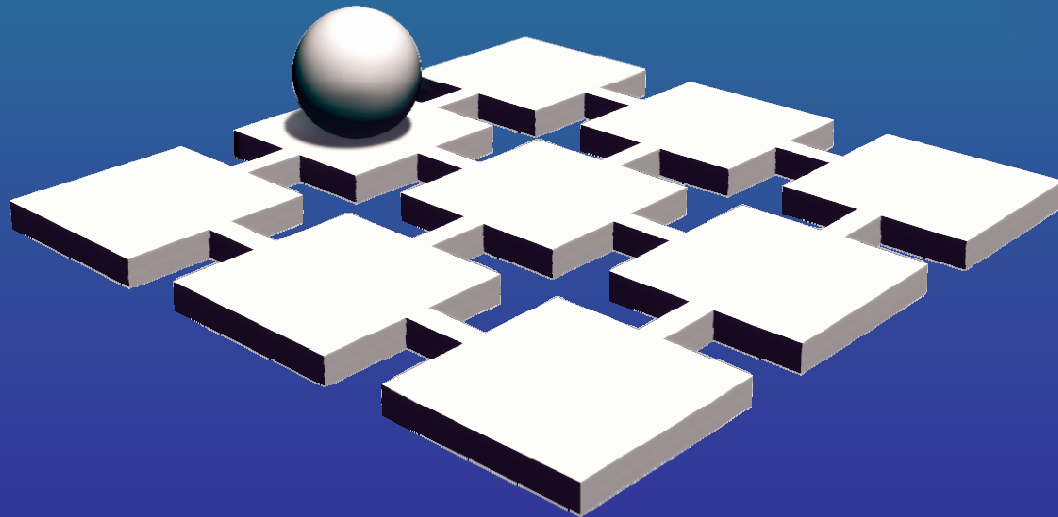


Simulations for Teaching and Learning in Higher Education

APPRENTISSAGE-JES



SAGE for Learning

David Kaufman, M.Eng., Ed.D.

Director, Learning & Instructional Development Centre

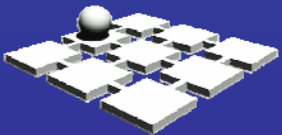
Professor, Faculty of Education

Simon Fraser University

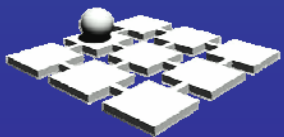
Burnaby, British Columbia

CANADA V5A1S6

dkaufman@sfu.ca



Simon Fraser University



Apprentissage- JeS

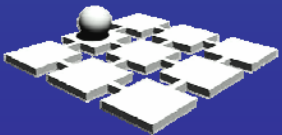
Louise Sauve, Ph.D.

Professeure, Teleuniversite

Presidente, SAVIE

Quebec, CANADA

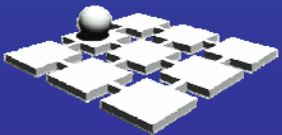
SAGE for Learning is a fully bilingual project
(English – French)



Simulation and Advanced Gaming Environments (SAGE) for Learning: A Pan-Canadian Project

- An SSHRC INE Collaborative Research Initiative
- Lead institution: Simon Fraser University
- 24 researchers; 20+ partners
- \$3 million grant
- Oct. 1, 2003-Dec. 31, 2007

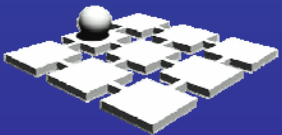
- www.sageforlearning.ca



Goal

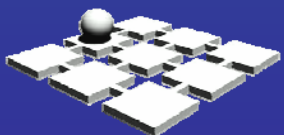


To explore the potential of simulations and games to support cognitive and social learning in light of new technologies, media and our knowledge of cognition and learning processes

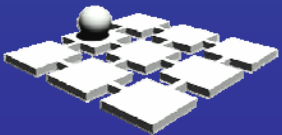
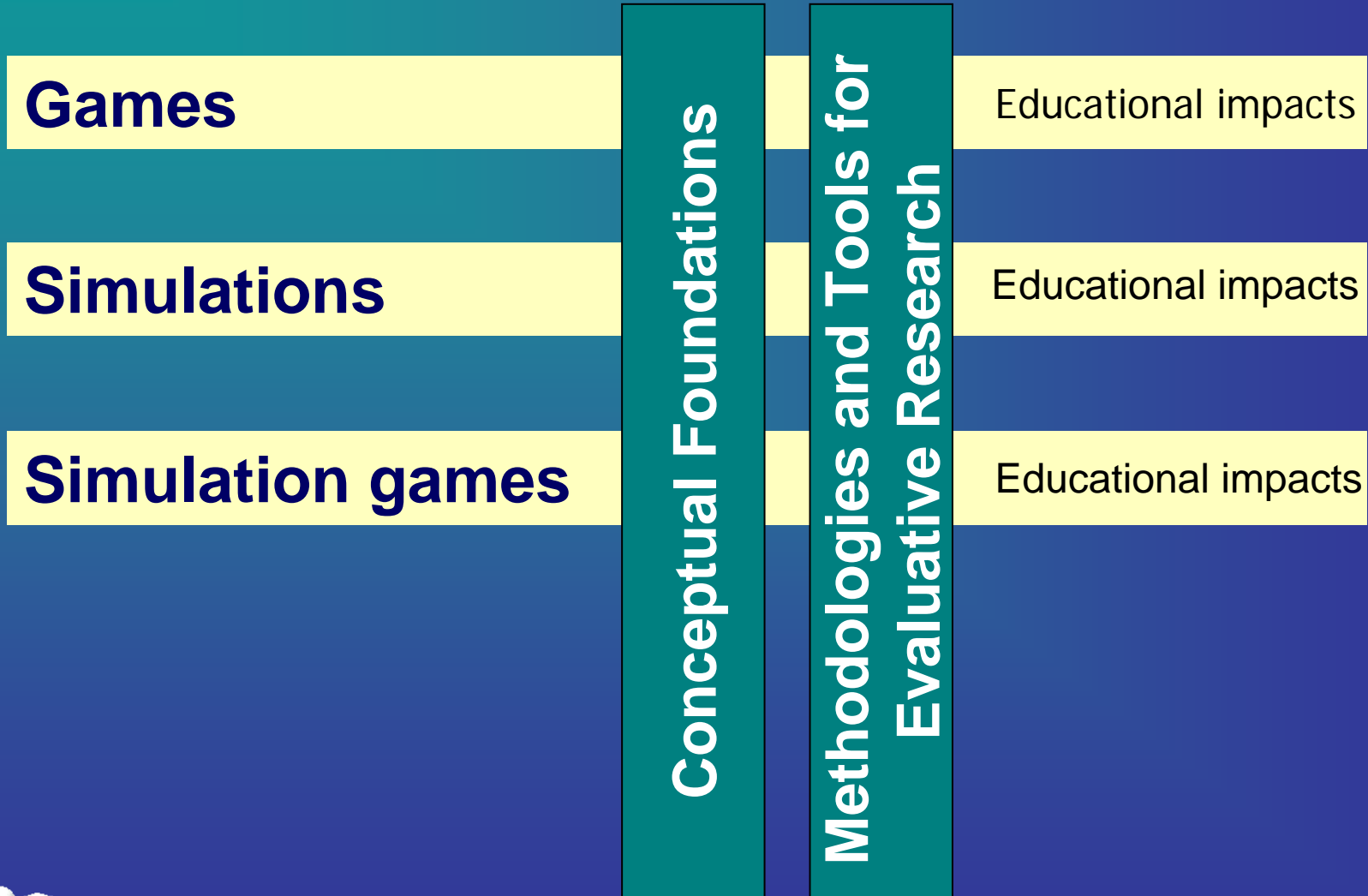


Target Audiences

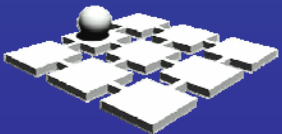
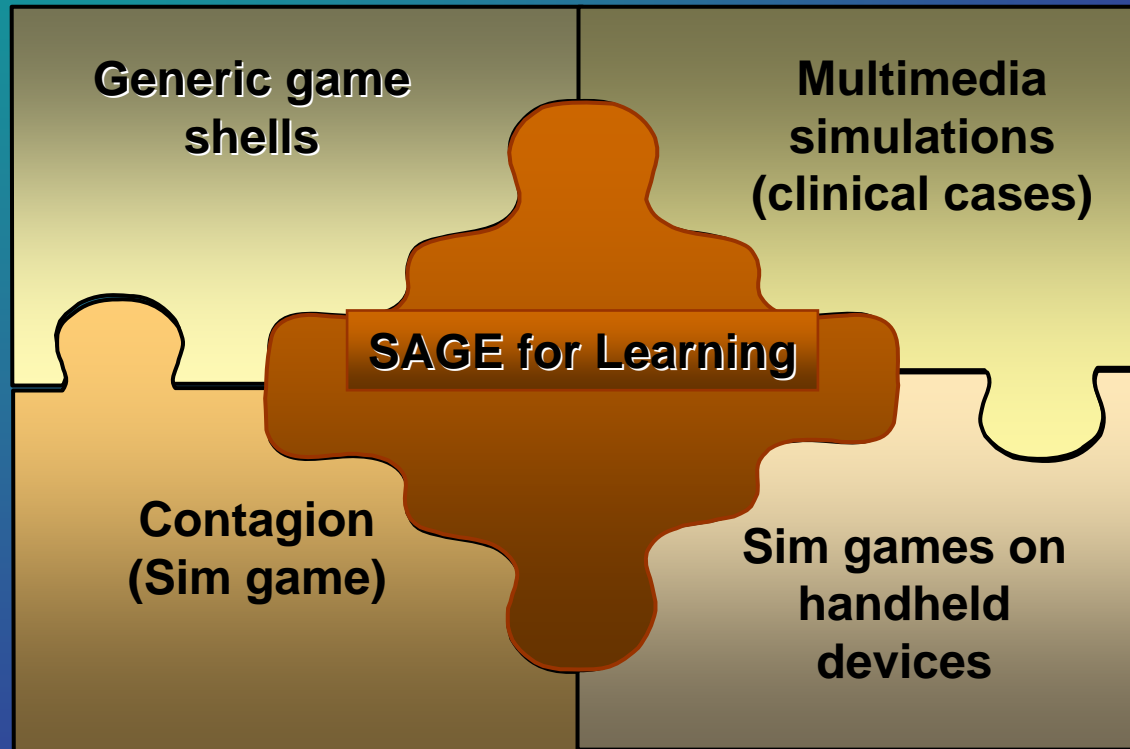
- ❑ Medical students
- ❑ Health professionals
- ❑ Managers
- ❑ Professors, Teachers
- ❑ Students
- ❑ Patients
- ❑ Community workers
- ❑ Public



Research Themes



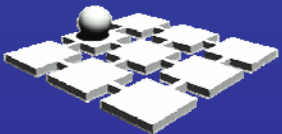
Four Prototypes



Technology Tools

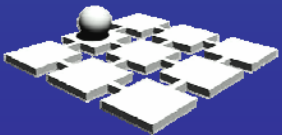


- ❑ Internet
- ❑ CD/ DVD
- ❑ PDAs, cell phones, and wireless technologies
- ❑ Eye tracking devices

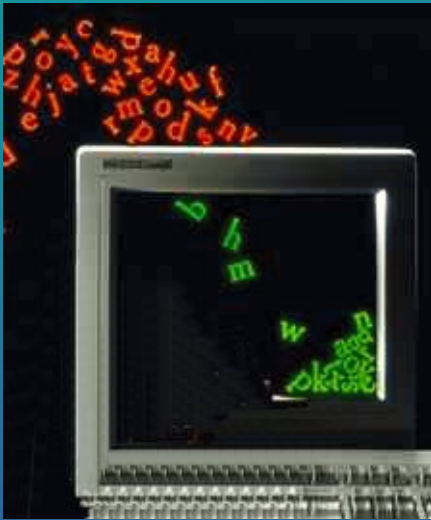


Study focus -- Why Health?

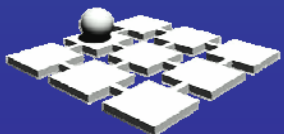
- Responds to the priority of improving the health care system and the health of Canadians
- Facilitates the sharing of knowledge and results among team members in the current and future network
- Facilitates research and implementation on a large scale across the network



Phase 1: Descriptive Research

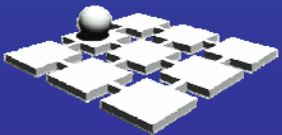


- ❑ Systematic review of the literature on SAGEs for the past six years
- ❑ Analyze best practices in SAGE, e.g., design and success/failure factors
- ❑ Analyze rigorous research studies on SAGEs
- ❑ Identify needs with regard to methodologies and tools for evaluation



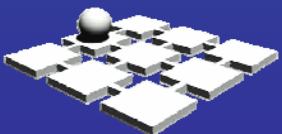
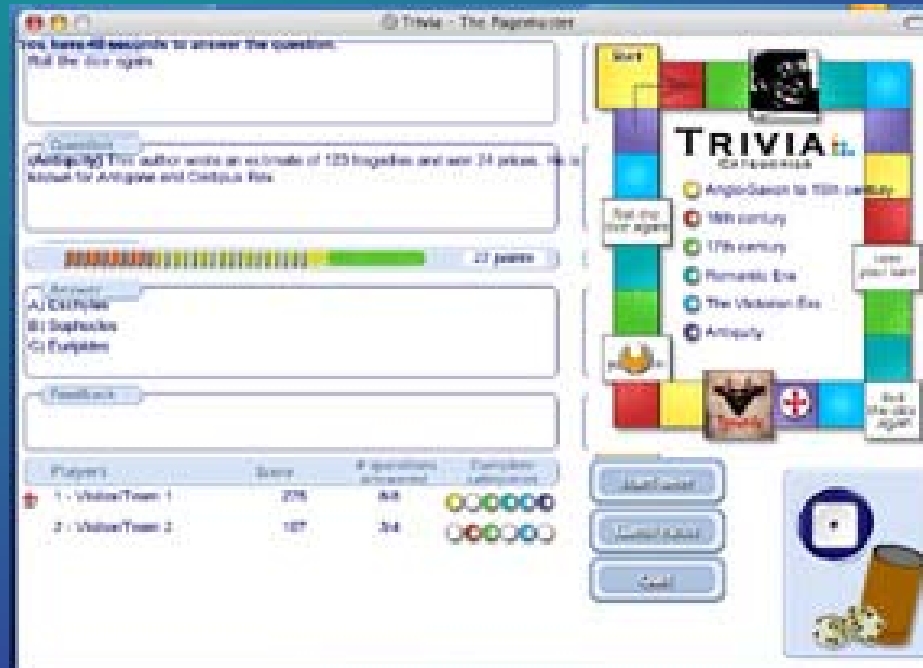
Phase 2: Developmental Research

- ▣ Develop, pilot test, and revise prototypes based on the results of Phase 1.
- ▣ Develop specifications for SAGEs to be indexed in learning object repositories



SAGE - Games Domain

EGC



SAGE - Simulation Domain COMPS

The screenshot displays the COMPS software interface. The title bar reads "COMPS - user: uid01 class: BIO 101 group: admin". The interface is divided into several sections:

- Agenda:** A tree view on the left showing "Case Presentation" (with sub-items "Case Information" and "Case Discussion") and "History" (with sub-item "Present Illness Description").
- Physical Case Presentation:** A central panel with a header "Physical Case Presentation" and a small globe icon. It contains a photograph of a young man with long blonde hair and a dark shirt. To the right of the photo is the text for "Case 1: SORE THROAT":

18 years old young man came into the office with complaint of sore throat, running a fever, and with pain of the neck for the past 5 days. He has some difficulty swallowing, and looked tired. He has dry coughing, had no chest pain, and mild shortness of breath. His appetite was down for a few days now and had been sleeping quite a lot. He was usually in good health and seldom got sick. No chronic illness like diabetes, asthma etc. His girl friend had somewhat similar symptoms a few weeks ago, but got better spontaneously without seeking any medical advice.

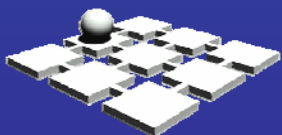
History of Present Illness

 - a. Duration of Illness --- past 5 days
 - b. Location of Illness --- in the throat
 - c. Severity --- Lots of pain on swallowing, drooling (* discuss of
- Chat Window:** A text area on the right showing system and server messages:

SERVER> Welcome uid01 to group admin
Type :help and click the "SEND" button for help

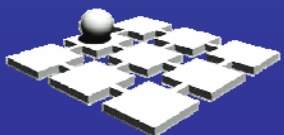
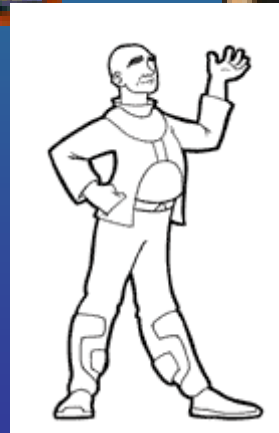
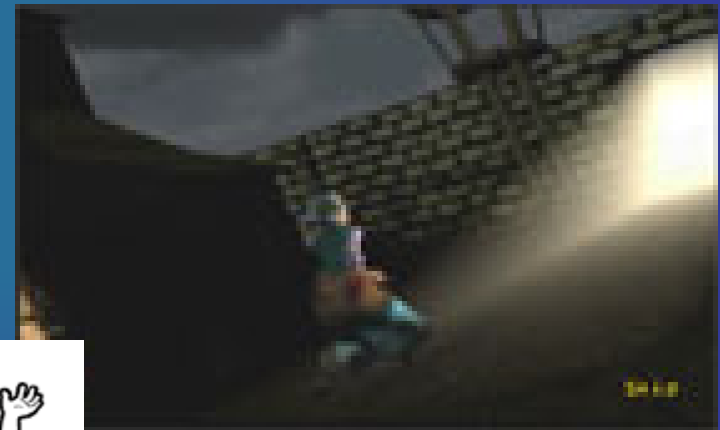
SYSTEM> The connection has been closed.

SERVER> Welcome uid01 to group admin
Type :help and click the "SEND" button for help
- Bottom Panel:** Includes buttons for "History Record", "Library", "Exit", "Main", "Prev", and "Next". A status bar at the bottom left shows "Online/Connected".



SAGE – Simulation Games

Contagion

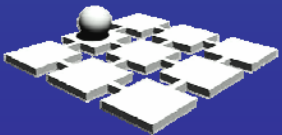


Phase 3: Evaluative Research

- Develop methods and tools for formative and summative evaluation



- Use these methods and tools with the prototypes from Phase 2 to validate the learning in authentic settings



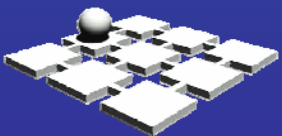
Definition of Simulation

Tools that give you ersatz (as opposed to real) experience

In simulation you are pretending

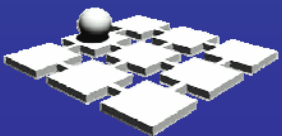


Prensky M. (2004). Interactive Pretending: An Overview of Simulation.
www.marcprensky.com/writing/Prensky-Interactive_Pretending.pdf



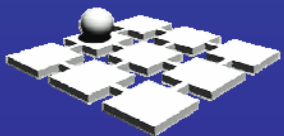
'Truths' about Simulation

- ▣ At its centre lies a 'model'
- ▣ The creators' view of:
 - ▣ what is important
 - ▣ relationships among the simulation's elements
- ▣ Takes user input and produces feedback based on the model

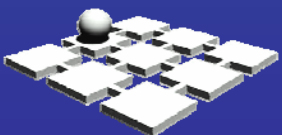


Categories of Simulations

Software	IT/application training
Business	Management skills, running simulated companies, accounting practices
Situational	Communication skills, problem-solving, decision-making
Technical	Physical systems, equipment
Procedural	Step-by-step processes
Virtual Worlds	Recreating workplaces, environments
Hybrid	Combination of above

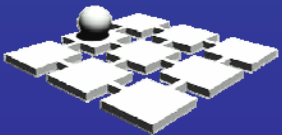


What are the factors creating a demand for educational simulations?



Benefits of Simulations

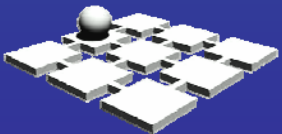
- ▣ Provides practice and feedback
- ▣ Safer to make mistakes
- ▣ Avoids use of expensive equipment
- ▣ Improves “real life” processes
- ▣ Harnesses the power of story, e.g., engagement, enjoyment
- ▣ Can reduce training time



More Benefits

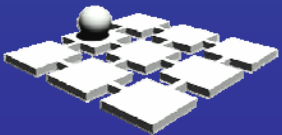
- ❑ Users must apply what they understand by interacting in real time
- ❑ Users are unlikely to ever play a scenario the same way
- ❑ Users can try alternative interpersonal styles
- ❑ There are a limitless supply of scenarios to challenge even the most experienced
- ❑ Users learn as much through failure as they do success

<http://simulearn.net/leadershiptraining/simulations.htm>

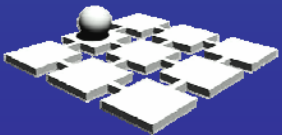


Limitations of Simulations

- ❑ Expensive and difficult to create
- ❑ Development time may be too long
- ❑ Not useful if content changes frequently
- ❑ Sometimes inappropriate for audience or situation
- ❑ Input is typically not very lifelike
- ❑ Limited set of choices is presented
- ❑ Often too much time for reflection
- ❑ Assumptions or rules usually not made explicit
- ❑ OTHER
- ❑ _____



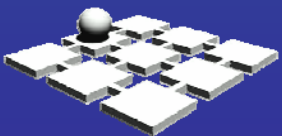
Limitations of Simulations



Effective Simulation Elements

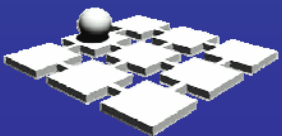
- Use of simulation genres, including branching stories, virtual products, virtual labs, interactive spreadsheets, flight simulators, 3D maps, others
- Appropriate use of elements such as modelling, AI, graphics, interface
- Creation of an atmosphere similar to actual context
- Presentation of behaviour to be modelled (e.g., narratives, instructions, case studies)
- Provision of feedback from decisions that shows 'natural' consequences
- OTHER? _____

www.e-learningcentre.co.uk/eclipse/Resources/simulation.htm



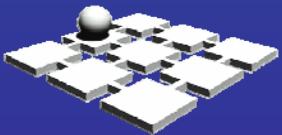
Types of Simulations in Health Professional Education

- ❑ Role-play, small group “in-basket”
- ❑ Simulated/Standardized patients
- ❑ **Computer-based clinical simulations, e.g. interactive, multimedia**
- ❑ **Video-based simulations, e.g. examinations, professionalism, ethics, doctor-patient relationships**
- ❑ Realistic interactive simulations, e.g. plastic models, high tech modelling
- ❑ Complex interactive simulations, e.g. Human Patient Simulator



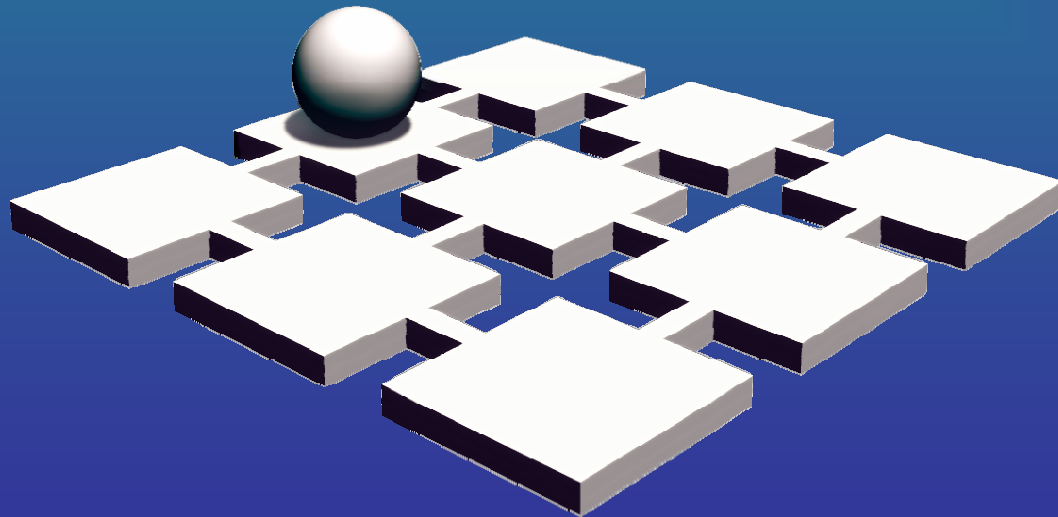
COMPS

- ▣ Collaborative
- ▣ Online
- ▣ Multimedia
- ▣ Problem-based
- ▣ Simulations

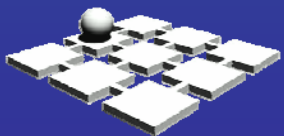
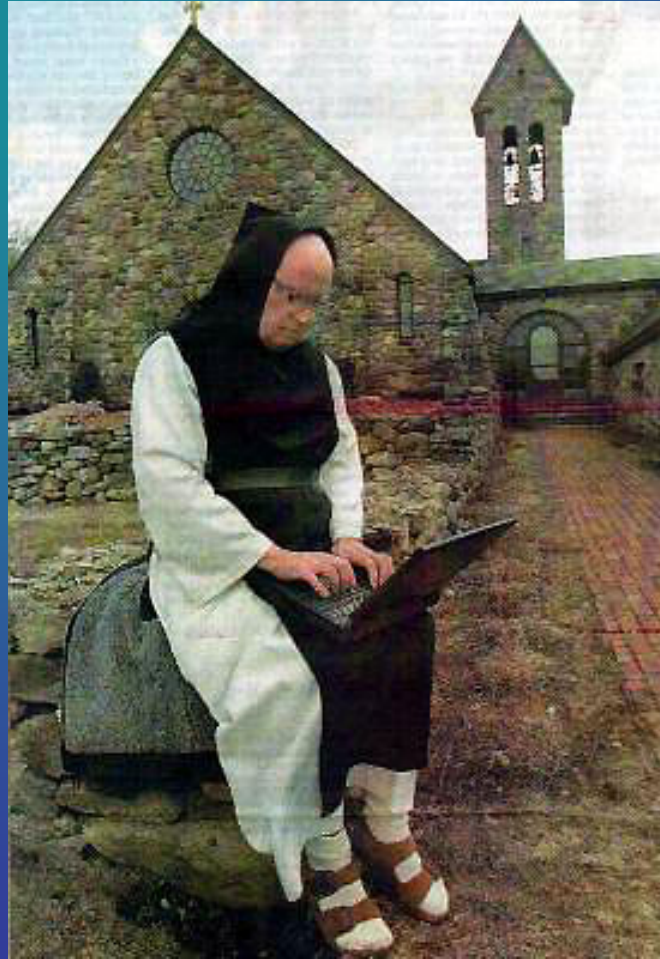


Simulation Examples

APPRENTISSAGE-JES



Just About Everyone Has a Computer...





SAGE

Simulation and Advanced Gaming Environments for Learning

SAGE for Learning

Welcome to SAGE

the centre for learning with new-technology games and simulations.

dkaufman@sfu.ca
Isauve@teluq.quebec.ca

Headlines



News 1

The is a consise little bit of news



Rodger Dodger

The is a consise little bit of info



Simulation 3

The is a consise little bit of news



News 4

The is a consise little bit of news



Rodger Dodger

The is a consise little bit of info



News 6

The is a consise little bit of news



Simulation 7

The is a consise little bit of news



Rodger Dodger

The is a consise little bit of

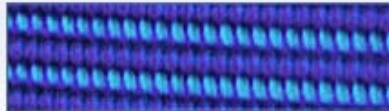
Projects



Full News Title 1

Through a top-down, proactive approach we can remain customer focused and goal-directed, innovate and be an inside-out organization which facilitates sticky web-readiness transforming turnkey eyeballs to brand 24/365 paradigms with benchmark turnkey channels

People



Full Rodger Dodger Title 2

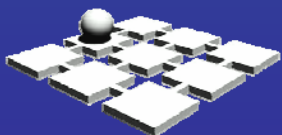
Innovate and be an inside-out organization which facilitates sticky web-readiness transforming turnkey eyeballs to brand 24/365 paradigms with benchmark turnkey channels implementing viral e-services and dot-com action-items while we take that action item off-line and raise a red

Play

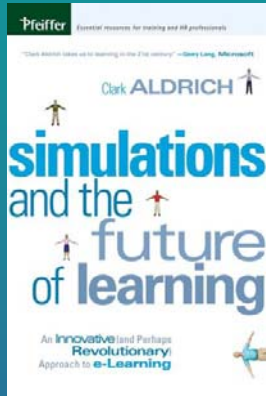


Full Simulation Title 3

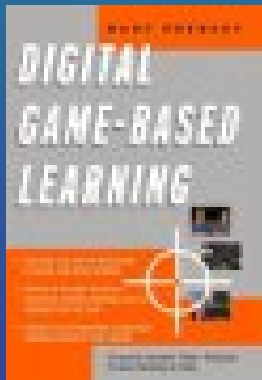
We can remain customer focused and goal-directed, innovate to brand 24/365 paradigms with benchmark turnkey channels implementing viral e-services and dot-com action-items while we take that action item off-line and raise a red flag and remember touch base.



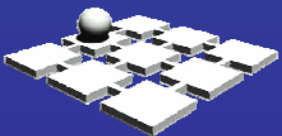
Resources for Further Learning



Aldrich, C. (2003). Simulations and the Future of Learning : An Innovative (and Perhaps Revolutionary) Approach to e-Learning.



Prensky, M. (Dec., 2002). Digital Game-Based Learning.



Resources for Further Learning



Simulation & Gaming journal

TEC 1280

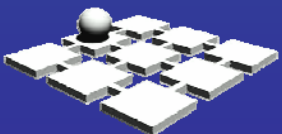
Jeux, simulations et jeux de rôle : exploration et analyse pédagogique

www.e-learningcentre.co.uk/eclipse/Resources/simulation.htm

www.insead.fr/CALT/Encyclopedia/Education/Advances/games.html

www.sosresearch.org/simulationeducation/simteachingresources.html

Google search on simulation, gaming, and related terms



Acknowledgement

We wish to acknowledge the financial assistance of the Social Sciences and Humanities Research Council (SSHRC) in providing a \$3 million grant from 2003-07 to the SAGE for Learning project.

This presentation was supported through this grant.

www.sageforlearning.ca

