MOOCs: Back to the Future
Behaviourist teaching in the 21st Century
Behaviourist teaching machine
Behaviourist teaching machine

Introduction to the course and to Davy

Watch this video to find out a little about who Humphry Davy was, his achievements and his importance to us today.

Professor Sharon Ruston will also introduce the course, describing its structure and key themes.
A ‘constructivist’ learning platform

• ‘Talk’ on the platform is mediated through the discussion forums, which have interactive qualities (‘affordances’)

• “we shape our buildings and afterwards our buildings shape us.” Winston Churchill, on redesigning the Commons Chamber in 1943
Social Constructivism in FutureLearn (FL)

• Conversational Framework: “...learning involves a **dialogue** between teacher and student, which reveals conceptions and variations between them” Laurillard, 2002.

• Talk is directly around the content (e.g. video step) so is usually relevant. ‘Around a shared conceptual object’.

• This organises the talk to some degree and increases the likelihood of higher levels of knowledge construction (Scardamalia, Gunawardena, Henri) or cognitive activity (Piaget, Bloom)

• Also does not overwhelm the participant. Commenting is easy.
Other consequences of the design

- Comments are ordered chronologically, so older posts get pushed down the feed.
- Notifications only trigger to people already in a conversation.
- The ‘most liked’ feature cannot perform ‘affinity searching’. 😞
- The platform is ‘stepped’ so users will not often look back.
Conversations in FL

- Are very short. This graph shows a count of conversation by length. Negligible numbers of conversations more than 5 strong IN ANY MOOC
- Other research (Brinton et al) shows that discussion in MOOCs can get very busy and dense, then activity decreases (these are not FL but show that scale is a problem for all MOOCs)
Measuring the conversation

• Conversation length alone is not an adequate measure

• A social constructivist heuristic may also include 2 further dimensions:

  1. Turn taking
  2. Diversity of contributions (unique participants)

• These are proxies for, not evidence of, higher levels of cognitive activity. They are used to act as constants in the experimental design.
Turn-taking in FL conversations

• Affordance of the FL platform is single hierarchy threads (ie no reply to reply)

• Taking the conversation as the main unit of analysis, and ‘first’ and ‘further’ as means of categorising the contributions, there are 9 possible ‘types’ of conversation that are possible
## Turn-taking in FL conversations

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<th>First Reply (FR)</th>
<th>Further Reply (FurR)</th>
<th>Initiator First Reply (IR)</th>
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</table>
Simpler heuristic

• **Lone**: only 1 person is involved; may reply to themselves (reflective practice?)

• **Q&A**: 1 post/ 1 reply;
  “Where did Wordsworth live?” // “Grasmere”

• **Limited Social**: 1 post/ 1 reply/ OP posts again:
  ”R” // ”B” // “..I can understand his poetry through that landscape…” (no-one triggered to reply 😞)

• **Extended Social**: anyone gives a further reply: as above, but then B, R, B, R etc.
Indicates new information and more variety of concepts to negotiate with in the conversation

- **Lone**: 1 person
- **Watercooler**: 2 people
- **Cocktail party**: 3-9 people
- **Conference**: 10+ people
Diversity

- On the longest thread (90 comments) in the William Wordsworth course:

  This thread is a peculiar mix of interesting analysis and the Daily Mail.

  Liked 10  Bookmark
“A new technology tends to take as its content the old technology, so that the new technology tends to flood any given present with archaism” – Marshall Mcluhan

How can we turn our ‘backs from the future’? What theory or practice do we have to guide us?
Design Based Research (DBR)

- “set of analytical techniques that ... attempts to bridge theory and practice in education. A blend of empirical educational research with the theory-driven design of learning environments, DBR is an important methodology for understanding how, when, and why educational innovations work in practice; DBR methods aim to uncover the relationships between educational theory, designed artefact, and practice.”

https://www.learning-theories.com/design-based-research-methods.html
Collaboration: 2 or more people collectively creating emergent shared representation

Cooperation: Separate and distinct contributions are made and aggregated

Coordination: Unrelated entities are drawn together within a space

Elliot, 2007
Stigmergy: a theoretical framework for mass collaboration

- “Stigmergy is a form of mediated communication where signs placed in the environment serve as stimuli to other agents to further transform the environment”

- “Mass collaboration is defined as digital stigmergic collaboration (collective creation of shared representations in digital media), where the membership is near or greater than 25 participants”

- “..collaboration (in education –ed) is a specific kind of collaborative activity that can only scale beyond small f2f groups through stigmergy”

Elliot, 2017
‘Comment Discovery Tool’ (CDT)

• Each word written is a sign for others to follow, knowledge is emergent

• Each time a word is clicked, the visualisation re-draws containing only comments with the chosen word/s

• https://www.futurelearn.com/courses/william-wordsworth/3/exercises/24260
Research questions, brief results

- Does the CDT encourage more diversity in conversations?
- Does the CDT affect the ‘types’ of conversation as categorised by ‘turn-taking’?

![Bar chart showing conversation types and unique members across different dimensions and course runs.](chart.png)
Where are the meaningful signs?

Brute force (‘meaning’ is guesstimated):
• Visualising every word
• Automated content analysis e.g. LDA, sentiment analysis, Flesch–Kincaid...
• Corpus Linguistics: collocates, ‘keyness’
• Comments with links
• etc.

Changing learner practices/ actions (‘meaning’ is negotiated):
• #hashtagging content for folksonomic themes, communities
Social Media practices for networked individuals

- ‘trending’
- ‘#hashtags’
- ‘verified’ comments (e.g. mentors, tutors)

- New activity: classifying content to enrich the visualisation

Possible outcomes

- Ownership over MOOC
- Enriched datasets, signals
- Emergence of community?

#insta-gogy (or #insta-doggy)
Discussion

- To what extent do our environments shape us? What does this mean for online pedagogy within MOOC context?
- What other conversational dimensions could be measured as proxies for social constructivism? How reliable are they?
- Is it a good idea to port ideas from social media like visualising, trending and hashtags?
- What of brute force? Is this a useful method or will there be too many false positives?

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