Digital Neuroscience 101
(and the importance of empathy in digital experience design)
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So... what is a Business Analyst?
“Most people in the UK are dependent on their digital devices and need a constant connection to the internet”

- OFCOM 2018
The Brain 101 and Digital

101.1: Brain Parts
101.2: My Chemical Romance
101.3: How Memory Works
101.4: Habit Forming
“Interviewed students reported feeling ‘intoxicated’ and ‘gratified’ by social media use, even though they were aware that it was not contributing to their productivity”

-Drinkwater, 2016
How Memory Works

Limited-capacity Processing Channels

- **Stimulus/Input**
  - Capacity: Large
  - Forget time: max 2 seconds

- **Sensory Store**
  - Capacity: Small (7-15 items)
  - Forget time: 5-20 seconds (without focus/repetition)

- **Short-term Store**
  - Capacity: Unknown/unlimited
  - Forget time: N/A

- **Long-term Store**
“The biggest impediment to your concentration is your computer’s ecosystem of interruption technologies”

- Cory Doctorow, 2009

“Neurons that fire together, wire together”
Hebb’s Rule (Hebb, 1949)
-Lowel & Singer, 1992

Löwel, S. & Singer, W., 1992. Selection of Intrinsic Horizontal Connections Cortex by Correlated Neuronal Activity. Science
Society and Digital

Behavioural Trends
Striking a Balance: Commercial vs Ethics
“There is a clear association between time spent online and some symptoms of mental-ill health”

-Ipsos MORI 2018

Przybylski, et al., 2013. Motivational, emotional, and behavioral correlates of fear of missing out
"Are GenZ glued to technology? It’s not an addiction; it’s an extension of themselves"

-Ipsos MORI 2018
Empathy and Design Thinking
“A multidisciplinary process that builds solutions ... in a technically feasible, commercially sustainable and emotionally meaningful way”.

— Gartner, 2019
Empathy and Design Thinking

1. Empathize
2. Define
3. Ideate
4. Prototype
5. Test
Personas are fictional characters, representing a group of users with the same needs, purpose, and expectations.
Arabella, 19
Undergraduate Student

Journey Scenario:
It is late at night and dark, Arabella is walking through campus on the way back to her hall of residence. A man who approached her earlier is clearly following her.

Objective: Get out of danger, get help and get home safely.

Emotion
• Heightened
• Afraid
• Under Stress

Environment
• Outside
• On campus
• Dark

Physical Factors
• Shaking
• May be moving
• May require discretion

Technology
• Campus Wifi Connection
• Good 4G Coverage
• Good mobile signal
• Mobile phone access likely
Will, 23
Postgraduate Master’s Student

Journey Scenario:
Will is researching an assignment. He is well on track and on schedule and is engaged in the subject he is researching. He wants to find a post that his lecturer recently shared.

Objective: Complete the first draft of the assignment in this study session.

Emotion
- Engaged in study
- Calm
- Happy

Environment
- Inside
- At home
- Music playing in the background (streaming on Spotify)

Physical Factors
- Sitting down at a desk/table
- Comfortable

Technology
- Good Wifi Connection
- OK 4G Coverage
- OK mobile signal
- Working on laptop
- TV and mobile in the same room
In Summary...
TAKEAWAY 1
Our brains adapt and change in response to technology use
Our behaviours change in response to this

TAKEAWAY 2
Some of the negative messages around technology use are true...
...unintended impacts and unethical design may cause issues

TAKEAWAY 3
We are all responsible for considering and mitigating against the negative and unintended impacts of technology

TAKEAWAY 4
As technologists, we are well-placed and have tools and techniques to help with this

TAKEAWAY 5
Using empathy to consider a user’s objective, environment, technology and emotions helps us to build a user-centric digital journey and have happy
Questions? Thoughts? Ideas?

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