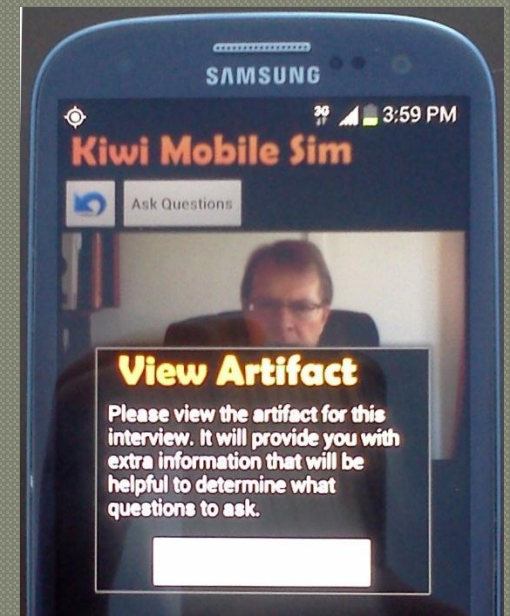


Serious Mobile Learning Games

21st century tools for 21st century skills

Associate Professor David Parsons
Massey University, New Zealand



Outline

- A mobile serious game designed to foster '21st century' skills
- Augments a physical location to represent a virtual company
 - Players act as business consultants
- Narrative-driven simulation leverages contextual mobile learning
- Configurable open source project

Changing Nature of Learning

- ◉ From knowledge production to knowledge configuration
 - Gibbons, 1998
- ◉ Relationship between education and productivity
 - Chang, 2010
- ◉ Articulation between education and work
 - Altbach & Peterson, 1999
- ◉ Smaller entrepreneurial enterprises
 - Vessuri, 1998
- ◉ Analyse, evaluate and create
 - Krathwohl, 2002

21st Century Skills

- 3 broad clusters of 21st century skill
 - Cognitive, interpersonal, intrapersonal
- Cognitive skills:
 - Non-routine problem solving
 - diagnosis, reflection, strategy switching
 - Critical thinking
 - Systems thinking
- Interpersonal skills
 - Social skills
 - Teamwork

• National Research Council - Assessing 21st Century Skills (2011)

Mobile Learning Games

- Technical features alone do not make a game either engaging or pedagogical
- Need to embed both effective gaming experiences and worthwhile learning outcomes into the same application

Our Game

- ◉ Augmented/virtual reality outdoor mobile learning game for one or (preferably) two players
- ◉ Follows classic linear fiction model
- ◉ Narrative path is reflected by a physical path
 - Players navigate to locations and investigate the problem they have to solve

Simulated Business Consulting Project

- Players have to gather, analyze and reflect on various (and sometimes conflicting) pieces of information about a mobile phone manufacturing company that is having some problems
- Aims to teach higher level skills (analysis, synthesis, critical thinking)

Exercising Higher Level Skills

Analysis

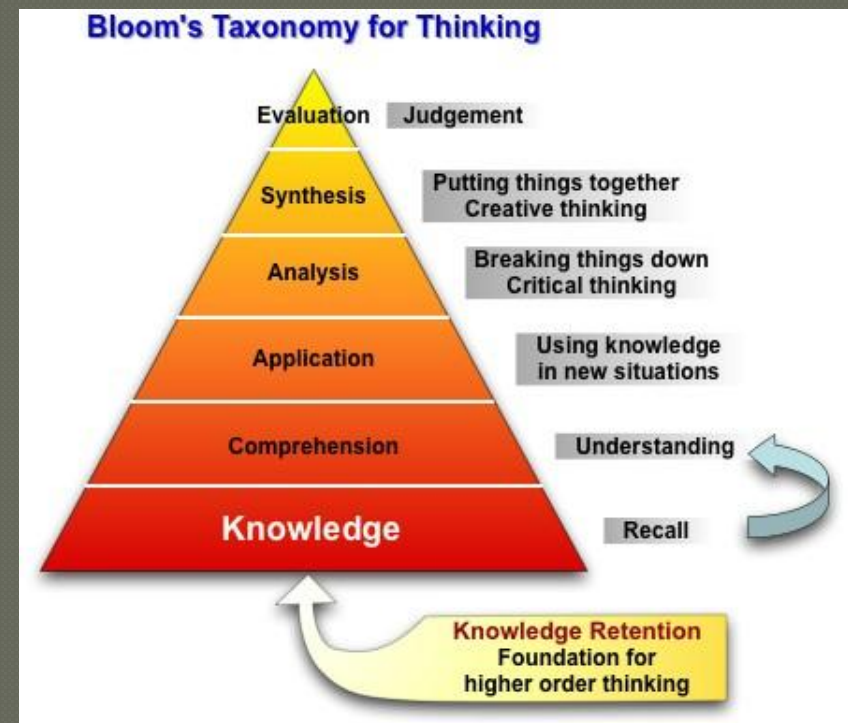
- **What** does this tell me?

Synthesis

- **How** do these different sources relate to one another?

Critical Thinking

- **Why** am I getting different stories from different people?



Game Evolution

- Original Nokia Version (2010)

- Functional but dull



- Enhanced Nokia Version (2011)

- Narrative flow



- Android Version (2012)

- Enhanced game experience



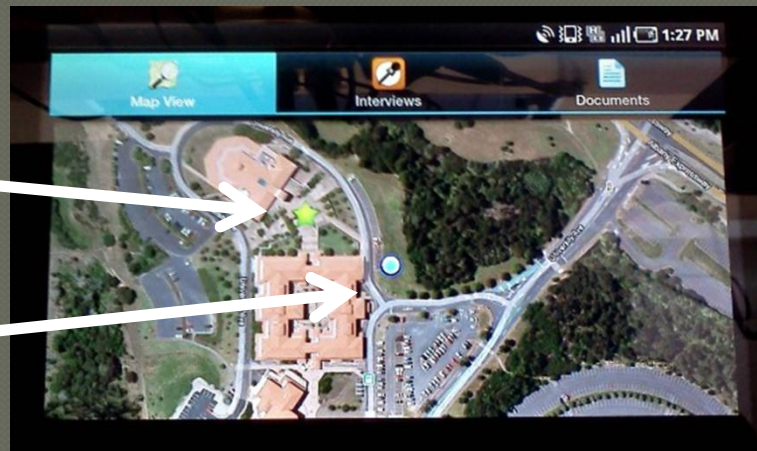
Process

- Move around a physical virtual location

Player's next waypoint



Player's current position



- Locations represent parts of the company
- Find virtual and physical artifacts
 - Videos, questions, documents
- Resources unfold problems

Two-Person, Non-Zero-Sum Game

● Non-zero-sum game

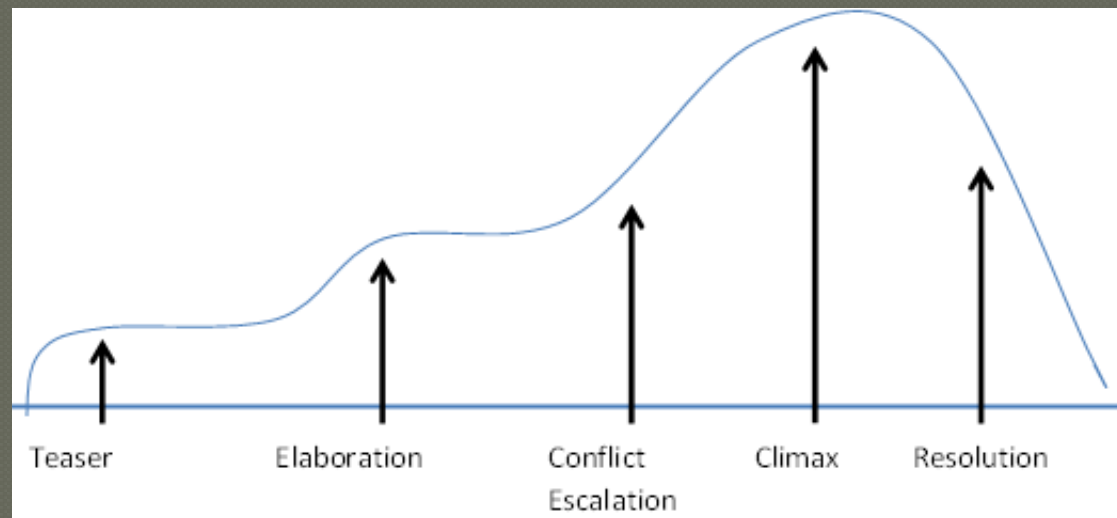
- One player does not win at the expense of the other
 - Both players 'win' together.
 - The strategies chosen by each player determine the outcome of the game
- ## ● Associated with each possible outcome of the game is some kind of a payoff

The Role of Narrative

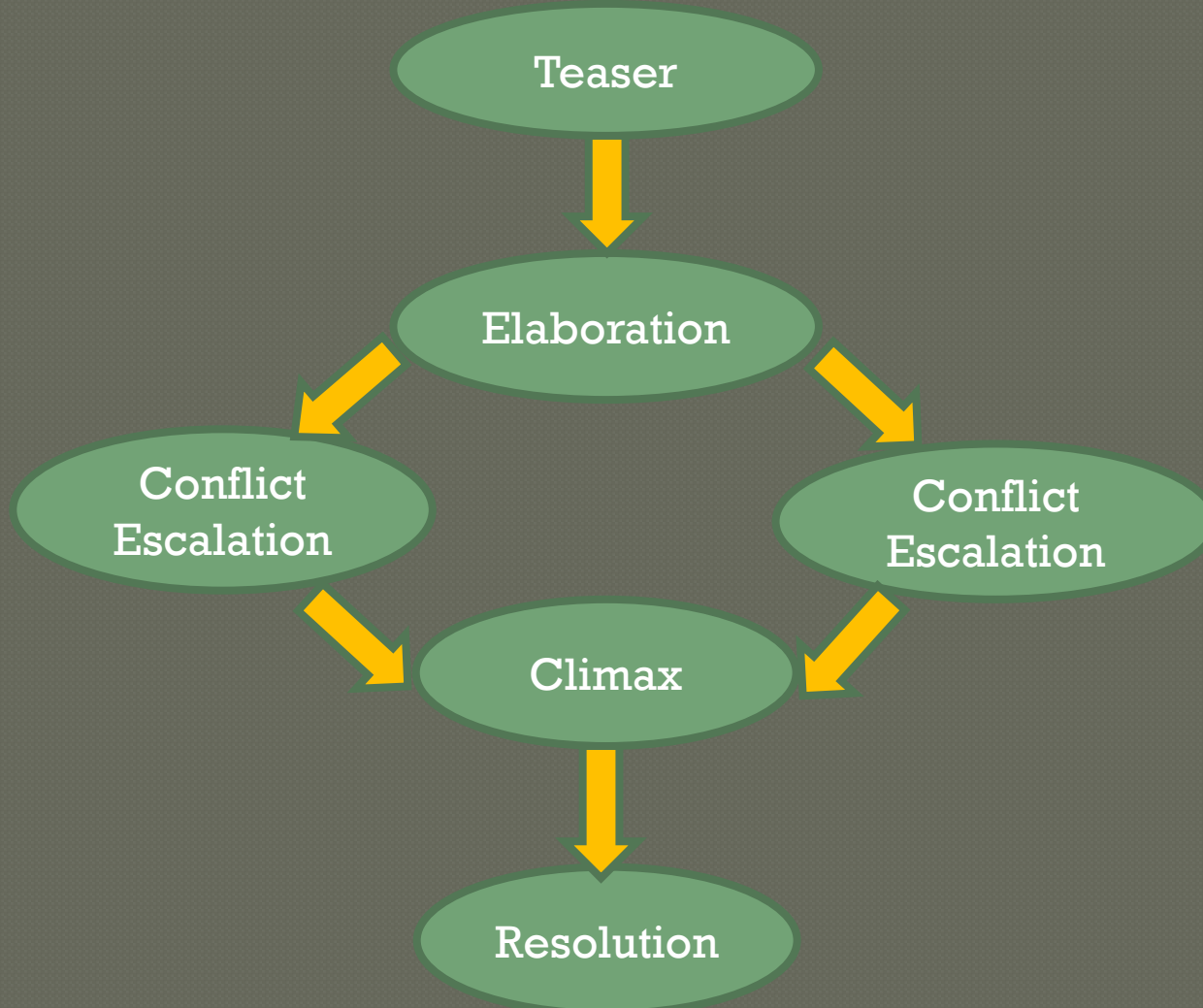
Model of classic linear fiction

- “Such a structuring of events may even...be a standard model of human perception ...From a position of ignorance the interactor is taken through a learning process that ends in a climax.”

The Road not Taken -
The Hows and Whys of
Interactive Fiction
Jonas Heide Smith



The Game Tree



The Teaser

“the bad press I
have been getting
from the daily rag”



Sunday February 12, 2011

Cell Phone Battery Explosion

Mel Kardishan was at home sleeping when her daughter's cell phone exploded, spraying red-hot battery fragments onto a nearby doll and setting it aflame.

No one was injured in the Oct. 4 mishap at the family's North Shore home. But the Kardishans say the kiwi mobile device was to blame for a blaze that might easily have been much worse. "We were fortunate," Paige Kardishan said.

"We were able to contain the fire just to that area of the room.

Bad batteries have made 2011 a year of living dangerously with cell phones. Watchdog groups devoted to the safety of consumer products say they've fielded dozens of reports this year of kiwi mobile cell phone meltdowns that have resulted in injury and property damage.

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Conclusion



you two have already
taken up enough time
... What issues have
you found with the
business and how do
you think I can get this
place back on top?



Demo



Evaluation Approaches

- ◉ Surveys
- ◉ Interviews
- ◉ Observations
- ◉ Log file analysis
- ◉ Classroom discussion
- ◉ Experiment (single player v. teamwork)

Current Status and Future Work

● Current:

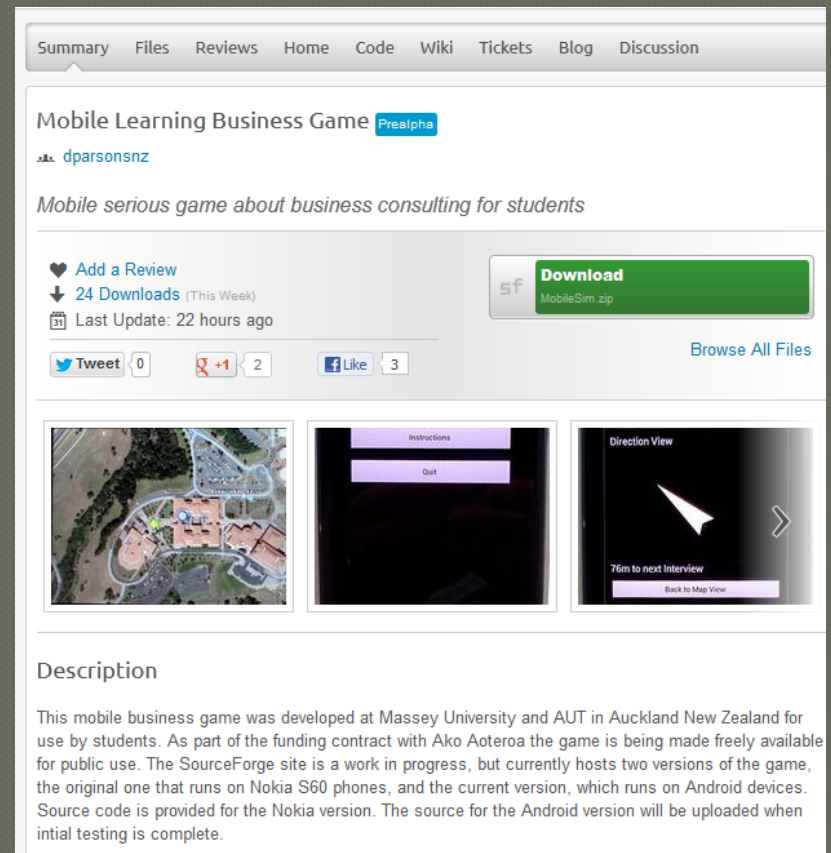
- Android version being refined and improved as on ongoing process
- Game available via SourceForge open source project

● Future:

- Build a configuration tool that can be used to more easily customize the application
- Improve learning, assessment, monitoring features

SourceForge Site

- <http://sourceforge.net/projects/mlearngame/>
- ◉ Hosts old Nokia version and current Android version
- ◉ Android version runs on 2.2 or above



The screenshot shows the SourceForge project page for 'Mobile Learning Business Game'. The page has a navigation bar with links: Summary, Files, Reviews, Home, Code, Wiki, Tickets, Blog, and Discussion. The project name 'Mobile Learning Business Game' is displayed with a 'Prealpha' badge. The user 'dparsonsnz' is listed as the maintainer. A description reads: 'Mobile serious game about business consulting for students'. Below this, there are links to 'Add a Review', '24 Downloads (This Week)', and 'Last Update: 22 hours ago'. A green 'Download' button is labeled 'MobileSim.zip'. Social media links for Twitter (0), +1 (2), and Facebook Like (3) are shown. A 'Browse All Files' link is also present. Three preview images are displayed: a map view, a 'Quit' dialog box, and a 'Direction View' showing a compass and distance to the next interview. The 'Description' section at the bottom states that the game was developed at Massey University and AUT in Auckland New Zealand, is funded by Ako Aotearoa, and is available for public use. It mentions that the SourceForge site is a work in progress and currently hosts two versions: the original for Nokia S60 phones and the current version for Android devices. Source code is provided for the Nokia version, and the source for the Android version will be uploaded upon completion of initial testing.

Summary Files Reviews Home Code Wiki Tickets Blog Discussion

Mobile Learning Business Game **Prealpha**

dparsonsnz

Mobile serious game about business consulting for students

♥ Add a Review
↓ 24 Downloads (This Week)
📅 Last Update: 22 hours ago

Download
MobileSim.zip

Browse All Files

Tweet 0 +1 2 Like 3

Instructions
Quit

Direction View
76m to next interview
Back to Map View

Description

This mobile business game was developed at Massey University and AUT in Auckland New Zealand for use by students. As part of the funding contract with Ako Aotearoa the game is being made freely available for public use. The SourceForge site is a work in progress, but currently hosts two versions of the game, the original one that runs on Nokia S60 phones, and the current version, which runs on Android devices. Source code is provided for the Nokia version. The source for the Android version will be uploaded when initial testing is complete.

Related Publications

- Puja, J., & Parsons, D. (2011). A Location-Based Mobile Game for Business Education. In *Proceedings of 11th IEEE ICALT*, 141-144
- Parsons, D., Petrova, K., & Ryu, H. (2011). Designing Mobile Games for Engagement and Learning. *ICITA Journal of Information Technology and Applications*, 41-46
- Parsons, D., Petrova, K., & Ryu, H. (2012). Mobile Gaming - A Serious Business! In *Proceedings of 7th IEEE WMUTE*, 17-24