# Understanding What Learners Like and Dislike About MOOCs Across Subject Areas Using Topic Modeling

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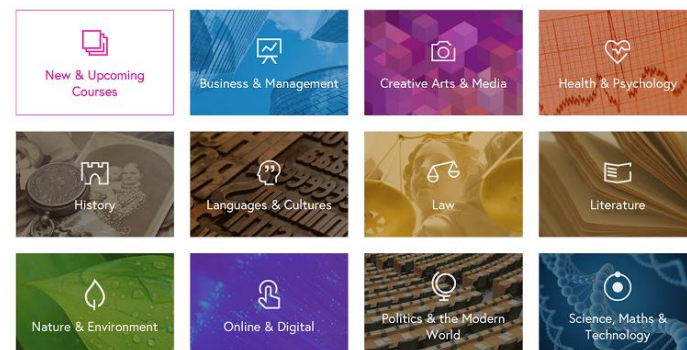PURDUE UNIVERSITY

ENGINEERING EDUCATION

# + Motivation and Objective

- MOOCs in different subject areas involve different pedagogies and course design

- It is important to understand whether learners have similar or different experiences based on the subject area of MOOC

- The purpose of this study is to understand learners' likes and dislikes by analyzing end-of-course evaluation surveys of MOOCs from different subject areas

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Future Learn

# + Data

- Analyzed open-ended responses of post-course survey questions

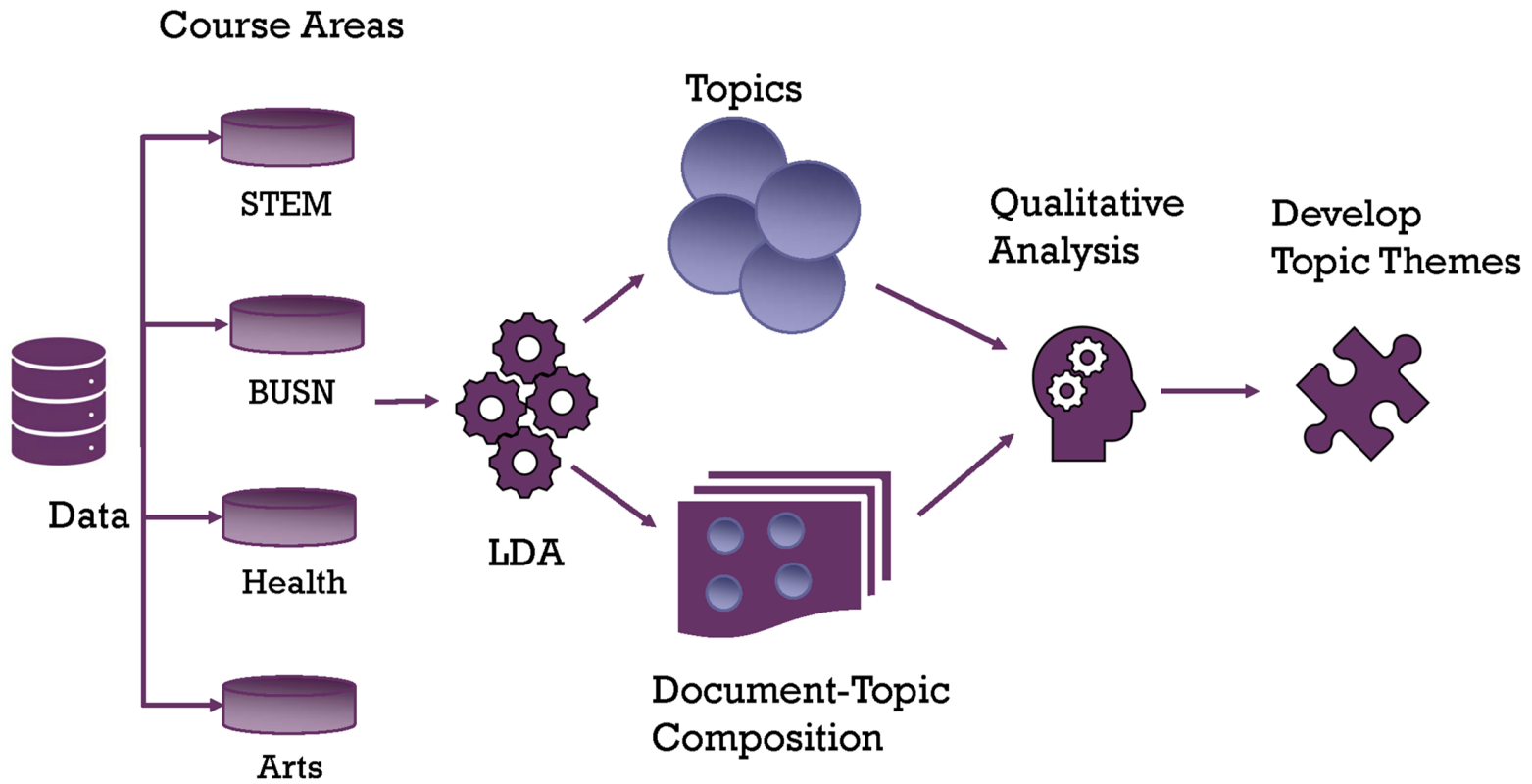| Question | Number of Courses | Total Responses |
|---|---|---|
| How could the course be improved? | 810 | 137,000 |
| What was your favorite part of the course, and why? | 809 | 158,000 |
| What was your least favorite part of the course, and why? | 809 | 130,500 |

# Data

| Study Area | First-Level Categorization | No. of Unique MOOCs | Total |
|---|---|---|---|
| Arts | creative_arts_and_media | 36 | 193 |
| | study_skills | 14 | |
| | Teaching | 25 | |
| | politics_and_the_modern_world | 25 | |
| | History | 38 | |
| | languages_and_cultures | 43 | |
| | Literature | 12 | |
| Business and Law | business_and_management | 138 | 147 |
| | Law | 9 | |
| Health | health_and_psychology | 125 | 125 |
| STEM | nature_and_environment | 45 | 110 |
| | science_engineering_and_maths | 50 | |
| | tech_and_coding | 15 | |

# Data: Study Area Wise

| Study Area | Number of Courses | Total Responses |
|---|---|---|
| Arts | 193 | 51000 |
| Business and Law | 147 | 16600 |
| Health | 125 | 42260 |
| STEM | 110 | 8100 |

# + Approach



Course Areas

Data

STEM

BUSN

Health

Arts

LDA

Topics

Document-Topic Composition
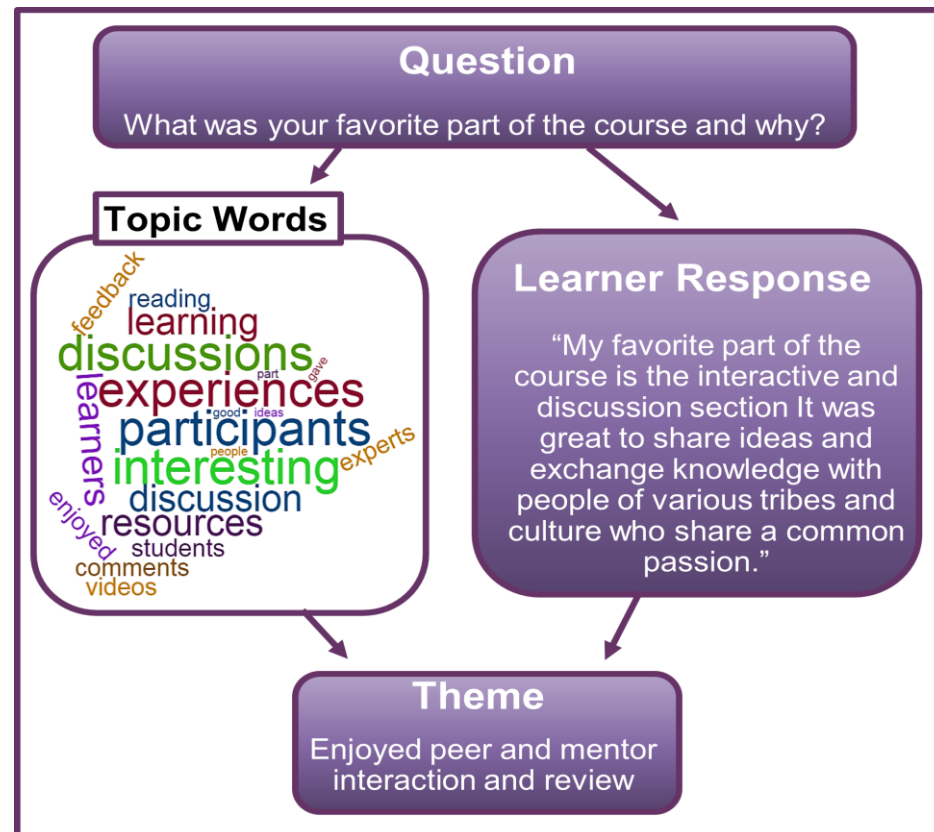
Qualitative Analysis

Develop Topic Themes

# + Approach

- Used Latent Dirichlet Allocation (LDA) topic model to identify underlying topics/themes from responses to each question
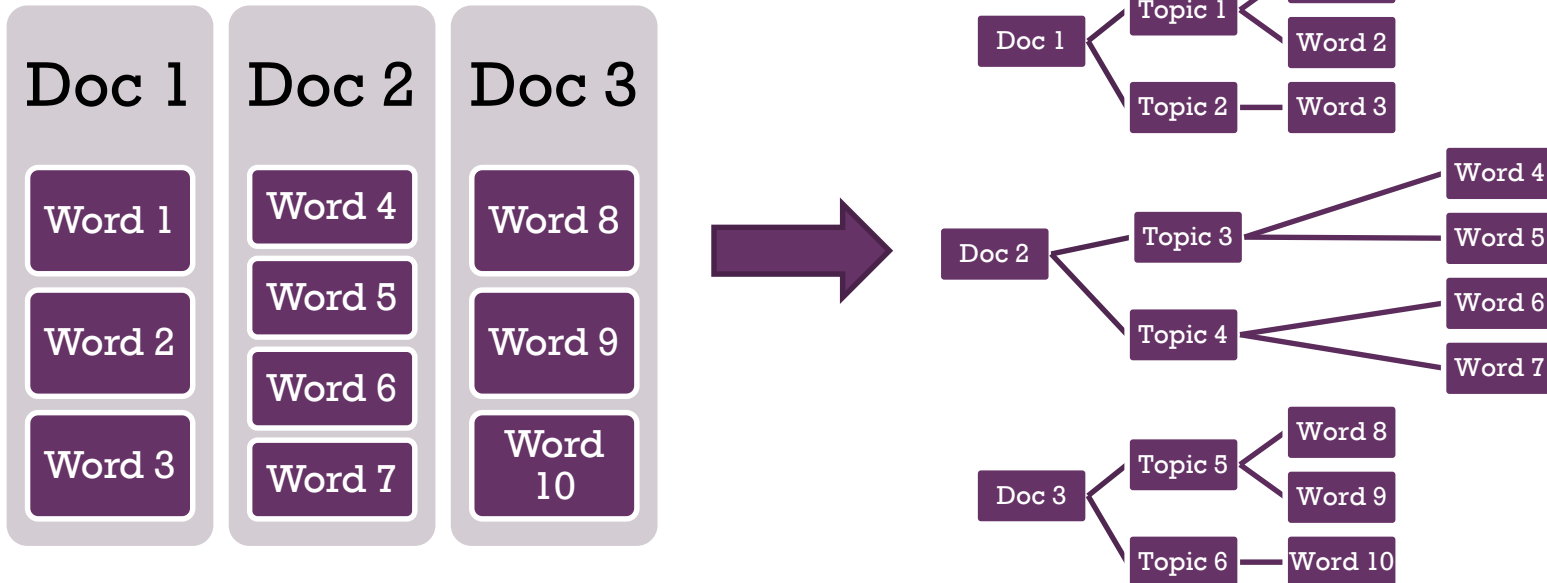
# + Qualitative Analysis

- Identified initial theme from top words

- Examined top 100 responses

- Updated theme with new aspects

- Checked if the theme agreed with response

**Question**

What was your favorite part of the course and why?

**Topic Words**

feedback reading learning discussions experiences learners participants good ideas people interesting experts discussion enjoyed resources students comments videos

**Learner Response**

"My favorite part of the course is the interactive and discussion section It was great to share ideas and exchange knowledge with people of various tribes and culture who share a common passion."

**Theme**

Enjoyed peer and mentor interaction and review

# STEM – Most Favorite

- *Common:*
  - Specifics of course
  - Assessment (helped them confirm understanding)
    - *"I enjoyed the quizzes as it gave me a chance to reflect and test what I'd learned."*
  - Real life applications

- *Unique*:
  - Teaching methods/content


- *Did not identify peer interaction*

# STEM: Least Favorite

- *Common*:
  - Issues with assessment like formatting, wording, grading
    - *"The quizzes. I don't like the binary nature of them and I feel like some of the questions weren't suitable for a right wrong answer"*
  - Length of course/time needed
  - Issue with course content (videos and lecturer).

- *Unique*:
  - Issue with the difficulty and pacing of the course (specifically around the math requirement)
  - Issues with accessibility of programs (downloading/using)
  - Issues with peer and mentor interaction (specifically with peers)
    - *"reading other participant comments, lots of biased ill-informed comments and at times people were rude and dismissive of others"*

# + STEM: Improvements

- *Common*:
  - Peer and mentor interaction (lack of mentor interaction)
    - *"It could have more interaction, chats, and channels to make the participants keep in touch with others."*

- *Unique*:
  - Issue with the difficulty and pacing of the course
    - course breadth and accuracy of the description
    - felt like course was very math heavy

# Business and Law: Most Favorite

- *Common:*
    - Specific topics
    - Course content
    - Peer interaction
        - *"The discussion boards. The insight I got from fellow learners, mentors & educators on these was invaluable."*

- *Unique*:
    - Enjoyed learning specific skills (recruiting and hiring)

# Business and Law: Least Favorite

- *Common* :
  - Issues with peer and mentor interaction (lack of mentor interaction)
  - Length
  - Issues with accessibility of programs (downloading/using)

- *Unique*:
  - Peer interaction & assessment (disliked peer grading)
    - *"Reviewing other people's work. I didn't feel comfortable critiquing other people's work when I am still learning myself."*

# Business and Law: Improvements

- *Common*:
  - Peer interaction (too overwhelming)
  - Issue with accuracy of course information/description
    - *"It could be a bit more clearly defined as to the level of previous knowledge that you are expecting from participants."*
  - Length of course

- *Unique*:
  - Issue with the breadth of the course
    - didn't cover enough information
    - want more in-depth examples

# Health: Most Favorite

- *Common:*
    - Course content

- *Unique*:
    - Peer interaction (specifically different perspectives from learners)
    - enjoyed the real life aspect (personal examples)

# Health: Least Favorite

- *Common*:
  - Length of course
  - Interaction with peers

- *Unique*:
  - Accuracy of description and breadth of course
    - course was not accurate
    - did not cover the listed topics completely
    - *"I wish many of the topics had been discussed in more depth. Found that was a very broad overview of most topics"*
  - Accuracy of time commitment

# + Health: Improvements

- *Common*:
  - Increase real life examples
    - *"A variety of case studies used to base the issues around. I think story/real life examples are easier to engage with generally."*

- *Unique*:
  - Issues with interaction around assessment
  - Accessibility of course content
    - *"A few links for further resources went to journals where the full article wasn't freely available. Maybe find alternative free material?"*

# Arts : Most Favorite

- *Common:*
  - Course content

- *Unique* :
  - Enjoyed specific topic and learning specific skills
  - Course content and peer interaction around course content
  - Enjoyed interaction & real life applications

**+**

# Arts: Least Favorite

- *Common*:
  - Length of course
  - Accuracy of time commitment.
    - *"Give a better estimate of time to take on the course or split estimate between formal content and learner content"*

- *Unique*:
  - Breadth of course/not accurate to description
  - Content quality/accessibility

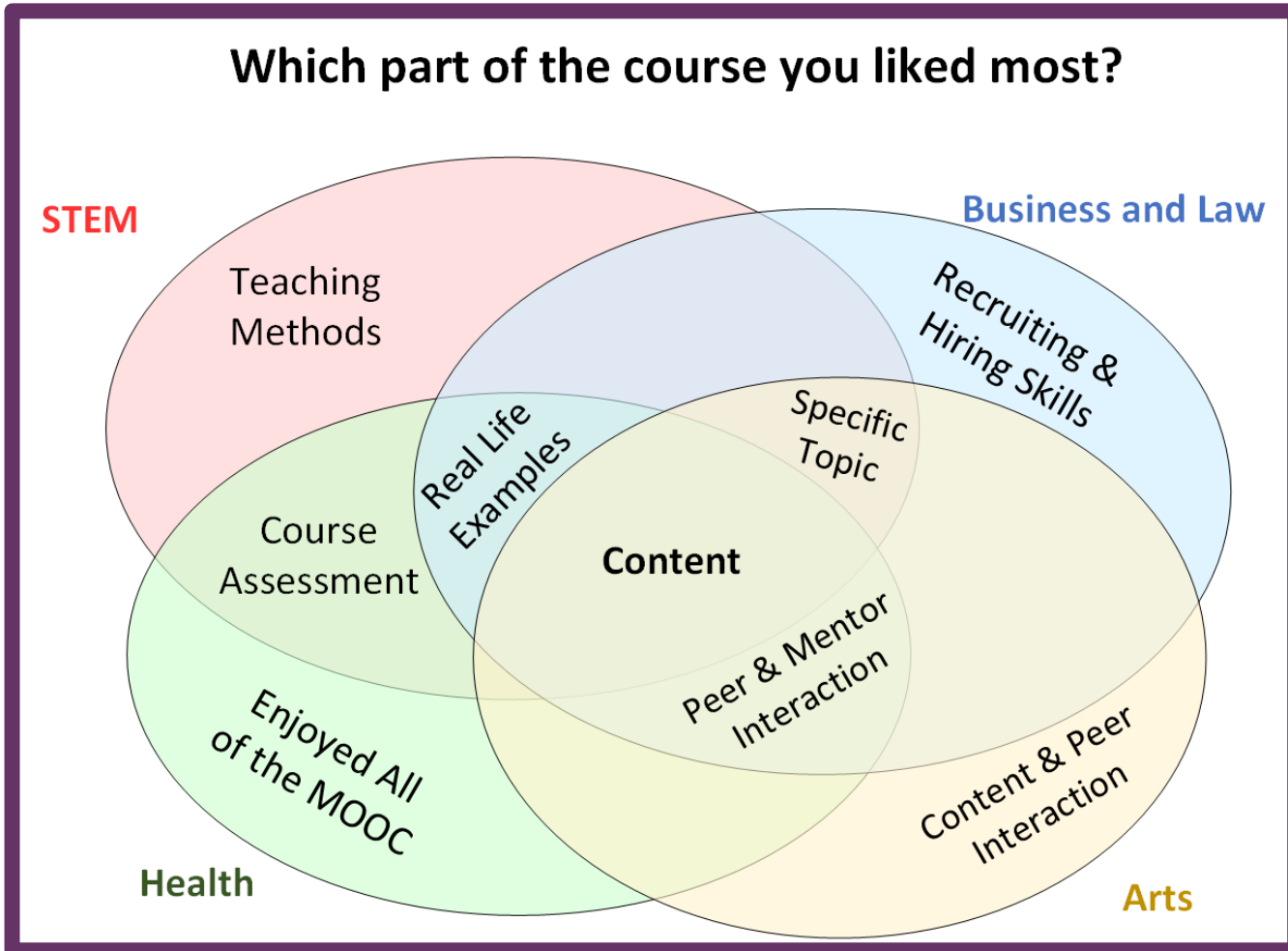# + Arts: Improvements

- *Common*:
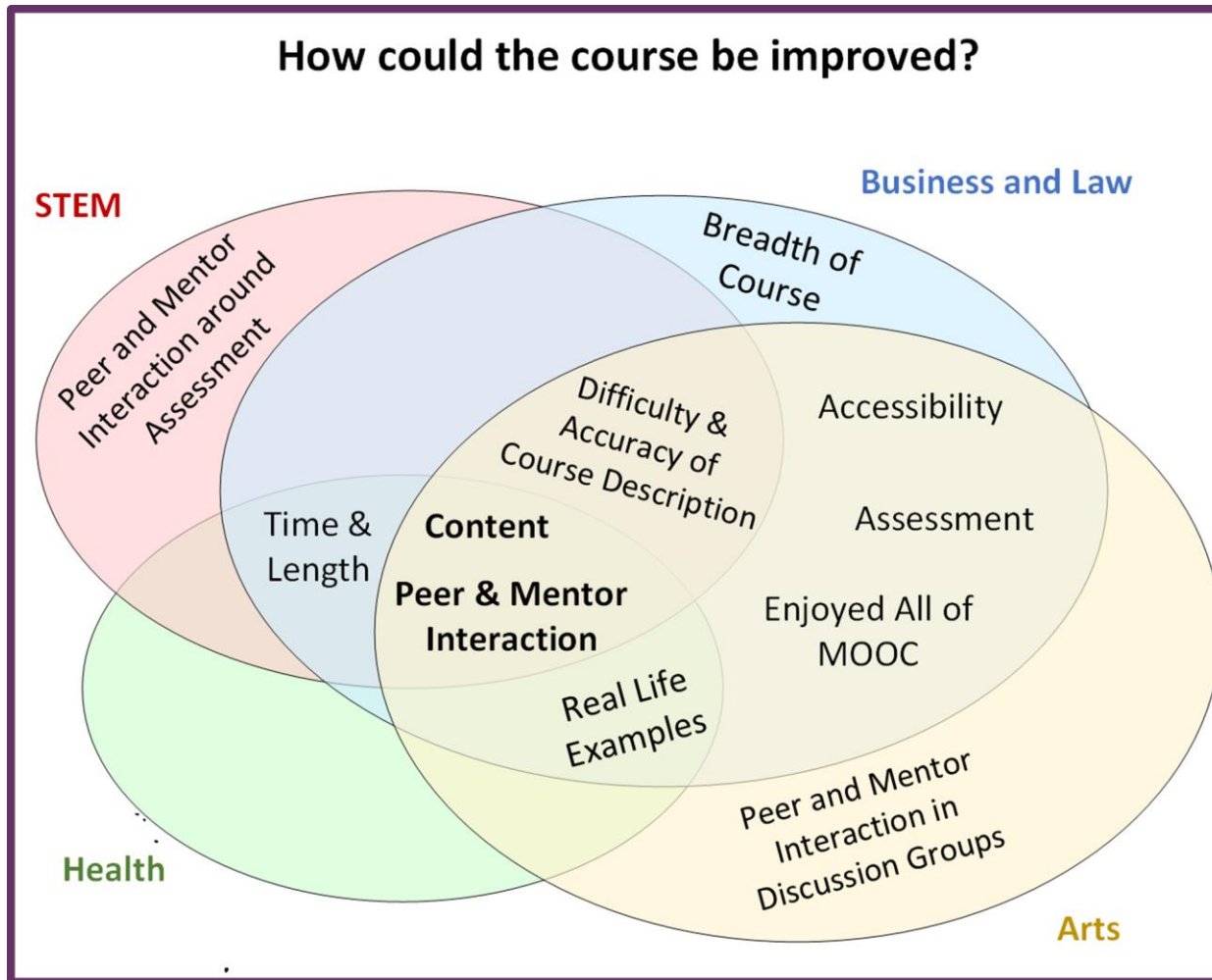  - Accessibility
  - Assessment

- *Unique*:
  - Issue with interaction in groups (changing format of groups)
  - Lack of interaction

# Most Favorite: Different Subject Areas



Which part of the course you liked most?

STEM — Teaching Methods

Business and Law — Recruiting & Hiring Skills

Real Life Examples

Course Assessment

Specific Topic

Content

Peer & Mentor Interaction

Enjoyed All of the MOOC

Content & Peer Interaction

Health

Arts

# + Improvements in Different Areas

# Challenges and Limitations

- Challenges
  - Overlapping elements in topics
  - Responses composed of multiple topics
  - Weights are not always representative of topic composition

- Limitations
  - Data collected from only those learners who completed the course
  - Limitations of topic model
    - Smaller but important topics may not emerge

**+**
# Questions?

National Science Foundation

PRIME #1544259