Problems of Korean higher education and learning analytics as solutions

Il-Hyun Jo
Ewha Womans University
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Basic statistics of Korean higher education

Number of Universities / Colleges

<table>
<thead>
<tr>
<th>Year</th>
<th>Universities</th>
<th>Colleges</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>183</td>
<td>147</td>
</tr>
<tr>
<td>2012</td>
<td>189</td>
<td>142</td>
</tr>
<tr>
<td>2013</td>
<td>188</td>
<td>140</td>
</tr>
<tr>
<td>2014</td>
<td>189</td>
<td>139</td>
</tr>
<tr>
<td>2015</td>
<td>189</td>
<td>138</td>
</tr>
</tbody>
</table>
## Basic statistics of Korean higher education

### Number of Students / Faculty members

#### Students

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Universities</th>
<th>Colleges</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>2,065,451</td>
<td>776,738</td>
<td>1,288,713</td>
</tr>
<tr>
<td>2012</td>
<td>2,103,958</td>
<td>769,888</td>
<td>1,334,070</td>
</tr>
<tr>
<td>2013</td>
<td>2,120,296</td>
<td>757,721</td>
<td>1,362,575</td>
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<tr>
<td>2014</td>
<td>2,130,046</td>
<td>740,801</td>
<td>1,389,245</td>
</tr>
<tr>
<td>2015</td>
<td>2,113,293</td>
<td>720,466</td>
<td>1,392,827</td>
</tr>
</tbody>
</table>

#### Faculty members

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Universities</th>
<th>Colleges</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>63,905</td>
<td>12,891</td>
<td>51,014</td>
</tr>
<tr>
<td>2012</td>
<td>68,034</td>
<td>13,078</td>
<td>54,956</td>
</tr>
<tr>
<td>2013</td>
<td>69,802</td>
<td>13,015</td>
<td>56,787</td>
</tr>
<tr>
<td>2014</td>
<td>71,401</td>
<td>12,920</td>
<td>58,481</td>
</tr>
<tr>
<td>2015</td>
<td>72,642</td>
<td>12,991</td>
<td>60,651</td>
</tr>
</tbody>
</table>
Basic statistics of Korean higher education

- Number of Jobs for Universities/Colleges’ graduates

**Employment rate of Graduates**

- Universities
- Colleges
- Total
CSAT (College Scholastic Ability Test) is a standardized test used for admissions by Universities and Colleges in Korea.

Test have five sections: Korean, Math, English, Social Studies/Science, 2nd Foreign Language/Chinese Character

Application timeline is as follows:

<table>
<thead>
<tr>
<th>Classification</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application period</td>
<td>Three days or more between Dec. 31, 2016 &amp; Jan. 4, 2017</td>
</tr>
<tr>
<td>Selection period</td>
<td></td>
</tr>
<tr>
<td>Group Na</td>
<td>Jan. 15, 2017 Jan. 21, 2017 (7 days)</td>
</tr>
<tr>
<td>Group Da</td>
<td>Jan. 22, 2017– Feb. 1, 2017 (11 days)</td>
</tr>
<tr>
<td>Announcement of successful applicants</td>
<td>On or before Feb. 2, 2017</td>
</tr>
</tbody>
</table>
Entrance of K-Colleges, without internal learner motivation

Roles of private prep academies
About Early Decision

- Extra curricular resume can include the following activities:
  1) Student clubs
  2) Student council
  3) Volunteer work
  4) Mentoring programs
- Application timeline is as follows:

<table>
<thead>
<tr>
<th>Classification</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application period</td>
<td>Three days or more between Sep. 12, 2016 and Sep. 21, 2016</td>
</tr>
<tr>
<td>Selection period</td>
<td>Sep. 12, 2016 – Dec. 14, 2016 (94 days)</td>
</tr>
<tr>
<td>Announcement of successful applicants</td>
<td>On or before December 16, 2016</td>
</tr>
</tbody>
</table>
Entrance of K-Colleges, without internal learner motivation

✓ Extra-curricula portfolio by “mothers:”
During collegiate years, without performance feedback

Lack of feedback in Korean Collegiate years

Frequency of performance feedback from Instructor (Bae, 2012)

Korean

USA

Never

Seldom

Often

Usually
During collegiate years, without performance feedback

- Comparative scoring system (curve-based)

  - Examples of Ewha

  

  Sum of A and B

  Within 70%

  More than 30%

  Within 35%
During collegiate years, without performance feedback

- Comparative scoring system (curve-based)

  - Reasons of Comparative scoring system

To prevent grade inflation, Comparative scoring system is mandatory for university
During collegiate years, without performance feedback

- Comparative scoring system (curve-based)
  
  - Problems of Comparative scoring system

Real learning is rarely occurred
During collegiate years, without performance feedback

- Government-led innovation in collegiate education & assessment

![Diagram showing the Ministry of Education with branches for PRIME, CORE, and ACE](image-url)
During collegiate years, without performance feedback

- Extensive use of technology
  - High-tech classroom in Ewha
During collegiate years, without performance feedback

Lack of Feedback

Providing feedback to improve real learning with Learning Analytics

Government-led Innovations
Exit of K-Colleges, without Jobs

- Delayed exit for “specs”

About 30,000 students are delaying graduation.

About 30% of 467,570 TOEIC/TOEFL test takers are opting for stop-out.

- TOEIC / TOEFL
- OVERSEAS STUDY
- CERTIFICATION
Exit of K-Colleges, without Jobs

✓ NCS (National Competency Standards) and its variations

“NCS is standardization of derived, required skills for the workers to accomplish the duties in their jobs (MOEL, 2010b).”
Implications and issues

- Recognition of learner motivation to specs, curves, and jobs
- Design of longitudinal customized portfolio system including extra-curricula
- Support management to win government funding opportunities
Status quo of learning analytics in Korean higher education

- Total 61 academic researches between 2008 and 2016
- Starting to some researches in several universities

A Literature Review on Learning Analytics: Exploratory study of empirical researches utilizing log data in Korea (Ahan, M. et al., 2016)
Status quo of learning analytics in Korean higher education

Learning analytics and e-portfolio system

- Personalized learning and Supporting career design utilizing big data
Ecological characteristics of Korean LA

LA as an evidence-based quality assurance initiative

Sensitive to evaluating learning progress
Ecological characteristics of Korean LA

✓ LA as a leverage for winning government funding

ex) K-MOOC

- K-MOOC is the Korean Massive Open Online Course (MOOC) system led by government
- National Institute for Lifelong Education (NILE)
- The president of NILE said

"K-MOOC platform will conduct learning analytics research utilizing various learning activity logs and data of the users and promote related research."
Ecological characteristics of Korean LA

LA as future ‘bread earning’ industry of Korea
LAPA, leading research project in Korea

Logical structure of LAPA Model

Learner-customized Dashboard & Treatment model

Learner

[Learning Model]

Self-regulating

Learner’s Psychology

• Cognitive
• Motivated
• Social

Instruction

Learning Behavior

• Social interact
• Self-regulated Learning

Individual Trait

• Demographic information
• Self-directedness

[Prediction Model]

Log-data (non-interference)

Cluster Analysis

Prediction Model for each Cluster

• Learning performance

[Action Model]

Classifying Groups

• By predicted risks of each group

Preventive Treatment

• Visualized feedbacks
• Guideline for instructor and learners

Instructor's Dashboard & Guideline

Instructor

Learner’s Psychology

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Instruction

[Learning Model]

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Learner-customized Dashboard & Treatment model

Instructor’s Dashboard & Guideline

Instructor

Learner
Introduction of KRF funded 5-year research project

LAPA, leading research project in Korea

Development of Tailored Flipped Learning Model and Support System based on Big Data and Smart Device: In a Middle School Math Curricula Context
LAPA, leading research project in Korea

Introduction of KRF funded 5-year research project

1st Stage

[ What learners do ]
- Observation
- Log data

2nd Stage

[ Why learners do that]
- Cause-effect
- Various data
- SR interview

3rd Stage

[ How to treat learner ]
- Treatment
- E.T approach

Learner Analysis
LAPA, leading research project in Korea

1st Stage

- Login Time & Frequency
- Time on Movie
- Time on Discussion

- Dropout rate
- Achievement
LAPA, leading research project in Korea

- The initial attempt

Psychophysiological approach with Learning Analytics

- Behavioral Log
- Test Anxiety Survey
- Psychophysiological Response
- Achievement
LAPA, leading research project in Korea

Repeat time

HR rate for Exam

HR rate for Movie

Achievement

Test Anxiety
LAPA, leading research project in Korea

Reflections and Prospections

- 2nd Stage of project
LAPA, leading research project in Korea

- Experimental research
  - Second phase

- Brainwave data
- Facial Expression data
- Heart Rate data
- Eye behavior data
LAPA, leading research project in Korea

☑ Experimental research
LAPA, leading research project in Korea

Reflections and Prospections

- Research Results

<table>
<thead>
<tr>
<th>Prediction</th>
<th>Learning</th>
<th>Action</th>
<th>Ethics</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Constructing Proxy Variables to Measure Adult Learners’ Time Management Strategies in LMS (Jo, I., Kim, D., &amp; Yoon, M., 2015)</td>
<td>- A Study on the Relationship among Test Anxiety, Behavioral Log, Psychological Response and Learning Achievement for Video-Based Learning contents (Sung, H. &amp; Jo, I., 2016)</td>
<td>- Effects of learning analytics dashboard: analyzing the relations among dashboard utilization, satisfaction, and learning achievement (Kim, J., Jo, I., &amp; Park, Y., 2016)</td>
<td>- Promises and Challenges of Learning Analytics (Kim, J., et al, 2014)</td>
</tr>
<tr>
<td>- Analysis of online behavior and prediction of learning performance in blended learning environments (Jo, I., Park, Y., Kim, J., &amp; Song, J., 2014)</td>
<td></td>
<td>- An exploratory study on the development of Index for K-MOOC analytics system (Park, Y., Kim, M., &amp; Jo, I., 2016)</td>
<td></td>
</tr>
<tr>
<td>- Effects of Communication Competence and Social Network Centralities on Learner Performance (Jo, I., Kang, S., &amp; Yoon, M., 2014)</td>
<td></td>
<td>- Clustering blended learning courses by online behavior data: A case study in a Korean higher education institute (Park, Y., Yu, J., &amp; Jo, I., 2016)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- LAPA (Learning Analytics for Prediction &amp; Action) Model as a Theoretical Framework for Educational Technology Research and Development in Emerging Technology-mediated Learning Phenomena (Jo, I., 2014)</td>
<td></td>
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LAPA, leading research project in Korea

- Reflections and Prospections

- 2016 LAPA Workshop (2016.06.20)
  - Total 137 persons
  - National organization(3) / Business(36) / University(80) / Research institution(6) / etc(12)
Implications and imperatives of LAPA as learning design infrastructure

- ✓ Decision-support system for mass customization of learning

- ✓ Evaluation as beginning of analysis in spiral learning design

- ✓ Challenges: Ethics, Informational self-determination, Professional integrity, Commercialization of learning
Q & A

Il-Hyun Jo  ijo@ewha.ac.kr
Thank you !