



# Instructional Gaming

Presented by MATEC NetWorks



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National  
Science  
Foundation

Funded, in part, by a grant from the National Science Foundation. DUE-0501626

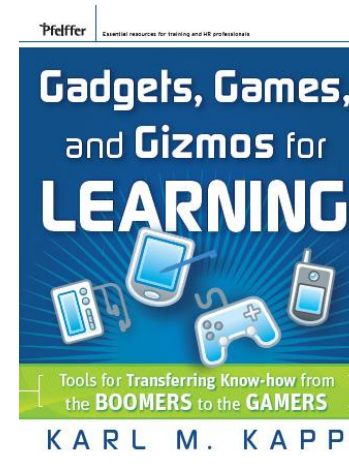
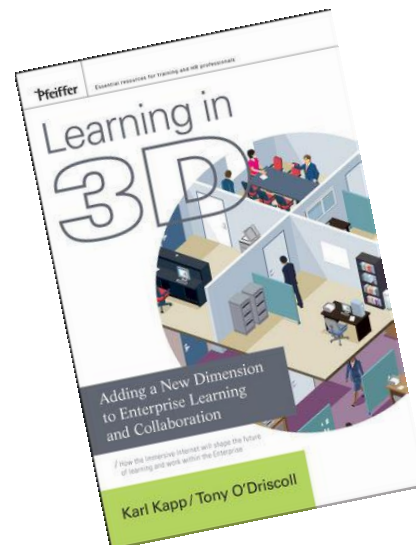
# Presenter



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Author, Professor-Instructional Technology  
Bloomsburg University

Twitter: @kkapp





# Agenda

1

How did we get to this point?  
Why are we here?

2

What is gamification?

3

Are games instructional/educational?

4

How do games impact learning, are they effective tools for transferring knowledge?



Digital divisions. Report by the *Pew /Internet: Pew Internet & American Life*.  
US Department of Commerce



**13 hours  
of console  
games a  
week**

Digital divisions. Report by the *Pew /Internet: Pew Internet & American Life*.  
US Department of Commerce



13 hours  
of console  
games a  
week

87% of 8- to 17-  
year olds  
play video games  
at home.

American Life.



10,000 of  
Game play

13 hours  
of console  
games a  
week

87% of 8- to 17-  
year olds  
play video games  
at home.

American Life.





Lazy



**Lazy**

**Rotting  
Brain**



**Lazy**

**Anti-Social**

**Rotting Brain**



**Lazy**

**Wasting  
Time**

**Anti-  
Social**

**Rotting  
Brain**

A photograph of two young boys sitting on the floor, intensely focused on playing video games. The boy in the foreground is wearing a dark blue zip-up jacket and blue jeans, holding a green and black game controller. The boy in the background is wearing a red t-shirt and blue jeans, holding a black game controller. A blue starburst graphic is overlaid on the left side of the image, containing the text 'Problem Solvers'.

# Problem Solvers

Got Game:  
John Beck and  
Mitchell Wade (2004)



**Problem  
Solvers**

**Confident**



**Problem  
Solvers**

**Confident**

**Social**



**Problem  
Solvers**

**Confident**

**Social**

**Resilient**



A young boy with short brown hair, wearing a blue long-sleeved shirt, is sitting on the floor and playing a video game. He is looking intently at the screen, with his hands on a game controller. The background is slightly blurred, showing other people in red shirts. Overlaid on the image are five colorful starburst shapes, each containing a word. The words are: 'Problem Solvers' (blue starburst), 'Confident' (yellow starburst), 'Social' (green starburst), 'Resilient' (orange starburst), and 'Multi-tasking' (magenta starburst).

**Problem Solvers**

**Confident**

**Social**

**Resilient**

**Multi-tasking**

A young boy with short brown hair, wearing a blue long-sleeved shirt, is sitting on the floor and playing a video game. He is looking intently at the screen, with his hands on a game controller. The background is slightly blurred, showing other people in red shirts. Overlaid on the image are five colorful starburst callouts with black text: a blue one in the top left, a yellow one in the top right, a green one in the bottom left, a red one in the bottom center, and a pink one in the bottom right.

**Problem  
Solvers**

**Confident**

**Social**

**Resilient**

**Multi-  
tasking**



Almost 43% of the gamers are female and 26% of those females are over 18.



Almost 43% of the gamers are female and 26% of those females are over 18.



Females play 5 hours a week of console games. They make up the majority of PC gamers at 63%.

# Percentages of Impact

Type of Knowledge/ Retention	% Higher
Declarative	11%
Procedural	14%
Retention	9%

Sitzmann, T. (2011) **A meta-analytic examination of the instructional effectiveness of computer-based simulation games.** *Personnel Psychology* .Review of 65 studies

# Percentages of Impact

Type of Knowledge/Retention	% Higher
Declarative	110%
Procedural	
Retention	57%

It wasn't the game, it was level of activity in the game. The instructional methods.

## Poll Question

(Click on the correct answer button above the Participants' Box)

Which builds more confidence for on the job application of learned knowledge?

A. Classroom instruction

B. Simulation game

C. Neither are beneficial



Simulation Game.

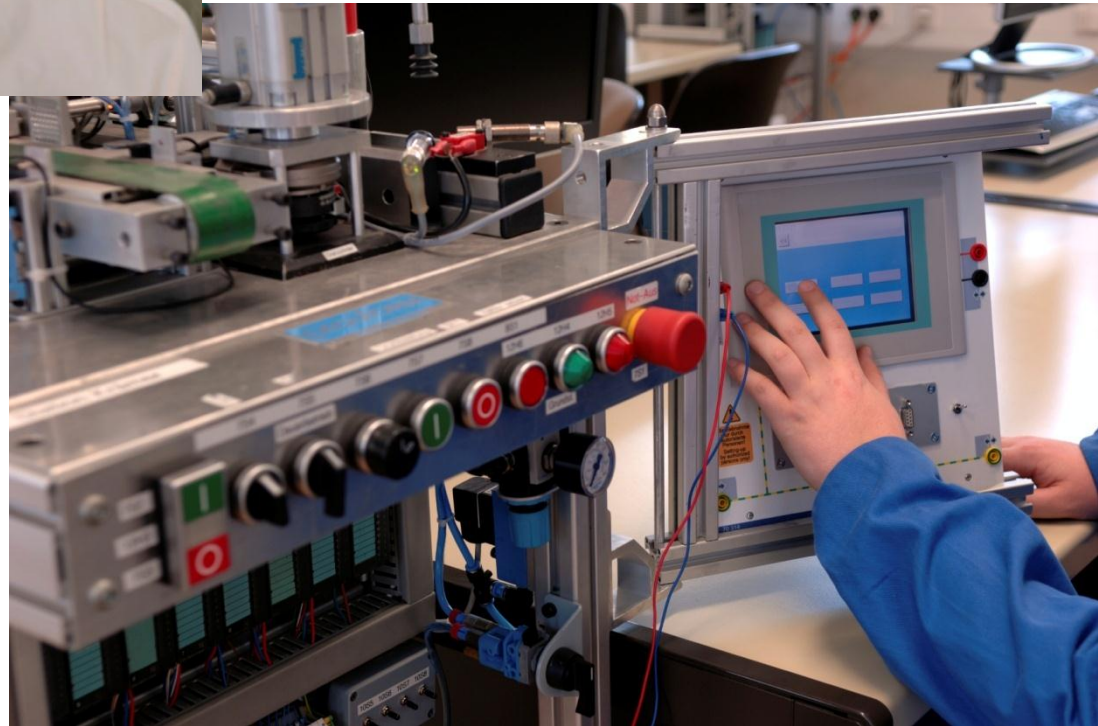


Sitzmann, T. (2011) A meta-analytic examination of the instructional effectiveness of computer-based simulation games. *Personnel Psychology* .



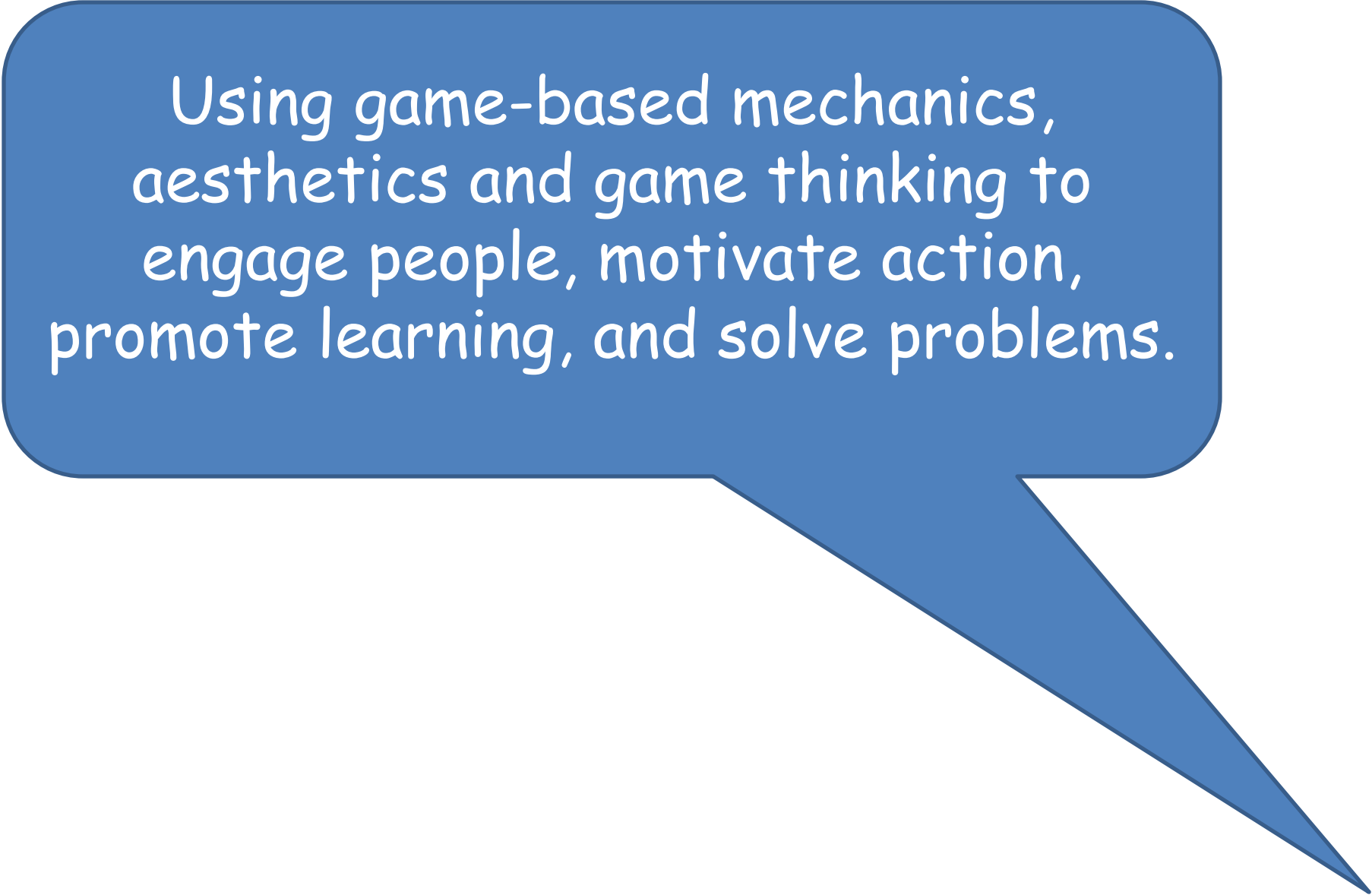
20% higher.

Sitzmann, T. (2011) A meta-analytic examination of the instructional effectiveness of computer-based simulation games. *Personnel Psychology* .





What is  
"Gamification"



Using game-based mechanics, aesthetics and game thinking to engage people, motivate action, promote learning, and solve problems.

# Games

1. Provide a Challenge
2. Tell a Story
3. Be a Strategy Guide
4. Appeal to All Player Types
5. Provide Feedback
6. Award Experience Points
7. Add Cooperation and Competition

# VIDEO GAMES

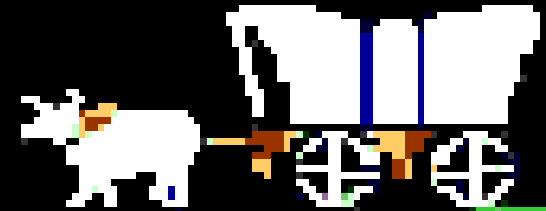


WHY WASTE GOOD TECHNOLOGY  
ON SCIENCE AND MEDICINE?



#1 Provide a Challenge

# Reach Oregon



From Independence it is 102 miles to the Kansas River crossing.

Date: April 1, 1848

Weather: cool

Health: good

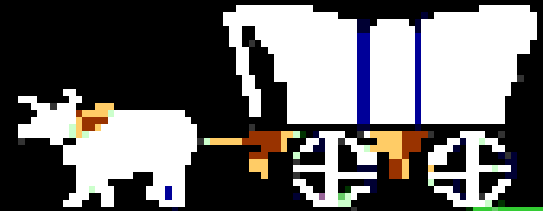
Food: 800 pounds

Next landmark: 102 miles

Miles traveled: 0 miles

Press SPACE BAR to continue






From Independence it is 102  
miles to the Kansas River  
crossing.

Survive!

Date: April 1, 1848  
Weather: cool  
Health: good  
Food: 800 pounds  
Next landmark: 102 miles  
Miles traveled: 0 miles

Press SPACE BAR to continue



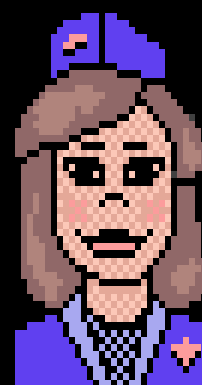
# Where in the World is Carmen Sandiego?

©copyright 1992 Electronic Arts  
©copyright 1985, 1991.  
Broderbund Software, Inc.

All Rights Reserved.  
Licensed by Sega Enterprises Ltd.

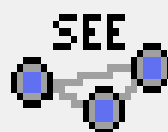
# Game Options Acme Dossiers

Mexico City  
Monday, 6 p.m.



It's awfully busy  
around here; I  
haven't noticed  
anyone suspicious.

FLIGHT ATTENDANT





**Can this group solve the challenge?  
Do they know what tools to use?**

# Proposal Challenge

- Examine a problem
  - Evidence
  - Research
  - Observation
- Proposal a solution
  - Written
  - Presentation



# Solution #2: Tell a Story

Bourne Conspiracy  
Video Game





Defense Intelligent  
Agency Training





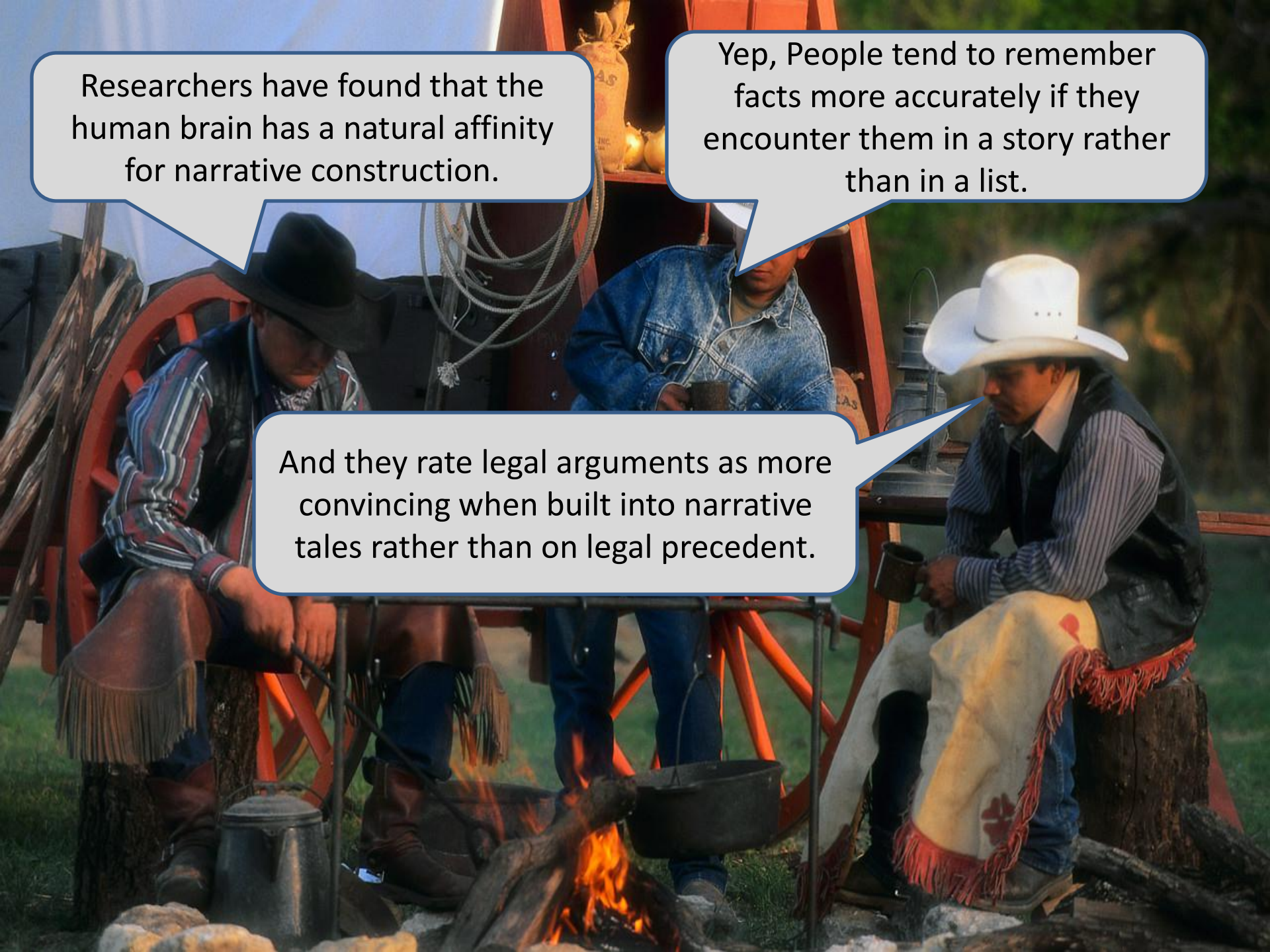
America's Army

<< So, you want to wear the Green Beret, eh? Are you sure? >>



Helping your fallen teammates is an honorable thing to do.

[Close this Window](#)

A photograph of three cowboys in a wooden wagon. One cowboy on the left is wearing a dark hat and a striped shirt, leaning over a campfire. A second cowboy in the middle is wearing a denim jacket and holding a mug. A third cowboy on the right is wearing a white hat and a striped shirt, also holding a mug. The wagon has large wooden wheels and is filled with various items like ropes and a lantern. The scene is set outdoors at dusk or dawn, with a fire burning in the foreground.

Researchers have found that the human brain has a natural affinity for narrative construction.

Yep, People tend to remember facts more accurately if they encounter them in a story rather than in a list.

And they rate legal arguments as more convincing when built into narrative tales rather than on legal precedent.

004885

*Missile Command.*

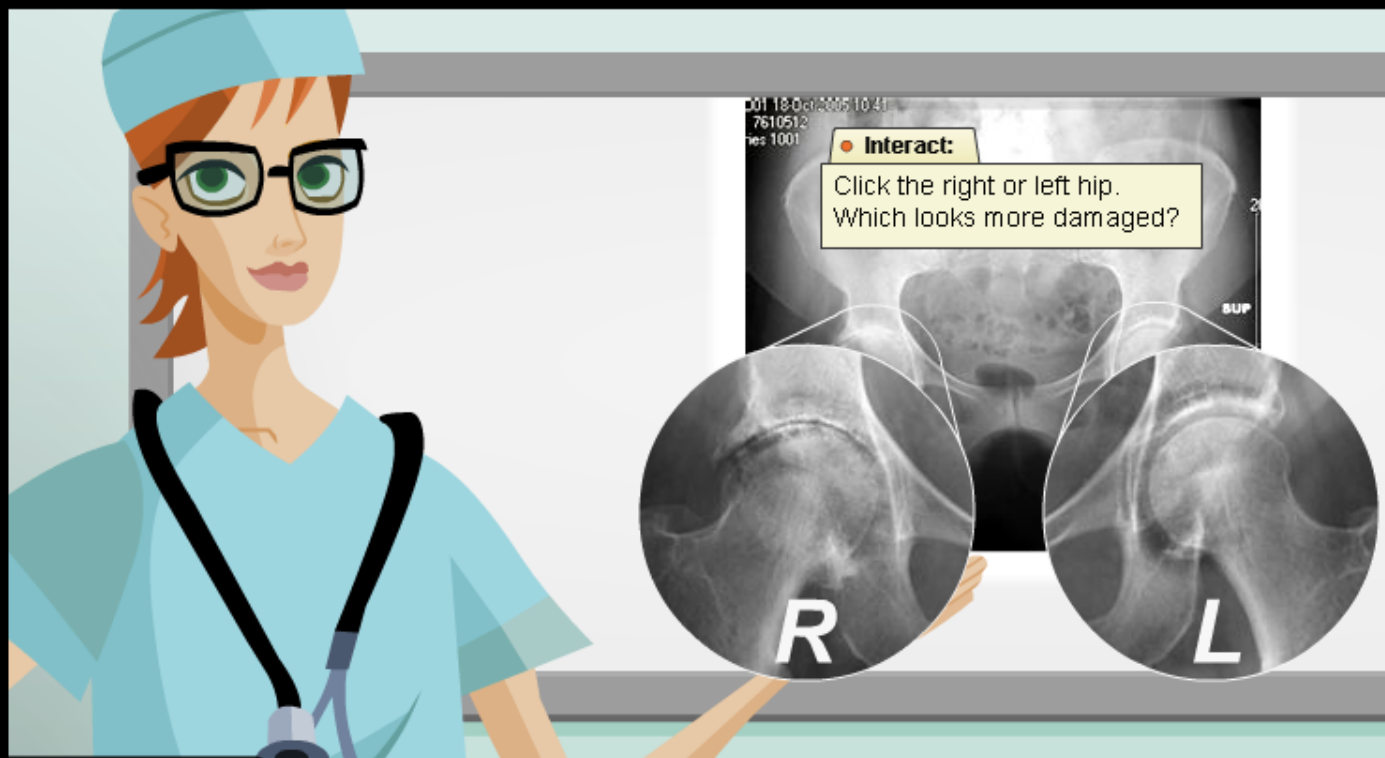
Simple storyline: Missiles are falling and you must save your cities.

Players can then imagine a nuclear war, aliens launching missiles, a moon base under attack, whatever they like in the context of the simple storyline.



**Edheads**  
virtual hip replacement

[Intro](#) [Front Desk](#) [Pre-Op Intro](#) [Main Surgery](#) [Surgery Photos](#)



Copyright Edheads.org 2007

Based on this patient's X-Ray, Which hip do you think needs surgery?



Done

Internet

100%

Internet

100%

Internet

100%

http://www.edheads.org - Welcome to Edheads Virtual Knee Surgery - Microsoft Internet Explorer provide...

# Edheads Virtual Knee Surgery

reception desk virtual surgery surgery photos

subtitles activity site map

**Interact:**  
Click and drag the **sponge** into the bowl to soak it.  
Then drag the soaked sponge over the **leg and foot** to coat them in Betadine.

Copyright 2007 Edheads + COSI site credits

Done Internet

www.edheads.org



Stories provide, context,  
meaning and purpose

# Stories Need

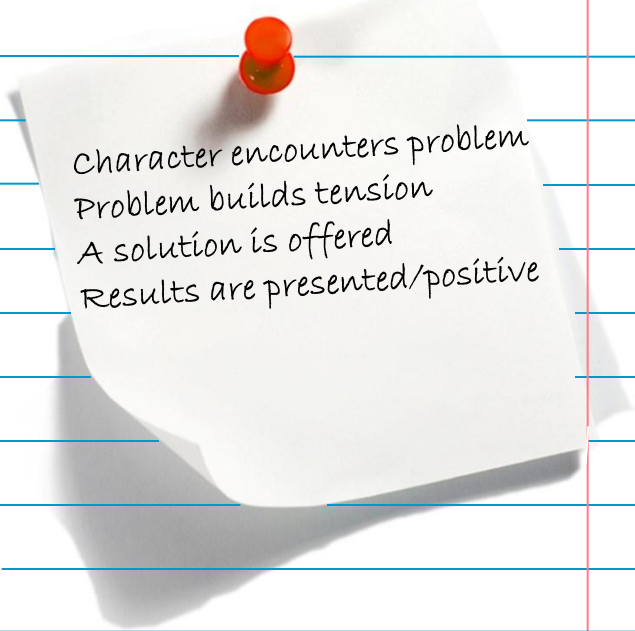
1. Characters

2. Plot (something has to happen).

3. Tension

4. Resolution

5. Conclusion



Character encounters problem  
Problem builds tension  
A solution is offered  
Results are presented/positive



Have learner's create stories.

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## Mobile Development Done Right


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[www.unity3d.com](http://www.unity3d.com)



**Rimelands: Hammer of Thor**  
Dicework Games details the development of their critically acclaimed mobile RPG.  
[Read more](#)




**Castle Warriors**  
Find out how GameResort LLC created a casual real-time strategy for the touch screen.  
[Read more](#)



**Samurai II: Vengeance**  
MADFINGER Games uses Unity to deliver console-quality experiences on mobile devices.  
[Read more](#)



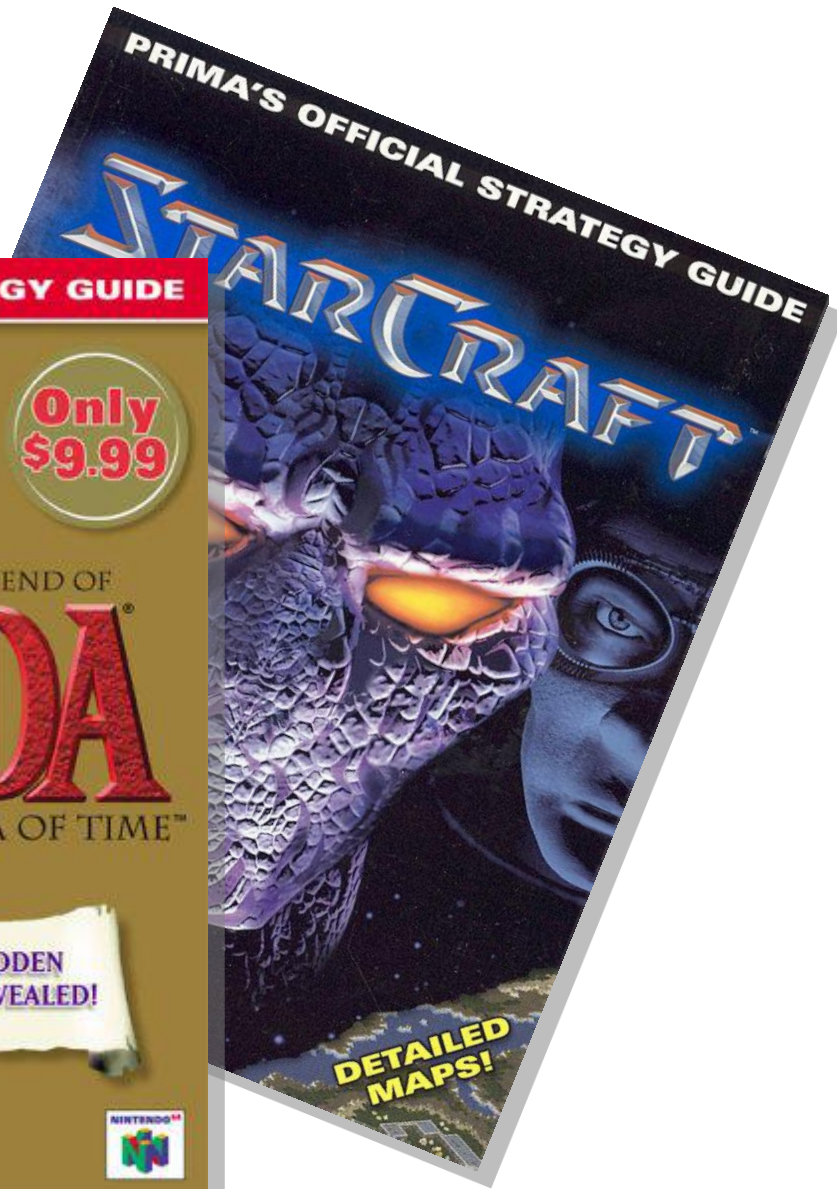
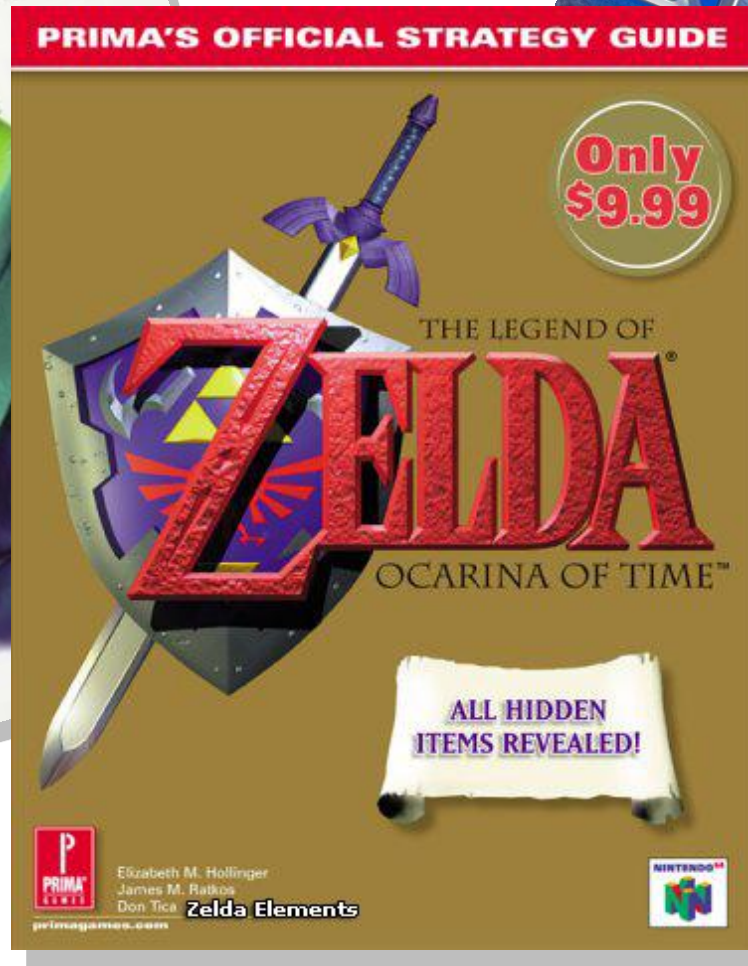
**Zombierville USA**  
Cute meets gruesome to create an App Store chart-topper with Mika Mobile's mobile survival game.  
[Read more](#)



**Drift Mania Championship**  
Ratrod Studio brings a combination of driving skill, style and showmanship to iOS and Android.  
[Read more](#)



**Tumbledrop**  
Discover a playful puzzle game that captures the spirit of children's toys from Starfruit Games.  
[Read more](#)



Solution #3: Be a Strategy Guide

# Hints, Tips and Guidance

## 3 Levels

- Vague Hint
- Specific Hint
- Answer

.SPARKLE ADvertiser.  
Dmc Dench  
(Editing Appearance)

Share Appearance

@ 501 \$  
eadly Rifle

Body Parts

- Shape
- Skin
- Hair
- Eyes
- Clothes
- Shirt
- Pants
- Shoes
- Socks
- Jacket
- Gloves
- Skirt

Gygorg007gth Shape  
Located in /My Inventory/Clothing/Cybergoth Male

Body

Head

Eyes

Ears

Nose

Mouth

Chin

Torso

Legs

Female

Male

Randomize

Short Tall

Height 100

Body Thin Body Thick

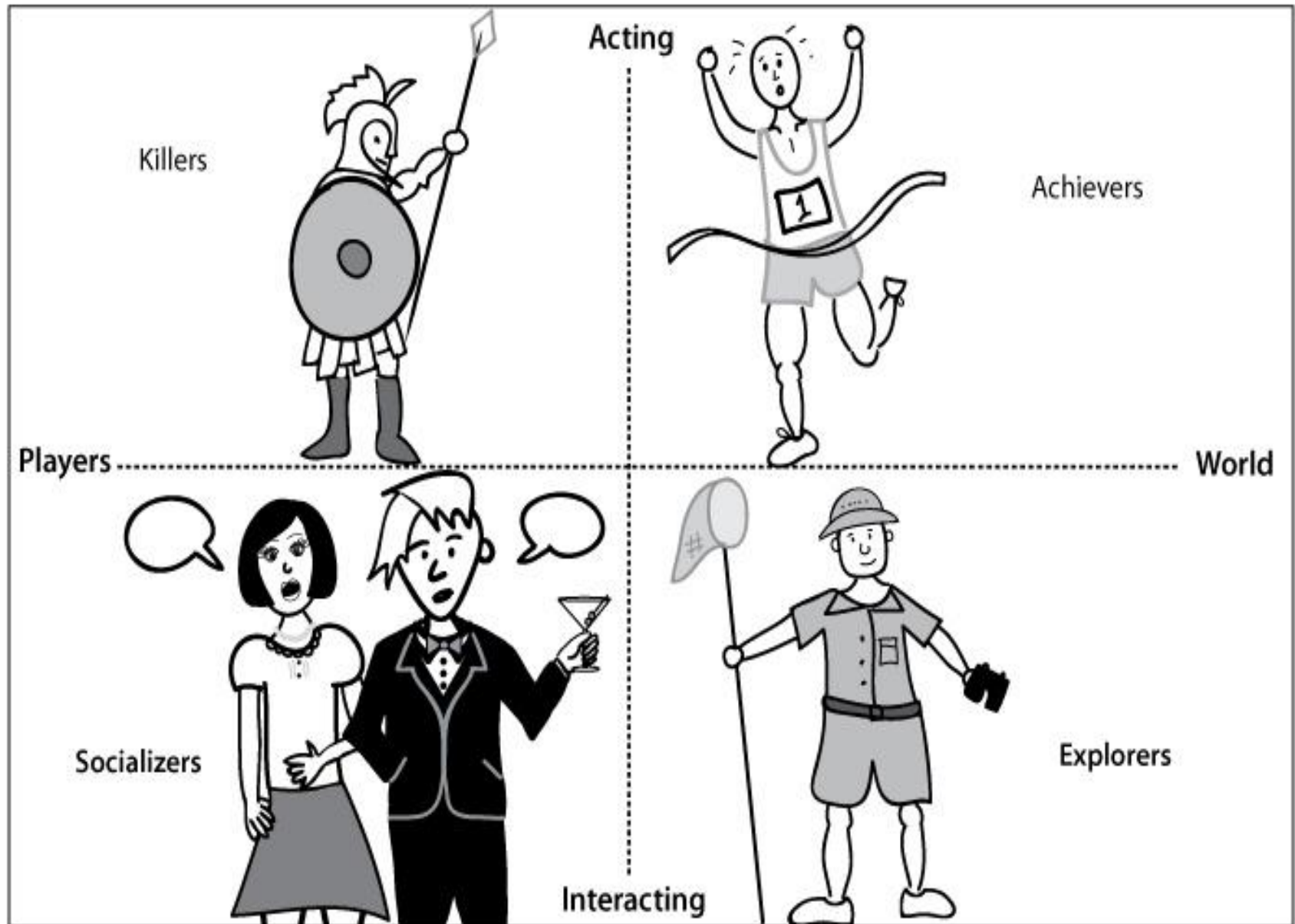
Body Thickness 100

Save Save As Report



Solution #4: Appeal to All Player Types

(Select the yellow highlighter tool on the left and ink color below to draw on the screen)



# Solution #5: Provide Feedback





# HANDYMAN HAMMER CHALLENGE

00:08

1200



POWER  
23%

Immediate/Realistic  
Feedback



X X X

X X X

X X X

Bent it

Nailed it

X X X

X X X

TurningPoint®

Send User Data  
Presentation  
Test/Homework  
Change Channel

Start/End Test

Enter

YES MENU NO

Go To

1/A 2/B 3/C

?

Ans Mode

4/D 5/E 6/F

7/G 8/H 9/I

10

+ - 0/J .

SEL

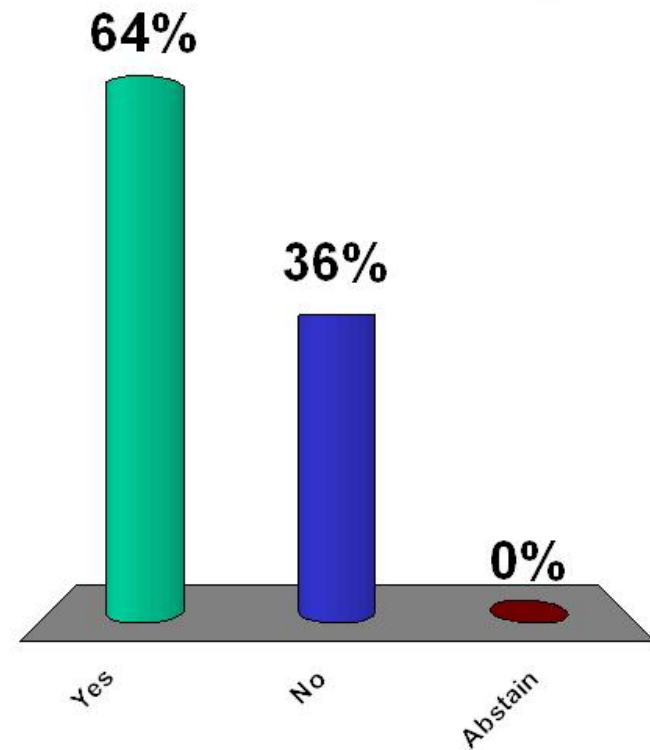
CLR

ResponseCard®XR



## Do you think the overall scope of work was feasible?

1. Yes
2. No
3. Abstain



# Peer-to-Peer





# Solution #6: Award Experience Points



Raskalor

Keeg Gibn

Dunmore

Fafhrkek

whiteout

Keeg Gibn  
<Dance>

Fafhrkek

Granit

Damador  
<Night Crew>

Dunmore

You dance with Keeg Gibn.  
 You dance with Keeg Gibn.  
 You dance with Keeg Gibn.  
 [1: General] Beryl: get down tonight?  
 Dunmore says: join in folks  
 [1: General] FourInchTool: Considering we're dwarves, little is right.  
 Damador bursts into dance.  
 Dunmore bursts into dance.

TigerLibra gains Devotion Aura.  
 BeoWolven gains Devotion Aura.  
 Devotion Aura fades from BeoWolven.  
 Devotion Aura fades from BaleogFierce.  
 Devotion Aura fades from TigerLibra.  
 Devotion Aura fades from Erebus.  
 Devotion Aura fades from Brunhilde.  
 Devotion Aura fades from BaleogFierce.

Damador  
 Dwarf Paladin  
 Level 8



# THUNDER ISLAND

## LEADER BOARD

DRIVER	BEST LAP	AIR TIME	BEST HEIGHT	BEST DISTANCE	DATE
INMOTION	1:23.82	014.52	002.93	040.46	12.13.09 18:18
INMOTION	1:24.12	014.40	002.24	034.64	12.13.09 23:15
			003.05	040.48	12.13.09 22:54
			002.20	027.58	12.13.09 18:01
			003.39	046.03	12.14.09 00:24
			002.72	042.05	12.13.09 18:03
			002.69	037.49	12.14.09 00:10
INMOTION	1:25.36	015.00	003.31	048.36	12.13.09 22:57
INMOTION	1:25.36	015.62	003.18	049.71	12.13.09 23:05
INMOTION	1:25.44	015.12	003.16	041.38	12.14.09 00:20

Leaderboards provide opportunities for players to receive feedback about their performance as compared to others..

# Solution #7: Add Competition and Cooperation

# Use Small Group Exercises



Pasha, P. (2005). Corporations  
woo baby boomers  
*CNNMoney*,



Let Learner's Present  
Solutions



Provide time for  
unstructured  
chats.





# Summary

1

How did we get to this point?  
Why are we here?

2

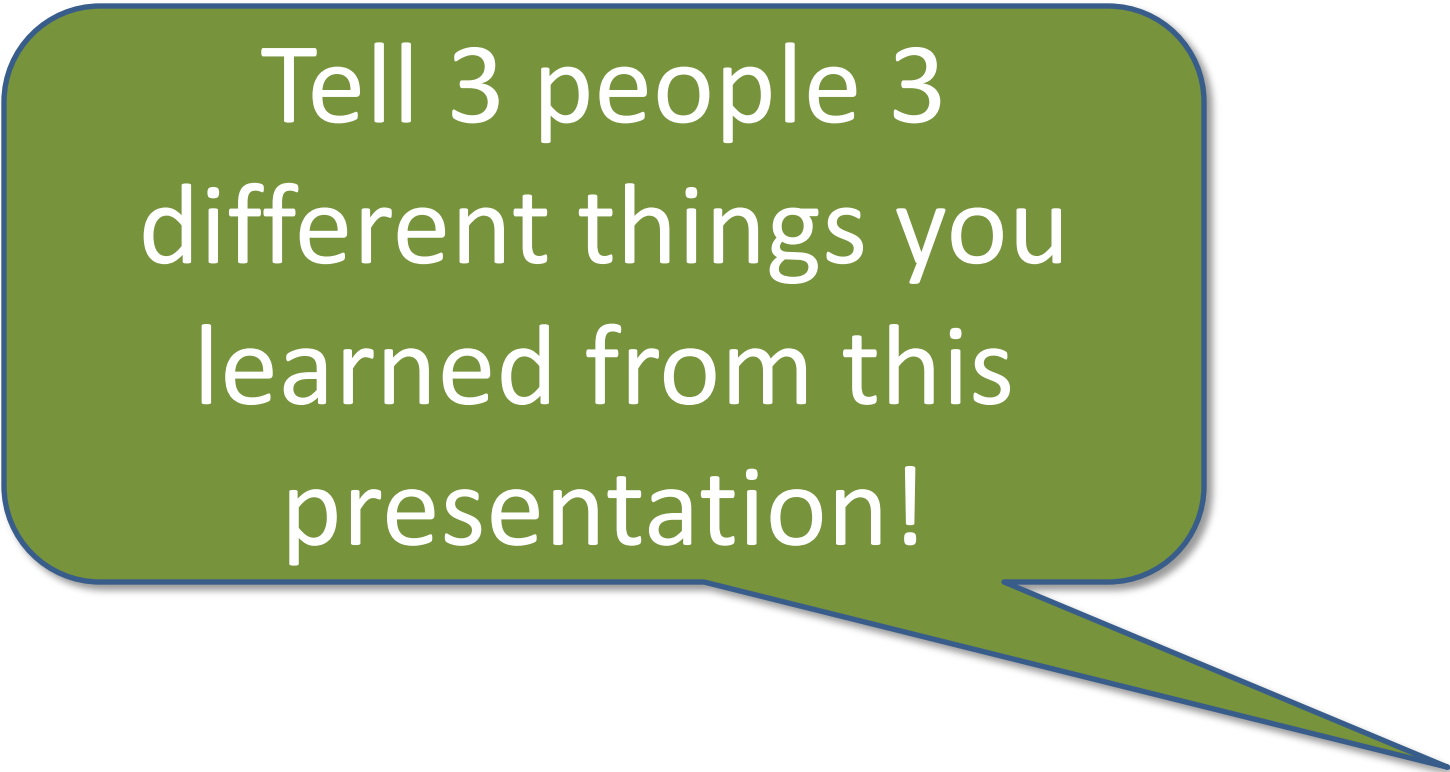
What is gamification?

3

Are games instructional/educational?

4

How do games impact learning, are they effective tools for transferring knowledge?



Tell 3 people 3  
different things you  
learned from this  
presentation!

Google "Kapp Notes"  
www.kaplaneduneering.com/kappnotes

2012 New Book:  
"The Gamification of Learning and Instruction"

July 2011 T&D Article  
Matching the Right Instruction to the Right Content

September 2011 Training Quarterly Article  
Improving Training: Thinking Like a Game Developer

Design | Key Questions To Consider

Centered	<ul style="list-style-type: none"> <li>What role(s) do the participants play in the experience?</li> <li>What actions and interactions can the participants take to encounter teachable moments within the experience?</li> </ul>
Contextually Situated	<ul style="list-style-type: none"> <li>What situational contexts best accommodate the learning objectives of the intervention?</li> <li>What is the role of the facilitator, other participants and the environment itself in creating an authentic situational context for learning?</li> </ul>
Discovery Driven	<ul style="list-style-type: none"> <li>What is the minimum set of guidelines that need to be established to catalyze action within the learning experience?</li> </ul>

SHARE [social icons]

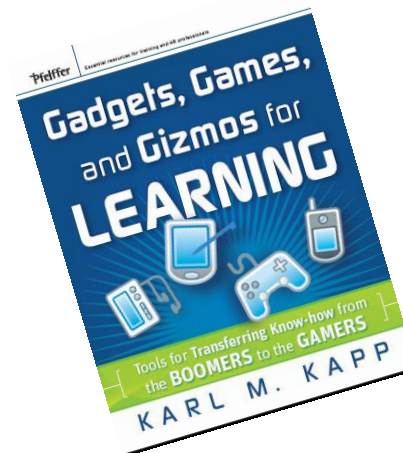
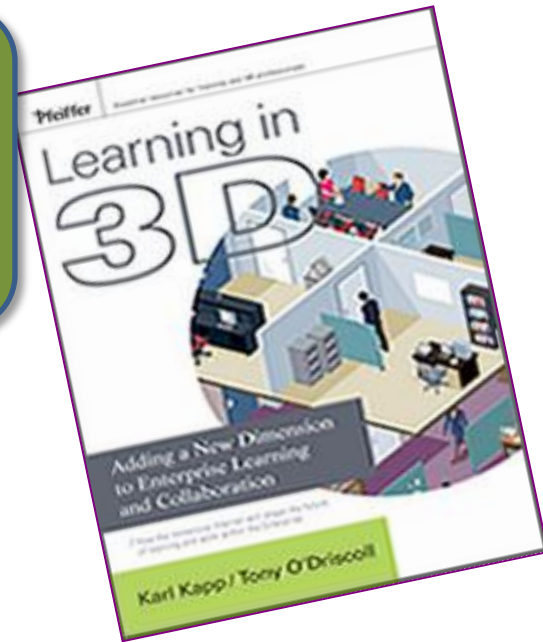
Archives + show all

September 2010 August 2010

# Questions/More Information

- <http://www.kaplaneduneering.com/kappnotes/>
  - Recommended books
  - Samples and Examples
  - Slides
- Learning in 3D
  - [www.learningin3d.info](http://www.learningin3d.info)
- Gadgets, Games and Gizmos for Learning
  - [www.gadgetsgamesandgizmos.com](http://www.gadgetsgamesandgizmos.com)
- Email: [kkapp@bloomu.edu](mailto:kkapp@bloomu.edu)

Look for “The Gamification of Learning and Instruction” this Spring





# How Can We Better Serve You?

Whether you are joining us live or watching the recorded version of this webinar, please take 1 minute to provide your feedback and suggestions.

<http://questionpro.com/t/ABkVkZLlc6>



# Webinar Resources

To access the recording, slides, and handout, visit

[www.matecnetworks.org](http://www.matecnetworks.org)

Keyword Search:

“webinar instructional gaming”





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Thank You!

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Instructional Gaming