

The effect of points and audio in game based learning

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Introduction

Paper: The effect of points and audio on concentration, engagement, enjoyment, learning, motivation, and classroom dynamics using Kahoot!

Content

- What is game based learning?
- Kahoot!
- Method & Experiment
- Results

Introduction

Game based learning



Points, Music and Sound

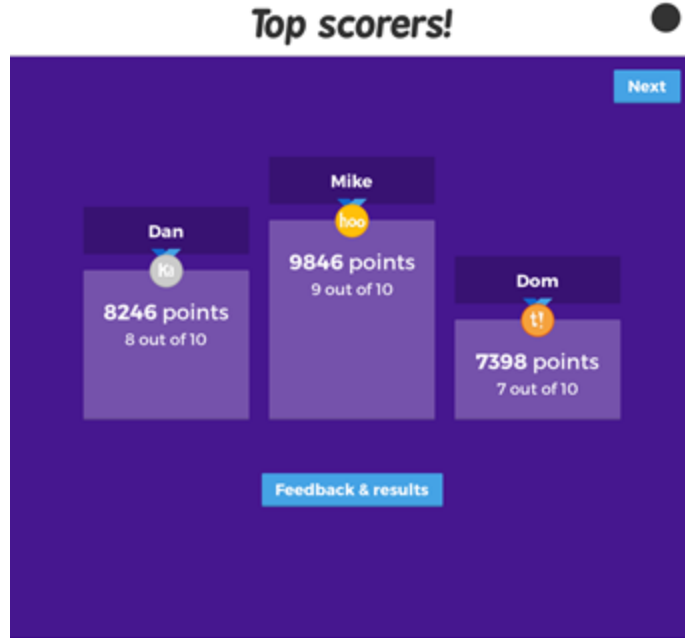
Kahoot!

Top scorers!

Next

Dan 10 8246 points 8 out of 10	Mike 100 9846 points 9 out of 10	Dom 1! 7398 points 7 out of 10
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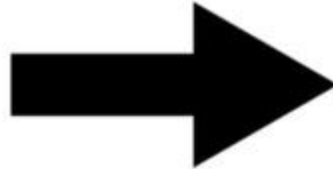
Feedback & results

A screenshot of the Kahoot! 'Top scorers!' screen. The background is dark purple. At the top right is a 'Next' button. Three player cards are displayed: Dan with 8246 points (8/10), Mike with 9846 points (9/10), and Dom with 7398 points (7/10). Each card shows the player's name, a score icon, total points, and correct/total questions. A 'Feedback & results' button is at the bottom.

Points, Music and Sound

Scores

- Staple of game design
- Engagement



Points, Music and Sound

Music and Sound

- Audio and music
 - Shift from “lecture mode” to “Game/play” orientation
 - Ambience
 - Motivating game factors



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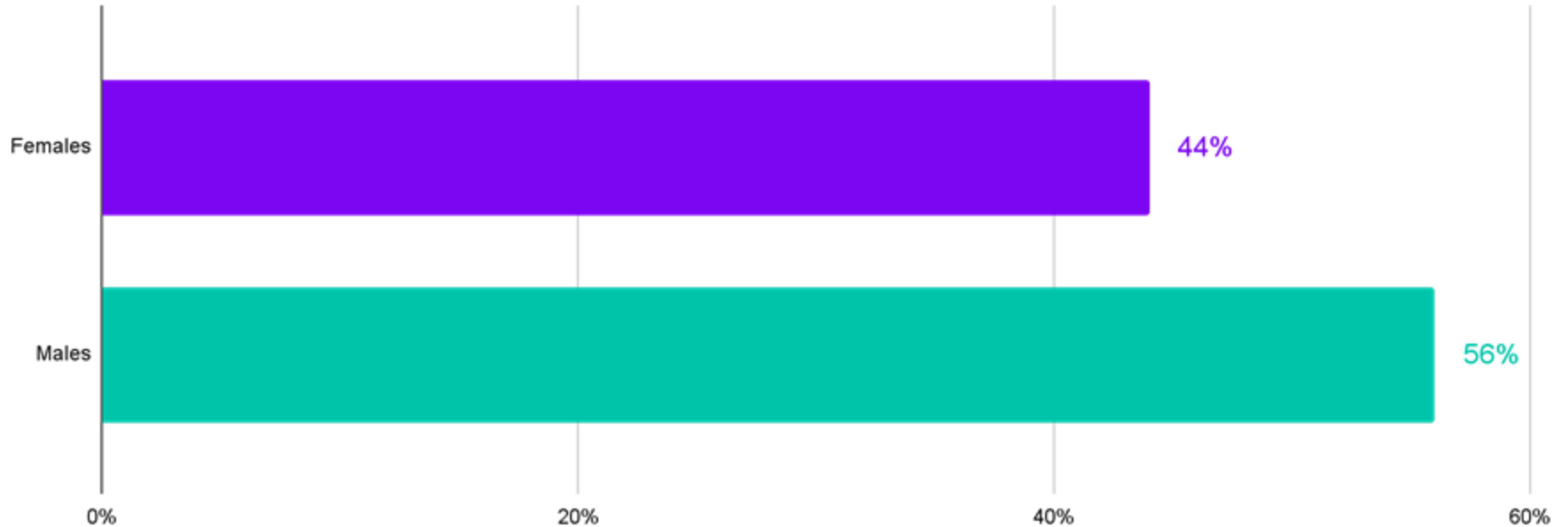
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The Experiment

Course - IT introductory course at NTNU

Students



The Experiment

Variations

- Normal
- Without sound
- Without points
- Without sound & points



The Experiment

Questioner

How likely is it that you will buy a product from this company again?

	Not at all likely	Not very likely	Somewhat likely	Very likely	Extremely likely
Product A	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Product B	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Product C	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The Experiment
Observations



The Experiment

The Kruskal-Wallis Test

$$H = \left[\frac{12}{n(n+1)} \sum_{j=1}^c \frac{T_j^2}{n_j} \right] - 3(n+1)$$

The Experiment

Research Goals

- How does the use of audio and point affect the students':
 - concentration?
 - engagement?
 - enjoyment?
 - motivation and effort?
 - learning outcome?
- How use of audio and points affect the classroom dynamic?

Results

Effect on Concentration

Takeaways:

- Significantly lower concentration with no audio and points where used
- No noticeable difference in concentration while playing using audio and/or point

STATEMENT	GROUP	DISAGREE	AGREE	H	P
Playing the quiz did not hold my attention	Full Kahoot!	85%	15%	0.23	0.9726
	No audio	84%	16%		
	No points	84%	16%		
	No audio/points	82%	17%		
The quiz kept my concentration during the lecture	Full Kahoot!	17%	82%	60.25	<0.0001%
	No audio	16%	84%		
	No points	16%	84%		
	No audio/points	28%	72%		

Results

Effect on Engagement

Takeaways:

- Significant difference whether students felt pulse with/without points
- Points are most important for engagement, but audio also plays a role

STATEMENT	GROUP	DISAGREE	AGREE	H	P
I thought playing the quiz was boring	Full Kahoot!	93%	7%	2.42	0.4899
	No audio	96%	4%		
	No points	91%	9%		
	No audio/points	84%	16%		
I felt increased pulse when answering questions	Full Kahoot!	31%	69%	50.56	<0.0001
	No audio	32%	68%		
	No points	61%	39%		
	No audio/points	68%	32%		

Results

Effect on Enjoyment

Takeaways:

- Fewer student found the quiz fun when no audio or points where used

STATEMENT	GROUP	DISAGREE	AGREE	H	P
Playing the quiz was fun	Full Kahoot!	8%	92%	9.68	0.0215
	No audio	6%	94%		
	No points	9%	91%		
	No audio/points	25%	75%		

Results

Effect on Perceived Learning

Takeaways:

- No significant difference for perceived learning
- Weak tendency that students perceive that they learned more when no points are used,

STATEMENT	GROUP	DISAGREE	AGREE	H	P
I learned something from playing the quiz	Full Kahoot!	5%	95%	1.17	0.7602
	No audio	10%	90%		
	No points	2%	98%		
	No audio/points	2%	98%		

Results

Effect on Motivation & Effort

Takeaways:

- Motivation for doing well with points and without audio increased as it felt more formal

STATEMENT	GROUP	DISAGREE	AGREE	H	P
It was important to do well on the quiz	Full Kahoot!	28%	28%	2.8	0.4235
	No audio	22%	22%		
	No points	34%	34%		
	No audio/points	34%	34%		
Playing the quiz could be of some value to me	Full Kahoot!	7%	93%	0.78	0.8542
	No audio	7%	93%		
	No points	6%	94%		
	No audio/points	11%	89%		
I did not try very hard to do well on the quiz	Full Kahoot!	77%	23%	11.74	0.0083
	No audio	93%	7%		
	No points	74%	26%		
	No audio/points	64%	36%		
Playing the quiz made me less motivated about the subject	Full Kahoot!	93%	7%	0.25	0.9691
	No audio	91%	9%		
	No points	90%	10%		
	No audio/points	90%	10%		

Results

Effect on Classroom Dynamics

Takeaways:

- Audio had the largest impact on classroom dynamics in terms of interaction, response and spirit

