

Trials of Game-Based Learning in XJTLU

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Terms

- Gamification: adding game elements to a nongame situation.

game elements: points, badges, and leaderboards;

nongame situations: shops, factories, classrooms ...

- Game-based learning: using game to enhance learning experience

game types: computer games, online games, board games, role-playing game,

HEA's view

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Gamification and Games-Based Learning



Sector Snapshot



Getting Started



Next Steps



Talk and Share

What is Digital Games-Based Learning and Gamification?

Digital Games-Based Learning is the integration of gaming into learning experiences to increase engagement and motivation.

Gamification refers to the use of a pedagogical system that was developed within gaming design but which is implemented within a non-game context.

Where did they come from?

The link between learning and playing is longstanding and predates the digital era by thousands of years (e.g. puzzle games, physical games, board games). Indeed 20th century theorists Jean Piaget and Leonard Vygotsky have argued that play is a crucial component of cognitive development from birth and through adulthood (Piaget 1962; Vygotsky 1962).

How does GBL and Gamification work?

To create complex environments;

To try out alternative courses of action and experience different outcomes;

To encourages players interact with others;

Step 1 Coursera

The screenshot shows the Coursera course page for 'Gamification'. At the top, there is a navigation bar with the Coursera logo, 'Institutions', a search bar labeled 'Catalog Search catalog', and a 'For Enterprise' link. Below the navigation bar, the course title 'Gamification' is prominently displayed in a large font. To the left of the main content area is a sidebar menu with options: 'Overview', 'Syllabus', 'FAQs', and 'Creators'. The 'Syllabus' option is selected, and the course title 'Gamification' is repeated in the sidebar. Below the title in the sidebar is a blue 'Enroll Now' button with the text 'Starts Apr 24'. Underneath the button, a note states: 'Financial Aid is available for learners who cannot afford the fee. Learn more and apply.' The main content area features a breadcrumb trail: 'Home > Computer Science > Design and Product'. Below this, the course title 'Gamification' is repeated. A paragraph of text describes the course: 'About this course: Gamification is the application of game elements and digital game design techniques to non-game problems, such as business and social impact challenges. This course will teach you the mechanisms of gamification, why it has such tremendous potential, and how to use it effectively. For additional information on the concepts described in the course, you can purchase Professor Werbach's book For the Win: How Game Thinking Can Revolutionize Your Business in print or ebook format in several languages.' Below this text is a 'Show less' link. Further down, it says 'Created by: University of Pennsylvania' and includes the Wharton logo and the word 'ONLINE'. At the bottom of the main content area, there is a circular profile picture of Kevin Werbach, followed by the text 'Taught by: Kevin Werbach, Associate Professor' and 'Legal Studies & Business Ethics'. On the right side of the page, there is a vertical list of course topics, each preceded by a 'WEEK' label: 'WEEK 1 Gamification and Games', 'WEEK 2 Deconstructing Games', 'WEEK 3 Motivation and Psychology', 'WEEK 4 Design', 'WEEK 5 Applications', and 'WEEK 6 Gamification in Perspective'.

Overview

Syllabus

FAQs

Creators

Gamification

Enroll Now
Starts Apr 24

Financial Aid is available for learners who cannot afford the fee. [Learn more and apply.](#)

Home > Computer Science > Design and Product

Gamification

About this course: Gamification is the application of game elements and digital game design techniques to non-game problems, such as business and social impact challenges. This course will teach you the mechanisms of gamification, why it has such tremendous potential, and how to use it effectively. For additional information on the concepts described in the course, you can purchase Professor Werbach's book *For the Win: How Game Thinking Can Revolutionize Your Business* in print or ebook format in several languages.

[Show less](#)

Created by: University of Pennsylvania

ONLINE

Taught by: Kevin Werbach, Associate Professor
Legal Studies & Business Ethics

WEEK 1
Gamification and Games

WEEK 2
Deconstructing Games

WEEK 3
Motivation and Psychology

WEEK 4
Design

WEEK 5
Applications

WEEK 6
Gamification in Perspective

Step 2 First trial in LAN104, 2016

A role-playing game based on a real water crisis happened in Flint, USA

0-30min:

- Introduce the history of Flint water crisis;
- Explain the stakeholders in the environmental crisis: government, water companies, journalists, scientists, and residents;

30-45min

- Introduce the concepts of Environmental Pollution and Environmental Carrying Capacity
- Introduce how to play;

45-120 min

- 3 rounds

Procedure for Each Round

0 – 5 min :

Water companies decide the production plan;

Facilitator distributes salaries, collected the cost for water production;

Government collects taxes from residents;

Free discussion inside each group;

5 – 20 min

Free discussion, one to one discussion,

20 – 25 min

End of discussion, government collects taxes from water companies and hands the overhead to facilitator.

The speech by facilitator, government and media will not consume game time.

After the game ...

One student commented me on Weibo (Chinese twitter) that “It’s a pleasure to join the lecture.

The game is very interesting and thoughtful. It’s a little pity that the time is too limited”.

Step 3 Second trial in LAN104, 2017

What we did to improve the learning experience:

- Reduce the introduction from 30 minutes to 15 minutes;
- Divide one complex game into 4 games with increasing difficulty;
- Peer-reviewer

Peer reviewer's comments

The students did think, talk , discuss and discover. I believe the interesting activity could be a fun experience for their learning of the content and their language skills would be enhanced.

- Overall comments from peer review.

1. More explanation before the first game to help students get it from the beginning. 2. Walk around to provide assistance during the game to all students.

- Areas for improvement

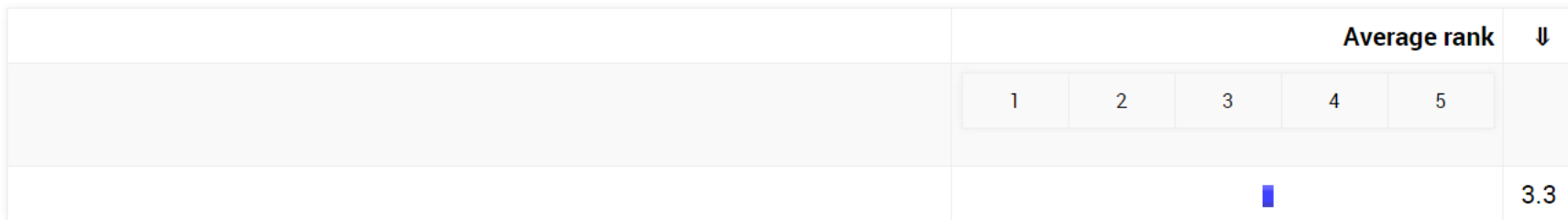


Survey results

1

I feel boring when playing the game.

1 = Strongly agree; 2 = Agree; 3 = Neither agree nor disagree; 4 = Disagree; 5 = Strongly disagree



Responses	1	2	3	4	5	Total
	1 (33%)	0	0	1 (33%)	1 (33%)	3

Survey results

2

The game help me understand the Flint's water crisis.

1 = Strongly agree; 2 = Agree; 3 = Neither agree nor disagree; 4 = Disagree; 5 = Strongly disagree

	Average rank					↓
	1	2	3	4	5	
						2.7

Responses	1	2	3	4	5	Total
	1 (33%)	1 (33%)	0	0	1 (33%)	3

Survey results

3

The game help me understand the complex interaction of each stakeholder in an environment-related issue.

1 = Strongly agree; 2 = Agree; 3 = Neither agree nor disagree; 4 = Disagree; 5 = Strongly disagree





	Average rank					↓
	1	2	3	4	5	
						2.3

Responses	1	2	3	4	5	Total
	2 (67%)	0	0	0	1 (33%)	3

Survey results

4

How often you want to have lectures with game-like activities?

Response	Average	Total
Never	 33%	1
Once per semester	 33%	1
More than once per semester;	 33%	1
Total	 100%	3/3

Survey results

5

In your opinion, what are the limiting factors for applying game-based learning in classrooms? (MCQ)

Response	Average	Total
It takes too long to learn a new game.	25%	1
The classroom setting is not suitable to play a game.	25%	1
The game is meaningless.	25%	1
other reasons the problem is not about game-based learning. The problem is that the game is simply not well-explained, designed and therefore meaningless and time-consuming	25%	1
Total	100%	4/3

Experiences from the 2nd trial

- I. GBL is good, but not all the games are attractive;
- II. Game may decrease students' engagement if not well calibrated;
- III. Calibration is very important to encourage the interaction among the roles

Step 4: 3rd trail in ENV308, 2017

Lords of the Valley

A online board game developed by Centre for Systems Solutions, Poland

Farmers

Bank

Government

Water board

Environmental NGO

Observers



Place	Date	Participants	Specific game Set-up
Leuven (Belgium)	03.2009	<ul style="list-style-type: none"> • students • groupwork professionals 	<ul style="list-style-type: none"> • simplified version of water infrastructure (no water steering) • managers elected by farmers • -special structure for all-parties meetings
Nagykörü (Hungary)	03.2009	<ul style="list-style-type: none"> • Local Authorities • NGOs • farmers 	<ul style="list-style-type: none"> • typical game set-up
Krakow (Poland)	04.2009	<ul style="list-style-type: none"> • water managers • water scientists 	<ul style="list-style-type: none"> • typical game set-up
Mogilany (Poland)	07.2009	<ul style="list-style-type: none"> • students 	<ul style="list-style-type: none"> • typical game set-up
Niepolomice (Poland)	09.2009	<ul style="list-style-type: none"> • water managers • water scientists 	<ul style="list-style-type: none"> • typical game set-up
Wroclaw (Poland)	09.2009	<ul style="list-style-type: none"> • scientists • NGO professionals 	<ul style="list-style-type: none"> • irrigation version (no dykes) • special structure for all-party meetings • limited communication between all-party meetings (maximum three parties at the same time)
Simferopol (Ukraine)	10.2009	<ul style="list-style-type: none"> • water managers • water scientists 	<ul style="list-style-type: none"> • irrigation version (no dykes)
Osjakow(Poland)	12.2009	<ul style="list-style-type: none"> • Local Authorities • NGOs • farmers 	<ul style="list-style-type: none"> • typical game set-up
Karpacz(Poland)	09.2010	<ul style="list-style-type: none"> • scientists • business professionals • NGO professionals • administration 	<ul style="list-style-type: none"> • unequal information distribution • special structure for all-party meetings • limited communication between all-party meetings (maximum three parties at the same time)

Facilitators and Players

Key Facilitators:

Dr. Wei Liu from International Institute for Applied Systems Analysis (IIASA) in Austria

Mrs. Yi-Dan Yang from HELP, Beijing;

Players:

8 Y4 ENV Students;

5 ENV PhD Students;

1 Y1 and 1 Y3 ENV students;

Observers:

Dr. Xuanwei Cao from IBSS, and me

Video records

Survey results

Y4 Students

required to play the game

第1题 : I feel boring when playing the game.

1 = Strongly agree; 2 = Agree; 3 = Neither agree nor disagree; 4 = Disagree; 5 = Strongly disagree

[单选题]

选项	小计	比例
1	0	0%
2	0	0%
3	0	0%
4	4	66.67%
5	2	33.33%
本题有效填写人次	6	

第1题 : I feel boring when playing the game.

1 = Strongly agree; 2 = Agree; 3 = Neither agree nor disagree; 4 = Disagree; 5 = Strongly disagree

[单选题]

选项	小计	比例
1	0	0%
2	0	0%
3	1	14.29%
4	2	28.57%
5	4	57.14%
本题有效填写人次	7	

Other students

invited to the game

Survey results

Y4 Students

required to play the game

第2题 : I think my knowledge of environmental science helps me understand the game.

1 = Strongly agree; 2 = Agree; 3 = Neither agree nor disagree; 4 = Disagree; 5 = Strongly disagree

[单选题]

选项	小计	比例
1	3	50%
2	3	50%
3	0	0%
4	0	0%
5	0	0%
本题有效填写人次	6	

第2题 : I think my knowledge of environmental science helps me understand the game.

1 = Strongly agree; 2 = Agree; 3 = Neither agree nor disagree; 4 = Disagree; 5 = Strongly disagree

[单选题]

选项	小计	比例
1	3	42.86%
2	2	28.57%
3	2	28.57%
4	0	0%
5	0	0%
本题有效填写人次	7	

Other students

invited to the game

Survey results

Y4 Students

required to play the game

第3题 : The game help me understand the complex interaction of each stakeholder in an environment-related issue.
1 = Strongly agree; 2 = Agree; 3 = Neither agree nor disagree; 4 = Disagree; 5 = Strongly disagree

[单选题]

选项	小计	比例
1	3	 50%
2	1	 16.67%
3	2	 33.33%
4	0	 0%
5	0	 0%
本题有效填写人次	6	

第3题 : The game help me understand the complex interaction of each stakeholder in an environment-related issue.
1 = Strongly agree; 2 = Agree; 3 = Neither agree nor disagree; 4 = Disagree; 5 = Strongly disagree

Other students

invited to the game

[单选题]

选项	小计	比例
1	4	 57.14%
2	2	 28.57%
3	0	 0%
4	1	 14.29%
5	0	 0%
本题有效填写人次	7	

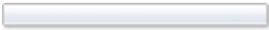


Survey results

Y4 Students

required to play the game

第4题 : How often you want to have lectures with game-like activities?

[单选题]


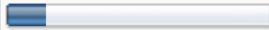


选项 ▾	小计 ▾	比例
Never	0	 0%
Once per year	0	 0%
Once per semester	3	 50%
More than once per semester;	3	 50%
本题有效填写人次	6	

Other students

invited to the game

第4题 : How often you want to have game-based learning activities?

[单选题]

选项 ▾	小计 ▾	比例
Never	1	 14.29%
Once per year	1	 14.29%
Once per semester	1	 14.29%
More than once per semester;	4	 57.14%
本题有效填写人次	7	

Survey results

Y4 Students

required to play the game

Other students

invited to the game

第5题 : In your opinion, what are the limiting factors for applying game-based learning in classrooms? (MCQ)

[多选题]

选项	小计	比例
It takes too long to learn a new game.	4	66.67%
The classroom setting is not suitable to play a game.	0	0%
The game is meaningless.	0	0%
other reasons [详细]	2	33.33%

After several rounds, students can realize indeed the mechanism. In other words, this game is quite time consuming if it's one component of the class.

From our last game, some of the stakeholders situation were not like in the real one. The game should have more realistic approach to the reality. For example, in reality the ENGO never get a fixed amount of subsidy. Barely happen in real world. Maybe it is in China perhaps, but definitely not in some countries

第5题 : In your opinion, what are the limiting factors for applying game-based learning in classrooms? (MCQ)

[多选题]

选项	小计	比例
It takes too long to learn a new game.	5	71.43%
The classroom setting is not suitable to play a game.	3	42.86%
The game is meaningless.	0	0%
other reasons [详细]	2	28.57%

the game is not so real
too complex, less competitiveness

Experiences from the 3rd trial

Well-calibrated game can increase the students' engagement;

Borrow a game or develop a game?

Time is an issue.

A Gaming Exercise to Explore Problem-Solving versus Relational Activities for River Floodplain Management

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Thank you

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