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Games and Graduate Skills

Dr Matthew Barr

Matthew.Barr@glasgow.ac.uk

@hatii_matt

**WORLD
CHANGING
GLASGOW**

THE SUNDAY TIMES
GOOD
UNIVERSITY
GUIDE
2018
SCOTTISH
UNIVERSITY
OF THE YEAR



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About me

- Currently Programme Director for the Graduate Apprenticeship in Software Engineering programme at Glasgow.
- Based in the Centre for Computing Science Education.
- Also Vice Chair of British DiGRA, Director and Trustee of the Scottish Game Developers Association and BAFTA Scotland Games Jury Chair.



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Games and university

- HEIs are expected to produce graduates adequately prepared for the workplace, equipped with skills and competencies sometimes referred to as 'graduate attributes'.
- Video games – which exercise many of the skills that employers seek – may be used to develop students' graduate attributes.



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John Seely Brown

“I would rather hire a high-level World of Warcraft player than an MBA from Harvard.”

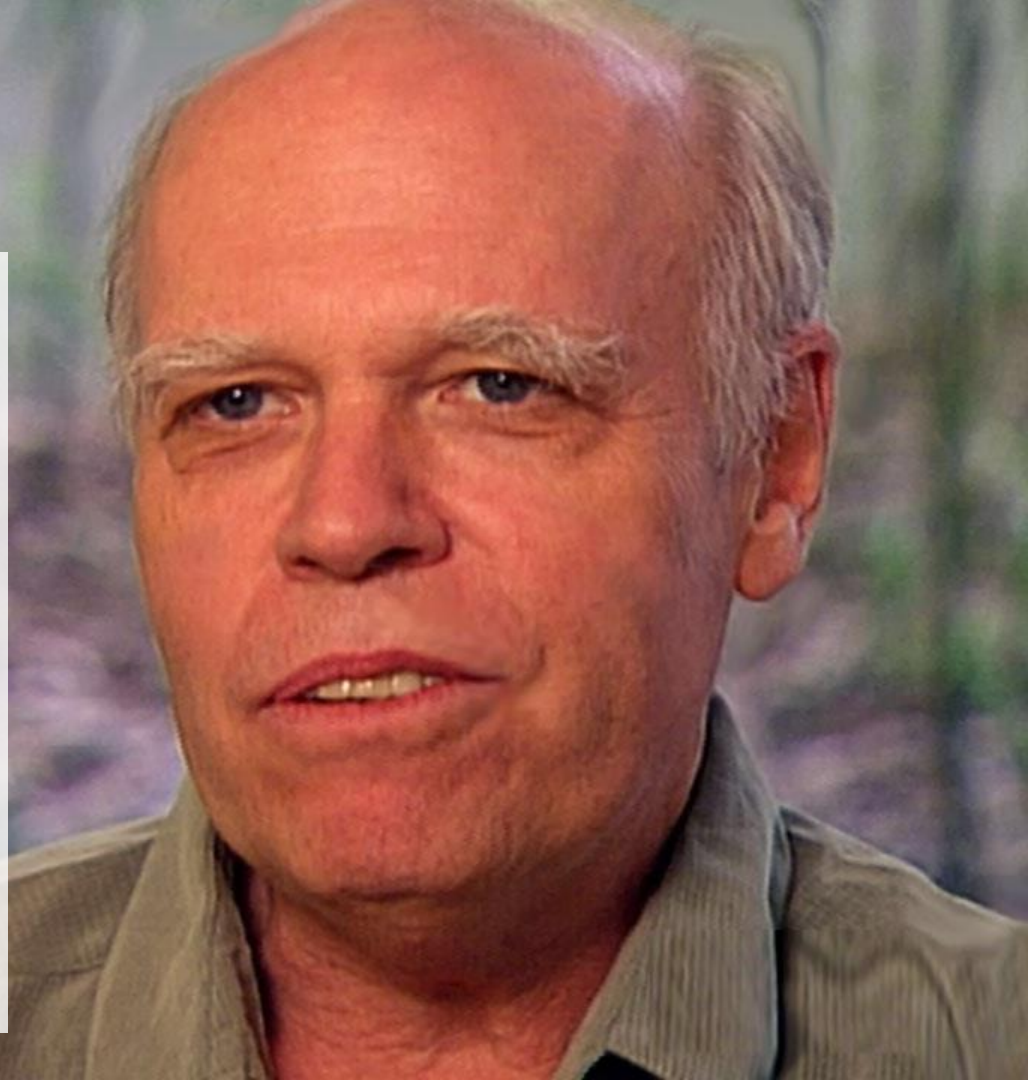




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James Paul Gee

“Learning is a deep human need, like mating and eating, and like all such needs it is meant to be deeply pleasurable to human beings.”





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A Theory of Fun

!! Mtg @ 2pm !!

? level 3
Balance?



for Game
Design

Raph Koster



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The Educator Perspective



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Cities: Skylines

"I took the crazy idea of seeing whether getting people to do something that was supposed to be sustainable, in real time in the class, would actually be a better way of doing these things. The idea of using *Cities: Skylines* was born, which to me was insane, because I don't do computer games."

– Steve Connelly, Senior Lecturer, Department of Urban Studies and Planning,
University of Sheffield



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Cities: Skylines

"So, really, the use of the game was a lever, it wasn't the be all and end all, it wasn't the thing that everything hinged on, it was kind of a pivot point for them to reflect on some of the theoretical concepts that they were exploring in the sessions."

– Bryony Olney, Learning Technologist, University of Sheffield (now Higher Education Training Consultant for Pearson Education)

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Two Interviewees

"I have found students are looking for more of a connection beyond just what's in our books and what we are trying to present in a lecture. So, I bridge the gap with that game into an emotional understanding of something that's very Marxist but also a reality that students might themselves face, should they not make decisions that are in line with who they are and their identity."

– Vanessa Haddad, chair of Liberal Arts, General Studies, State University of New York

«Walk me through your CV»



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Fallout Shelter

"We do very deep analysis of the game, but the point of this exercise is that the students were already taught theory. I never tell the students, 'hey this is a theory you're supposed to get from the game'. I just tell them, you need to play the game, with a scholarly mind."

– Sherry Jones, Rocky Mountain College of Art and Design, Colorado, US



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second time! 快来吃早饭!"

Mom's always been like that. When she's worried she can't keep her hands still - you can always find her fidgeting over the stoves. 天哪!. She makes me really anxious sometimes...

The Long Day of Young Peng When it's a sunny day, I won't freeze on the journey to the city.

"It's really realistic, and it's experimenting with a different way of communicating ethnographic experience, getting students to empathise in different ways or to see field sites from a different perspective. It's something you couldn't do without a game."

— Tom Boylston, Lecturer in Social Anthropology, University of Edinburgh

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Beyond: Two Souls

"I have observed that students in the sections where I use games have a more thorough understanding of the systems that shape our society – legal, education, media, et cetera – and are more willing to dig deeper when trying to understand how we are influenced by our surroundings than students who don't discuss these games in class."

– Johansen Quijano, Assistant Professor of English, Tarrant County College, Texas, US



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Worker
0.01/1
Forest

France - Democracy (0.10.0)
1880 AD - 3486 Gold (-145 per turn)
Ecology (4 turns)



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RESOURCEFULNESS

Because one day, a paperclip might save your life



Study design

- 100 undergraduate students randomly assigned to either an intervention group or a control group.
- Both groups tested at the beginning and the end of semester, using previously-validated instruments.
- Differences in attainment between the two groups were then calculated.
- The game labs operated on a drop-in basis.
- Participants were asked to log 2 hours of play on most games and 60 minutes on 2 shorter games (14 hours total game play across 8 games)



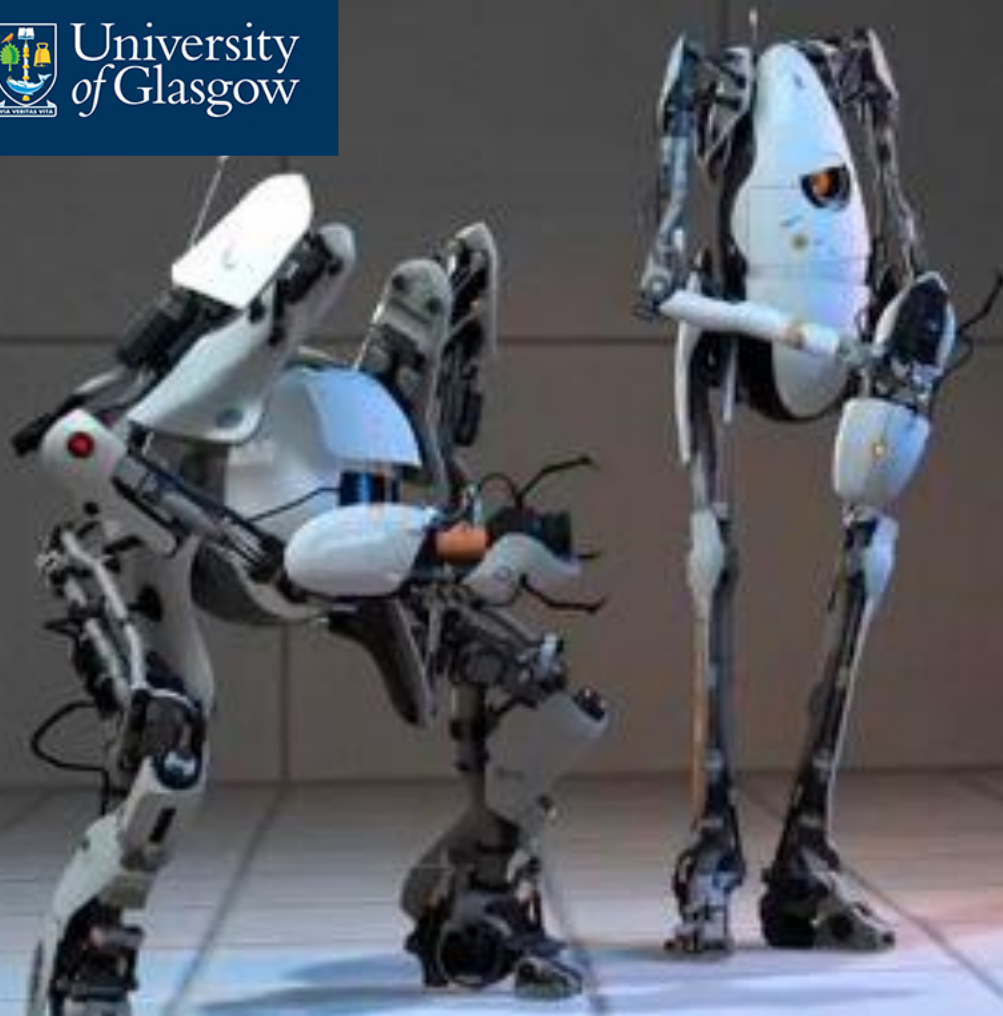
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Big Mean Muther Hubbard + Grim Bloody Fable

Crazed Golem

Big Mean Muther Hubbard

Ribs Grow Back

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Healing Poopy Joe



0

0

Playing to: 3



UBERCHARGE: 47%



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THE COLISEUM A TRADITION OF EXCELLENCE SINCE 1933

LOCATION		TITLE	
THEATER 3		PULP FICTION	
OCT 21	1994	7:15 PM	5.75
DATE		TIME	PRICE

CUSTOMER COPY

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STAND BACK



**I'M GOING TO TRY
SCIENCE**



	Score change				Difference in means		p-value	95% CI
	Control		Intervention			Cohen's d		
	Mean	SD	Mean	SD				
Communication	-2.8	5.65	4.94	8.41	7.74	1.1	0.004	12.79 to 2.69
Adaptability	-8.25	15.99	11.31	18.07	19.56	1.15	0.002	31.32 to 7.8
Resourcefulness	0.25	9.71	9.69	11.42	9.44	0.9	0.013	16.77 to 2.11



	Group		
Cha	<p>The percentage of participants in the intervention group with improved communication scores (69%) was greater than the percentage of participants in the control group with improved communication scores (25%) ($p = 0.016$, Fisher's exact test).</p>		
neg			
neg			
neg			
pos			
pos			
pos			
Column Total	26 (58%)	16 (44%)	56 (100%)



Results

Pre- and post-test results indicate significantly improved gains on the three measures for the game-playing intervention group versus the control, with differences of between 0.9 and 1.15 standard deviations in test scores. 95% confidence intervals calculated for the difference between mean scores for the control and intervention groups did not cross zero, further supporting the idea that **playing video games at university may help develop students' employability skills.**



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Challenges

- Buying and installing games
- Multiplayer
- Hardware limitations
- Student engagement
- Institutional buy-in



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A photograph of a lecture hall with several students. In the foreground, a young man with dark hair, wearing a grey and white striped polo shirt, is leaning forward with his head down, appearing to be asleep or resting. To his left, a young woman with curly brown hair, wearing a light blue long-sleeved shirt, is also leaning forward with her head down. To his right, a young woman with long dark hair, wearing a grey long-sleeved shirt, is leaning forward with her head down. In the background, another student is visible, wearing a blue and white plaid shirt, looking at an open book. The students are seated at white desks.

The Student Perspective

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Effective Communicators

- Multiplayer video games require players to communicate in order to succeed.
- Time-sensitive, high-pressure scenarios require players to communicate efficiently in order to progress.
- Being required to communicate with players of differing ability and experience.



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A pixel art illustration of an office environment. In the foreground, two women are seated at a white desk with two computer monitors. Behind them, a larger brown desk area has several people working at computers. A man in a suit is seated on the left, a woman in a purple shirt is standing in the center, and another woman in a green shirt is seated on the right. Further back, a man in a blue shirt is seated at a desk. To the right of the main desk area, there is a long white table with a blue cloth and a small potted plant. In the bottom right corner, there are some boxes and a small table with a blue object on it. The overall style is a low-resolution, pixelated aesthetic.

The Industry Perspective



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"*Left 4 Dead* and *Left 4 Dead 2* were specifically designed to enforce **cooperation**. That was a very specific part of the game design where we did not want to encourage players to go off on their own, so there are consequences for doing that. And we wanted to **encourage players to work together**, so there are game mechanics that directly work to that end. So, when a player is incapacitated, some other player has to save them. You get higher bonuses for getting your entire team to the end of the level as opposed to just one person surviving, for example."

– Mike Ambinder, Principal Experimental Psychologist, Valve

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"That was certainly not a goal, to make a game that encourages people and helps them learn how to collaborate or whatever. But I definitely can see how the game could help with that. Certainly, **critical thinking** was important to me. My goal wasn't to teach or to train, but from my game design standpoint, critical thinking was important to me."

— Paul Hellquist, Creative Director and Lead Designer,
Borderlands 2 (Gearbox Software 2012)



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"I think I'd be hard pressed to name a game that doesn't support learning, because I think if you're introspective or perhaps open to learning or just engaged with whatever you, as a person, happen to be experiencing at the time, that's always an opportunity to **learn something about the world**. This would be perhaps **emotional maturity or empathy** rather than a particular skill..."

— Matt Charles, Head of Production, Gearbox
Publishing

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"[*Brothers in Arms: Hell's Highway*] makes you think about the situation that the soldiers were up against and constantly being stuck between a rock and a hard place. It should teach you about the world, it should **teach you a little bit about yourself**. I think if you're paying a little bit of attention, you come away from that sort of game with a sense of gratitude for all the people that came before you in your life."

— Matt Charles, Head of Production, Gearbox Publishing

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"If we could show that games improve communication or teamwork dynamics or problem-solving or whatnot then, yeah, it's valuable. Whatever tools we have at our disposal, to teach students how to think more adaptively, or creatively, or to work better together, or to solve more difficult problems, we should absolutely take advantage of them. And games could be useful there, but we don't know. We'd like to figure that out."

— Mike Ambinder, Principal Experimental Psychologist, Valve

Video games could boost university skills, study finds

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Playing video games could help young people be more successful at university, according to a new study.

A **University of Glasgow** trial found gaming improved communication skills, resourcefulness and adaptability.

Video games DO make you smarter: Playing Minecraft and Lara Croft is linked to success at university

Playing video games 'improves students' employability skills'

University of Glasgow research indicates students can improve communication and thinking ability by playing computer games

THE IRISH NEWS

20 June, 2017

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Video games could help young people succeed later in life

Video Games Can Improve Academic Success, Study Finds

June 5, 2017 10:04 AM

Filed Under: [Education](#), [study finds](#), [Video Games](#)

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Playing video games makes you a better university student!

[PTI](#)

June 6, 2017 | UPDATED 14:05 IST

A + A -

X-BOXING CLEVER

COMPUTER gamers are more likely to succeed at university, a study suggests.

A couple of hours' play a week boosted students' communication.

They also became more adaptable and resourceful after just eight weeks.

Games tested included Minecraft, Warcraft III and Lara Croft. Research-

ers at Glasgow University said the games forced players to find multiple ways of completing a task.

They added this mindset of critical thinking and learning is what is needed to get a good degree and job.

Study head Matthew Barr joked: "This isn't what parents may like to hear."

DAILY EXPRESS

Official: Video games will make you smarter

By Alison Kershaw

PARENTS despairing at the amount of time their child spends playing video games should take heart, new research suggests it may actually do them good.

Gaming can help young people develop key skills such as communication and resourcefulness, according to a study by a Glasgow University academic.



They become like blinking lizards, motionless, absorbed, only the twitching of their hands showing they are still conscious. These machines teach them nothing. They stimulate no ratiocination, discovery or feat of memory though some of them may cunningly pretend to be educational.





Published Research

Barr, M. (2017). Video games can develop graduate skills in higher education students: A randomised trial. *Computers & Education*, 113, 86–97. <https://doi.org/10.1016/j.compedu.2017.05.016>

bit.ly/MattGBL

Barr, M. (2018). Student attitudes to games-based skills development: Learning from video games in higher education. *Computers in Human Behavior*, 80, 283–294.
<https://doi.org/10.1016/j.chb.2017.11.030>

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Barr, M. (2019). *Graduate Skills and Game-Based Learning: Using Video Games for Employability in Higher Education*. Palgrave Macmillan. <https://doi.org/10.1007/978-3-030-27786-4>

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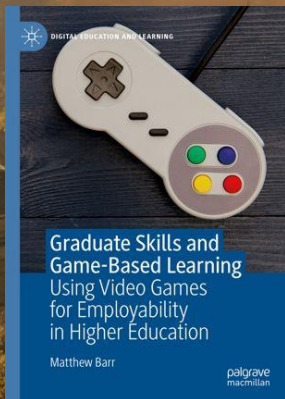


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Thank you! Questions?

Matthew.Barr@glasgow.ac.uk

@hatii_matt



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