How employment constrains participation in MOOCs?

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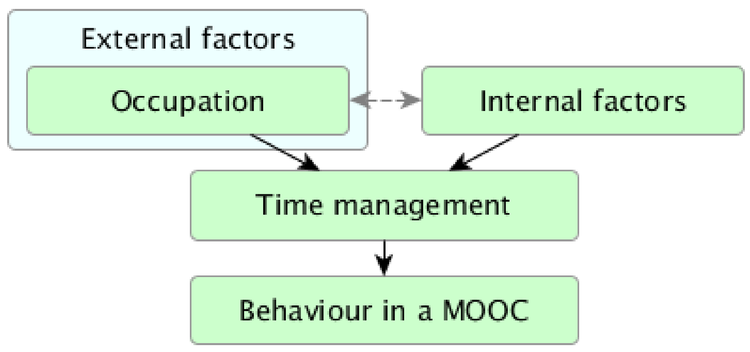
Motivation

Investigating the influence of occupation on time management and engagement



- High ratio of employed participants in MOOC (51% in this study)
- Design insights for courses targeted to employed audience.

Dataset

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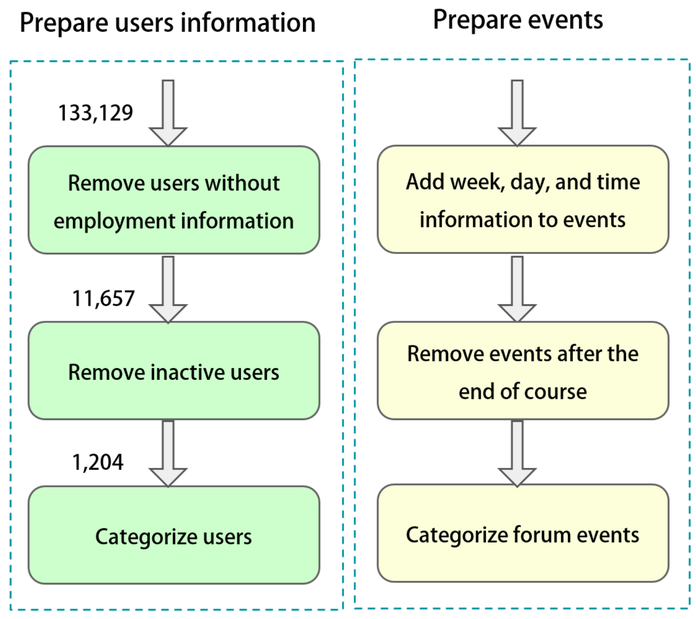
- Three offerings of "*Functional Programming Principles*" by Coursera.

Event types

- Forum activity (view, post, vote)
- Video play

User categories

- Full-time employed: 702
- Full-time student: 110
- Part-time activity: 66



Engagement and Achievement

Are employed participants more likely to engage in the course? YES

Employed participants are more likely to engage in the course. **Students** are most likely to drop out $(\chi\, 2 = 29,\ p < .01)$

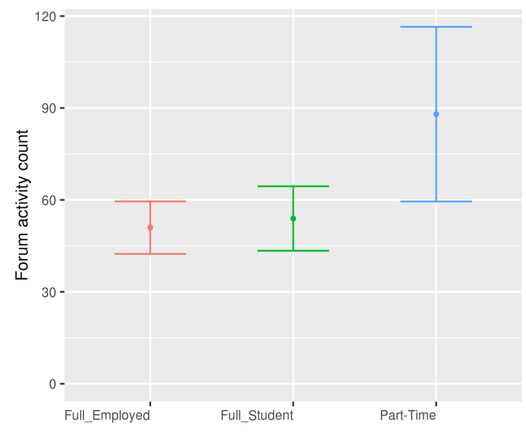
Do employed participants have higher achievement level? YES

Employed participants on average achieved a higher grade compared to **students** (70 vs. 63, $F[1,810] = 3.8,\ p = 0.05$)

Forum Participation

Are employed participants more engaged in forum? NO

Part-time participants are significantly more active in forum ($87\ vs.\ 51,\ W$

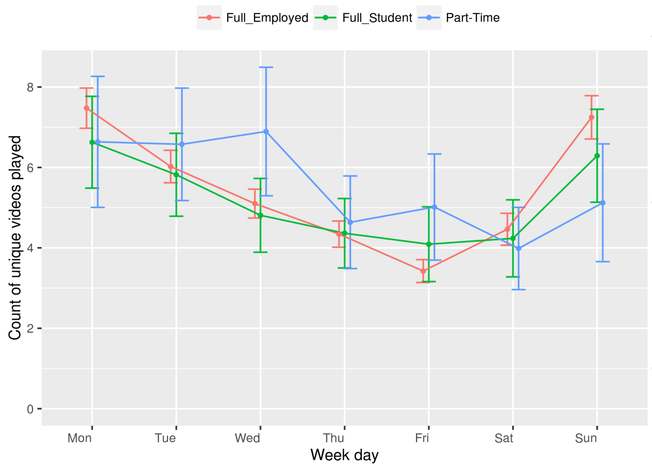


Do employed participants write shorter/more messages? NO

Part-time participants had significantly more and longer forum posts ($t = -2.21,\ df = 441,\ p = 0.02$)

Timing Patterns

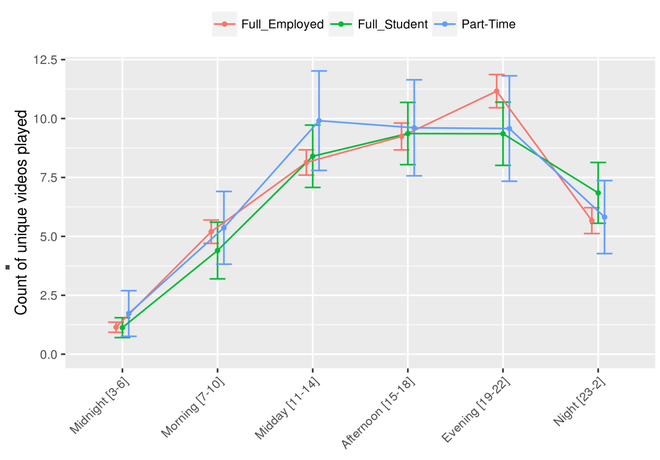
Do employed participant have different weekly pattern of activity? YES



- **Employed** participants are more active during weekend and least active on Friday.
- **Part-time** participants are more active during weekdays.
- **All users have** high activity level on Sunday and lecture release day (Monday)

Do employed participants have different time distribution of activities? YES

- **Employed participants** have activity peak on evening hours of working days (Monday-Thursday).
- Activity peak time shifts to afternoon hours on weekend.
- **Part-time** participants are more active during midday.
- **Students** are most active group during night hours.



Predicting Employment Status

To what extent can we predict user's employment status based on derived features?

Model (CARET method)	Parameter(s)	Accuracy	κ
PMR (multinom)	decay=0.001	0.79	0.3
RF (ranger)	mtry=20	0.85	0.45
SVM (svmlinear)	C=9	0.82	0.35
NNET (nnet)	size=9 decay=1	0.79	0.2

Implications

- Choose **lecture release day** depending on target audience.
- Choose activities convenient for **commute time.**
- Choose accurate **timing for communication** with users.
- Include **temporal activity indicators** in predictive models.

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