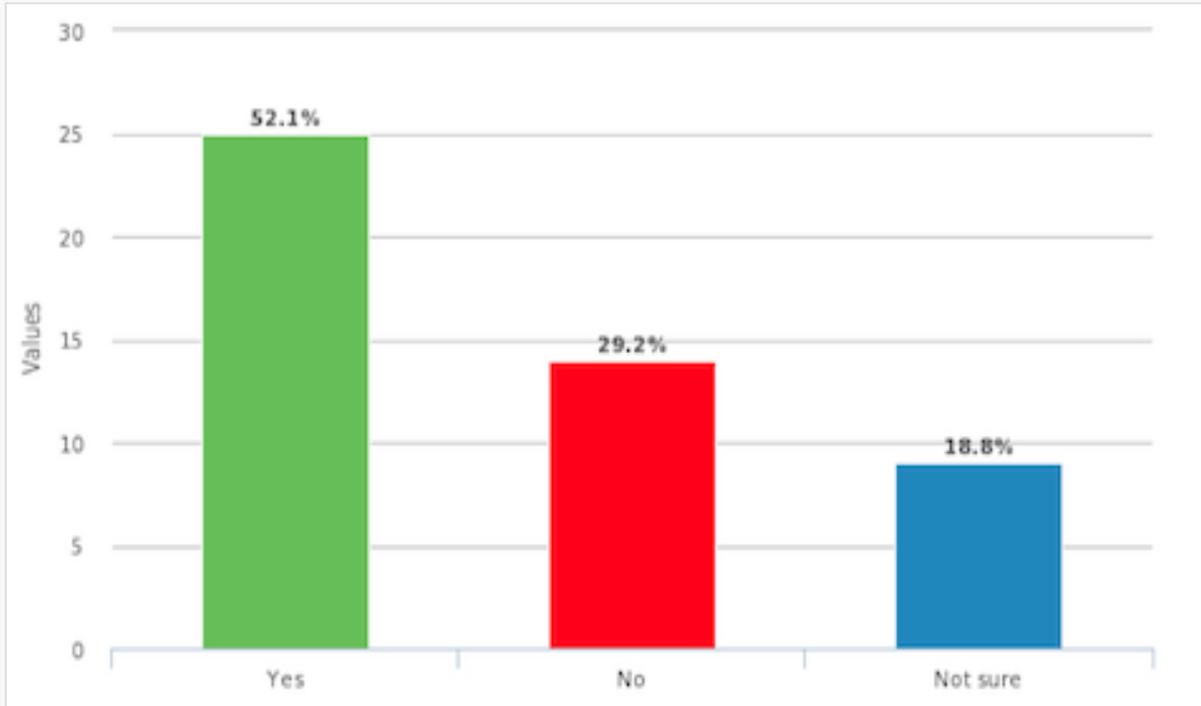
82 %
CORRECT

4. Game Evaluation Results – Delta Secondary (Ladner)

Levels of concern increased significantly for **global impact** of climate change after playing FD2



4. Game Evaluation Results – North Delta Secondary



Delta Secondary:
Similar with 45%
replying yes they game
made them thing
differently about
climate change

Post Survey Response: Has playing the video game made you think differently about climate change?

4. Game Evaluation Results – Delta Secondary (Ladner BC)

LEARNING

73% of written feedback responses by students indicated that through Future Delta 2.0 gameplay they have learned more about climate change. This was especially true about the causes and impacts of climate change in Delta, where they live.

PERCEPTION OF LEARNING. Total # of responses = 280			
	Learning = Yes	Learning = Unclear	Learning = No
After game play *	205 (73%)	28 (10%)	47 (17%)

* Includes comments on individual feedback forms after play of each Act and final Post-Survey



4. Game Evaluation Results – Delta Secondary (Ladner BC)

PLACE CONNECTION

214 written feedback responses indicated that through Future Delta 2.0 gameplay, local - place connections were made

PLACE CONNECTIONS. Total # of responses = 214		
	Question Driven	Student Driven
After game play *	178 (83%)	36 (17%)

- Includes comments on individual feedback forms after play of each Act and final Post-Survey

“It was interesting to see what could happen to the North Delta area”

“Having the game based in Ladner makes it personal”

“It was very realistic and it was neat to see it as a disaster zone”



4. Game Evaluation Results – Delta Secondary (Ladner BC)

AWARENESS

79 (94%) written feedback responses indicated that through FD2 gameplay students became more aware of climate change, while 5 (6%) of responses indicated no change in their awareness.

“I notice how many cars are driven for walking or biking distances”

“I'm more aware of what can/will happen to Delta”

4. Game Evaluation Results – Delta Secondary (Ladner BC)

CONCERN towards BEHAVIOUR CHANGE

- 25 (96%) written feedback responses indicated increased concern towards climate change while only 1 (4%) response indicated that “[the game] didn’t get you care”.

“that it is affecting us now”

“that climate change can affect us sooner than we think”

“It scared me thinking of what could happen”

“It made me more concerned about Delta’s future”

“Made me see how serious it is”

- 24 response from students referred to how students could or intended to implement behaviour changes to help mitigate or adapt to climate change

“I think it made me realize that not only the government has to take actions but the citizen as well”

4. Game Evaluation Results – Delta Secondary (Ladner BC)

of the 78 students in the sample 25 made statements that associated fun and learning in some way.

FUN & LEARNING

PERCEPTIONS OF FUN & LEARNING MATRIX. Total # of responses = 32

	Fun	No Fun
Learning = Yes	22	3
Learning = No	3	3
Learning = Unclear	1	0

- 32 responses total from 25 individuals students commenting within 5 post game play survey mechanisms:
(a) Tutorial (b) Act 1, (c) Act 2, (d) Act 3 and (e) Post-Game Evaluation Survey



4. Game Evaluation Results – Delta Secondary (Ladner BC)

FUN & LEARNING

“It's fun to play as a learning”

“Gaining knowledge points. I felt like I was progressing”

“fun and better than regular textbook work”

“I learn better by exploring/experiencing”

“Its more fun than a regular class, and also can take knowledge during the game”

Limitations of beta version:

- Points not used much, too obscure to incentivize most players
- Some functions not accessible (e.g. save-state)
- Narrative seen as informative but slow
- Not yet able to integrate several great ideas, Including:
 - Companion apps
 - social media integration
 - teachers tools



Today's Symposium:

INITIALIZING NEXT STEP >>>

Discussion with Panelist



Lessons learned from action research and next steps

Name and Title	Roles
Jeannette Angel Fox - Centre for Culture & Technology, PhD Candidate	Evaluation of play in classrooms
Neil Stephenson - Director of Learning Services, Delta School District	Co-design with Seaquam Operation Green student club and teacher using FD2 in classrooms
Michael Iachetta –Seaquam Secondary School Social Science Teacher	Co-design with Seaquam Operation Green student club Using FD2 in classrooms
Favian Yee – North Delta Secondary, Science Teacher	Curriculum connections advisor Evaluating Future Delta in classrooms
Taranveer Hayer, Felix He, Colin Leitner, Christine Soares	Co-Design students and continuing volunteers
Dr. Stephen Sheppard – Principal Investigator	Research, development ... next steps since evaluation