



The Ninth International Conference on Mobile,  
Hybrid, and On-line Learning

eLmL 2017  
March 19 - 23, 2017 - Nice, France

## Personalized Links Recommendation Based on Learning Analytics in MOOCs

Ahmed Mohamed Fahmy Yousef

Learning Technologies | Fayoum University

# Agenda

---

- ▶ Introduction
- ▶ Related Work
- ▶ Research Problem
- ▶ RECOMMENDER SYSTEM Design
- ▶ Requirements
- ▶ Implementation
  - ▶ System Architecture
  - ▶ Case Study
  - ▶ Evaluation
- ▶ Conclusion
  - ▶ Future Work



# Introduction

---

- ▶ **Video-Based Learning (VBL)** has a long history in the educational design research.
- ▶ In the past decade, the interest in VBL has increased as a result of new forms of online education, such as **flipped classrooms**, and most prominently **MOOCs**.



Yousef, A. M. F., Chatti, M. A., & Schroeder, U. (2014a, March). Video-Based Learning: A Critical Analysis of The Research Published in 2003-2013 and Future Visions. In eLML 2014, The Sixth International Conference on Mobile, Hybrid, and On-line Learning (pp. 112-119).

# Challenges

---

Thus, research is needed to investigate different approaches of user recommendation in MOOCs. This work proposes a novel approach which applies recommender system techniques for video lectures and discussions forum in MOOCs.



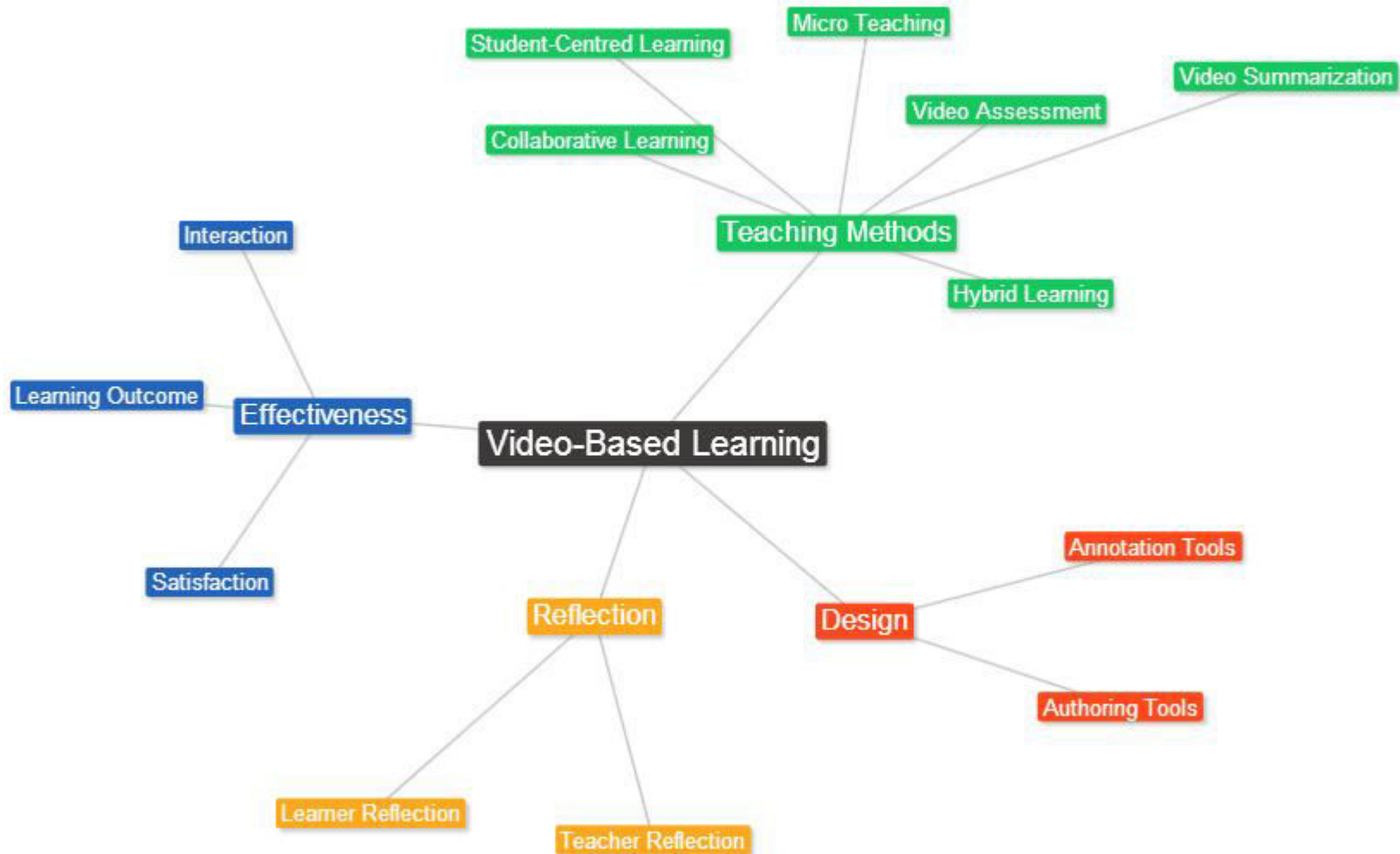
## Study Purpose

---

The contributions of this work are these design requirements:

- ▶ Capture and store large data sets from learners' activities when they watched video lecture.
- ▶ Observing the items that a user views the video lectures.
- ▶ Keeping a record of the items that a user discusses in the forum and newsgroup articles.
- ▶ Analyzing the user's social network and discovering similar likes and dislikes “Only for MOOC lectures”.
- ▶ Provide a recommendation mechanism that enables learners to discover external video lecture and learning resources based on their interests and activities on the learning environment.

# Related Work

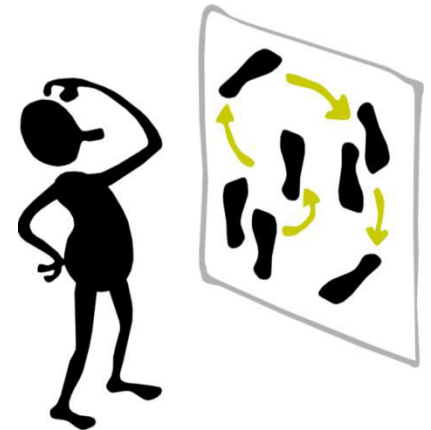


Yousef, A. M. F., Chatti, M. A., & Schroeder, U. (2014a, March). Video-Based Learning: A Critical Analysis of The Research Published in 2003-2013 and Future Visions. In eLML 2014, The Sixth International Conference on Mobile, Hybrid, and On-line Learning (pp. 112-119).

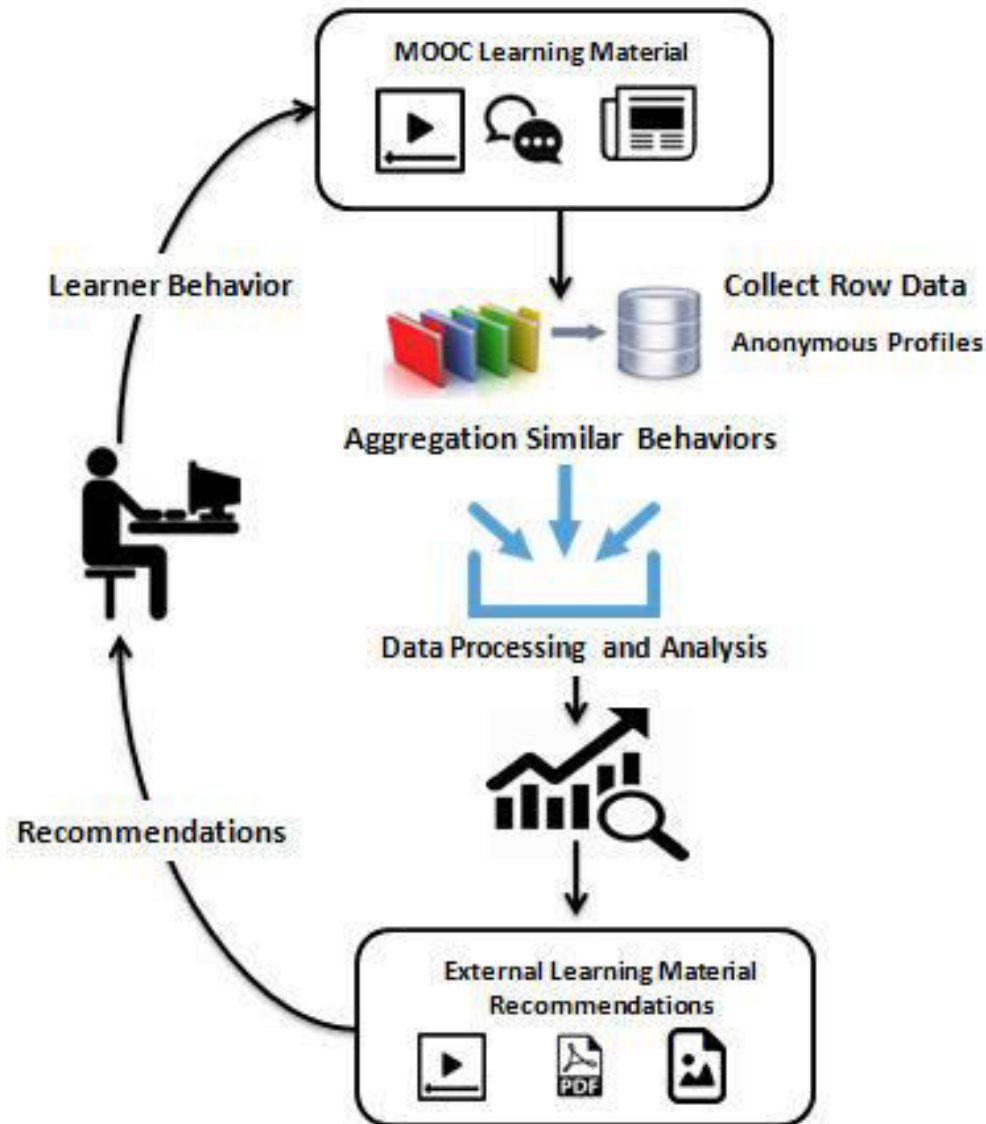
# User Requirements

---

- ▶ Collect as much data as reasonably possible from the video timeline.
- ▶ Support for a wide variety of current and future mobile devices.
- ▶ The system must deal with privacy police of the university. The user must be aware about the fact that the application is running, that it is collecting data, or what data it is collecting.



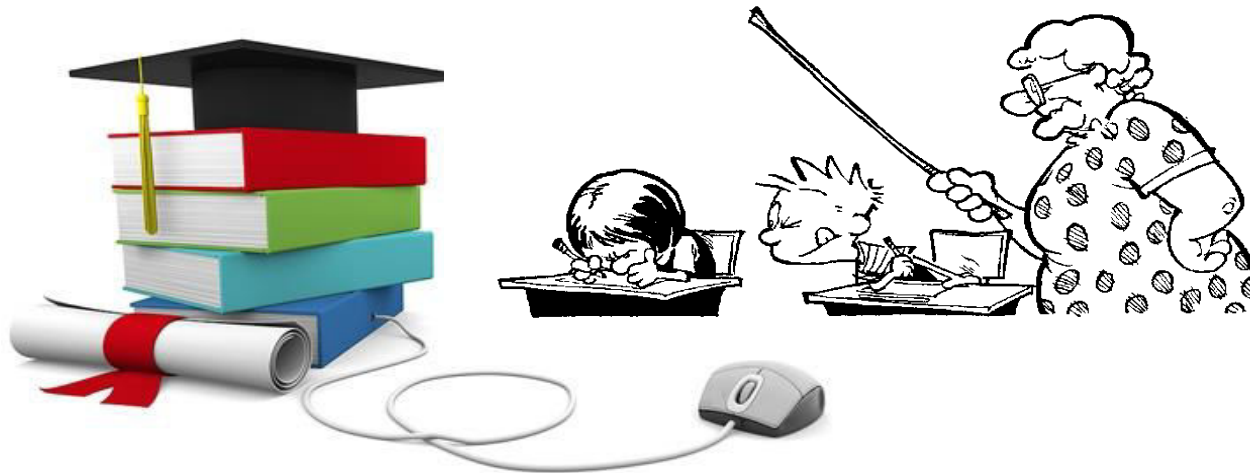
# System Architecture





# Case Study

---



# Case Study

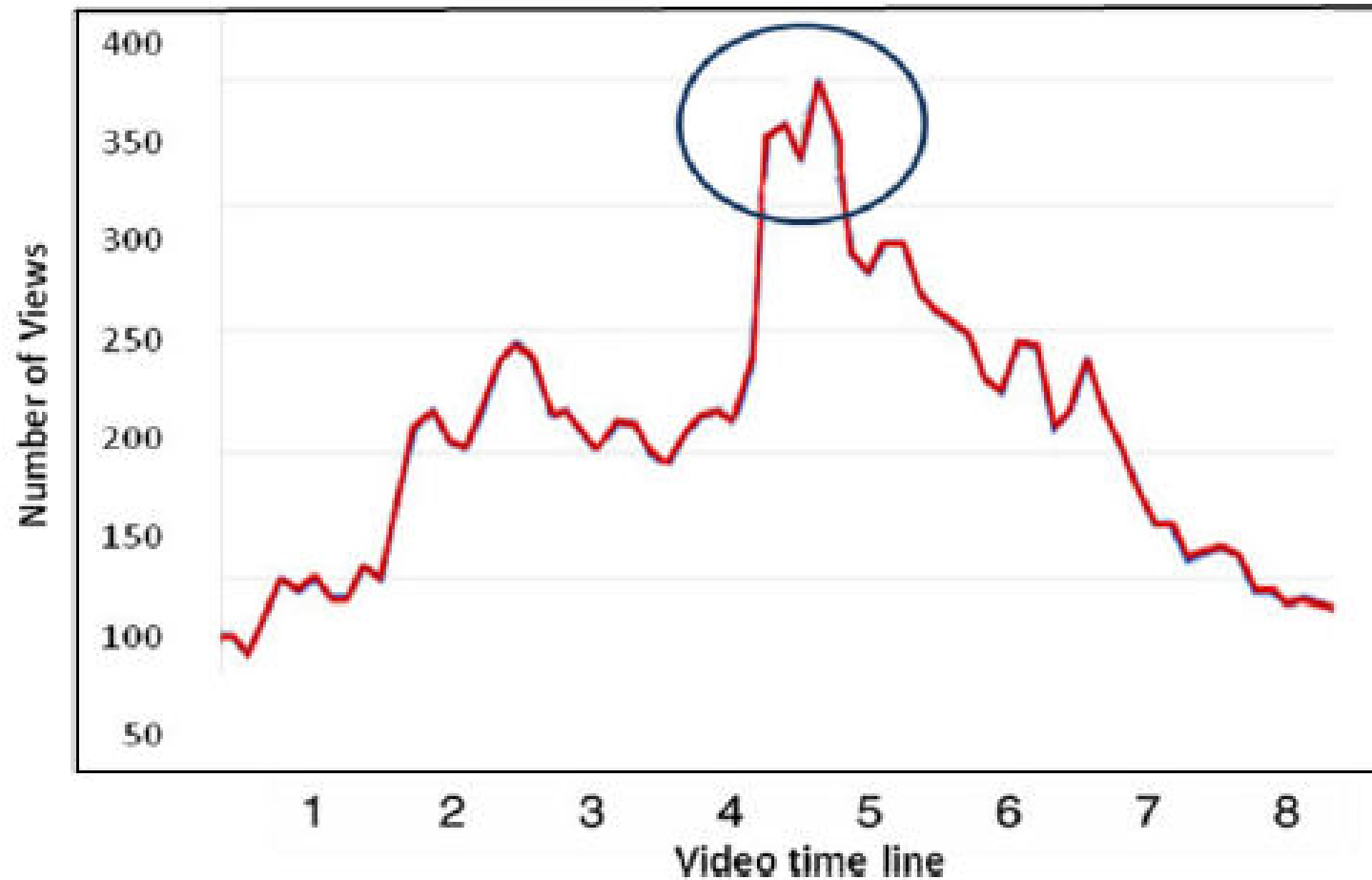
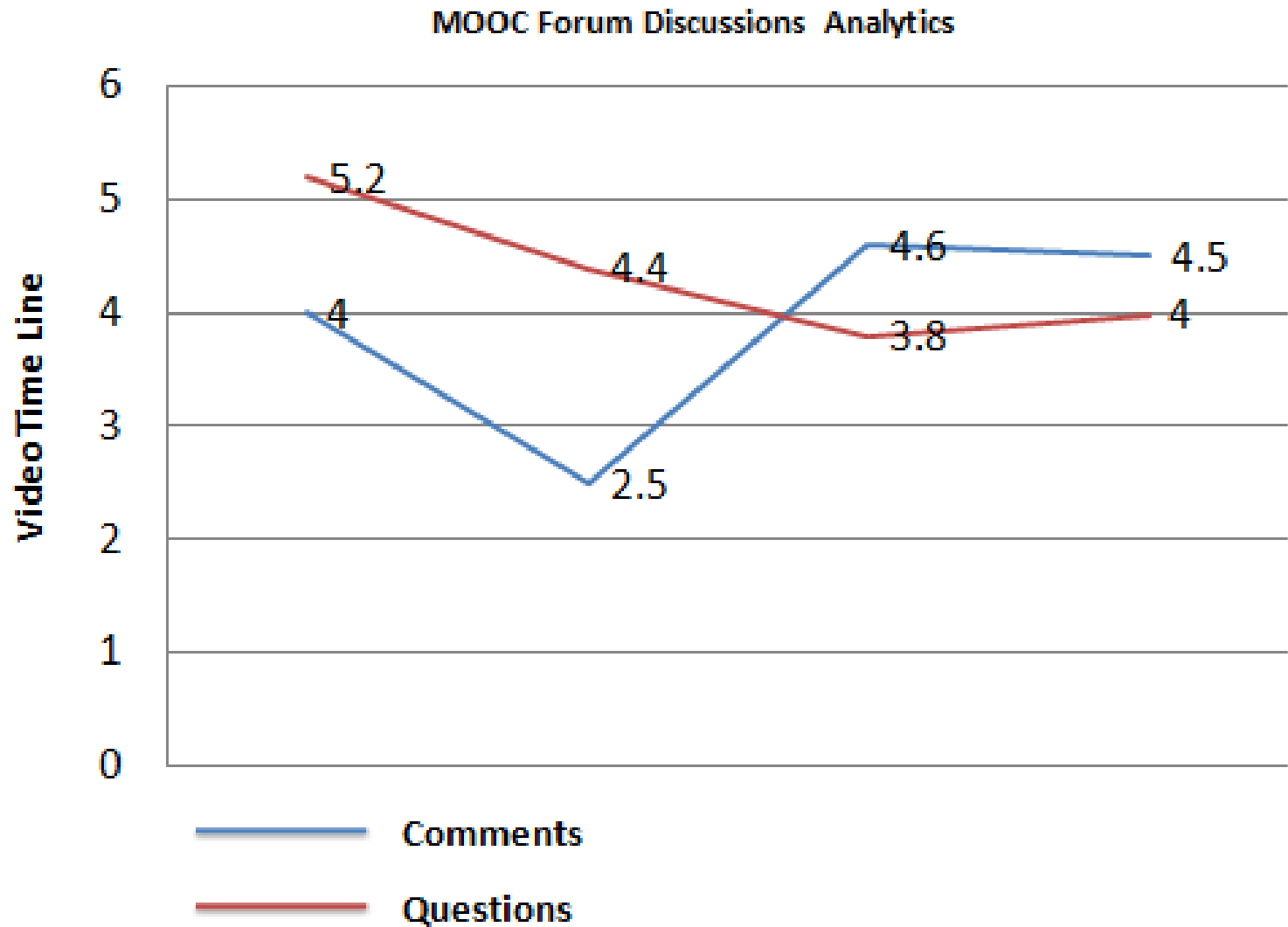


Figure 3. Video Heatmap Analysis

# Case Study



# Usability Evaluation: The System Usability Scale (SUS)

No	System Usability Scale (SUS)		
	Item	User Rating	SUS Score
1	I think that I would like to use this website frequently	4.3	3.3
2	I found the website unnecessarily complex	2.3	2.7
3	I thought the website was easy to use	3.9	2.9
4	I think that I would need the support of a technical person to be able to use this website	2.1	2.9
5	I found the various functions in this website were well integrated	4.6	3.6
6	I thought there was too much inconsistency in this website	1.9	3.1
7	I would imagine that most people would learn to use this website very quickly	4.6	3.6
8	I found the website very cumbersome to use	1.1	3.9
9	I felt very confident using the website	4.8	3.8
10	I needed to learn a lot of things before I could get going with this website	1.2	3.8
SUS Total Score			84

# Effectiveness Evaluation

No	Effectiveness Evaluation		
	Item	Mean	SD
1	I think that I the system is able to provide specific recommendation for me	4.3	0.45
2	I thought the system is able to recommend me (four to five) relevant learning material.	4.3	0.73
3	The remmended learning material help me to better understand the course content.	4.1	0.91
4	I think that items recommended to me are diverse (Videos, PDF, Images).	3.45	1.20
5	I found the rating system (Likes) helps me to assess the quality of the learning material	4.6	0.62
6	I found it is too easy to obtain the recommened learning resources for me form OER.	3.9	1.13
7	The personalized links recommendation helps me to reflect on my own performance.	4.6	0.61
8	I found the system is very respect of my praivacy.	4.6	0.34
9	I think the discciions formu helps me to improve collaboration with peers.	4.8	3.8
10	I can get help at any point that is tailored to where is me.	4.2	0.82
Effectiveness Evaluation Average Score		4.28	1.06

# Conclusion

---

The aim of this research was to explore and explain the personalized links recommendation tool in MOOCs. According to the case study results, responses regarding recommendation provided through this tool were largely positive. However, some learners received only recommended videos. One possible reason for this is that, those participants didn't participate in the discussion forum or students news group.

# Future work

---

## Enhancing MOOC Platforms through learning analytics





Dr.rer.nat. Ahmed Mohamed Fahmy Yousef  
E-mail: [amf00@fayoum.edu.eg](mailto:amf00@fayoum.edu.eg)