



Beyond the Lecture: Transforming Higher Education with Gamification and Active Learning

Prof. Dr. Patricia Everaert

IAFA Teaching & Learning Day, 8th of January 2025




UNIVERSITEIT
GENT

AGENDA

- Aim:
 - Active, engaging learning methods
 - *To inspire you*
- **Active learning:** Quizzes to use during class
 - Tips & tricks
 - PPT will be shared
- **Gamification:**
 - Free education app: DUGA

A. Spring

B. City

FINANCING

FIND 4 DIFFERENCES

	Stocks	Bonds
	Ownership (shares)	Debt
	Dividend	Intrest
	Return uncertain	Return (%) certain
	No repay, unless....	Repay at certain point in future

GAMIFICATION IS EVERYWHERE

- “The use of **game design elements** in non-game context”
- Taxonomy of game design elements (Toda et al., 2019)

Concept	Description
Acknowledgement	All kind of feedback that praises the players' specific actions. Some examples and synonyms are badges, medals, trophies.
Chance	Randomness and probability characteristics to increase or decrease the odds of certain actions or outcomes. Some examples and synonyms are randomnesses, luck, fortune.
Competition	When two or more players compete against each other towards a common goal. Some examples and synonyms are Player vs Player, scoreboards, conflict.
Cooperation	When two or more players collaborate to achieve a common goal. Some examples and synonyms are teamwork, co-op missions.
Economy	Transactions within the game, monetising game values and other elements. Some examples and synonyms are markets, transaction, exchange.
Imposed Choice	Decisions that the player is obliged to make in order to advance the game. Some examples and synonyms are judgements, forced choices. <i>(not to be confused with Narrative)</i> .
Level	Hierarchical layers present in a game, which provide a gradual way for the player to obtain new advantages as they advance. Some examples and synonyms are character levels, skill level.
Narrative	Order of events where they happen in a game. These are choices influenced by the players' actions. Some examples and synonyms are the strategies the player uses to go through a level (stealth or action), also the good or bad actions that influence the ending, karma system. <i>(not to be confused with Imposed Choice)</i> .
Novelty	New, updated information presented to the player continuously. Some examples and synonyms are changes, surprises, updates.
Objectives	Guide the players' actions. Quantifiable or spatial, from short to long term. Some examples and synonyms are missions, quests, milestones.
Point	Unit used to measure users' performance. Some examples and synonyms are scores, number of kills, experience points.
Progression	This allows players to locate themselves (and their progress) within a game. Some examples and synonyms are progress bars, maps, steps.
Puzzles	Challenges within the game that should make a player think. Some examples and synonyms are actual puzzles, cognitive tasks, mysteries.
Rarity	Limited resources and collectables. Some examples and synonyms are limited items, rarity, collection.
Renovation	When players are allowed to redo/restart an action. Some examples and synonyms are extra life, boosts, renewal.
Reputation	Titles that the player accumulates within the game. Some examples and synonyms are titles, status, classification.
Sensation	Use of players' senses to create new experiences. Some examples and synonyms are visual stimulation, sound stimulation.
Social Pressure	Pressure through social interactions with another player (s) (playable and non-playable). Some examples and synonyms are peer pressure, guilds.
Stats	Visible information used by the player, related to their outcomes within the game. Some examples and synonyms are results, health bar, magic bar, HUD, indicators, data from the game presented to the user.
Storytelling	It is the way the story of the game is told (as a script). It is told within the game, through text, voice, or sensorial resources. Some examples and synonyms are stories told through animated scenes, audio queues or text queues during the game.
Time Pressure	Pressure through time within the game. Some examples and synonyms are countdowns, clock, timer.

FUNNY GAMES (FUNNYGAMES.ORG)

- Acknowledgement
- Chance
- Competition
- **Cooperation**
- Experience points
- **Novelty: surprising effect**
- **Objective: find the 4 differences**
- Progression
- **Sensation: visual stimulation (sound stimulation)**
- **Time pressure**
- Immediate feedback

QUESTION 1

Where are you from?

- a) Ireland
- b) Northern Ireland
- c) Europe
- d) Other continent

QUESTION 2

How old are you?

- a) < 40 years
- b) ≥ 40 years

QUESTION 3

VAT percentage for chocolate in Belgium?

- a) 0%
- b) 6%
- c) 12%
- d) 21%

d) 21%

QUESTION 4

Did you vote for a “far right” party, during the last elections?

- a) Yes
- b) No

A BETTER ALTERNATIVE

A

B

C

D

QUESTION 5

Who will be the second keynote speaker today?

- A. Margeret Healy
- B. Philip Nicholl
- C. Cathy Myles
- D. Evelien Opdecam

B. Philip Nicholl

BINGO



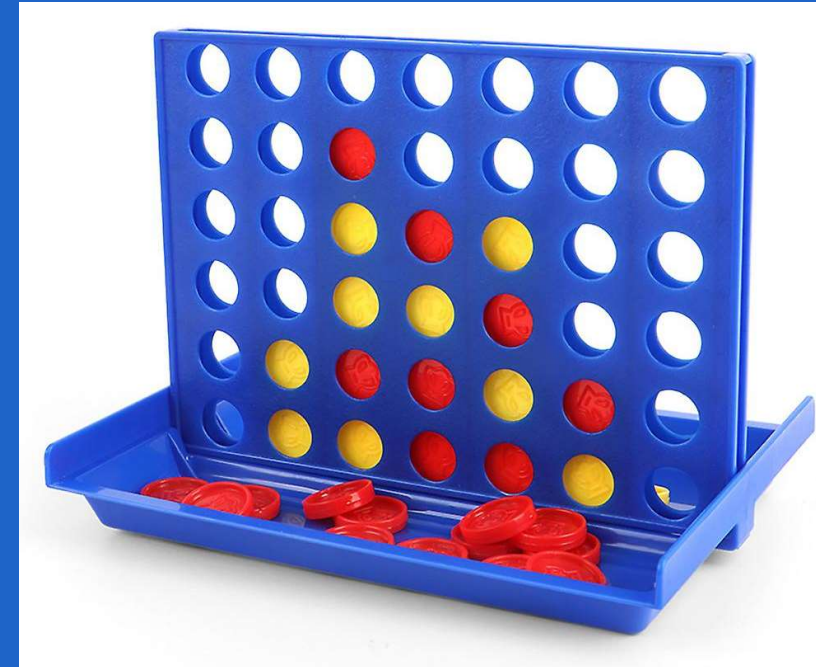
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BINGO: DISCUSSION

- Winner?
- Take aways:
 - Random sequence of questions
 - Each student has to think
 - Combination with A/B/C/D cards works well
 - PowerPoint:
 - “Insert action” to go to a specific slide
 - Answers: insert shape: list hierarchy

CONNECT 4 IN A ROW

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BINGO

- **Acknowledgement: coins**
- **Chance**
- **Competition**
- **Cooperation**
- Experience points
- **Novelty**
- Objective
- Progression
- **Sensation: visual stimulation** (sound stimulation)
- **Time pressure**
- **Immediate feedback**



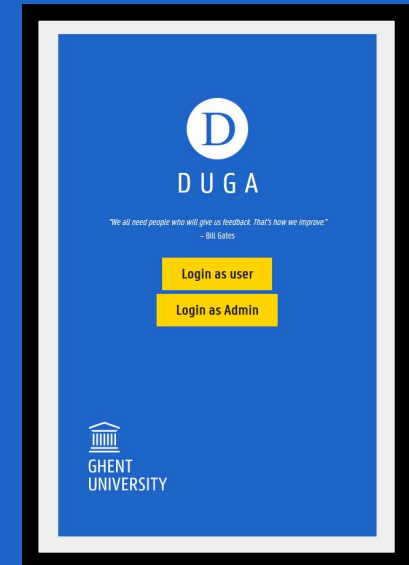
- Lectures
- Tutorials
- Additional online exercises

- Call for innovation

DUGA

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DUGA

Why?

- Gamification outside of class
 - To practice
- Gamification during class:
 - To engage: “surprise”

Teaser

DUGA: OBJECTIVES

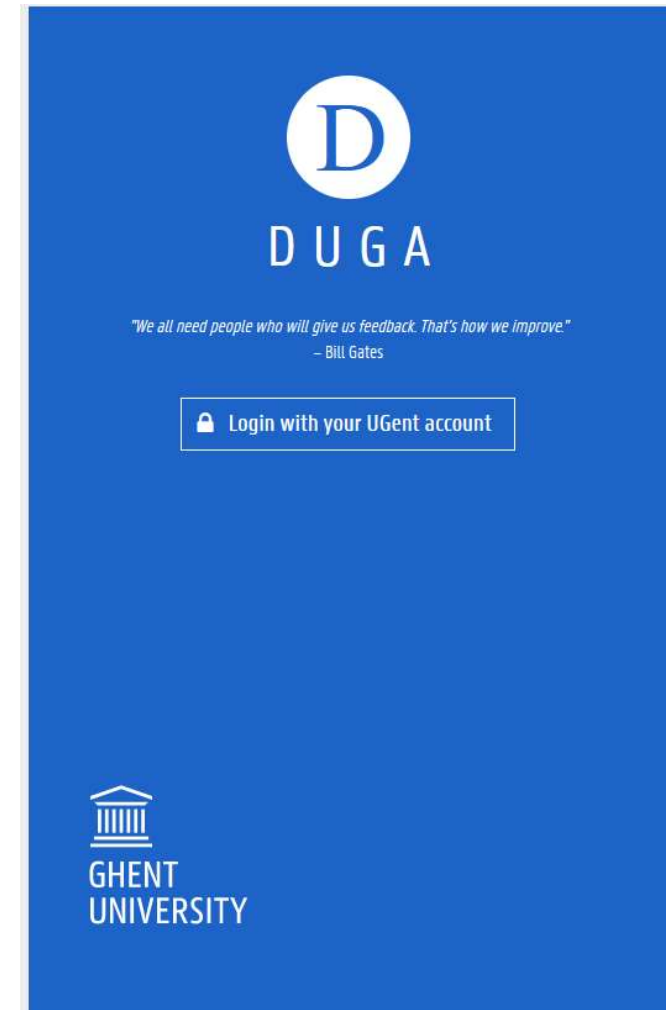
To practice

- Outside of class
- Independent
- With immediate feedback
- Anywhere, anytime
 - To challenge our “stronger” students
 - To motivate our “weaker” students
- In a different way
- Using technology and AI
- And ... **something different!**



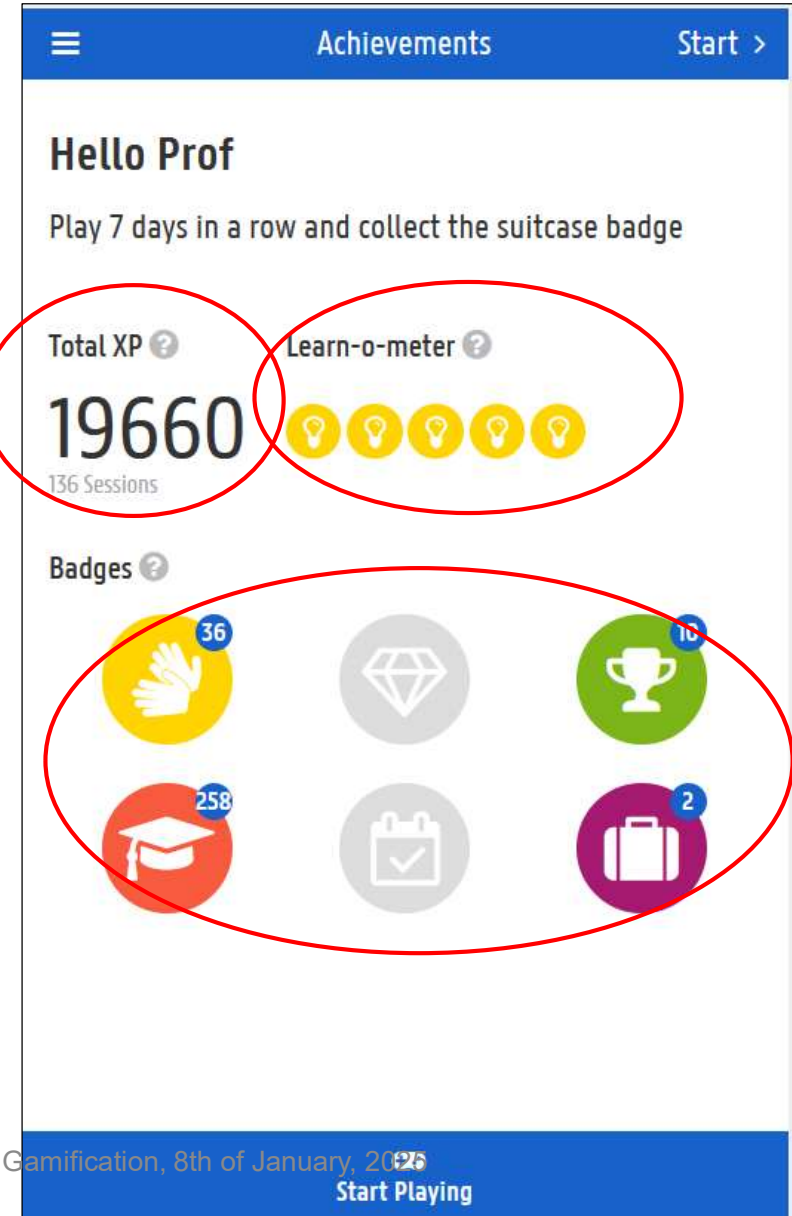
Fun Gamification

- Badges
- XP-points
- Level: learn-o-meter
- Nicknames
- Leaderboards
- Timing
- Feedback



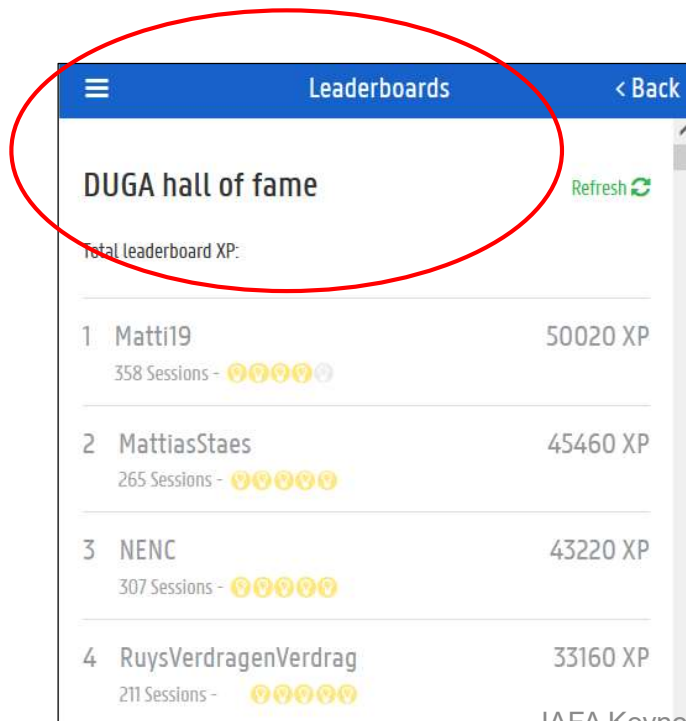
DUGA: GAMIFICATION

- XP-points
- Badges
- Level: learn-o-meter

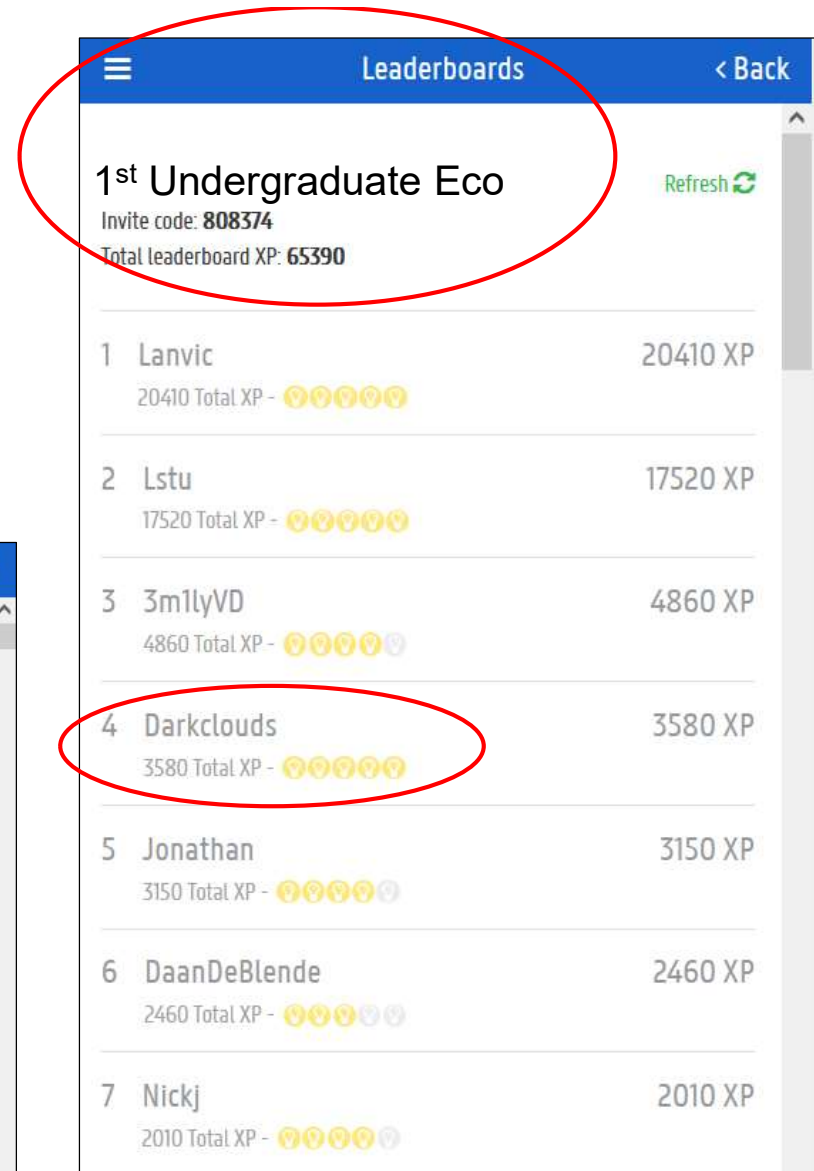


DUGA: GAMIFICATION

- Leaderboards
- Nicknames



Leaderboards		< Back
DUGA hall of fame		
Total leaderboard XP:		
1	Matti19	50020 XP
	358 Sessions -	👤👤👤👤👤
2	MattiasStaes	45460 XP
	265 Sessions -	👤👤👤👤👤
3	NENC	43220 XP
	307 Sessions -	👤👤👤👤👤
4	RuysVerdragenVerdrag	33160 XP
	211 Sessions -	👤👤👤👤👤



Leaderboards		< Back
1st Undergraduate Eco		Refresh 🔄
Invite code: 808374		
Total leaderboard XP: 65390		
1	Lanvic	20410 XP
	20410 Total XP -	👤👤👤👤👤
2	Lstu	17520 XP
	17520 Total XP -	👤👤👤👤👤
3	3m1lyVD	4860 XP
	4860 Total XP -	👤👤👤👤👤
4	Darkclouds	3580 XP
	3580 Total XP -	👤👤👤👤👤
5	Jonathan	3150 XP
	3150 Total XP -	👤👤👤👤👤
6	DaanDeBlende	2460 XP
	2460 Total XP -	👤👤👤👤👤
7	Nickj	2010 XP
	2010 Total XP -	👤👤👤👤👤

GAMIFICATION

– Timing

Question 3/10

20 Game XP

Total XP 19660

Learn-o-meter ★★★★★

35

Balanstezen / 9. Personeel / T09_008

Drag and drop

Sleep de elementen op de juiste plaats in de tekst.

Een onderneming kan kiezen om haar loonberekening zelf te maken of te laten maken door _____. Als de onderneming haar personeelsadministratie zelf doet, zal ze de ingehouden voorheffing rechtstreeks doorstorten aan _____. De storting aan de RSZ, gebeurt hier dan ook door _____.

de werknemer

het sociaal secretariaat de RSZ

de werkgever de staat

Confirm

Question 2/10

0 Game XP

Total XP 19760

Learn-o-meter ★★★★★

9

Balanstezen / 12. Inventaris / T12_014

Slider

Resultaatverwerking: Er is nu een te bestemmen verlies van 1.000. Dit wordt overgedragen naar volgend boekjaar. Welke rekening wordt hiervoor nu gecrediteerd?

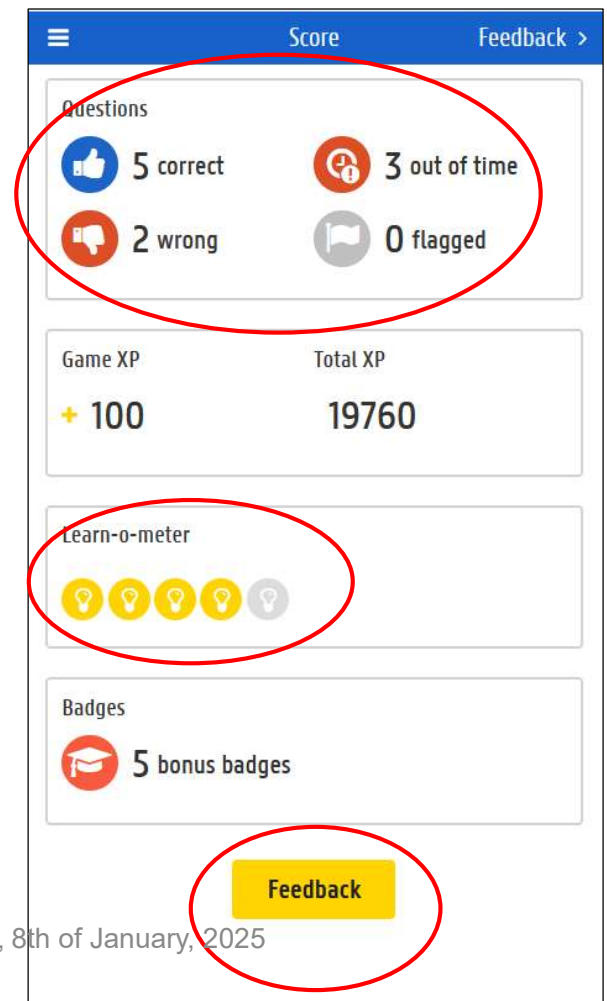
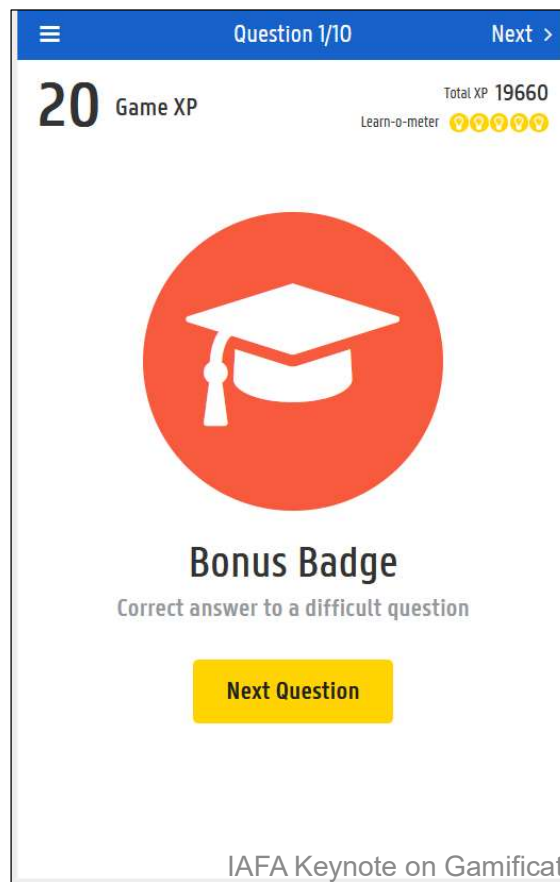
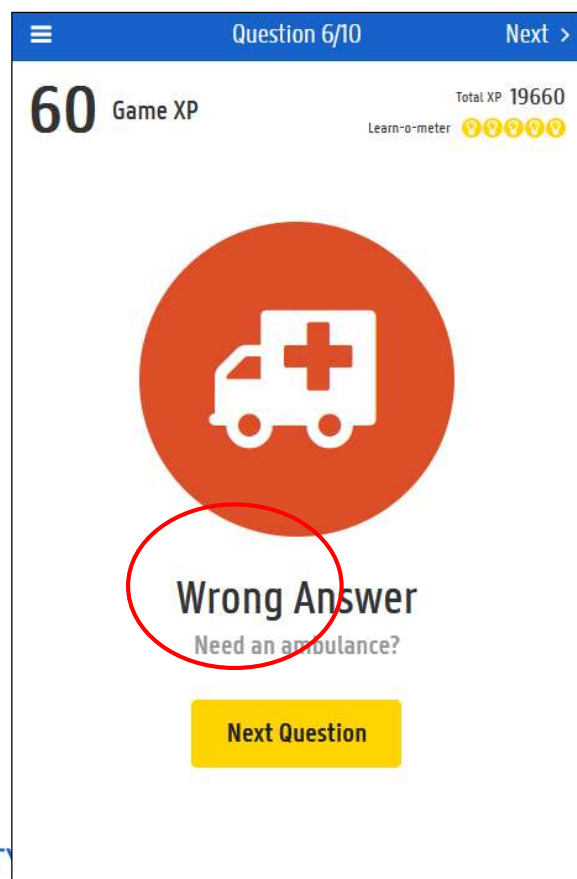
79

Confirm

Flag question

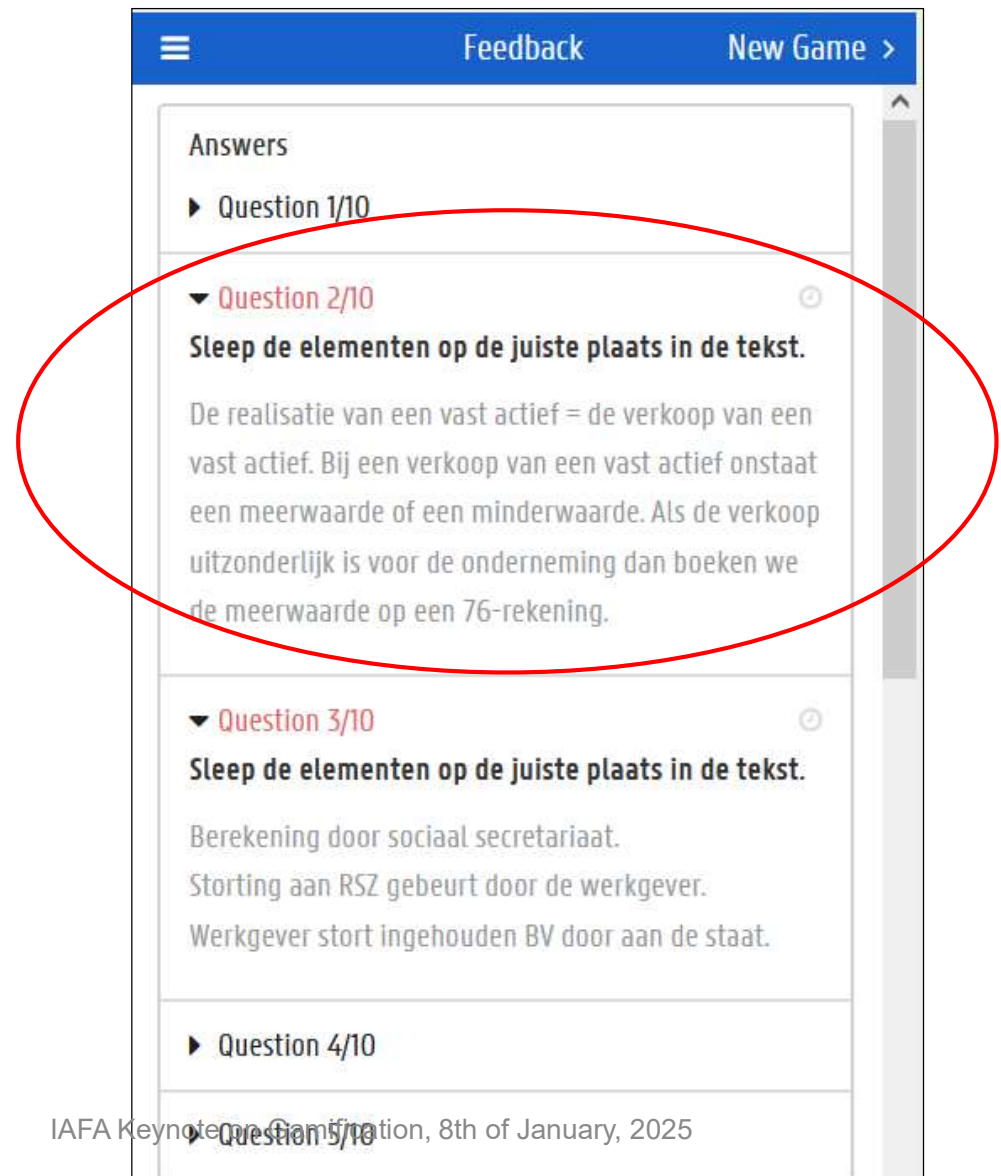
GAMIFICATION

- Feedback: immediate after each question



GAMIFICATION

- Feedback:
 - on content as well



IAFA Keynote on Gamification, 8th of January, 2025

DUGA: DIFFERENT FORMATS

- Multiple choice
- Slider
- Order
- Syllables
- True, false
- Outcome (picture)

Question 5 /10

0 Game XP Total XP 380

Learn-o-meter

18

Patricia BAFA AESIG 2024 / IntroAcc01_09

Multiple Choice

Which is NOT a fixed asset?

☐ Plant

☐ Inventory of goods

☐ Software

☐ Intangible assets

Confirm

Flag question

Question 8 /10

70 Game XP Total XP 230

Learn-o-meter

50

Patricia BAFA AESIG 2024 / IntroAcc02_09

Slider

Starting position of cash: 500; borrowed from bank: 3 500; received cash from clients: 2 000; received utility bill of 1 000 that will be paid next year. What is the ending cash position?

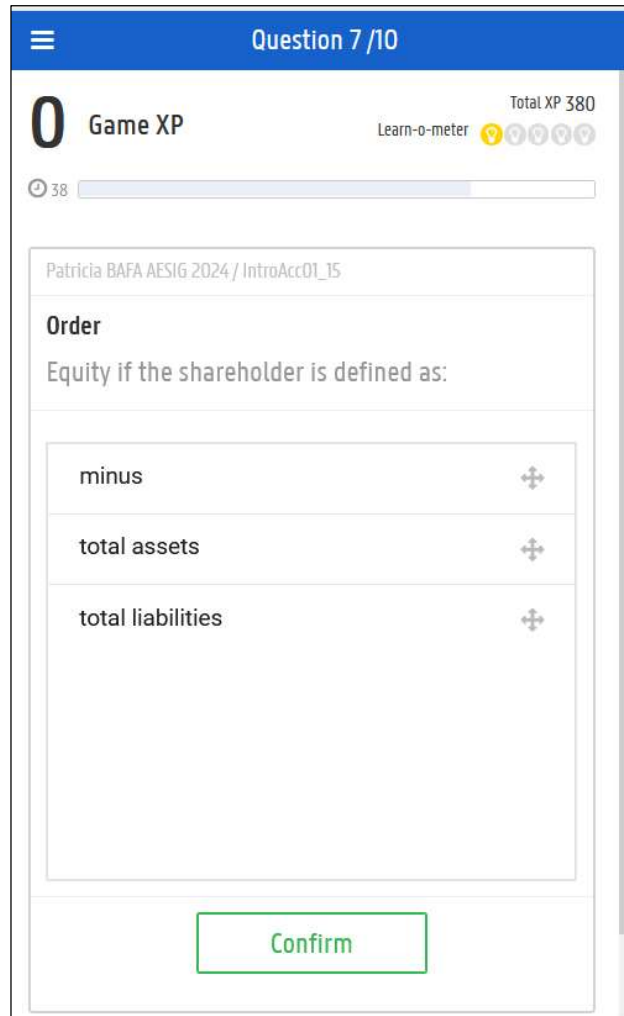
3500

Confirm

Flag question

DUGA: DIFFERENT FORMATS

- Multiple choice
- Slider
- Order
- Syllables
- True, false
- Outcome (picture)



Question 7 / 10

Game XP 0 Total XP 380

Learn-o-meter 🟡🟢🟢🟢🟢

⌚ 38

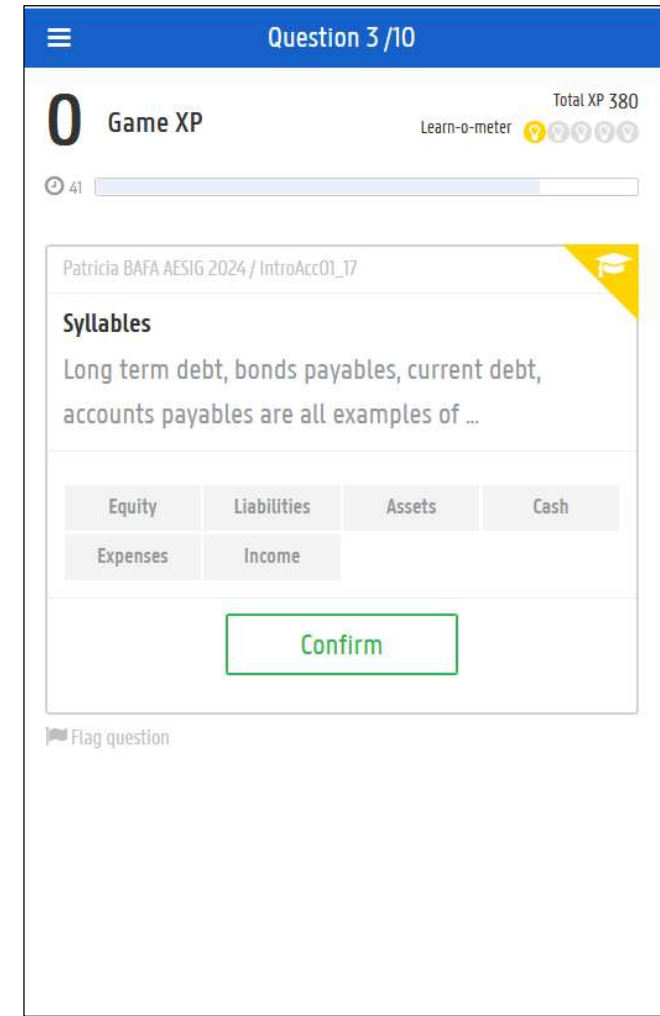
Patricia BAFA AESIG 2024 / IntroAcc01_15

Order

Equity if the shareholder is defined as:

minus	+
total assets	+
total liabilities	+

Confirm



Question 3 / 10

Game XP 0 Total XP 380

Learn-o-meter 🟡🟢🟢🟢🟢

⌚ 41

Patricia BAFA AESIG 2024 / IntroAcc01_17

Syllables

Long term debt, bonds payables, current debt, accounts payables are all examples of ...

Equity	Liabilities	Assets	Cash
Expenses	Income		

Confirm

Flag question

DUGA: DIFFERENT FORMATS

- Multiple choice
- Slider
- Order
- Syllables
- True, false
- Outcome (picture)

Question 2 / 10

0 Game XP Total XP 380

Learn-o-meter

43

Patricia BAFA AESIG 2024 / IntroAcc01_21

True or false

Patents are an example of intangible assets

True False

Confirm

Flag question

0 Game XP Total XP 230


Learn-o-meter

38

/ IntroAcc01_20

Outcome

What is correct?



Choose outcome

Confirm

Flag question

In sum:

- Gamification
- Immediate feedback

But also:

- Smart Picking
- PC or smartphone

For the teacher:

- Back-end: user friendly
- Database of questions:
 - Sample set is shared
 - Adapting questions
 - Adding questions

LET'S TRY TOGETHER

TRY IT YOURSELF

1. Playing the role as “**student**” on your phone/pc in my class:

- You will get a “**Player code**”.

2. Playing the role as “**teacher**” on your laptop, for your own class:

- You will get an individualized “**Teacher code**” by email, to use DUGA for your own class



DUGA.CASTARS.NET

The registration and login screens for DUGA. The registration screen (left) has fields for email, password, and repeat password, with a 'REGISTER' button. The login screen (middle) has a 'Login as user' button. Both screens feature the DUGA logo and a quote from Bill Gates: "We all need people who will give us feedback. That's how we improve." The nickname screen (right) has a 'Choose a nickname' field and a 'Save' button. It specifies: "Min 4 and max 20 characters, only letters and numbers".

– Step 1:

- Register: email address
- Password: e.g. Dublin2024!
- Make nickname
- Start

– Step 2:

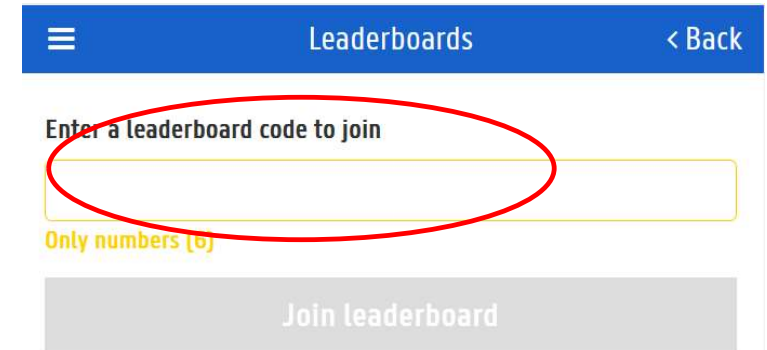
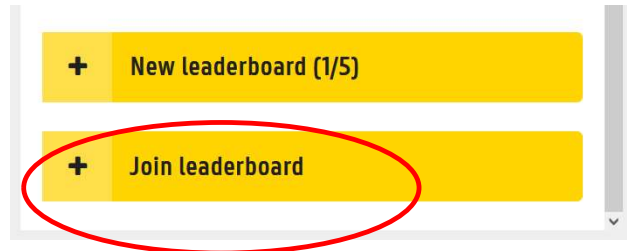
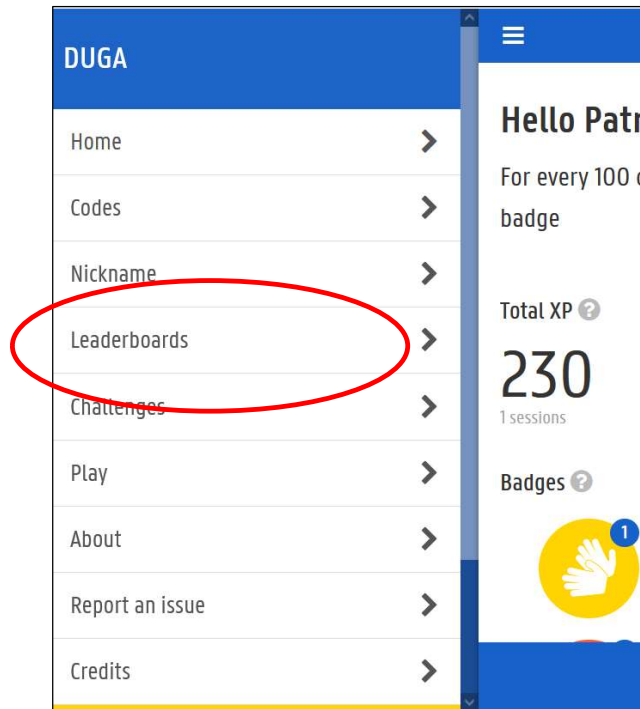
- New game
- Add new course
- Enter code

The gameplay and code entry screens for DUGA. The 'Hello Undercover' screen (left) shows a 'Start Playing' button circled in red. The 'Start' screen (middle) has 'New game' and 'Challenge' buttons circled in red. The 'Game options' screen (bottom middle) has an 'Add new Course' button. The 'Codes' screen (right) has an 'Enter your code' field circled in red. Below the code entry, the code 'P b c 5 s 4 0' is displayed in red, with the corresponding words 'Papa bravo charlie' and 'sierra' below it.

– Step 3: Start playing



Let's do a BAFA competition



4 6 8 3 9 5

Start playing!

DUGA

- **Acknowledgement: badges**
- **Chance: random questions, smart picking (within schedule)**
- **Competition: leaderboard**
- Cooperation
- **Experience points: XP points**
- **Novelty: surprises**
- Objective
- **Progression: X of the 10 questions**
- **Sensation: visual stimulation** (sound stimulation)
- **Time pressure: counting down (adaptable)**
- **Immediate feedback: instant + content after 10 Q**

BACK END

– Take the role as teacher

The screenshot displays the DUGA Admin interface. On the left is a blue sidebar with the 'DUGA Admin' header and a navigation menu. The main content area has a blue top bar with 'Admin Dashboard' and a hamburger menu icon. Below this is a 'Dashboard' section with a 'Welcome to Duga - Admin!' message. A 'Get Started' section contains a blue 'Add a course' button. A 'Next Steps' section lists four tasks with checkmarks: 'Create a section', 'Publish at least 10 questions', 'Schedule a section', and 'Generate a player code'. At the bottom, there's a 'Modules' section with five icons: Questions, Courses & Sections, Scheduling, Codes, and Analytics. On the right, an 'At a glance' section shows 'Your data' with 2 Courses, 8 Sections, and 1 Codes. A red oval highlights the sidebar and the main content area.

DUGA Admin

- Dashboard
- Courses and Sections
- Questions
- Schedule
- Generate Codes
- Analytics
- Analytics Graphs
- Return to player view**
- Logout

Admin Dashboard

Dashboard

Welcome to Duga - Admin!

Get Started

[Add a course](#)

Next Steps

- ✓ Create a section
- ✓ Publish at least 10 questions
- ✓ Schedule a section
- ✓ Generate a player code

Modules

- Questions
- Courses & Sections
- Scheduling
- Codes
- Analytics

At a glance

Your data

- 2 Courses
- 8 Sections
- 1 Codes

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ADMIN QUESTIONS

Admin Questions							
Add new		Reload table					
<input type="checkbox"/>		Code	Description	Course	Section	Type	
<input type="checkbox"/>		IntroAcc01_14	investment	Patricia BAFA AESIG 2024	Chatper 1: Basics	Multiple Choice	
<input type="checkbox"/>		IntroAcc01_15	Equity of the shareholder	Patricia BAFA AESIG 2024	Chatper 1: Basics	Order	
<input type="checkbox"/>		IntroAcc01_16	Visual representation balance sheet	Patricia BAFA AESIG 2024	Chatper 1: Basics	Outcome	
<input type="checkbox"/>		IntroAcc01_17	Debt and liabilities	Patricia BAFA AESIG 2024	Chatper 1: Basics	Syllables	
<input type="checkbox"/>		IntroAcc01_18	Accounting equation	Patricia BAFA AESIG 2024	Chatper 1: Basics	Slider	
<input type="checkbox"/>		IntroAcc01_19	Examples of current asstes	Patricia BAFA AESIG 2024	Chatper 1: Basics	Multiple Choice	
<input type="checkbox"/>		IntroAcc01_20	Accounting equation	Patricia BAFA AESIG 2024	Chatper 1: Basics	Outcome	
<input type="checkbox"/>		IntroAcc01_21	Intangible assets	Patricia BAFA AESIG 2024	Chatper 1: Basics	True or false	
<input type="checkbox"/>		IntroAcc02_01	general ledger	Patricia BAFA AESIG 2024	Chatper 1: Basics	True or false	
<input type="checkbox"/>		IntroAcc02_02	Salaries expense = debit	Patricia BAFA AESIG 2024	Chapter 2: Recording transactions	True or false	
<input type="checkbox"/>		IntroAcc02_03	Salaries payables	Patricia BAFA AESIG 2024	Chapter 2: Recording transactions	True or false	

EDIT QUESTION

Edit Question

Edit Question [Go Back](#)

Question Data

[Add New](#)[Duplicate](#)

Question code

IntroAcc01_02

Description

paid intrest

Question Type

Multiple Choice ▾

Multiple Choice

Question

Paid intrest is an example of

Choices

Choice	Correct	Remove
<div>Expenses</div>	<div></div>	Remove
<div>Revenues</div>	<div></div>	Remove
<div>Shareholders' equity</div>	<div></div>	Remove

Add Choice

UNIVERSITY

NEW QUESTION

Edit Question

Edit Question

Save

Save and go back

Discard changes

Discard and go back

Question Data

Add New

Duplicate

<div>Question code</div> <div>New0001</div>	<div>Description</div> <div>Example description</div>	<div>Question Type</div> <div>True or false</div>
<div>True or False</div> <div><div>Question</div><div>Example question text?</div></div> <div><div>True or False</div><div>False</div></div>		
<div>Course</div> <div>Intro to Accounting</div>	<div>Section</div> <div>Chapter 1</div>	<div>Bonus</div> <div>Off</div>
<div>Feedback</div> <div>Example feedback</div>		<div>Time</div> <div>50</div>

Status

Status: *Draft*

[Move to Trash](#)

Publish

Flags

Question has no flags

ADMIN SECTIONS: TO SCHEDULE


- Schedule per chapter: open or closed

Admin Schedule						
Add new						
Search						
Columns						
Title		Course	Sections	Display Options		Active
IAFA_Keynote_20250108	Preview	Intro to Accounting	Chapter 1 (21) Chapter 2 (9) Chapter 3: IAFA questions (5)	Open Closed Open		Yes
1 of 1 pages (1 item)						

ADMIN ANALYTICS

Admin Analytics												Patricia
Search											Columns	
Question...	Descripti...	Course	Section	Unique pl...	Times pl...	Correct	Wrong	Mean time	Out of ti...	Flagged		
IntroAcc01_13	shareholder equity	Intro to Accounting	Chapter 1	1	2	100%	0%	3	0%	0		
IntroAcc01_14	investment	Intro to Accounting	Chapter 1	1	1	100%	0%	3	0%	0		
IntroAcc01_18	Accounting equation	Intro to Accounting	Chapter 1	2	2	100%	0%	6	0%	0		
IntroAcc02_01	general ledger	Intro to Accounting	Chapter 2	1	1	100%	0%	2	0%	0		
IntroAcc02_02	Salaries expense = debit	Intro to Accounting	Chapter 2	2	3	100%	0%	2	0%	0		
IntroAcc02_03	Salaries payable	Intro to Accounting	Chapter 2	1	1	100%	0%	3	0%	0		
IntroAcc02_05	increase of assets = Debit	Intro to Accounting	Chapter 2	1	1	100%	0%	1	0%	0		
IntroAcc02_06	Increase in liabilities = C	Intro to Accounting	Chapter 2	2	2	100%	0%	3	0%	0		
IAFA_03	Treasurer	Intro to Accounting	Chapter 3: IAFA questions	1	1	100%	0%	2	0%	0		
IAFA_01	Chairman = Stuart	Intro to Accounting	Chapter 3: IAFA questions	1	1	100%	0%	4	0%	0		
IAFA_02	Secretary	Intro to Accounting	Chapter 3: IAFA questions	1	1	100%	0%	6	0%	0		

ADMIN CODES: TO GENERATE CODE FOR YOUR STUDENTS

 Admin Generate Codes Patricia

Codes

Generate New Code

Name*

The name of the code

Course*

Intro to Accounting ▾

The course for this code

Role

Player ▾

The role for this code

Create new Code

Your codes

Search								Columns ▾
Name	Code	Course	Role	Date cr...	Used by	Used on	Comm...	
Intro to Accounting IAFA 2024	Pbc5s40	Intro to Accounting	Player	07-01-2025 @ 23:22				

<< < 1 > >>

5 ▾

Items per page

1 of 1 pages (1 item)

Codes you used

Search				Columns ▾
Name	Code	Course	Date used	
IAFA 2024	Tn2t3vd	Intro to Accounting	07-01-2025 @ 22:32	

<< < 1 > >>

1 of 1 pages (1 item)

QUESTIONS?

AVAILABLE?

1. Playing the role as “student” on your phone in my class:
 - You will get a “**Player code**” and play in my class:
 - “Intro to Accounting”
2. Playing the role as “**teacher**” on your laptop, for your own class:
 - You will get an individualized “**Teacher code**”, to use DUGA for your own class: send email to:

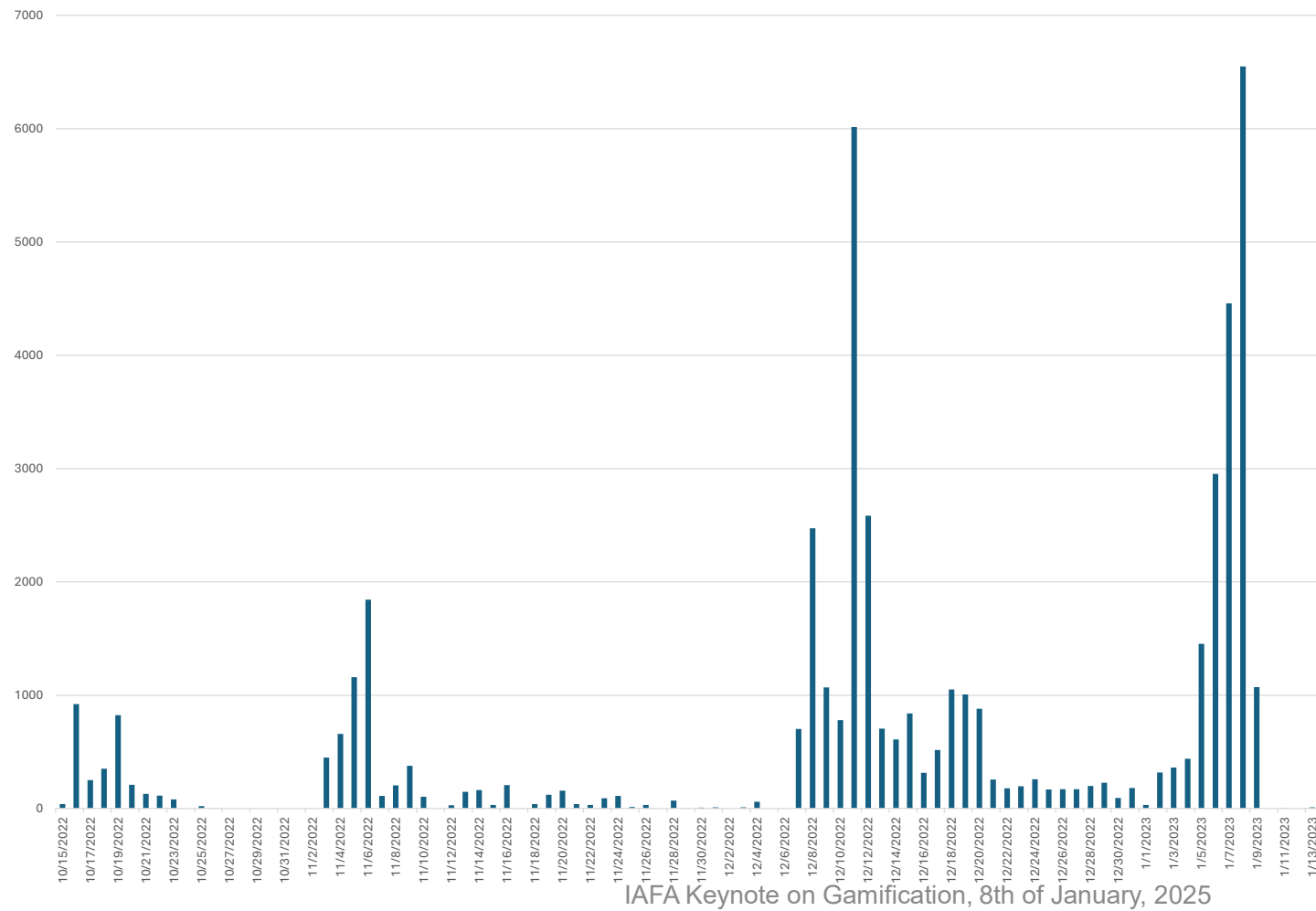
Sara.Wuyts@UGent.be

HOW TO USE DUGA?

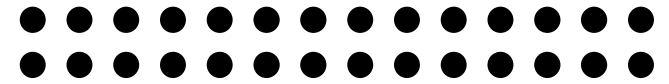
- Students heavily use it before a mid-term exam or **before the final exam**
- Students also like to use it for the **re-sit exam**, to review the material in another way.
- **Best practice:**
 - Week 3: use it in class, teacher plays on pc
 - Message on LMS: “beat the professor”
 - Do competition: 1 week (Challenge)

HOW TO USE DUGA?

Aantal gespeelde vragen per dag ACCA 2022-2023 (nudged)



DOES IT WORK?



2nd Undergraduate: intro course

ANCOVA on exam performance

Source	Sum of Squares	Df	Mean Square	F	Sig.
Gender	49.695	1	49.695	4.261	0.040
Players	147.194	1	147.194	12.620	<0.001
Error	3417.555	293	11.664		

	N	Exam
Non-player	190	12.40
Player	106	13.88

2nd Undergraduate: intro course

	DV= Exam performance	
	Coefficient	p-value
Gender	0.091	0.889
Intensity	0.281	0.451
N	105	

	DV= Exam	
	Coefficient	p-value
Gender	0.329	0.598
Accuracy	5.924	0.002
N	106	
Adj. R ²	0.076	
F-test	5.311	
P-value	0.006	

1st Undergraduate: Financial Accounting

ANCOVA on exam performance

Source	Sum of Squares	Df	Mean Square	F	Sig.
Gender	5.630	1	5.630	0.634	0.426
Year	218.493	1	218.493	24.586	<0.001
Ability	12828.684	1	12828.684	1443.544	<0.001
Player	110.422	1	110.422	12.425	<0.001
Error	8362.608	941	8.887		

	N	Exam
Non- Player	635	10.80
Player	311	11.55

IAFA Keynote on Gamification, 8th of January, 2025

IN SUM

- Use gamification elements during your classes!
- Slides are on our website:
 - www.accountingeducation.ugent.be
- Explore the app **as student**.
- If you want **a teacher code** to explore and to use the app with your students, email: **Sara.Wuyts@UGent.be**

Happy to inspire you!

Patricia Everaert

Full Professor

website: Accountingeducation.ugent.be
documents are there!

Teacher code: Sara.Wuyts@UGent.be

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www.accountingeducation.ugent.be

TAXONOMY OF GAME DESIGN ELEMENTS (TODA ET AL., 2019)

- Acknowledgement
- Chance
- Competition
- Cooperation
- Experience points
- Novelty
- Objective
- Progression
- Sensation: visual stimulation (sound stimulation)
- Time pressure
- Immediate feedback