Towards integration of Learning Analytics and intelligent online assessment service: Nordic passion, WISEflow case

OMAP

Online Massive Assessment Platform

For stress-less school

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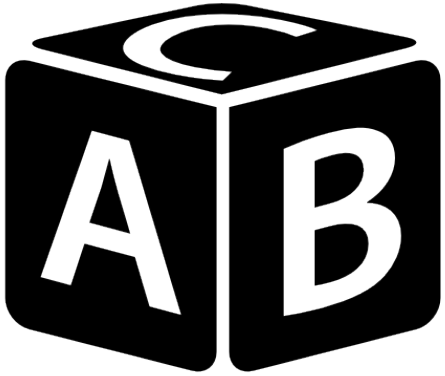
What is the OMAP we propose?

Definition



OMAP covers all the tests.

What does stress-less school mean?

Problem & Value

Money stress

Security stress

stress-less school

OMAP makes all easier

stress

stress

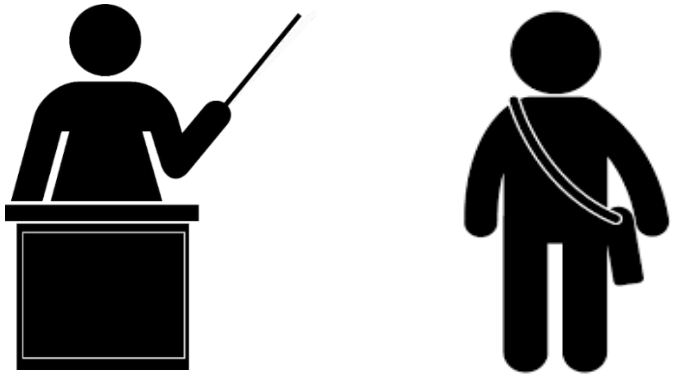
Teachers

Students

Who are our customers?

Target

Take away all the stress in schools.



Teachers **Students**

How much?

Business model

school

A License fee per year/semester

Prices may vary according to schools size (no of students)

How do I go to market?

GO-TO MARKET PLAN

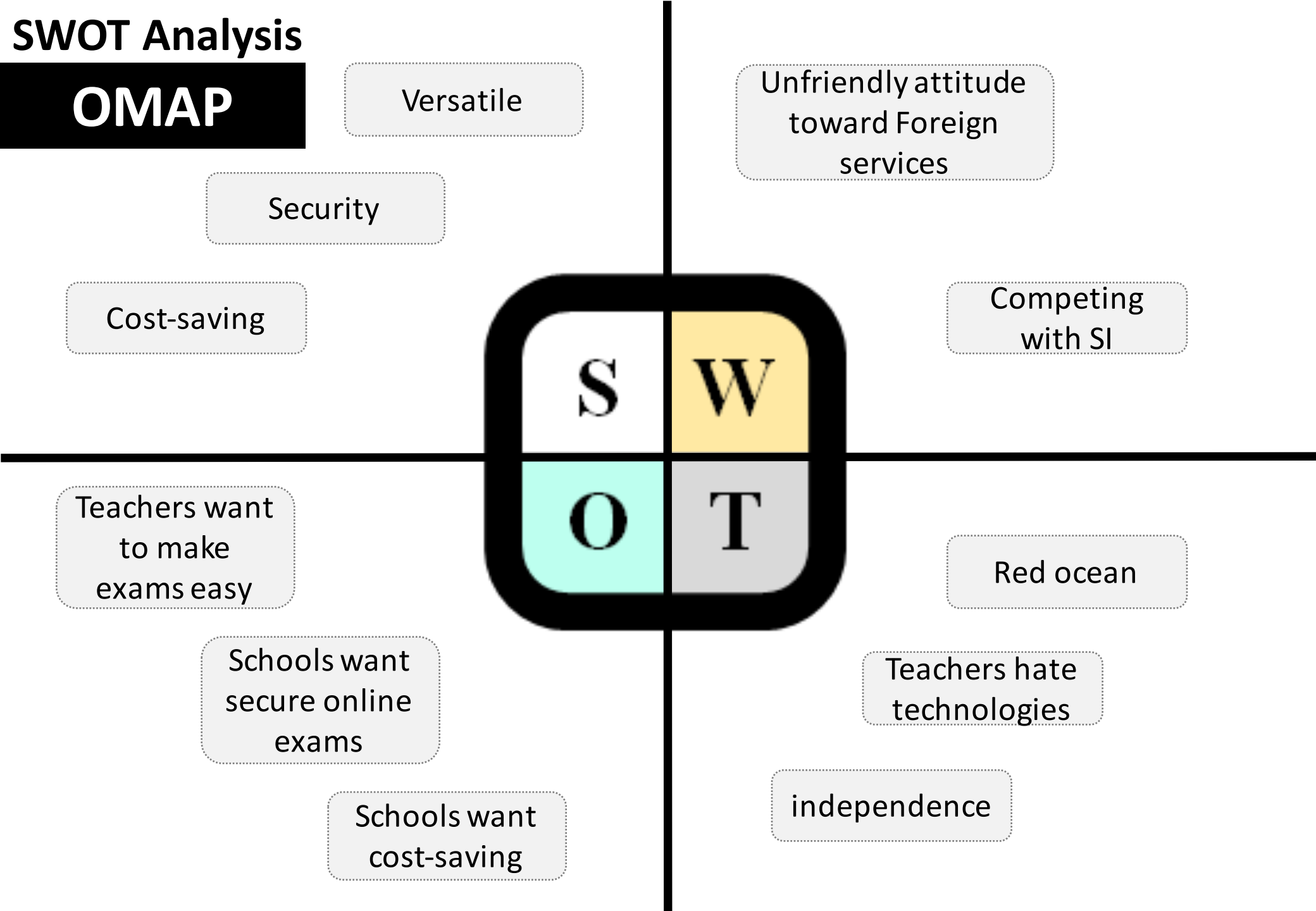
Recruit Pilot schools

Search Promotion & Sales partner

What superiorities does OMAP have?

SWOT Analysis

OMAP



Who are we, DUCOgen?

WHO WE ARE

CEO

Service Design


Education


Development



Industry-University R&D Center

UNIwise

Ewha University

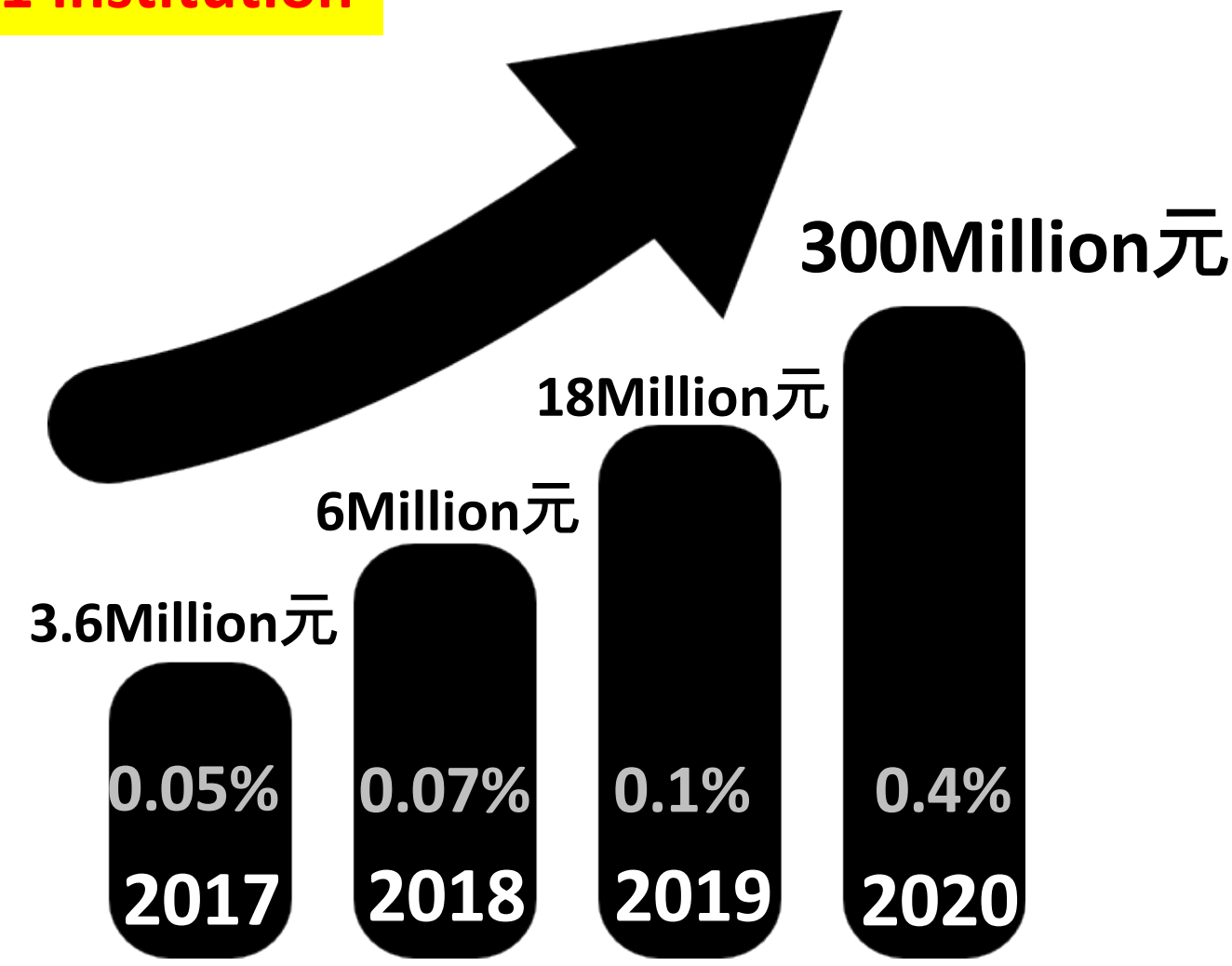
UNIwise is an Scandinavian's leading online assessment services provider.

How much will you get money?

ILLUSTRATIVE

Financial Projection

10,000 students = 1 institution



3 Hundred Million CNY income is expected

Let’s take a real look at our current situation

ROADMAP

CHINA

OMAP

Establish 6 branch network

Welcome Pilot-study

Welcome Promotion and Sales partners

further questions

creative partners

Ducogen
Nordic Passion

Learning by Doing

Park Jung Ho I CEO

DUCOgen/UNIwise Korea

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Implications of Learning Analytics on OMAP

Eunji Lee

Ewha Womans University

LAPA
LEARNING ANALYTICS FOR PREDICTION & ACTION

Implications of Learning Analytics on OMAP

1) Uncovered Treasure: Big Data

- **Large Amount of Data from WISEflow**

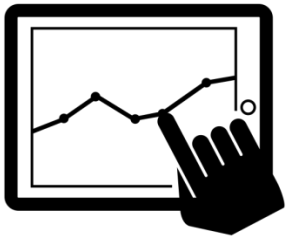
- Grading
- Time spent on each item
- Frequency of modifying answer
- …

Implications of Learning Analytics on OMAP

1) Uncovered Treasure: Big Data

- **Necessity of Various Methods of Data Analysis**

- Predictive modeling
- Regression
- Cluster analysis
- Machine learning
- Network analysis
- Time series analysis
- …



Implications of Learning Analytics on OMAP

1) Uncovered Treasure: Big Data

- **Clustering of Online Students: Towards an Elaborated Prediction Model of Learning Achievement** (Lee, H., Sung, H., Park, Y. & Jo, I., 2015)

✔ Research Variables

Variables	Explanation
TLT (Total Login Time)	A time period from the beginning of login to the point of time the learner finish it
TLF (Total Login Frequency)	Adding up the total numbers of login
LIR (Login Regularity)	Standard deviation of average login interval
VOB (Visit on Board)	Adding up the total numbers of access to board
TSB (Time Spent on Board)	A time period from the beginning of the using board to the point of time the learner finish it
LIRB (Login Regularity on Board)	Standard deviation of average access on board interval
TM (Time on Movie)	A time period from the beginning of the playing movie to the point of time the learner finish it
FM (Frequency on Movie)	Adding up the total numbers of playing movie
RM (Regularity on Movie)	Standard deviation of average playing movie interval
TS (Total Score)	Adding up each evaluation score

Implications of Learning Analytics on OMAP

1) Uncovered Treasure: Big Data

- **Clustering of Online Students: Towards an Elaborated Prediction Model of Learning Achievement** (Lee, H., Sung, H., Park, Y. & Jo, I., 2015)

How leaners' online behavior clusters certain groups with different characteristics?

✔ **Cluster Analysis (K-means algorithm)**

1. Standardize dataset → **scale difference**
2. Set the number of k = **3**
3. Find clusters which **minimize** the within-cluster sum of squares based on **Euclidean distance**

Implications of Learning Analytics on OMAP

1) Uncovered Treasure: Big Data

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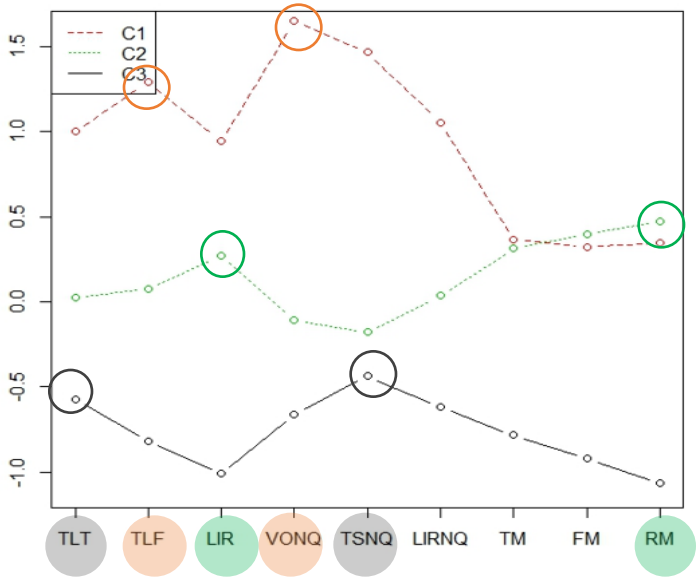
How leaners' online behavior clusters certain groups with different characteristics?

✔ **Cluster Analysis (K-means algorithm)**

Cluster mean vectors of K-means algorithm (N = 194)



	Number of Students	High value
C1	30	Busy sparrow
C2	107	Steady ant
C3	57	Inactive sloth

Implications of Learning Analytics on OMAP

1) Uncovered Treasure: Big Data

- **Clustering of Online Students: Towards an Elaborated Prediction Model of Learning Achievement** (Lee, H., Sung, H., Park, Y. & Jo, I., 2015)

✔ Conclusion

- **First**, each cluster showed different participation degree
- **Second**, predictors for learning achievement were different by cluster-based prediction models
- **Third**, the explanation ratio increased gradually in clustered prediction model than single model

[Whole group regression]

	(N = 194)
	t
(constant)	10.358
LIR	-4.294*
TSB	2.552*
TLT	-2.536*
LIRB	3.240*
VOB	2.681*
R^2(adj. R^2) = .222 (.201)	

x3

x2

[Clustered regression]

	(n= 30)
	t
(constant)	4.692
TLT	-6.788*
TM	3.510*
TSB	3.298*
R^2(adj. R^2) = .650 (.610)	

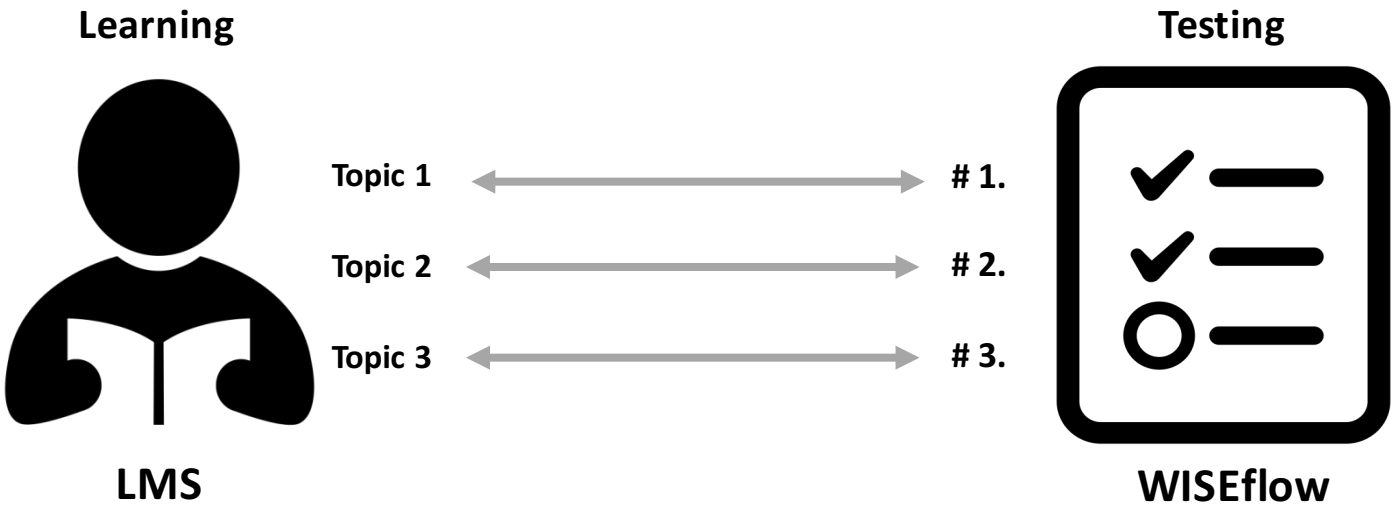
	(n = 107)
	t
(constant)	4.908
RM	2.105*
R^2(adj. R^2) = .040 (.031)	

	(n = 57)
	t
(constant)	.349
TLF	3.230*
TSB	3.014*
TM	2.257*
R^2(adj. R^2) = .436 (.404)	

Implications of Learning Analytics on OMAP

2) Combining learning data with WISEflow

- **Matching Learning data to Each Test item**



- Login-in time/frequency/regularity
- Time spent on learning video
- Frequency of repeat & pause
- …

- Grading
- Time spent on each item
- Frequency of modifying answer
- …

Implications of Learning Analytics on OMAP

2) Combining learning data with WISEflow

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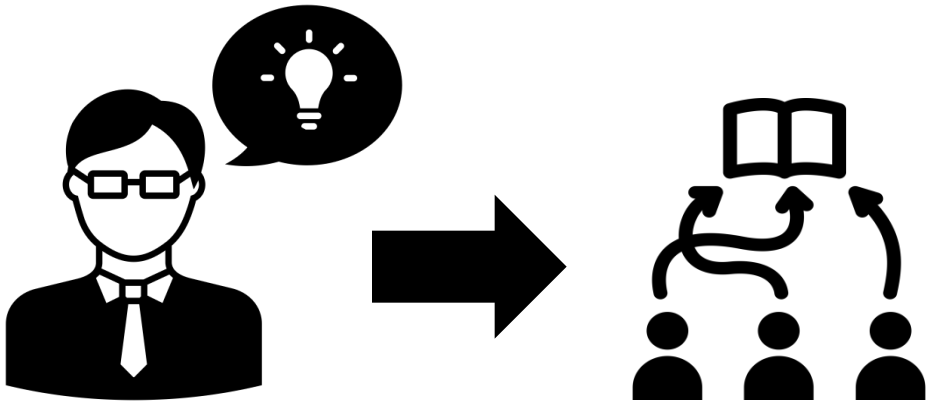
Implications of Learning Analytics on OMAP

2) Combining learning data with WISEflow

- **Providing Insights for Teaching and Exam methods**

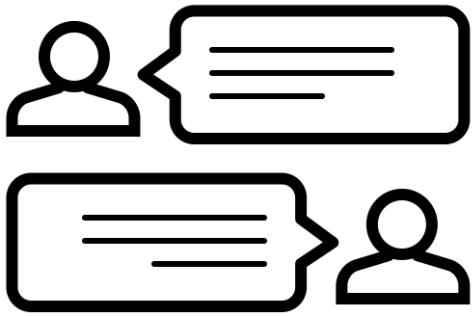


- Analyzing the connection between teaching methods and learning outcomes.
- Institutions can gain insights into which teaching and exam methods the students perform best in.

Implications of Learning Analytics on OMAP

3) Using Data for Action and for Impact

- **Automated Message feedback**

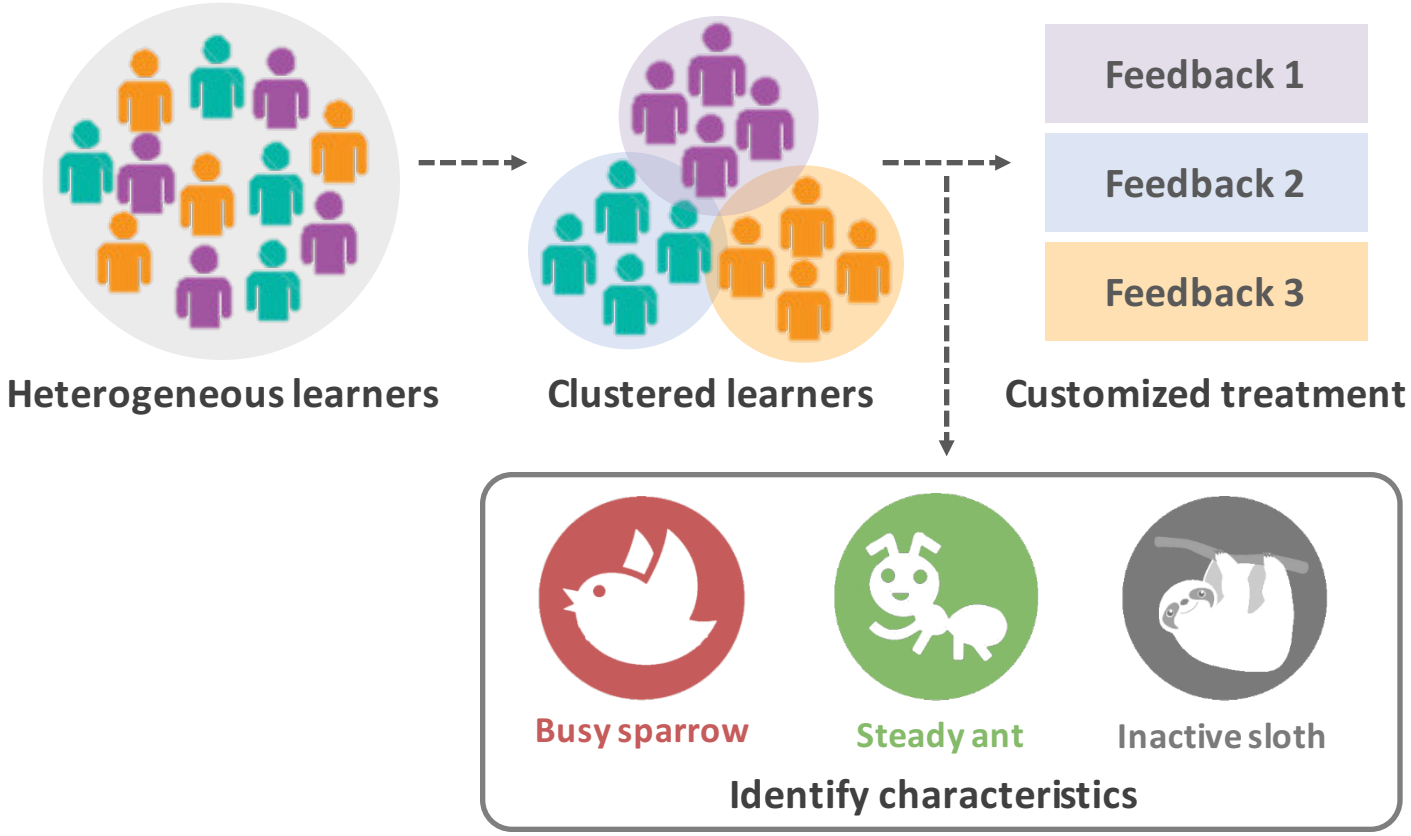


- Highlighting ’feedback’ function in WISEflow.
- Customize the messages and control the flow of info.

Implications of Learning Analytics on OMAP

3) Using Data for Action and for Impact

- **Automated Message feedback**

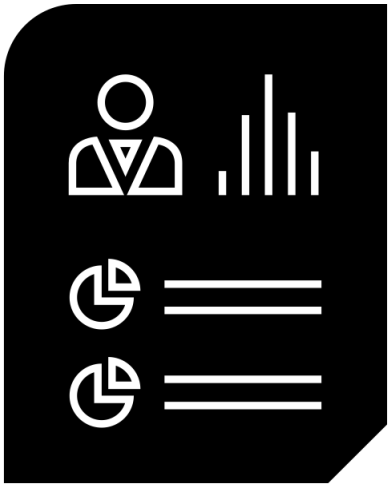


[Facilitate active participation + enhance learning performance]

Implications of Learning Analytics on OMAP

3) Using Data for Action and for Impact

- **Learning Analytics Dashboard**



- A visualized and intuitive display derived from the results of educational data-mining for the purpose of supporting students' learning and performance improvement
  (Yoo, Lee, & Park, 2014)

- LAD includes visual elements such as charts, graphs, indicators and alert mechanisms (Podgorelec & Kuhar, 2011).

Q & A

LAPA
LEARNING ANALYTICS FOR PREDICTION & ACTION

Thank you !

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LEARNING ANALYTICS FOR PREDICTION & ACTION