TIDE

Transformation by Innovation in Distance Education

Creating Serious Games for Education

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Date November 2019

The Transformation by Innovation in Distance Education (TIDE) project is enhancing distance learning in Myanmar by building the capacity of Higher Education staff and students, enhancing programmes of study, and strengthening systems that support Higher Educational Institutions in Myanmar. TIDE is part of the UK-Aid-funded Strategic Partnerships for Higher Education Innovation and Reform (SPHEIR) programme(www.spheir.org.uk). SPHEIR is managed on behalf of FCDO by a consortium led by the British Council that includes PwC and Universities UK International. The TIDE project will close in May 2021.

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Educational gaming

Are you game enough?
Cedric Tan

Overview

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- Why gaming?
- Types of educational games
- Experiential gaming model
- Game mechanics
- Summary

Current literature

THE GAMIFICATION OF EDUCATION

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Evidence for its effectiveness depends on type of games

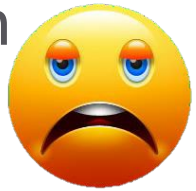
Distract from boring task

Increase intrinsic motivation

Incentive system: Points, badges and leaderboards

EXPLAIN

Decrease intrinsic motivation



Why gaming – the elements

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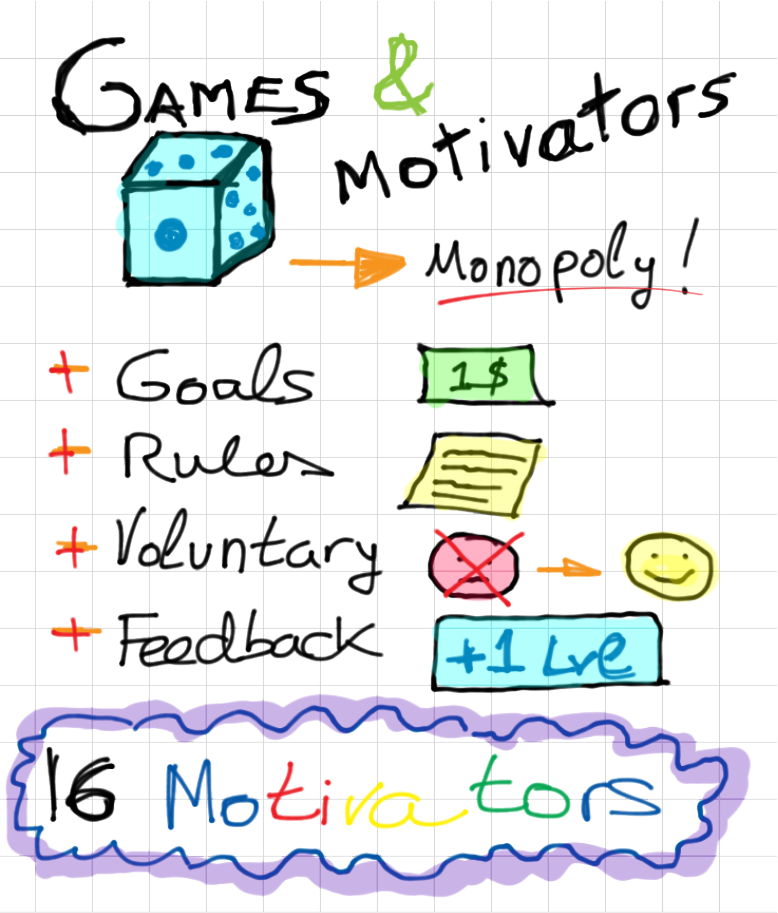

Why gaming – the elements

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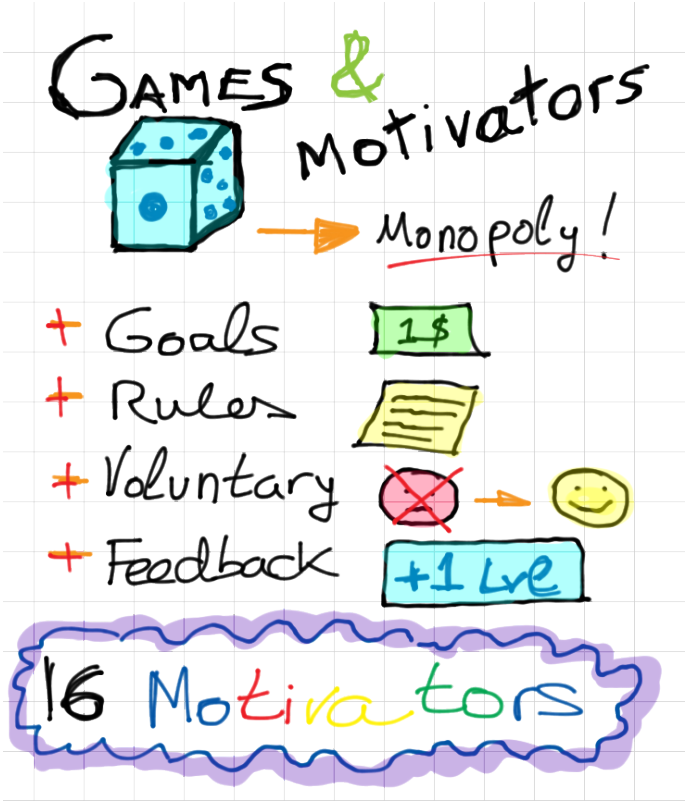

When we play games, we experience emotions that feed our basic motivators.

Why gaming – 16 basic desires

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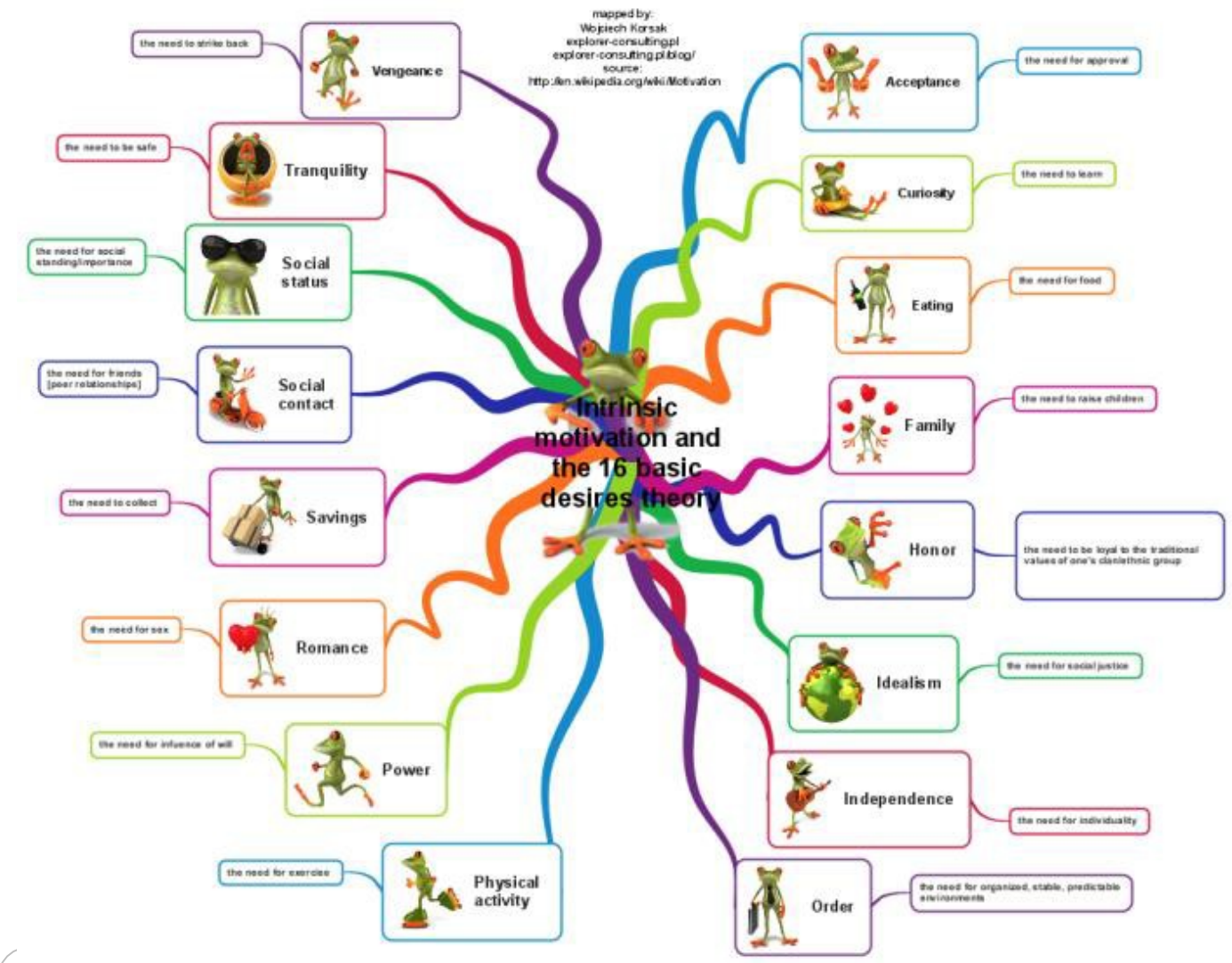

Reiss

Why gaming – intrinsic motivators

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Self-Determination Theory

Deci & Ryan (1985, 2001)

Deci & Ryan 2002

Why gaming – intrinsic motivators

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Self-Determination Theory
Deci & Ryan (1985, 2001)

AMOTIVATION	EXTRINSIC MOTIVATION				INTRINSIC MOTIVATION
	Rewards punishment	Self-esteem, pride	Personal goals	Personal beliefs	

internalisation

Novelty
Challenge
Aesthetics

Deci & Ryan 2002

Relatedness Competence Autonomy

Why gaming – intrinsic motivators

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Summary

Internalisation

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Types of educational games

Types

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Based on the learning style:

- Supplemental Games
- Declarative Games
- Procedural Games
- Experiential Games

Supplemental Games

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- Game has no meaningful interaction with subject matter
- Can teach facts
- Good for reproduction-directed learning

Supplemental Games – Valiant Hearts

https://www.youtube.com/watch?v=MP8q5F6dFqQ

https://www.youtube.com/watch?v=C_NCU-1Dxd4

- Puzzles
- Historical facts and information are available, but not necessarily baked into play

Declarative Games

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Drill the subject matter through simple declarative challenges

- Game doesn't consider the subject as a system
- Good for teaching simple relationships (e.g. multiplication tables)
- Great for memorization
- Not good for giving deeper understanding

Declarative Games – Flash cards

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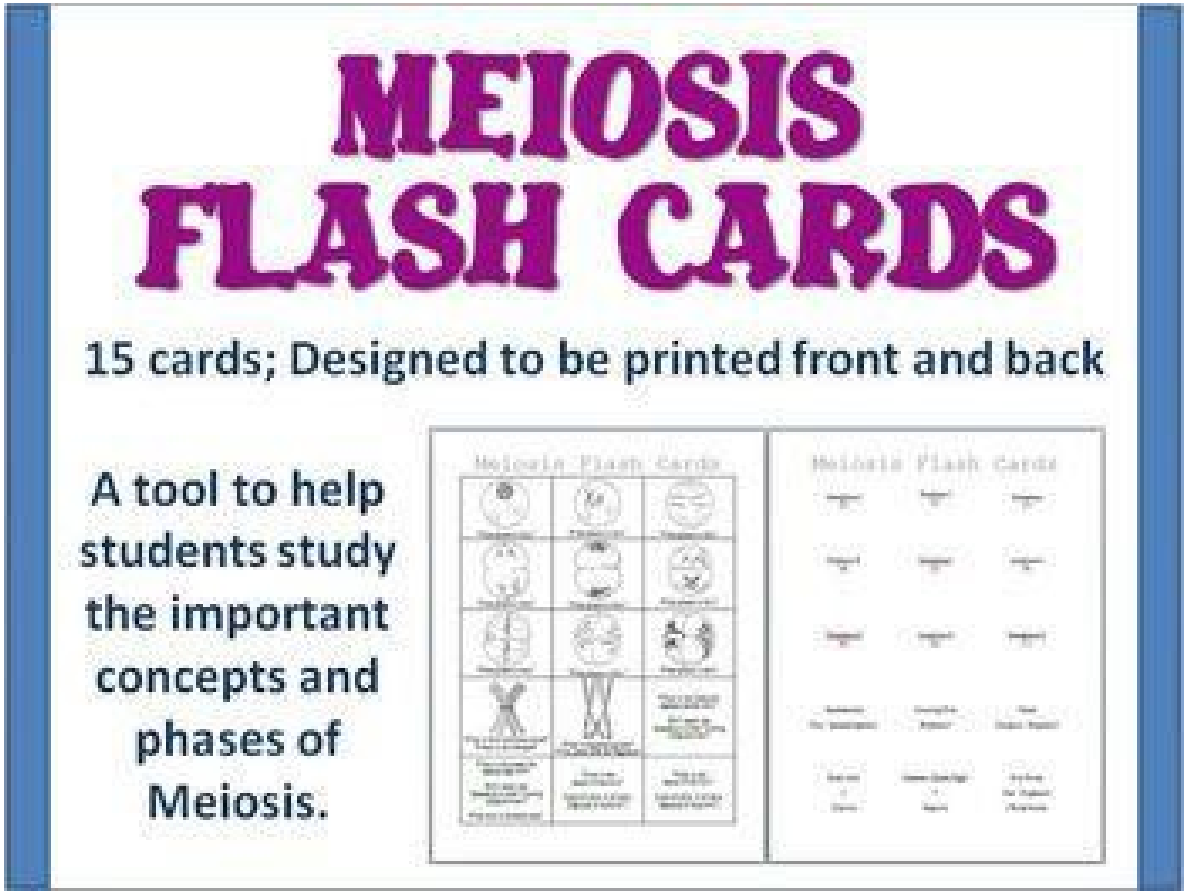

http://www.studystack.com/flashcard-711584

Procedural Games

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Players learn about the subject matter by performing some aspect of it - i.e. learning by doing or simulating the process

- Game considers the subject as a system
- Great for teaching higher-order skills
- Great for subject matter dealing with processes like Science

Procedural Games – Go extinct!

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Procedure of playing teaches how to read evolutionary trees

Experiential Games

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Players learn about the subject matter while doing other, related tasks

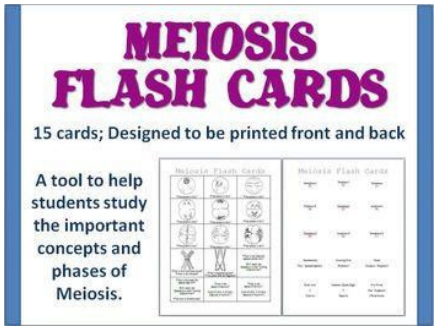
- Differs from procedural games by not requiring the player to perform an aspect of the subject matter
- Good for teaching complex **cause-and-effect systems** like the History of Science or Economics

Experiential Games – The Conservation Genetics Casino

- Players are to maintain a heterogenous population of chips by betting on answers

Types of games – two broad categories

Supplemental / declarative



Procedural / experiential

Can you list two differences?

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Elements of educational experiential gaming

The experiential gaming model

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Based on:

1. Experiential learning theory
2. Flow theory
3. Game design

Killi 2005

The experiential gaming model

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1. Experiential learning theory

Kolb 1984

The experiential gaming model

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2. Flow theory

The feeling of complete and energized focus in an activity, with a high level of enjoyment and fulfillment

1. We are up to the activity.
2. We are able to concentrate on the activity.
3. The activity has clear goals.
4. The activity has direct feedback.
5. We feel that we control the activity.
6. Our worries and concerns disappear.
7. Our subjective experience of time is altered.

Csikszentmihalyi 1975

The experiential gaming model

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3. Game design

A. Provide a clear goal

B. Allow multiple paths to reach end-goal

C. Require participants to take actions or decisions to succeed

D. Provide feedback on progress

Linehan et al. 2011

The experiential gaming model

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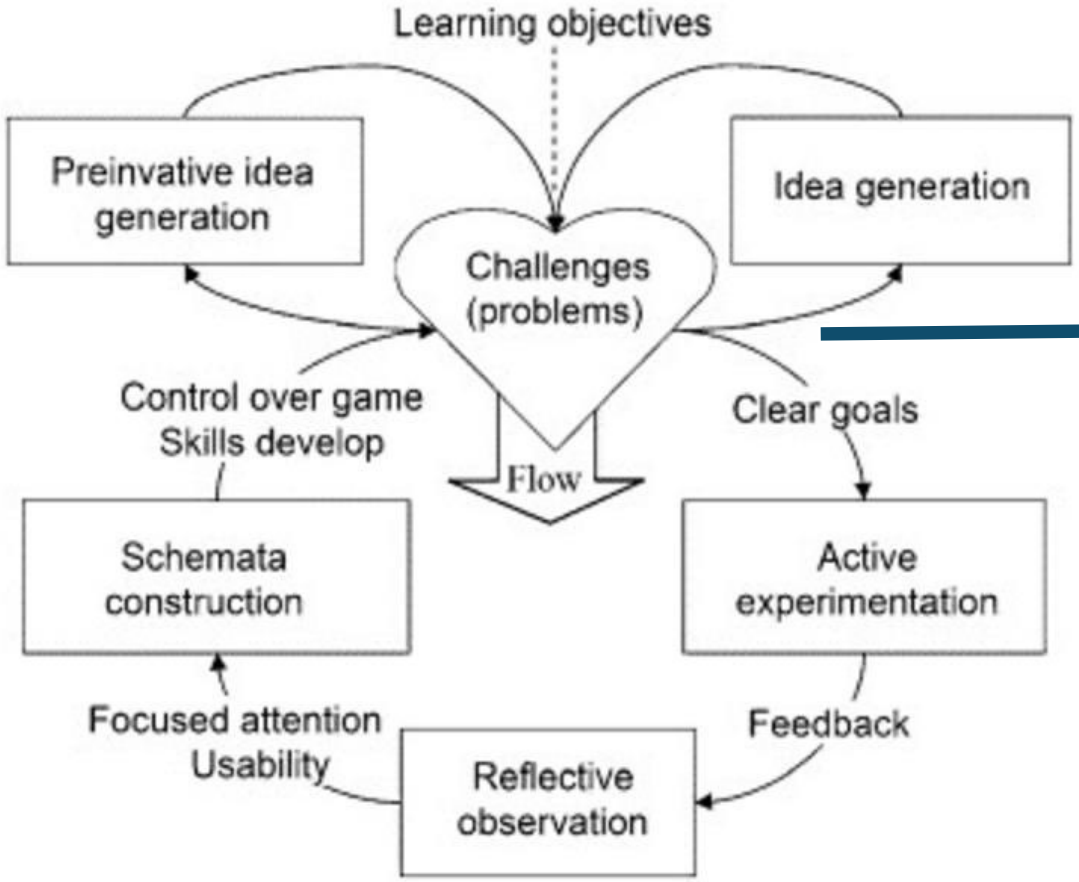
Main purpose: to link **gameplay** with **experiential learning** to facilitate **flow experience**.



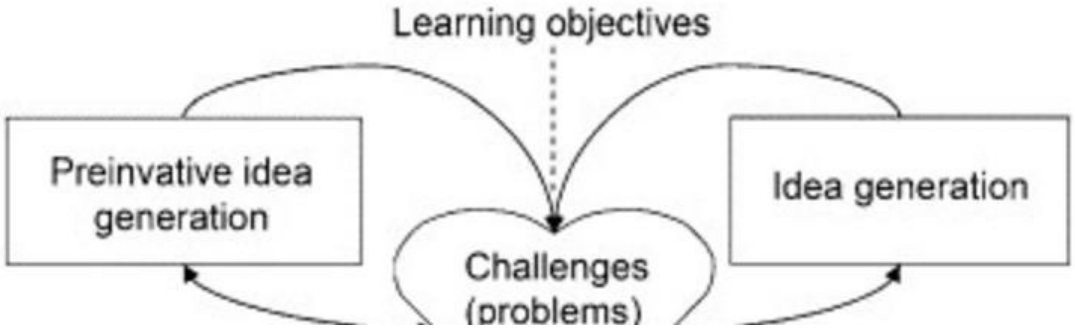
Ideation loop

Challenge bank

Experience loop

Killi 2005

The experiential gaming model



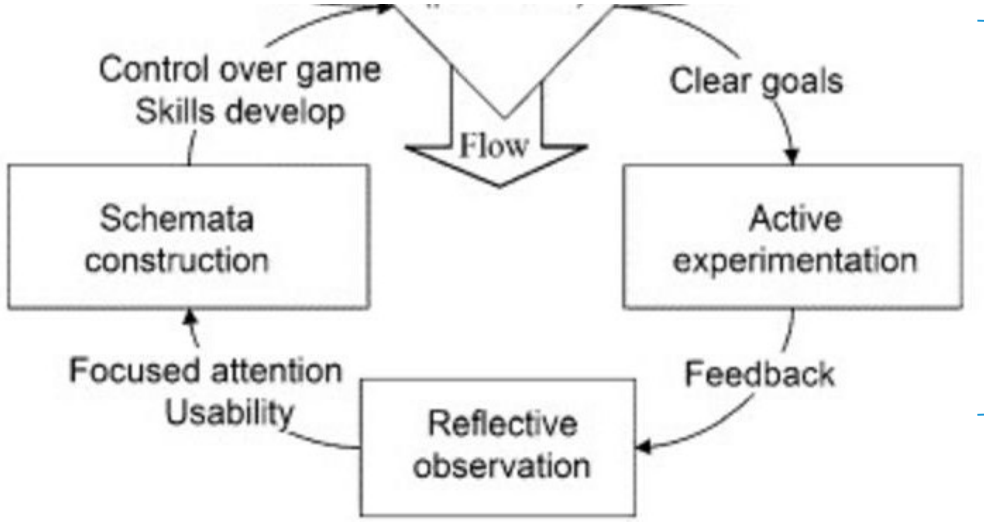
Ideation loop

Generating solutions to overcome challenges

- Preinvative: primary creativity that resembles the play of children
- Idea generation most fruitful in groups

Killi 2005

The experiential gaming model



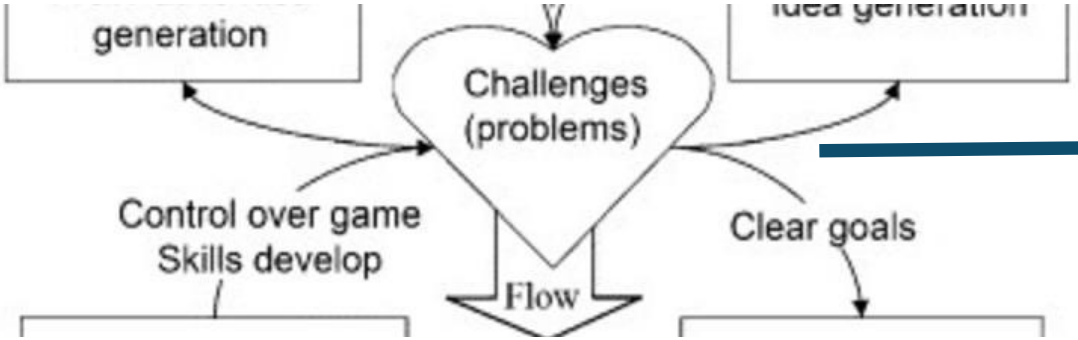
Experience loop

Test solutions and observe outcome

- Clear goals
- Appropriate feedback
- Important to test different solutions to expand knowledge

Killi 2005

The experiential gaming model



Challenge bank

- Provide challenges that match skill level
- A main challenge with mini-challenges like questions
- Arrange the following question types in increasing challenge.

A. Facts
B. Application
C. Meaning

Killi 2005

Experiential educational game

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Summary

A. Provide a clear goal

B. Allow multiple paths to reach end-goal

C. Require participants to take actions or decisions to succeed

D. Provide feedback on progress

E. Match challenge with skill level

F. Games reflect real-life scenarios

Linehan et al. 2011

Game mechanics

Game mechanics

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- Turns
- Action r…
- Auction…
- Cards
- Capture e…
- Catch-up
- Dice
- Movement
- …management
- …eward
- …ng
- …ving
- Worker placement
- Game modes

Game mechanics – What matters

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A. Interactions between groups
B. Catching-up and mitigation
C. Give choices
D. Role-play
E. Story-telling

Summary


MIGRATION POOL
(A) ALLELIC
(B) CHANGE
(C) ALLELIC
(D) CHANGE
POPULATION
GENETIC

What have you learnt?

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Intrinsic motivators

Internalisation

Relatedness Competence Autonomy

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Novelty

Challenge

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What have you learnt?

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Experiential game model

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What have you learnt?

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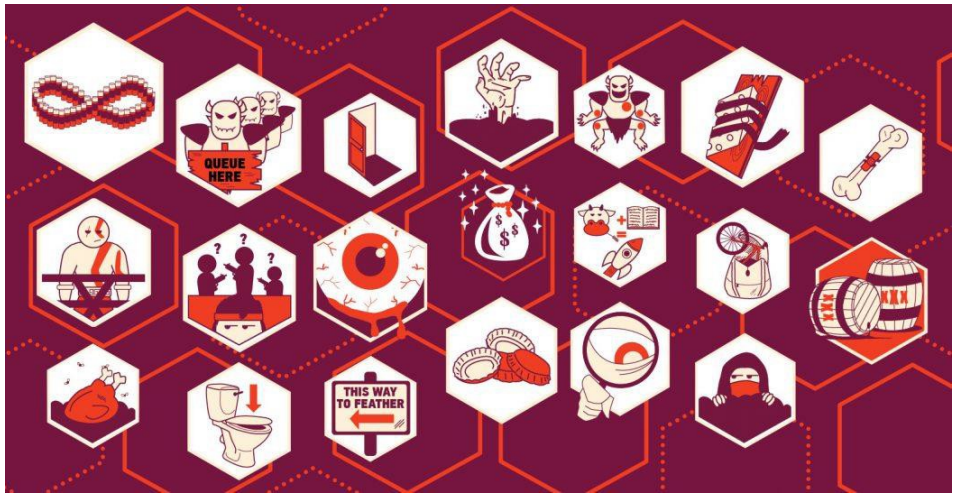

The end!

Any questions?