Abstract

The purpose of this study is based on two questions: 1) Given the beliefs and attitudes of teachers, what are the characteristics of the teachers who are willing / not willing to attend professional development activities? 2) Are there any specific characteristics that can identify the groups of teachers well? 14 countries in 2008 OECD (Organizational for Economic, Cooperation and Development) TALIS dataset (Teaching and Learning International Survey) were investigated (n=46,266). National-level specific variables of these countries were included for examining whether education investments of countries make teacher’s perception of professional development different. The blockwise multilevel logistic regression were performed using HLM. Variables of teachers’ beliefs on teaching and their attitudes towards the environment were used separately with latent class analysis to identify 3 groups of teachers. The result reveals significant cross-country differences in teacher’s professional development willingness. This finding not only driven by teaching constructivist beliefs and attitudes, but it is also influenced by nation-specific characteristic variability.

**How Professional Development Can Do Better for Teachers, and Who Needs It?**

The Implications from Hierarchical logistic Regression Analysis and Latent Class Analysis

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**Coefficients of the logistic multilevel analysis of professional development willingness**

<table>
<thead>
<tr>
<th>Model</th>
<th>Intercept</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
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<tr>
<td>Model 1</td>
<td>-0.191</td>
<td>0.230</td>
<td>-0.745*</td>
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</tr>
</tbody>
</table>

**Macro indicators**
- Expenditure on educational institutions as a percentage of GDP
- Day of instruction per school year

**Background**
- Female
- under 25 years old
- 25-29 years old
- 30-39 years old
- 40-49 years old
- 50-59 years old
- full time teacher
- part time teacher (50-90% of full-time hours)
- work at another school
- less or equal to 1 school-year fixed-term contract
- more than 1 school-year fixed-term contract
- Doctoral degree
- Master degree
- Research-based bachelor degree
- Skill-based bachelor degree
- Teaching experience: 1-2 years
- Teaching experience: 3-5 years
- Teaching experience: 6-10 years
- Teaching experience: 11-15 years
- Teaching experience: 16-20 years
- Academic training subject

**Teacher’s beliefs**
- Demonstrate solution
- Facilitate inquiry
- Finding solution
- Clear problem ideas
- Teaching facts
- Think to solve problem
- Quiet classroom
- Thinking vs curriculum

**Teacher’s attitudes**
- Satisfied with my job
- Making significant difference to stu
- Progress difficult students
- Successful with students
- Getting through to students
- Well respected in the community
- teacher student get on well
- students well-being important
- interest what students say
- provide extra assistance

**Variance Components**
- 0.640*** 0.800 0.641*** 0.801 0.613*** 0.783 0.245*** 0.500

**Results**
- The initial intercept of variance of the model (model 0) with no any macro or micro indicators is 0.655, showing that the differences observed between the countries at the country level are statistically significant. This doesn’t change when background variable, teacher’s beliefs, attitude and macro variables are successively incorporated into model 1 to model 4 as indicator variables.
- From model 0 to model 4, the variance component of intercept falls from 0.655 to 0.245. Comparing Model 4 and Model 0, when macro indicators take into account, the decrease amounts in total to 62.60 percent (1.0245/0.655).
- Examination of the influence of the fixed effects on professional development willingness reveals that middle age teachers are more willing to participate professional development activities comparing to young teachers (age under 25).
- Teachers with more constructivism beliefs are more likely to participate professional development activities. Meanwhile, teachers who are not satisfied with their jobs, who didn’t get through students well, who didn’t get well-respected from the local community, who think the teacher-student relationship in school is not well are more likely to have further professional development need. In addition, teachers who think their roles are important to students, who are willing to try hard for the most difficult and unmotivated students, and who believe students’ well-being is important are prone to partake more professional development activities.
- The results of the latent class analysis showed good quality of classification for 3 classes. The probability of teachers in the study to change group membership is less than 0.6%. In addition, entropy for classes of teacher beliefs is 0.989, while for 3 classes of teachers’ attitude towards environment is 0.996, showing good classification of the model as well, and worth used as an alternative model to validate the results.

**Correlation between aggregated teacher’s professional development and expenditure of the country**

- A positive correlation between the expenditure on lower secondary education and the professional development of teachers is observed.
- For example, in France and Sweden, the expenditure on lower secondary education is higher, which results in better professional development for teachers.
- On the other hand, in some countries like China and Indonesia, the expenditure on lower secondary education is lower, which results in lower professional development for teachers.