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Contents

3 The influence of standardized testing pressure on teachers′ working environment
Minjong Youn

23 Bridging social justice literacies: Elementary teachers′ beliefs about the goals of multicultural education
Hyunhee Cho & Jinyoung Choi

47 Pull factors influencing enrollment of Mainland Chinese students in Taiwanese universities: An empirical analysis
Joseph Meng-Chun Chin, Hsin-Chih Lin, Wei-Cheng Chien, & Cheng-Joo Eng

67 The antecedents of in-service teacher burnout: A study of their occupational health and perception
Angus C. H. Kuok & Stacy M. I. Lam

87 Exploring teacher inquiry through a teacher research community: Inquiry as stance and multicultural education as inquiry
Jonghun Kim

105 The new teaching career policy in Chile: Perspectives from school principals
Marta Quiroga & Felipe Aravena

121 Relationship among education fever, the college-admission policy, and shadow education in South Korea
Soojeong Lee

139 Academic achievement growth and differential association on proficiency levels
Yang-Boon Kim & Hyejin Shin

165 Understanding the adoption of e-learning in South Korea: Using the extended Technology Acceptance Model approach
KilYoung Cha & SangJib Kwon

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The influence of standardized testing pressure on teachers' working environment

Minjong Youn
Pusan National University, Korea

Abstract

Using a nationally representative sample of teachers from the Early Childhood Longitudinal Study (ECLS-K), this study employed structural equation modeling to examine the influence of testing pressure on teachers' sense of empowerment and its further consequences on their sense of community and professional commitment. Findings of this study suggest that testing pressure appears to lower teachers' sense of empowerment, and engenders further negative consequences on teachers' sense of community and their professional commitment. In addition, testing pressure may still deteriorate teachers' working condition independent from the level of social support that is provided within the school. Furthermore, such negative impact of testing pressure was prominent on middle and lowest socio-economic status (SES) schools. This study suggests a need to reconsider the notion that the pressure created by testing policies may lead to successful changes on teachers' working environment.

Keywords : testing pressure, empowerment, sense of community, professional commitment, structural equation model

The influence of standardized testing pressure on teachers' working environment

In the past few decades, an accountability system based on students' test scores has gained increasing popularity as a policy tool to motivate and reorient the behavior of teachers across countries (Meyer, Trohler, Labaree, & Hult, 2014; Ozga, 2013). In particular, the US has actively adopted state-wide standardized testing programs, and used the test results of students to evaluate teachers and further decide on school closures or reconstitutions. Most of these programs were implemented before No Child Left Behind (2002), although it, at the federal level, strengthened the momentum to continue and expand the high-stakes testing policy (Heiling & Darling-Hammond, 2008). Thus, at the federal, state, and local levels, the accountability system based on testing has become the linchpin of educational reform initiatives.

Yet, the spread of the 'accountability movement' via the testing policy has sparked an intensive debate over its influence on teachers' working environments in public schools (Meyer et al., 2014; Ozga, 2013). Advocates suggest that the threat of sanctions and rewards based on the test results of children reorients the behavior of teachers and improves their commitment and efficacy as a whole (Bishop & Mane, 1999; Borko & Elliot, 1999; Wolf & McIver, 1999). On the other hand, another body of evidence supports the notion that standardized testing pressures undermine teachers' professional autonomy, which consequently lowers their sense of a professional community and their commitment (Figlio & Ladd, 2008).

The literature, however, suffers from a lack of empirical evidence that can explain *how* the standardized testing pressure may influence aspects of teachers' working environments (Gordon, 2008). Using a nationally representative sample of kindergarten teachers based on the Early Childhood Longitudinal Study Kindergarten Cohort (ECLS-K), this study will address the following questions:

1) What is the influence of standardized testing pressures on teachers' sense of empowerment, sense of community, and professional commitment? Furthermore, does the social support provided within the school play a complementary role along with the standardized testing pressure?

2) Is there any systematic variation in teachers' responses to the standardized testing pressure depending on school socio-economic status (SES)?

This study is designed to explain the ways in which testing pressures influence teachers' sense of empowerment, sense of community, and professional commitment. In doing so, I will explore whether the impacts of the testing pressure on teachers' working environment show any systematic variation across school SES. Findings of this study may suggest whether the pressure created by testing policies may lead to successful changes on teachers' working environment.

Evidence of the influence of standardized testing pressure on teachers' empowerment, sense of community, and professional commitment

There are controversies concerning whether the increased emphasis on testing has actually improved the effectiveness of school staff through improving the school community, as a whole. One line of research argues that teachers suffer from reduced control over content and pedagogy as a result of an increasingly structured and controlled curriculum engendered by standardized testing pressure (to see the impact of testing policy on teacher instruction, see Hamilton, 2003; Koretz, Barron, Mitchell, & Stecher, 1996; Mehrens, 1998). From this perspective, it is often suggested that teachers' task discretion and autonomy at the school and classroom level have been greatly curtailed under the highly-regulated, top-down authority structures engendered by testing policies (Hamilton, 2003; Ingersoll, 2003).

Furthermore, the decrease in teachers' sense of empowerment due to testing policies may likewise lower their sense of commitment (Madaus, 1988; Rosenholtz, 1987). Indeed, evidence indicates that a large number of teachers either themselves contemplated leaving the profession or knew others who had done so because of standardized testing pressure (Abrams, Pedulla, & Madaus, 2003; Rosehnholtz, 1987). In addition, teachers working in high-stakes testing programs wanted to transfer out of the grades in which the test is administered, whereas teachers who feel empowered to make key workplace decisions have a substantially reduced turnover rate and more engagement with their schools (Abrams et al., 2003; Ingersoll, 2003).

Yet, other findings contradict these relationships, suggesting that they are inconsistent and there is no compelling evidence that standardized testing pressure may deteriorate teachers' working environments (Bishop & Mane, 1999; Borko, Elliott, & Uchiyama, 1999; Stecher, 2002). Archbald and Porter (1994) claim that there is little evidence that teachers feel less effective or less satisfied in their work because of a relative lack of control over their working conditions. Instead, their empirical evidence points to a positive influence of testing policies in that they induce the school community to work more efficiently and professionally (Borko et al., 1999; Wolf & McIver, 1999). For example, according to Bishop and Mane (1999), teachers in the 'all Regents' high schools in New York were inspired to work harder by their schools' commitment to students' success on the high-stakes Regents examination. Similarly, Gordon (2008) showed that testing policies stimulated educators to adopt a more collective stance. Indeed, teachers actually demonstrated more collaboration with their peers over time, such as the development of informal networks and relationships, and this benefit was attributed to the state-mandated testing program. The overall assessment from these studies is that test-based reform establishes an explicit standard which reduces the ambiguity in teachers' profession, and thereby improves their working conditions and enables them to work more efficiently.

As the review of this line of research indicates, the evidence for the impact of testing on teachers' professional community does not reveal a clear or systematic pattern of influence. Such inconsistent findings result from a number of methodological and

conceptual shortcomings in the previous studies. First, most studies have relied on local and district samples of teachers and schools that are not nationally representative (e.g., Chicago, Texas, and Florida). Though some researchers claim that regional sampling is sufficient and does not raise a concern for population variability and quality of data (V. E. Lee & Smith, 1999), their findings are still not generalizable to the nation's teachers. Second, many previous studies did not take into account different school and teacher characteristics, the lack of which may have exacerbated or undermined the relationship between standardized testing pressure and teachers' working environment. Third, while a considerable number of studies have been conducted on the influence of testing on teachers' instruction, very little attention has been devoted to understanding the ways in which testing may influence different dimensions of the working environment. These limitations of the previous studies underscore the need for a study based on a nationally representative sample that examines the consequences of standardized testing pressure on teachers' sense of empowerment, and how those consequences further influence teachers' sense of community and their professional commitment. Understanding this relationship may be important given that teachers' working conditions may play a significant role in shaping teachers' practices and behaviors within schools. In particular, under growing federal and state control over schools via external accountability policies, the nature of teachers' working conditions, especially empowerment, is a relevant topic to investigate in relation to teachers' practices (Gordon, 2008).

The complementary role of social support along with the testing pressure

A number of studies emphasize the importance of adequate social support to carry out any type of school reform (Hawley, 2008; V. E. Lee & Smith, 1999). In particular, the success of the reform may hinge not only on the effect of standardized testing pressure, but also on administrators' efforts to encourage teachers' commitment and the sharing of knowledge and practices among colleagues (Firestone, Monfils, Schorr, Hicks, & Martinez, 2004; Hallinger & Heck, 1996). Indeed, this line of studies suggest that standards and tests may serve as extrinsic motivation, but they need to be combined with supplemental internal support in order for the school to make successful changes (Hawley, 2008; V. E. Lee & Smith, 1999; Mintrop, 2008; Roderick, Bryk, Jacob, Easton, & Allensworth, 1999; Sunderman & Orfield, 2008). In this same vein, Fullan (1991) argues that pressure without support leads to resistance and alienation implying that contextual support is essential as it buffers the pressure placed on teachers by the policy change. Thus, these researchers oppose an 'either-or' proposal for school reform that views pressure and social support for teachers as contradictory strategies. Instead, they suggest a complementary role of support as the key mechanism to buffer the negative impact of pressure, and thus promote teachers' motivation and commitment (Hawley, 2008). However, little attention has been devoted to the mechanism through which social support plays a complementary role along with the standardized testing pressure.

From this perspective, the present study extends previous work by taking into account social support in assessing the relationship between standardized testing pressure and teachers' working environment.

The varying influence of standardized testing pressure depending on school SES and social support

Beyond the debate over whether the effects of testing are positive or negative, some previous studies indicate that the effect of standardized testing pressure appears to vary depending on school contextual characteristics (Firestone, Mayrowetz, & Fairman, 1998; Grant, 2000; Taylor, Shepard, Kinner, & Rosenthal, 2003). The empirical evidence, though not extensive, indicates that schools show a systematic variation in their response to the testing policy that depends on their available capacity (e.g., human, social, and physical resources) to support the reform, and this variation engenders different impacts (Bulkley, Fairman, & Martinez, 2004; J. Lee & Wong, 2004; Roderick & Engel, 2001). Specifically, those schools without the capacity are unlikely to respond to the testing policy, and instead simply turn to the "quick fix" which may engender negative responses from the teachers, whereas those schools with financial resources and tools necessary for reform pursue systemic and deep change at both the school- and teacher-level and create expected positive outcomes (Bulkley et al., 2004; Sunderman & Orfield, 2008). In this view, the omission of school contextual characteristics, such as school SES, can lead to a spurious relationship between standardized testing pressure and teachers' working environment. To this end, previous studies suggest the need for a study that examines the ways in which testing pressure influences teachers' working environment, and whether this relationship varies across school SESs after controlling for teacher and school characteristics.

In assessing these relationships, this study employs a nationally representative sample of kindergarten teachers, given that the sample of teachers in other years in the ECLS-K does not represent the national population of teachers. There are a number of reasons why studying kindergarten teachers can shed light on the influence of testing policies. There has been a clear shift toward a more performance-oriented kindergarten with increasing academic demands and standards for content and performance, for instance, to improve the academic preparedness of children before they enter elementary school. Indeed, under the current movement to extend the existing high-stakes policy before third grade, teachers are now confronted with explicit instructional guidance in their curriculum content with the evaluation criteria, which in turn reduces their task autonomy and are impaired in their discretion to match appropriate learning objectives to students (Black, 2004; Slavin, 2003). In addition, a large proportion of kindergarten teachers in this study are part of an elementary school, and thus share the collective perception of their working environment with their colleagues. That is, according to Coleman, Hoffer, and Kilgore (1982), shared norms within a community exert influence over the actions of others, especially when these actions influence the outcomes of the group. As a result, though kindergarten teachers may not always be the target population

of the pressures of testing policies, the testing policy literature indicates that the entire school organization is likely to respond to a policy and experience similar consequences (Pedulla et al., 2003). Given that the increasing academic demands in kindergarten and the school-wide influence of testing policies are recent phenomena, kindergarten teachers may be exemplary cases for understanding how teachers' workplaces are reshaped by standardized testing pressure. Thus, exploring the relationship between testing and teachers' workplace in kindergarten may provide important implications for both academic research and policy implementation.

Analytical approach

There have been two main approaches to examining the impact of educational policy on teachers' working conditions. The first approach is to study the individual teacher as a unit of analysis, focusing on the impact of educational policy on individual teachers' practices and their perceptions about their working environments. The second approach is to aggregate each individual teacher's perceptions at the school level, defining it as 'collective perception' and using the average score of teachers' attitudes within the school. This latter approach sees teachers' attitudes, in the aggregate, as an organizational feature of the school (V. E. Lee & Loeb, 2000; V. E. Lee & Smith, 1996). In this view, teachers' attitudes at the collective level represent the shared values of school members and thus can be characterized as an organizational feature of the school that shapes the learning experience of children (Goddard, Hoy, & Hoy, 2004; V. E. Lee & Smith, 2001).

Many studies in this tradition have focused on the individual teacher as the unit of interest, rather than examining collective teachers' perceptions as a school organizational feature (Halvorsen, Lee, & Andrade, 2009). Yet, investigating solely the impact of educational policy on individual teachers may be limited since it may exclude the influence of school context on the beliefs and attitudes of the teacher. That is, the individual teacher's beliefs and attitudes are tightly connected to the organizationally embedded culture that structures their everyday beliefs and practices. Indeed, the organizational culture affects the substance of the everyday teacher-student interactions and gives direction to the organizationally embedded expectations (Goddard et al., 2004). Thus, collective perceptions for certain actions are a powerful aspect of a school's operative culture, and the power of this "normative press lies in the social persuasion it exerts on teachers" (Goddard et al., 2004). From this perspective, this study aimed to extend previous research by investigating how the standardized testing pressure influences the collective perception of teachers of their working environment.

Model building was carried out in steps that are consistent with the research questions. First, I examined the influence of standardized testing pressure on teachers' sense of empowerment, community, and professional commitment holding constant social support, teacher and school contextual characteristics. By including social support in this model, I was able to examine the role of social support on the relationship between standardized testing pressure and teachers' working condition. Second, in order to investigate whether the influence of standardized testing pressure on teachers' working

environment has any systematic variation, schools were divided into three categories (e.g., low, medium, and high) based on average school SES. After verifying that the model has measurement invariance across groups, multi-group analyses were used to compare the different pattern of relationship between standardized testing pressure and teachers' working environment across school SES. In doing so, school and teacher characteristics were statistically controlled on standardized testing pressure, social support, teachers' sense of empowerment, sense of community, and job satisfaction.

Data and method

The data for this study comes from ECLS-K released by the US National Center for Education Statistics. The ECLS-K employed a stratified design sampling structure to randomly select 1,277 public and private schools that offered kindergarten. In addition to the rich information about student and family characteristics, the first wave of ECLS-K data contains a nationally representative sample of kindergarten teachers. The analyses presented here are based on the sample of kindergarten teachers in order to ensure the generalizability to the national population of teachers. In this study, the final analytical sample includes public school teachers, given that testing policies are focused on public schools.

Although the current data set included some missing data, a Full Information Maximum Likelihood estimation (FIML) was implemented to impute missing data. FIML is a preferred method for generalizing results to the population and using all available data (Arbuckle, 1996). The final analytical sample size is 2,762 schools containing about six teachers per school.

Measures

The variables used in this study were taken from teacher and school administrator questionnaires with the exception of school SES. Teachers' sense of empowerment, sense of community, professional commitment, and social support were constructed as latent variables. I included only those variables that showed acceptable factor loadings as latent variables in the analyses. These latent variables were scaled by fixing the raw regression coefficient of one indicator variable to 1.0.

Standardized testing pressure

I define standardized testing pressure as the degree of emphasis that principals place on teachers to raise academic outcomes on standardized tests. Thus, from the school

administrators' questionnaires, I used the items that relate to the emphasis school administrators place on raising the average performance on standardized tests, screeners, or readiness instruments. The information was condensed into three categories from 'no or minor emphasis' through 'major emphasis', and this measure was taken to reflect how much pressure was being placed on teachers as a result of testing policies.

Sense of empowerment

Teachers' empowerment can be defined as autonomy within the classroom as the degree of control over curricular content/pedagogy and the level of influence in school policy (Ingersoll & Alsalam, 1997). Following this tradition, I used two indicators of teachers' perception on: 1) their capacity to influence school policy, and 2) their control over teaching methods, skills to be taught, and disciplinary measures. The responses were in five categories from 'no influence or control' through 'a great deal of influence and control.' The teachers' responses were aggregated at the school level.

Professional commitment

Following the definition of Ingersoll and Alsalam (1997), I take 'teachers' commitment' to refer to 'the degree of internal motivation, enthusiasm, and job satisfaction teachers derive from teaching and the degree of efficacy and effectiveness they achieve in their jobs.' Thus, in this study, teachers' commitment was constructed based on three questions: whether 1) 'I enjoy my present teaching job.', 2) 'I make a difference in the lives of the children I teach.', and 3) 'I would choose teaching again as my career.' The responses fell into five categories from 'strongly disagree' through 'strongly agree.' These responses were also aggregated at the school level.

Teachers' sense of community

According to Bryk and Driscoll (1988), teachers' sense of community can be characterized as a sense of common purpose and shared values among school members. The main constructs I employed to measure the sense of community were unity, belonging, and cooperative interdependence among peers (Newman, Rutter, & Smith, 1989). This measure came from four survey questions: 1) 'Staff members in this school generally have school spirit.', 2) 'I feel accepted and respected as a colleague by most staff members.', 3) 'Teachers in this school are continually learning and seeking new ideas.', and 4) 'I feel accepted and respected as a colleague by most staff members.' The five response categories ranged from 'strongly disagree' through 'strongly agree'. The responses were aggregated at the school level.

Social support

This study conceptualizes social support as the efforts of the principal to create working conditions in which teachers can increase their knowledge of practice and to encourage their commitment (Firestone et al., 2004). I employed four constructs of social support based on the following questions: 1) 'School administrator deals effectively with pressures from outside of school.', 2) 'Administrators are supportive and encouraging.', and 3) 'Administrators know what kind of school they want and have communicated that goal to the staff.', and 4) 'School administrator sets priorities, makes plans, and sees that they are carried out.' The responses were in four categories from 'strongly disagree' through 'strongly agree'. The responses were aggregated at the school level.

Covariates

Previous research has shown that the demographic characteristics of teachers, such as teaching experience, sex, and education, are associated with their attitudes and perceptions (Pallas, 1988). Moreover, among school characteristics, the SES of the students served by the school has been shown to affect the behavior and attitudes of teachers (Newman et al., 1989). In addition, school location has been associated with standardized testing pressure (Firestone et al., 1998).

School average SES: An aggregate of the individual SES scores of students in a school, measured as an aggregate of parental education, occupational prestige, and family income.

School location: 0=large city, 1=suburban, and 1=rural.

Teacher's educational level: A continuous variable of the highest level of education that a teacher has completed, out of eight categories ranging from high school diploma or General Educational Development (GED) through Doctorate.

Teacher's experience: A continuous variable of how many years the teacher has taught in the current school.

Female: dummy variable; 0=male, 1=female.

Table 1 presents the descriptive statistics for the variables included in the model.

Table 1
Descriptive Statistics of the Variables Included in the Models

		Mean	SD
N		2,762	
School SES		-.174	.47
Suburban		.38	.485
Rural		.19	.392
Teacher experience		8.747	7.80
Highest degree		2.188	.903
Gender		.963	.19
Standardized testing pressure		2.101	.81
Teachers' empowerment	Impact school policy	3.36	1.19
	Control curriculum/pedagogy	4.33	.87
Sense of community	School mission	3.91	.86
	School spirit	4.017	.803
	Seek to learn	4.30	.72
	Feel accepted	4.34	.803
Professional commitment	Enjoy teaching	4.49	.707
	Make a difference	4.56	.585
	Choose teaching again	4.32	.955
Social support	Principal communicates well with other school member	4.114	.861
	Encourages me	4.077	.933
	Set plans and carry out	3.957	.905
	Deals effectively with pressure	3.895	.943

Method

Structural equation modeling (SEM) techniques were used in this study for several reasons. First, this study involves a measurement and structural component that SEM combines in a single model. The measurement component estimates latent constructs of sense of empowerment, professional commitment, and sense of community. By using multiple observed variables and accounting for measurement error in the estimates of the latent variables, SEM produces a more accurate estimation than a model with a single variable or a factor score. Second, SEM enables estimation of the direct and indirect effects of standardized testing pressure on teachers' sense of empowerment, sense of community, and professional commitment, which is essential to understand the ways in which standardized testing pressure influences teachers' working environment. Third, SEM also tests whether the estimated model fits the data adequately. To assess the goodness of the model fit, I used an incremental fit index (IFI), a comparative-fit index (CFI), and a root

mean square error of approximation (RMSEA). For the IFI and CFI, values of 0.9 and above indicate a reasonable model fit, and for the RMSEA, values of .05 or less indicate an acceptable model fit. My models showed acceptable fits according to all of these indexes.

Results

The influence of standardized testing pressure and teachers' working environment

Figure 1 presents the parameter estimates for predicting the influence of standardized testing pressure on teachers' professional community after controlling for school and teacher characteristics. The values of the indices used to gauge the model's fit were IFI=0.943, CFI=0.942, and RMSEA=0.047.

As can be seen from Figure 1, after controlling for school location, teachers, and school characteristics, parameter estimates indicate that social support has a substantial positive influence on teachers' sense of empowerment and sense of community. These effect sizes appear to be the largest among all the predictors, which reflects the critical role social support plays in improving teachers' working conditions. In turn, the emphasis on raising academic performance has a substantially negative influence on both constructs of teachers' sense of empowerment, teachers' sense of community, and their professional commitment even after controlling for the positive impact of social support.

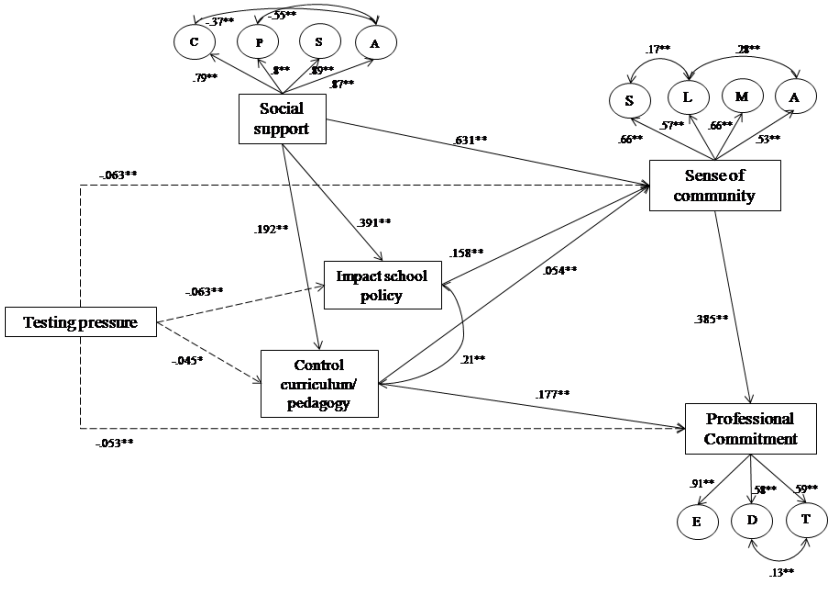

Figure 1. Structural and measurement model with standardized coefficients of teacher's empowerment, sense of community, professional commitment and social support predicted by standardized testing pressure.

Note. Dotted lines designate negative association and straight line the positive relationship. Only statistically significant relationships were shown in this figure. School, teacher characteristics were statistically controlled on standardized testing pressure, social support, teacher's sense of empowerment, sense of community, and professional commitment. Sense of community: S (school spirit), L (seeks to learn), M (mission), A (feel accepted); professional commitment: E (enjoy teaching), D (make difference), T (choose teaching again); social support: C (encourages me), P (sets plans and carries out), S (deals effectively with outside pressure), A (communicates well with member).
$^{*}p < .05$. $^{**}p < .01$.

Furthermore, two aspects of teachers' empowerment, namely control over curriculum content and pedagogy, are differentially associated with teachers' sense of community and professional commitment. Specifically, teachers' sense of empowerment is more associated with teachers' sense of community, showing a larger effect size, whereas teachers' autonomy within the classroom was found to influence teachers' individual professional commitment. This implies a tendency for teachers to derive a higher level of professional commitment from their ability to maintain task discretion within the classroom and to feel a stronger sense of community through their ability to participate in their school's decision making.

The role of social support on the influence of standardized testing pressure on teachers' working environment

A number of previous studies indicated the complementary role of the social support provided within the school along with testing pressure, suggesting that social support and testing pressure should be employed simultaneously to promote teachers' motivation and commitment (Firestone et al., 2004; Fullan, 1991; Hawley, 2008). As presented in Figure 1, however, this study failed to find any significant relationship between standardized testing pressure and social support. Such an insignificant association indicates that the emphasis a school places on testing cannot be used to predict the level of social support it provides for its teachers.

Furthermore, when I examined the additive model by including social support after examining the influence of standardized testing pressure, the influence of social support did not reduce the negative influence of standardized testing pressure on any aspects of teachers' working environment. That is, the negative influence of standardized testing pressure appears to be consistent even after including social support in the model as it is shown in Figure 1. This suggests that regardless of whether the school provides a high level of social support, the emphasis on raising students' academic performance may still deteriorate teachers' empowerment, sense of community, and their professional commitment. These findings support the argument that social support neither buffers nor overcomes the negative impact of standardized testing pressure.

The varying influence of standardized testing pressure depending on school SES

Previous studies have suggested that the pattern of impact of standardized testing pressure may vary according to the level of school SES. In order to examine any varying impact of standardized testing pressure across school SES, I divided the sample based on SES into three groups: low, middle, high. For comparison, I repeated the multiple group analysis, constraining the factor covariance for three groups of comparisons.

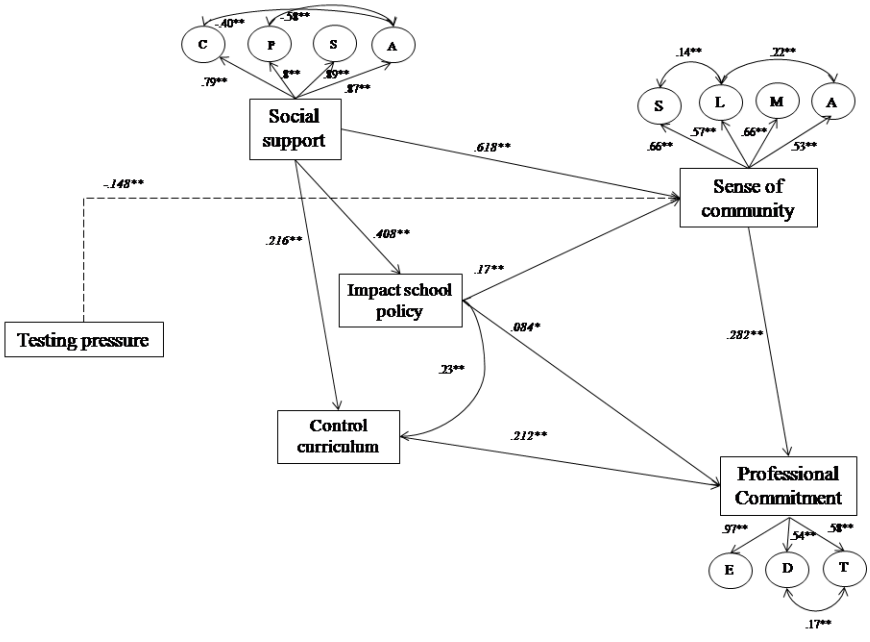

Figure 2. Structural and measurement model with standardized coefficients of teacher's empowerment, sense of community, professional commitment and social support predicted by standardized testing pressure of low SES schools.

Note. Dotted lines designate negative association and straight line the positive relationship. Only statistically significant relationships were shown in this figure. School, teacher characteristics were statistically controlled on standardized testing pressure, social support, teacher's sense of empowerment, sense of community, and professional commitment. Sense of community: S (school spirit), L (seeks to learn), M (mission), A (feel accepted); professional commitment: E (enjoy teaching), D (make difference), T (choose teaching again); social support: C (encourages me), P (sets plans and carry out), S (deals effectively with outside pressure), A (communicates well with member).
$^{*}p < .05$. $^{**}p < .01$.

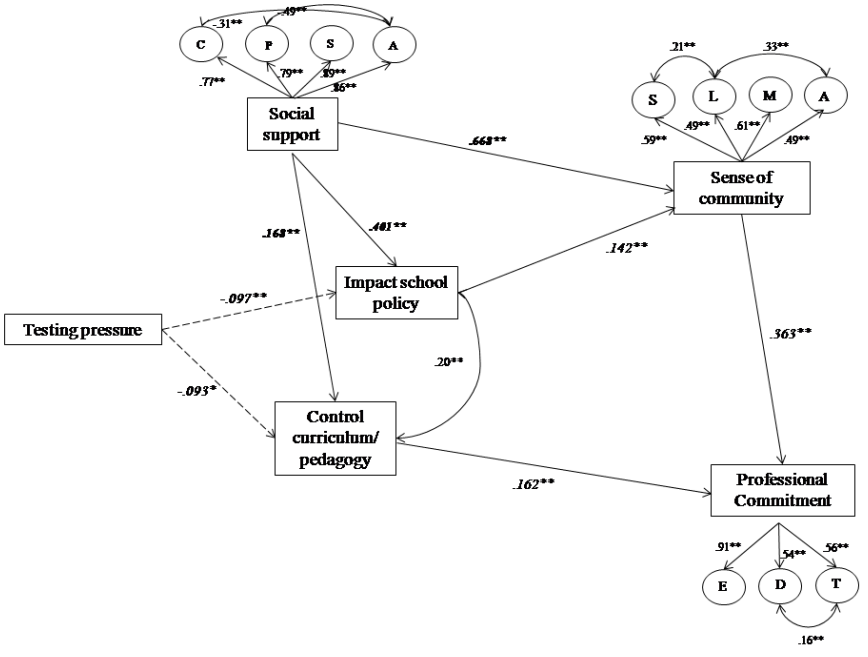

Figure 3. Structural and measurement model with standardized coefficients of teacher's empowerment, sense of community, professional commitment and social support predicted by standardized testing pressure of mid SES schools.

Note. Dotted lines designate negative association and straight line the positive relationship. Only statistically significant relationships were shown in this figure. School, teacher characteristics were statistically controlled on standardized testing pressure, social support, teacher's sense of empowerment, sense of community, and professional commitment. Sense of community: S (school spirit), L (seeks to learn), M (mission), A (feel accepted); professional commitment: E (enjoy teaching), D (make difference), T (choose teaching again); social support: C (encourages me), P (sets plans and carry out), S (deals effectively with outside pressure), A (communicates well with member).
$^{*}p < .05$. $^{**}p < .01$.

My findings show that this constrained multiple group model also fits the data well, with X^2 (238)=764, p<.001, CFI=.944, TLI=.904, NFI=.922, IFI=.945, RMSEA=.028. Furthermore, the X^2 difference between the constrained and unconstrained model showed X^2 (16)=22.24, p>=.05, which indicates no significant difference between the original and constrained models. This suggests that the model has measurement invariance across groups, which supports a single-group analysis test of the structural model for the prediction of standardized testing pressure, given virtually no decrement of the fit indices with the constrained model.

As it can be seen from these figures, the impact of standardized testing pressure showed a different pattern of relationship depending on school SES. That is, standardized testing pressure did not indicate any significant influence on teachers' working environment in high SES schools. Yet, the detrimental impact of standardized testing

pressure was concentrated on middle and low SES schools. More specifically, in low SES schools, standardized testing pressure appeared to deteriorate teachers' sense of community, and in mid SES schools, standardized testing pressure was found to lower both aspects of teachers' sense of empowerment and engender further negative consequences on teachers' sense of community and professional commitment. In addition, these negative impacts of standardized testing pressure at the lowest- and middle-SES schools were evident even when social support was not held constant. That is to say, no buffering influence of social support was found on any of the groups. Furthermore, this pattern of relationship was consistent when I divided the sample into different categories of school SES.

Discussion

The aim of this study was to examine the ways in which the increased standardized testing pressure influences teachers' sense of empowerment, sense of community, and their professional commitment. In assessing these relationships, I examined the complementary role of social support along with testing pressure, and whether there is any systematic variation in teachers' responses to the testing pressure depending on school SES. To answer these research questions, I employed SEM using the ECLS-K data, a large, nationally representative sample of U. S. kindergarten teachers.

My findings suggest a prominent impact of testing pressure on teachers' working environment. According to my result, standardized testing pressure appears to lower, both direct and indirect, teachers' sense of empowerment, including their impact on school policy and control of curriculum content and pedagogy as well as the teachers' sense of community and their professional commitment holding constant the teachers' and school characteristics. This pattern of results aligns with previous studies that discussed the deteriorating influence of the testing pressure on the teachers' working environment (Figlio & Ladd, 2008; Hamilton, 2003; Mehrens, 1998).

One explanation for how testing pressure may deteriorate the entire school community is that teachers who feel disempowered due to standardized testing pressure not only become professionally disaffected and demonstrate a lower efficacy, but they may also have more passive interactions with their colleagues that focus on poor school conditions rather than on finding solutions (Abrams et al., 2003; Hamilton, 2003). As a result, those teachers who feel disempowered tend to alienate themselves from other teachers to protect their self-esteem (Rosenholtz, 1987). They shy away from situations in which conclusions about their professional inadequacies may either be publicly or privately drawn (Hamilton, 2003). This line of studies argue that professional disempowerment can have a serious deleterious impact on teachers' overall perception of their profession, since teachers derive satisfaction from feeling empowered both in and outside of their classrooms (Abrams et al., 2003).

On the other hand, I found a substantial influence of social support on every aspect of teachers' working environment that I examined. Indeed, the effect sizes on sense of empowerment and community were the largest, larger even than school SES, which

reflects the decisive influence of social support on teachers' working conditions. However, despite this strong influence, my findings showed that pressure and support are not as complementary as some of the previous studies indicated (Mintrop, 2008; Sunderman & Orfield, 2008). Rather, the negative effect of testing pressure on teachers' influence on school policy, sense of community, and commitment was consistent even after social support was included in the model. That is, testing appears to deteriorate teachers' working environment independent from the social support provided within school. This implies that social support for teachers can neither buffer nor overcome the negative effects that testing may have on their working environment.

Regarding with our second research question—whether influence of testing pressure varies according to school SES—this study showed that the negative influence of testing pressure was found only at the middle and the lowest school SES, whereas no impact was indicated on higher school SES. More specifically, in the lowest SES schools, the testing pressure appeared to lower the sense of community, and in the middle SES schools the testing pressure showed a negative influence on the teachers' sense of empowerment and further engendered negative consequences on teachers' sense of community and professional commitment.

Such varying influence of testing pressure is consistent with previous studies that suggested not all teachers are equally influenced by the testing pressure; rather, its impact may vary depending on school contextual conditions (Bulkley et al., 2004; Fairman & Firestone, 2001; J. Lee & Wong, 2004). According to previous studies, it is possible that teachers working in high SES have the capacity to buffer the testing pressure and are less influenced, given the possibility that these teachers may not be in a contextual condition where they are in need to respond to the testing pressure and thus alter on their working conditions (Grant, 2000). On the other hand, teachers working at the lowest and the middle SES schools, where there are exceptional challenges serving a large proportion of low income students, may be greatly altered given the situation where they need to make a "quick fix" in order to respond to the pressure (Bulkley et al., 2004). As a result, they may face a double pressure, one from their relatively poor contextual condition and the other from the need to meet the testing pressure within such a context (Sunderman & Orfield, 2008). Under such conditions teachers may feel more anxious about their working environment, and thus deteriorate their perception about their professional community.

This study is not without limitations. First, this study is unable to rule out the possibility of differential selection into school contexts that is not fully accounted for in this statistical method. Thus, the design of this study precludes firm causal inferences. Second, this study relied on a survey in which principals describe the testing pressure within the school. It is important to note that the principals' response on testing pressure may not completely reflect testing pressure that the teachers are confronting. Yet, the principals' self-reported data are generally perceived to describe the aggregate nature of school, which may reflect the overall degree of testing emphasis that the school places on teachers. Third, in examining the paths through which testing pressure may influence the different dimensions of the teachers' working environment, this study is based on the collective perception of kindergarten. This may be controversial since kindergarten teachers are not the main target population of the test-based accountability policy. As noted earlier, kindergarten teachers, however, share a collective perspective of their

working environment with the targeted population of the testing policy (e.g., elementary school teachers). Along this line, previous literature suggested that the entire school community is likely to experience and react to school policy whether or not they are in the actual target group (Pedulla et al., 2003). From this perspective, the current study provides important implications for advancing understanding in the way in which the 'accountability movement' via testing policy influences on teachers' working environment.

Despite these limitations, findings of the current study raise serious concerns about accountability policies that rely on a system of rewards and sanctions. A policy that intends to motivate teachers and lead to positive changes within the school may ironically defeat its original intentions by degrading the teachers' professional community and their sense of collective responsibility. Indeed, this deleterious impact is mostly concentrated in the middle and the lowest SES schools, where the most positive outcome of the policy is expected. Thus, this study suggests a need to reconsider the notion that the pressure created by testing policies may lead to successful changes in schools where improvement is really needed.

Address for correspondence

Minjong Youn
Assistant Professor
Department of Education, Pusan National University
2, Busandaehak-ro 63 beon-gil, Geumjeong-gu, Busan, 46241, Korea
Email: myoun129@pusan.ac.kr

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Bridging social justice literacies: Elementary teachers' beliefs about the goals of multicultural education

Hyunhee Cho
Korea University, Korea
Jinyoung Choi
Ewha Womans University, Korea

Abstract

Although there is a consensus on core ideas of multicultural education, goals that scholars discuss vary. This qualitative study examined nine South Korean elementary teachers' beliefs about different goals of multicultural education in relation to their prior experiences of multicultural teacher education in formal and/or informal settings. A synthesis of findings from in-depth interviews indicated that these teachers generally endorsed teaching of functional and relational literacies while they had discontinued views on teaching of critical literacy. The findings also suggested that teachers' experiences of becoming numerically and/or culturally marginalized within ethnic minority communities in conjunction with their reflective efforts to integrate knowledge from multicultural education into the national curriculum served as a powerful means to enhance their commitment to the teaching of critical literacy. Based on these findings, implications for teacher education and school system were provided.

Keywords : teacher beliefs, multicultural education, teaching for social justice, teacher education, South Korea

Introduction

More people than ever are crossing international borders. In 2015, the United Nations Department of Economic and Social Affairs reported that the number of international migrants rose to above 244 million from 125 million in 2000. Despite growing diversity, most people in many countries still live in their own ethnic and cultural enclaves. Hence, they often have only superficial knowledge of or tangential interactions with people from different groups (Gay, 2012). With growing recognition that the tension between increasing societal diversification and persistence requires deliberative interventions, many educators and scholars have suggested that multicultural education should become a regular part of education in all schools (Banks, 2013; Gay, 1994; Sleeter & Grant, 1999).

Although there is a consensus on core ideas of multicultural education, such as its strong commitment to creating inclusive learning experiences and promoting education equity for students from racially, ethnically, and culturally marginalized groups, goals that scholars discuss vary. Gay (2012) has organized various goals of multicultural education into four major categories: academic, social, political, and cultural. Academic goals use underrepresented students' cultural heritages and experiences to improve their academic performance. Political and social goals focus on building a strong commitment to being conscious of discriminatory practices as well as challenging inequalities, oppression, and exploitation in all forms. Cultural goals include reducing stereotypes and developing intercultural competence by deliberative interventions.

However, current practices in South Korea (Korea, henceforth) and many other countries often fail to attend to these comprehensive purposes of multicultural education. Multicultural education policies and practices in many Asian countries are still limited to "the intergroup education movement" (e.g., Miel with Kiester, 1967; Trager & Yarrow, 1952) pervasive in the United States throughout the 1950s (J. Choi, 2015). These approaches can be part of multicultural education. However, they are insufficient to meet social and political goals, such as empowering all students to become justice-oriented citizens with critical consciousness (Dolby, 2012).

Combatting the status quo and promoting social justice and equity require more integrated approaches to multicultural education in which academic, cultural, social, and political goals are individually and collectively advocated. Although it is important to engage students in learning about the larger scope of social, economic, and political structures affecting their lives, academic and cultural goals of multicultural education are not necessarily unimportant. Delpit (1995) has identified the instrumental value of functional literacy as helping other people's children experience success in the existing system so that they can use their success to challenge the system in strategic rather than subtractive ways. Scholars in the field have also cautioned that too heavy an emphasis on the students' academic performance and critical consciousness can obscure their intercultural competence development which is critical for advocating micro-level justice in face-to-face interactions (e.g., Dolby, 2012; Wade, 2007).

With growing consensus that teachers play a key role in implementing these various goals, there have been research studies on teachers' beliefs about multicultural education (e.g., Brown, 2004; Kagan, 1992). These research efforts have also been made in Korea. Studies on teachers' beliefs about multicultural education have been steadily published

since 2009 (e.g., M. Choi & Kim, 2011; K. S. Park & Nam, 2009). Relationships between teachers' beliefs about and practices in multicultural education (e.g., Chang & Cheon, 2013; N. S. Park, 2007) and their impact on culturally marginalized students' school adjustment (J. P. Kim & Tak, 2011) have also been investigated.

However, little research has been done on how teachers' beliefs about different goals of multicultural education are informed by their multicultural education-related experiences in formal and/or informal settings. Research studies on multicultural teacher education programs usually focus on how participating teachers' beliefs about multicultural education and/or attitudes to diversity have changed through newly developed programs (e.g., K. H. Mo, Choi, & Lim, 2010) or examining whether or not teachers' beliefs about multicultural education are related to their experience of participating in a multicultural teacher education program and/or those of working with ethnic minority groups (e.g., J. Choi & Cho, 2017). What is missing is a more comprehensive understanding of how multicultural teacher education programs (in a formal setting) and the experience of working with people from ethnically marginalized groups (in an informal setting) lead teachers to have different beliefs about multicultural education. In what circumstances do these experiences create a tipping point where teachers turn to *different* beliefs about multicultural education?

In this research context, we took a closer look at the complexity of Korean elementary teachers' beliefs about the goals of multicultural education in relation to their prior experiences. The research questions that guided this study were: 1) what are the distinguishing features of Korean elementary school teachers' beliefs about the goals of multicultural education? 2) how do teachers' beliefs about the goals of multicultural education relate to their prior experience of multicultural teacher education in formal and/or informal settings?

Review of literature

Multicultural education as a vehicle for promoting social justice

As noted by many scholars and educators in the field, teaching for social justice and multicultural education discourses largely overlap because, in part, those who have suggested multicultural social reconstructionist education (Sleeter & Grant, 1999) are the ones who have connected it to the concept of teaching for social justice (Grant & Agosto, 2008). Another reason that these two discourses overlap is that social justice is an inherent goal of multicultural education (Gay, 2012). By illuminating a high degree of coherence between the goals of multicultural education and those of teaching for social justice, Cho (2017) suggested that the two discourses be mutually associated each other. In this study, we assumed that multicultural education is identical with teaching for social justice in terms of their substantive goals and practices.

There are numerous labels given to teaching for social justice, such as social justice teacher education, social justice pedagogy, and anti-oppressive education (e.g.,

Cochran-Smith, 2009; Kumashiro, 2002; McDonald & Zeichner, 2009). However, there is a consensus on its core idea which is to challenge punitive forms of school accountability and advocate educational equity between majority and minority ethnic groups, between privileged and powerless groups, and among poor, middle, and wealthy economic classes (Zeichner, 2011).

Teaching for social justice is often used to distinguish a re-invigorated version of teacher education which makes social justice and equity issues central to teacher education programs by reflecting the 1960s civil rights movement from its earlier version (the late 1970s and early 1980s) in which diversity issues are incorporated into teacher education programs at superficial level (e.g., Cochran-Smith, 2009; Darling-Hammond, French, & Garcia-Lopez, 2002; McDonald & Zeichner, 2009). Even in recent years, the enthusiasm of educators and scholars for social justice teaching has not waned. This is evidenced by their continuing efforts to build theoretical frameworks for teaching for social justice (e.g., Dover, 2015; Sleeter, 2015).

Studies in the context of K-12 education also offer theoretical frameworks for social justice education with a focus on the curriculum (i.e., what to teach) and instruction (i.e., how to teach). Picower (2012), for example, has suggested six elements of social justice curriculum design for elementary students: self-love and knowledge, respect for others, issues of social injustice, social movement and social change, awareness-raising, and social action. In a similar vein, Cho (2018a) and Dover (2015) have defined integrative strategies for implementing critical and social justice-oriented citizenship education into a standard-based classroom.

Theoretical framework

North's (2009a) theory of teaching for social justice served as a framework for the present study. Her scholarly works (2007, 2009a, 2009b) have re-invigorated multicultural education that mainly concerns teachers' consciousness about their unexamined racism and racial privilege as well as their responsibilities for promoting social justice and equity in the context of day-to-day teaching and learning. She has identified five types of social justice literacies (functional, critical, relational, democratic, and visionary) pursued by teachers in the name of social justice. Literacy in her framework did not mean merely reading and writing skills. It included abilities to fully engage in a school curriculum and contribute to building a better community and society (North, 2009a). In order to distinguish North's (2007, 2009a, 2009b) definition from the traditional notion of literacy (i.e., reading and writing), we used the term "social justice literacies" in this article (Poole, Reynolds, & Atkinson, 2011, p. 1).

North (2009a) noted an inevitable tension between functional and critical literacy. Functional literacy refers to the ability to live appropriately as autonomous and informed citizens (Gutstein, 2006). Those who emphasize functional literacy have a great interest in how to develop students' reading and writing skills needed to function effectively in a given society (Poole et al., 2011). By comparison, critical literacy refers to abilities to challenge existing paradigms of knowledge, question institutionalized power relations, and build strategies to act for equity and social justice (North, 2009a).

Although functional and critical literacies have different foci, they are complementary in helping students become agents for social justice. Developing only functional literacy without critical literacy keeps social injustice unchallenged, while developing only critical literacy without functional literacy might fail to empower students to take powerful legal, socioeconomic, and ethical positions that enable them to advocate for social justice more effectively (Jenks, Lee, & Kanpol, 2001). Therefore, these two literacies need to be developed in an integrated way.

North (2009a) has also identified relational literacy as an important ability for promoting social justice. Relational literacy is the ability to understand mutual connections among humans, to consider others without bias or prejudice, and to care for each other within and beyond school walls. This literacy plays a significant role in promoting social justice in that learning empathy and caring leads students to work for rights and well-being of others and for social justice more broadly (Dolby, 2012; Wade, 2007).

Although North (2009a) has discussed democratic and visionary literacies, this study focused on functional, critical, and relational literacies because we had a special interest in how these three literacies often regarded as conflicting with one another individually and/or collectively contributed to constructing teachers' beliefs about goals of multicultural education. In this study, we regarded functional, critical, and relational literacies as interchangeable terms with academic, social/political, and cultural goals of multicultural education, respectively.

South Korean context

In the early 2000s, Korea began to experience a growing influx of foreign workers, Southeast Asian immigrants, and North Korean defectors. These foreign populations consisted of under 1.5% of Korean residents until 2005. However, in 2016, this number was about 2,050,000, consisting of nearly 4.3% of Korean residents (Ministry of Justice, 2017). These growing populations are most remarkable in the K-12 school system. The number of ethnic minority students (*Damunwha*[1] students) was 109,387 in 2017, a number that was nearly quadrupled since 2010. Over the last five years (2012-2017), although the number of total students in K-12 has decreased annually by 180,000 compared to the previous year, the number of ethnic and cultural minority students has increased about 10,000 annually. About 75.7% of these minority students are currently enrolled in elementary schools (Ministry of Education, 2018).

To respond to these demographic shifts, the Ministry of Education enacted policies and programs supporting ethnic minority students in 2006. It has announced its annual plans every year since then. The initial approach was focused on teaching Korean language and culture. It has been extended to provide them with bicultural and bilingual education with a growing recognition that these students have potential to facilitate diplomatic relations between Korea and countries of their origin. In addition, the government has made multicultural education a regular part of the school curriculum to help all students learn the value of diversity.

In spite of emergent discussions about multicultural education, issues of social justice

and equity have been sparse in Korean domestic scholarship (J. Choi, 2015). Most of all, the nation's dominant discourse built upon a ruling ideology *ethnic nationalism* has condemned critical discourse as stirring up social division (Cho, 2018a). Along with nationwide Confucian culture, the political reality that the nation has not reached to the ideal of civil society ─where everyone comes into the public sphere as rough equals shares problems and deliberates on the best alternatives─has also contributed to critical discourse in the margin of state-led multicultural education (H. Park, 2012). More recently, the nation's current education practices are getting largely filtered through the global trend of teaching for social justice as evidenced by new policies promoting teacher autonomy and school-led curriculum development such as Innovative Schools [*hyuk-shin hak-kyo*][2] policy. Yet, it does not necessarily mean that Korean teachers are readily engaging in these newly emerging approaches. Cultural and political contexts of Korean society might make teachers reluctant to depart from their traditional approaches. With careful attention to this national context, this study sought to unravel the complexity of teacher beliefs about multicultural education.

Research method

We utilized a basic qualitative research approach (Merriam, 2009) to investigate our research questions. Our rationale for using a qualitative research approach reflects the presumption that realities, such as teachers' beliefs about multicultural education, are socially, culturally, and politically constructed (Guba, 1990). The inductive, heuristic, and descriptive nature of qualitative research (Merriam, 2009) also provided a powerful tool for (re)constructing meanings with participating teachers and illuminating previously unknown relationships between teachers' beliefs about multicultural education and their prior experiences.

Settings and participants

Participants of this study were nine Korean elementary teachers working in Seoul city or Gyeounggi Province. Researchers' affiliation and familiarity with these two areas provided the rationale for the choice of these two areas, helping us readily understand insider perspectives. Furthermore, a geographical closeness between these two areas enabled intensive time on site that the research design demanded (McDonald, 2005). Our choice of these two areas with vast majority of ethic/cultural minority students in Korea also helped us identify more teachers who had worked with these students.

Once areas were chosen, we used purposive sampling (Creswell & Plano Clark, 2011) to identify research participants who could provide rich details and insights for understanding teachers' beliefs about multicultural education in relation to their experiences. By adopting a criterion-based selection approach (LeCompte & Preissle, with Tesch, 1993), we specifically sought teachers who a) had knowledge of multicultural

education; b) had experience of working with ethnic/cultural minority students; and c) had experience of participating in multicultural teacher education in a formal or informal setting. The operational meaning of "having knowledge in multicultural education" is: a) perceiving that multicultural education is for both ethnic minority students and mainstream students, and b) recognizing multiple goals of multicultural education.

These nine teachers were initially invited to participate in an eligibility interview. Results of the interview verified that all nine teachers were qualified as participants. These participants included seven female teachers and two male teachers. Their years of teaching varied from one to 30. In terms of academic degree, four teachers had a master's degree and one teacher was in a doctoral course specializing in multicultural counseling. Two teachers (Teacher C & Teacher F) were distinguished from the rest of teachers in that they taught in Multicultural Education Research Schools (MERS)[3]. Table 1 details the profile of these participants.

Table 1
A Profile of the Participants

Participant	Gender	Years of teaching	Academic degree (B.A.+)	Multicultural education programs for in-service teachers	Multicultural Education Research School
Teacher A	Female	30	English Education & Counseling (M.A)	Introduction to Multicultural Education	X
Teacher B	Female	32	X	Introduction to Multicultural Education	X
Teacher C	Female	13	Korean Language Education (M.A.)	Korean as a Second Language	O
Teacher D	Female	3	Social Studies (M.A.)	Introduction to Multicultural Education	X
Teacher E	Female	12	International Understanding (M.A.)	Cultural Understanding	X
Teacher F	Female	5	X	X	O
Teacher G	Female	12	Multicultural Counseling (PhD candidate)	Korean as a Second Language	X
Teacher H	Male	5	X	Korean as a Second Language	X
Teacher I	Male	1	X	X	X

Data collection

Once we identified these participants, we conducted semi-structured interviews with these nine participating teachers at their workplaces. Each of them participated in the interviews two or three times, and each interview lasted approximately 60-80 minutes. We asked the participants to describe their beliefs about goals of multicultural education, roles of schools and teachers, the authority of textbook and standards, goals of elementary education, and their school climates and prior experiences related to multicultural

education. We used common types of questions during these interviews, but the sequence of these questions was not determined ahead of time (Merriam, 2009). We also probed further using unscripted questions whenever new themes appeared in the interview. After we completed the first round of qualitative data analysis, we conducted follow-up interviews with each participant. The time between the first and follow-up interviews was about three months.

Data analysis

We used thematic categorization to analyze the data (Castro, Kellison, Boyd, & Kopak, 2010). We analyzed our data with open coding to let key issues emerge from participants. Once we identified an initial set of data-based codes, we integrated them with literature-based codes: beliefs in functional, relational, and critical literacies (See Table 2).

Table 2
A Literature-Based Code Set

Categories	Functional literacy	Relational literacy	Critical literacy
Concepts	Students develop the ability to appropriately function living as an autonomous and informed citizen.	Students develop the ability to respect others without bias and prejudice; and care for others on their mutual connection with others within and beyond school walls.	Students develop the ability to challenge the universal paradigm of knowledge, question institutionalized power relations, and build strategies to act for equity and social justice.

The reason for beginning with identifying data-based codes was that literature-based codes were developed from the Western context. By beginning with open coding, we more closely attended to participants' voices which allowed us to construct more substantive themes that emerged from the collected data (Cho & Choi, 2016). When integrating these data-based codes with literature-based codes, we were also self-critical to capture subtle differences between these two code sets (Charmaz, 2001). Within each category, we grouped these codes that were similar in meaning and gave each group a label that captured its meaning as reflected in the quotation. By combining groups with similar meanings, we could gradually narrow the total number of groups. We then grouped participants according to their beliefs about goals of multicultural education. When analyzing relations of participants' beliefs and their prior experiences, we used a constant comparative method (Glaser & Strauss, 2009). Drawing upon a range of similarities and contrasts among participants, we linked participants' specific experiences to their specific beliefs, which allowed us to construct assertions that outlined relationships between beliefs and experiences.

Several strategies were used to enhance the study's authenticity and credibility. First,

we asked one expert in the field of multicultural education to examine the theoretical validity of literature-based codes as a guiding framework (Denzin, 1978). One doctoral student specializing in multicultural education participated in analyzing a sample of non-identifiable data collected in the interviews. Second, we made our judgements explicit by describing the analysis process in detail (Ryan & Bernard, 2003). Third, at any moment of disagreement, we engaged outside researchers having been trained in a qualitative research method in analyzing and/or interpreting the data until we came to an agreement. Finally, to verify the identified relationships between beliefs and experiences, we used code-by-code co-occurrence matrices (Ryan & Bernard, 2003).

Findings

These nine Korean elementary teachers' beliefs about the goals of multicultural education emerged along with important experiences that influenced their beliefs.

Beliefs about the goals of multicultural education

Regarding beliefs about the goals of multicultural education, six themes and 20 sub-themes emerged from these participating teachers. They were categorized into beliefs in functional literacy, relational literacy, and critical literacy (See Table 3).

Table 3
Beliefs about the Goals of Multicultural Education

Functional literacy		Relational literacy		Critical literacy	
Catching-up standards	Blooming to the fullest potential	Celebrating diversity	Building caring relationships	Developing critical consciousness	Taking social actions
a. To become fluent in the Korean language b. To adapt to Korean school and society c. To meet academic standards d. To not learn about the home language and culture	a. To develop one's own talent b. To learn home language and culture	a. To understand foods, flags, and festivals from other countries b. To understand the value of cultural diversity	a. To build emotional stability b. To develop good relationships with Korean mainstream students c. To reduce prejudice e. To respect human rights g. To preserve the ecosystem h. To become aware of equality	a. To understand ethnic/cultural minority peoples' contributions to Korean society b. To understand concepts of diversity c. To understand knowledge as culturally constructed	a. To actively participate in voting

These teachers' beliefs in functional literacy consisted of two mutually exclusive views that we labeled "catching-up standards" and "blooming to the fullest potential." These views were categorized into functional literacy in that they both presented a strong commitment to helping students learn basic knowledge and skills and experience academic achievement in the current school system. Yet, the former contrasted with the latter in the way teachers dealt with ethnic minority students' cultural and linguistic diversity.

The "catching-up standards" view holds that multicultural education should help students adapt to mainstream Korean society and succeed on their standardized tests. It also believes that teaching ethnically and culturally underrepresented students about their home language and culture should be excluded from regular school curricula because doing so can interrupt their acquisition of Korean language and culture. Teacher C was a good example. She rejected the idea of teaching ethnically marginalized students their home languages and explained that:

> They [Chinese Korean students who learn home languages] have some problems in their Korean pronunciation. Their [Chinese] parents don't teach Korean spelling, but teach Chinese by tutoring their kids from 1st-2nd grades. It makes them confused. The pronunciations of two languages are mixed, or it is unintentionally *disclosed* that they are Chinese. I don't understand why they learn Chinese at this important time that they should learn Korean.

The presented quotation reveals the perspective of cultural deficiency (Harry & Klinger, 2007) in which teachers and evaluators often use to attribute poor performance and widespread underachievement to students' culture of origin (i.e., race, ethnicity, region) or low socioeconomic status without critical awareness of standardized school system. The "catching-up standards" view also showed little to no critical awareness of the standardized school system.

By comparison, the "blooming" view of functional literacy along with its emphasis on students' academic achievement identified multicultural education as helping students explore their own strengths and use them to craft more abundant and meaningful lives. Teachers who held this view actively advocated teaching ethnic minority students about their home language and culture within school systems based on the strong belief that learning a first language could accelerate and enrich acquiring a second language. Teacher G provided a good example of this belief.

> Of course, they [ethnic and cultural minority students] should learn both [Korean languages and culture and those of home]. I believe they have a big potential to become talents in the future because they know cultures and languages from both countries. For example, children of Mongolian mom and Korean dad can become great ones who can bridge Mongolia and Korea because they are equipped with cultural and social knowledge from two countries.

The "blooming" view also went beyond the human capital theory-based approach toward a more humanized approach with emphasis on "personal literacy (Cho, 2017, p.

13)." It believes that teachers should help students gain better understanding of "who I am", "what I am good at", and "what I want to do" because all students have the right to actualize their own lives in the way they want.

Beliefs in relational literacy were crystalized into two concepts: "celebrating diversity" and "building caring relationships." The former meant that students should learn diverse countries' cultures, such as foods and festivals. The latter referred to the belief that students should learn knowledge, attitudes, and skills needed to recognize mutual dependency and help others in and outside school walls. These two categories were conceptually distinct but not mutually exclusive. Many teachers held both sets of beliefs at the same time.

More specifically, the idea of "building a caring-centered relationships" was discussed at two levels: individual (face to face) and societal. The individual level of caring meant the belief that teachers in their practice of multicultural education should create positive classroom climates in which students, especially those from ethnic and cultural minority groups, could feel emotional and psychological safety. For example, it included helping these students build good relationships with mainstream Korean students. The societal level of caring referred to the belief that students should learn how to care for other people and the environment outside school walls, such as combating prejudice, fighting for human rights, preserving the ecosystem, and understanding what equity means. This belief overlapped in part with critical literacy in that it also advocated student opportunities to investigate unequal power relations among different cultural groups.

These teachers' beliefs in critical literacy consisted of two concepts: "developing critical consciousness" and "taking social actions." The former ("developing critical consciousness") referred to the belief that multicultural education could empower students to critically analyze various forms of injustices pervasive in communities and larger societies. This belief also emphasized that teachers should help students a) reconstruct their conceptions of ethnic and cultural minority groups by understanding their contributions to Korean society; b) recognize various concepts of diversity including gender, race, ethnicity, region, religion, and sexual preference; and c) understand that school knowledge is not universal, but culturally constructed and historically rooted.

"Taking social actions" referred to the ability to engage in individual and/or group actions to challenge social or institutional injustice. For example, Teacher I who had a strong belief in this literacy considered diverse modes of civic engagement, such as participating in voting, engaging with nongovernmental organizations (NGOs), and participating in campaigns and protests. Despite his strong commitment to teaching social action literacy, he believed that teaching about the significance of voting was sufficient at elementary level. He specified that:

> The social studies textbook describes six ways of active civic participation, but I believe the most powerful way in which elementary students can engage is voting. In reality, my students are not even socially mature enough to participate in deliberations for making better decisions about how to act. I can't do such grand things with these young students, so I focus on encouraging them to actively participate in voting.

The quoted statement was in correspondence with the notion *of convenient excuse* (Tatum, 1997) that it is neither possible nor appropriate to engage elementary students to learn critical consciousness and activism because these young students' cognitive function may not reach the degree to which they can grasp institutional or structural injustices.

Three types of teachers: Discontinued views on functional and/or critical literacy

These nine teachers were divided into three groups (type 1, type 2, and type 3) based on their beliefs about goals of multicultural education. All three groups of teachers commonly supported for relational literacy. However, they were distinguished from one another in their views on functional literacy and/or critical literacy. Type 1 and type 2 teachers barely recognized the significance of critical literacy while the type 3 teachers had a strong belief in critical literacy. There was also a stark difference between type 1 and type 2 teachers in their perspectives on cultural difference. The former had the "catch-up standards" view while the latter had the "blooming" view of functional literacy. These three types of teachers and their beliefs about goals of multicultural education are summarized in Table 4.

Table 4
Teachers' Beliefs about the Goals of Multicultural Education by Type

Type	Teacher	Relational literacy		Functional literacy		Critical literacy	
		Celebrating diversity	Building caring relationships	Catching-up standards	Blooming to the fullest potential	Developing critical consciousness	Taking social actions
Type 1	C, D, E						
Type 2	A, B, H						
Type 3	F, G, I						

Type 1 teachers (Teacher C, D, and E) favored the "catch-up standards" view of functional literacy and relational literacies. However, they had little willingness to teach critical literacy. With great emphasis on ethnic minority students' success in standardized tests, these teachers perceived that minority students were culturally and linguistically deficient. Therefore, they were responsible for helping these students effectively learn the mainstream culture and language and successfully adapt to their schools and the larger Korean society. In McLaren's (1997) term, these teachers' beliefs represent *conservative multiculturalism* in which social control and competition ideologies are taken for granted by the presumption that conditions for justice already exist in the mainstream. Although type 1 teachers' beliefs about multicultural education were distinguished from the assimilationist perspective in that they recognized the value of cultural diversity for its

contribution to mainstream society (Banks, 2013), they remained *conservative* due to their rejection of a request for integrating ethnic minority students' home language and cultures into current school curricula.

Type 2 teachers (Teacher A, B, and H) also placed a high priority on supporting for ethnic minority students' academic achievement and developing students' abilities to appreciate different cultures and care for others. Different from type 1 teachers, however, type 2 teachers held the "blooming" view. They recognized ethnic minority students as linguistically and culturally different rather than deficient. They believed that these students' home languages and cultures should be more actively nurtured along with Korean language and culture so that these students could become more competitive in a global society. These teachers also felt obliged to assist underrepresented students to explore their strengths at an early age. In a larger context, type 2 teachers' beliefs about multicultural education are based on *liberal multiculturalism* which focuses on celebrating cultural diversity, reducing stereotyping, and encouraging cooperative learning activities (McLaren, 1997). Yet, this pluralist perspective was limited in that it masked conflicts and contradictions inherent in Korean society and left social injustice unchallenged (Jenks et al., 2001).

Type 3 teachers (Teachers F, G, and I) were committed to teaching critical literacy in addition to relational literacy and the "blooming" view of functional literacy. They believed that understanding different types of diversity (e.g., religious, regional, sexual) not discussed in the current textbooks and standards should be a starting point for recognizing what kinds of groups are marginalized in the Korean society. These teachers' sensitivity to "equal representation" along with their critical analysis of curriculum standardization collectively provided evidence that their beliefs about multicultural education were based on *critical multiculturalism* (McLaren, 1997)

Type 3 teachers felt obliged to teach about issues related to justice and equity. However, they tended to perceive that elementary students were not developmentally ready to participate in public actions. Teacher F and Teacher G, for example, stated that elementary students were not intellectually mature enough to justify reasons for social actions. Teacher I rationalized his limited commitment to teaching social actions by stating that "elementary students feel difficulty even in participating in deliberation." These teachers shared a consensus belief that various modes of civic engagement suggested in current social studies textbooks (i.e., engaging with NGOs, participating in protests) were mostly not applicable to elementary students.

Beliefs about goals of multicultural education and prior experiences

Cross-case comparison of these nine participants revealed strong evidence for the claim that individual teacher's own critical literacy preceded his/her strong beliefs in teaching critical literacy. Teachers with a strong commitment to teaching critical literacy (type 3 teachers) had in common that they could critically analyze knowledge embedded in the national curriculum, whereas the teachers who had little willingness to teach critical literacy (type 1 and type 2 teachers) had no such awareness. Delving into where these contrasts came from, we found two experiences that led these teachers to discontinued

beliefs about multicultural education. Emerged learning experiences that enhanced type 3 teachers' critical literacy were: a) locating oneself in a subordinate position; and b) appropriating knowledge from multicultural education to analyze the national curriculum.

Locating oneself in a subordinate position

These teachers' beliefs about goals of multicultural education were related to kinds of experiences they had with people from ethic/cultural minority groups. Those whose interactions with these groups were limited to the school environment tended to focus on only relational and functional literacies. By comparison, teachers who worked with ethnic and cultural minority groups within their schools and in their communities where these minority groups were *numerically* dominant were more likely to be sensitive to rights of underrepresented groups. They strongly advocated developing students' critical consciousness. Type 3 teachers' experiences provided good examples. Teacher F and Teacher G had rich and frequent experiences with ethnic minority students and parents because their schools were located in a Chinese-Korean community and a North Korean community, respectively. Teacher I taught in a school where Korean mainstream students were dominant. He also had spent time with other ethnic groups while working in Mongolia as an NGO member. He used to live among many other ethnic groups when he volunteered in various human rights movements.

Type 3 teachers' experiences with ethnic minority groups were similar in that those experiences had led them to identify themselves as minorities, at least numerically. For example, Teacher I recalled his experience with the Mongolian community in this way:

> I was often marginalized by Mongolian people in their community, but it gave me a good opportunity to locate myself in the position of minority. And it helped me become more sensitive about equal rights between different groups of people.

The quoted statement provided strong evidence that the experience of being marginalized had a significant impact on building and/or enhancing this teacher's critical literacy. Teachers F and G also professed that being surrounded by people from minority groups offered the opportunity to reverse the power dynamics in those communities, which helped them recognize the need of special attention to promote the rights of minority groups.

Appropriating knowledge from multicultural education to analyze the national curriculum

Teachers F, G, and I who had critical consciousness had opportunities to use knowledge from multicultural education that advocated structural inclusion of marginalized groups rather than celebrating diversity when they analyzed the national

curriculum (i.e., the standards and textbooks). After they learned about social and political goals of multicultural education, these teachers applied their knowledge into actual practices of critical analysis. These experiences led them to face conflicts between the ideal of multicultural education that they had learned (e.g., structural inclusion of underrepresented groups) and the reality (e.g., the dominance of mainstream knowledge that they need to teach within the constraint of national curriculum standards).

The noteworthy thing was that teachers' experience of that contradiction created additional opportunities to critically examine current standards and textbooks. For instance, Teacher F, who worked in a MERS, had frequent opportunities to use multicultural education theories in implementing a new curriculum that often led her to face contradiction between theories and the national curriculum. She stated that this experience had helped her to critically analyze current textbooks and standards, thereby helped her understand that "the social studies textbooks generally focus on big and wealthy countries, and students have few opportunities to learn about many other underrepresented countries." In contrast, Teacher C who taught in the MERS with few opportunities to engage in such reflective processes was led to emphasize only functional and relational literacies. By comparing Teacher F (type 3) with Teacher C (type 1) who was teaching in another MERS with little opportunity to use principles of multicultural education in analyzing given curriculum textbooks and standards, it became more obvious that teacher's critical literacy was enhanced not merely by teaching in MERSs.

Teacher G who specialized in multicultural education was also a good example. Her doctoral studies offered her opportunities to learn many critical theories on multicultural education and integrate them into actual implementation of the national curriculum. By adopting these theories, she could more critically determine that the national curriculum failed to adequately include populations from diverse categories, such as religion, region, and sexual orientation, and denied students opportunities to understand their society. This teacher also examined how people from ethnic minority groups were systematically marginalized in the current national curriculum. Her specific description is worth quoting:

> …I read a number of books and articles about multicultural education, but it was hard to contextualize them into the Korean case, and I began to study more about Korea. After Korea became a member of OECD, more Korean people began to avoid 3D jobs [dirty, difficulty, and dangerous]. We also began to have new problems, such as low birth rate and low marriage rate… Now that I learned these realities, I could discover that the textbooks were describing these people in inappropriate ways like "we should help them because they are poor and need help" or "we should provide multicultural students more financial and educational support because their parents are not good at educating their children."

She was convinced that efforts to connect the theories with practices and realities had enhanced her willingness to engage students in "critically analyzing distorted images of ethnic and cultural minority people that are reflected in the textbook."

Although Teacher I had no experience participating in official multicultural education programs for in-service teachers or working in a MERS, he was motivated to

learn from multicultural education due to his personal interest. Making efforts to apply what he learned from theories to analyze social studies textbook, Teacher I could enhance his critical literacy. He explained that:

> If we take a look at the fifth grade social studies textbook, some important uprisings, such as the March First Independence Movement and Donghak Peasant Movement are not recognized as great things. These movements are described in the textbook within just one sentence, but they should be discussed in more depth.

This reveals that this teacher's reflective experience reducing a gap between the ideal and reality of multicultural education helped him develop critical literacy, such as ability to understand the value of these movements led by marginalized groups of people.

Discussion

This study sought to unravel Korean elementary teachers' beliefs about goals of multicultural education in relation to their experiences of participating in formal and/or informal teacher education. Based on findings of this study, this section discusses how this study extends and elaborates upon the guiding theory, teaching for social justice (North, 2009a), as well as a body of literature on teachers' beliefs about multicultural education. With a more careful attention to the larger context of Korean society, the remainder of this article also provides implications for further development of multicultural teacher education and school system.

The complexity and intersection of social justice literacies

Most of all, this study's findings elaborate the theory of teaching for social justice by crystalizing two different perspectives embedded in teachers' beliefs about functional literacy. North (2009a) defined functional literacy as the ability to live autonomously in a given society. The previously defined concept of functional literacy was in accordance with those emerged from participating teachers' beliefs about multicultural education. However, this study went further by revealing that teachers who felt obliged to promote ethnic minority students' academic success and effective acculturation were actually divided into two groups according to how they perceived these students' cultural differences. For example, teachers who supported the "catch-up standards" view regarded ethnic minority students as deficient in terms of language and culture. Hence, they rejected the idea that these students should learn their home languages and cultures in school. In contrast, those who supported the "blooming" view recognized these students as different rather than deficient. Therefore, they perceived that providing these students with opportunities to learn their home languages and cultures in schools could empower them to become "global talents" or "national brokers" in enhancing the relationship between

Korea and other countries, such as China, Vietnam, and the Philippines.

As observed in our findings, the "catch-up standards" view often unconsciously favored pedagogy of poverty (Haberman, 1991) which multicultural educators generally criticized as threats to equity pedagogy. The idea that ethnic minority students' home languages might impede their learning of mainstream language was consistently countered by many empirical studies in the field of multicultural education (Gay, 1994). When developing functional literacy, it is important to help ethnically underrepresented students gain access to *codes of power* (Delpit, 1995) that are constructed and maintained by the mainstream society. However, it does not necessarily mean that they should or could learn this knowledge and its related skills at the expense of their home languages and cultures. The "catch-up standards" view, therefore, needs to be distinguished from goals of multicultural education.

The "blooming" view was distinguished from the "catch-up standards" view by its recognition of cultural differences. However, it did not completely depart from mainstream multicultural education. Although teachers who had the "blooming" view believed that school was responsible for teaching ethnic minority students about their home language and culture, they did not suggest that Korean mainstream students should also learn languages and cultures of ethnic minority students. In other words, what they suggested was not integrating diverse language and culture into the current school curricula, but merely providing ethnic minority students with independent courses (i.e., extra curricula, after-school programs) in which these students could learn their home languages and cultures in addition to regular school curricula. Simply put, these teachers' belief in multicultural education was not based on commitment to a bilingual/bicultural or multilingual/multicultural society.

The limited understanding of content integration (integrating knowledge and skills from ethnically marginalized groups into the given curriculum content) is unsurprising in that, despite increasing influx of foreigners and immigrants, current demographics of Korea are still dominantly Korean ethnicity (more than 95%). Another reason for the limited view on content integration is, in part, due to the fact that national curriculum standard has a legal force (Seo, 2016). In Korea, although Innovative School has a relatively more autonomy in curriculum development, schools and teachers are not allowed to delete or change the given national curriculum standards (Lee, Jo, & Jung, 2015). The high degree of rigidity in curriculum development might have made these teachers hesitant to suggest integrating ethnic minority students' language and cultures into nation-level common curriculum standards, leading them to the add-on remedy, such as teaching ethnic minority students about their home languages and cultures in addition to regular school curricula.

Scholars in the field suggest that school-based and classroom-based curriculum development should be more encouraged for deep implementation of multicultural education (Cho & Choi, 2016; Gay, 2012). From this point of view, institutional and educational efforts for enhancing teacher autonomy and capabilities of designing school curriculum based on their own students and communities need to be more actively advocated.

Our findings also illuminated the intersection of functional and relational literacies. This study incorporated the "blooming" view into the concept of functional literacy in that teachers recognized an ultimate goal of this model is to help students live appropriately in

a *given* society. Nonetheless, the meaning of "blooming to the fullest potential" that emerged from our data was more than the traditional concept of functional literacy (i.e., basic skills in math and reading). It emphasized motivating individual students to maximize their unique talents informed by their languages and cultures. In this regard, the "blooming view" of functional literacy partly overlaps with relational literacy that advocates students' ethnic and cultural identity development. It also supports the principle of culturally responsive teaching/pedagogy (Gay, 2018; Ladson-Billings, 1995).

Teachers' discontinued view on teaching of critical literacy

Our findings suggest that relational and functional literacies are generally more advocated than critical literacy by Korean elementary teachers. All nine participating teachers supported functional and relational literacies. However, they had discontinued view on teaching critical literacy. Findings of this study affirm previous empirical findings showing that Korean teachers perceive multicultural education as teaching ethnic and cultural minority students about mainstream Korean culture (H. Kim & Kim, 2008) or helping all students develop attitudes and skills is needed so that they can become culturally competent citizens with mutual respect, cooperation, and openness (M. Choi & Kim, 2011). These findings also support the claim, in part, that multicultural education programs in Korea tend to emphasize assimilating ethnic minority students and celebrating diversity rather than critically analyzing asymmetrical power relations among different cultural groups (K. Mo, 2009).

Existing studies suggest that it is not simple for teachers to teach critical literacy in reality (Cochran-Smith, 2000; Dolby, 2012). North (2009a) has demonstrated that teachers' beliefs in teaching critical literacy often conflict with their beliefs in teaching functional literacy because the former encourages counter-socialization whereas the latter supports socialization. Teachers' beliefs in teaching critical consciousness also often contradict with national and state standards that are usually built upon majority assumptions (Villegas & Lucas, 2002). At elementary level, teaching critical literacy becomes more challenging because teachers question whether it is appropriate for elementary students to learn it and whether these students are capable of critically analyzing institutional and structure-level injustices (Hodges, 2015). Results of this study identified similar obstacles to those identified in previous studies. At the same time, our results provide context-specific implications that the government needs to promote partial relaxation of restrictions regarding national curriculum standards.

Learning to teach social justice literacies in a more integrative way

This study's findings suggest that teachers' beliefs in critical literacy are enhanced when they have occasions to communicate with ethnic minority populations in environments in which these groups are numerically dominant. Looking closely at the experience of type 3 teachers enabled us to provide a convincing interpretation that teachers' experiences of being numerically in the minority group had strengthened their

beliefs in critical literacy. For example, type 3 teachers (Teachers F, G, and I) who were committed to teaching critical literacy had taught, worked, and been in the numeric minority in Chinese-Korean, North Korean, and Mongolian communities, respectively. Such results suggest that reversing typical power relationships could help teachers become aware of the rights of ethnic and cultural minority group members, advocate their rights, and build a strong willingness to teach critical literacy.

Many studies have suggested that ethnic minority groups begin to be recognized as significant groups in society when their populations reach the point of *critical mass* (Dahlerup, 1988). In this regard, many teachers and educators have implemented service-learning programs to locate teacher candidates in urban areas where ethnically, culturally, and socially subordinated groups are numerically dominant and their lives are more visible (Cochran-Smith, 2000; Wade, 2000). For example, teacher candidates were sent to Harlem for their teaching practicum. They were expected to learn how to integrate school and public knowledge with students' cultural knowledge that they had learned from their homes and the community. Meanwhile, other educators and scholars believe that numeric dominance cannot reverse power relations that are socially and historically constructed and maintained (McLaren, 1991). Findings of this study suggest that teachers' experiences with being numerical minorities can help them develop their own critical consciousness and willingness to teach it. Nonetheless, it is still debatable whether teachers' experiences with being culturally, ethnically, and racially underrepresented rather than numerically underrepresented might have more impact on their beliefs about teaching critical literacy.

Combined findings from these nine teachers' experiences also provided strong evidence for the claim that teachers' beliefs in critical literacy could be enhanced not merely by obtaining higher academic degrees or teaching in MERSs, but by engaging in reflective learning in which they could subjectively link the ideal of multicultural education with the reality of it. Different from other types of teachers, type 3 teachers (Teachers F, G, and I) who had strong commitment to teaching critical literacy had common experience of utilizing knowledge from multicultural education in which the inclusion of minorities was actively advocated. When they analyzed the national curriculum, they found that most views were pervasive. Although type 3 teachers differed from one another by highest academic degree, school type, and participation in multicultural teacher education programs, they were commonly involved in a reflective process of multicultural curriculum development.

A noteworthy contribution of this study is its affirmation of previous research findings that teacher education programs based on reflective practices help teachers take more transformative approaches to multicultural teaching (Cho, Choi, & Lee, 2015) and teaching practices, in general (Clift, Houston, & Pugach, 1990). However, findings of this study also suggest that reflective practices have limited effect on building a strong willingness to engage students in more active social actions. Although type 3 teachers were in favor of teaching critical literacy, they had little knowledge or skills needed to cope with any obstacles related to teaching about social action. As observed from Korean prospective teachers in a previous study (Cho & Choi, 2016), teacher's commitment to teaching critical literacy does not always ensure that they have knowledge or skills needed to teach critical literacy.

Concluding remarks

By comparing and synthesizing nine Korean elementary teachers' experiences, this study has provided an enhanced explanation of how teachers' beliefs about the goals of multicultural education are constructed and how these beliefs are related to their learning experiences in formal and informal settings. Findings of this study revealed that there was less emphasis on critical literacy in teachers' beliefs about multicultural education. At the same time, when teachers engage with ethnic minority communities in conjunction with reflective efforts to integrate knowledge from multicultural education into the national curriculum, these experiences can serve as a powerful means to enhance their commitment to the teaching of critical literacy.

In the context of teacher education, the findings of this study suggest that rich and frequent opportunities to provide appropriate knowledge from multicultural education to critically analyze existing curricula and engage in ethnic minority communities should be collectively pursued by teacher educators if they aim to make issues of social justice and equality more centrally. In addition, there is a need to develop the teachers' commitment to taking a more transformative approach to teaching critical literacy. School environments in which these experiences are actively advocated should also create more opportunities for teachers to take transformative approaches to meet diverse goals of multicultural education.

Despite many efforts to provide more specific descriptions and interpretations, data are limited in understanding the range of individual and contextual factors that can enhance teachers' critical literacy. Data on crucial experiences that make a distinction between the "catch-up standards" view and the "blooming" view are also limited. Further research is needed to examine the dynamics of these variables.

Address for correspondence

Jinyoung Choi
Professor
College of Education, Ewha Womans University
52, Ewhayeodae-gil, Seodaemun-gu, Seoul, 03760, Korea
Email: cjy@ewha.ac.kr

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Footnotes

1. The working definition of Damunwha in Korea is equivalent with those ethically and culturally different from South Koreans (Ministry of Education, 2018). The term 'Damunwha students' refers to students from foreign worker families or international families.
2. An 'Innovate School' in Korea is a school that receives official approval from the government to operate its curriculum independently of the public school system where it is located. In Innovate Schools, teachers are encouraged to collaborate with parents, students, and other teachers in planning and implementing school and classroom curricula. In order to support these collaborative systems, the government provides additional funding and human resources for administrative works (Cho, 2018b).
3. A Multicultural Education Research School (MERS) in Korea is a school that receives official approval from the government to implement new multicultural education policies so that the relevance of those policies can be examined before they are generalized to more schools.

KJEP 15:2 (2018), pp. 47-66

Pull factors influencing enrollment of Mainland Chinese students in Taiwanese universities: An empirical analysis

Joseph Meng-Chun Chin
National Chengchi University, Taiwan
Hsin-Chih Lin
National Academy for Educational Research, Taiwan
Wei-Cheng Chien
National Academy for Educational Research, Taiwan
Cheng-Joo Eng
Min-Hwei Junior College of Health Care Management, Taiwan

Abstract

A rapidly declining birthrate in Taiwan has placed pressure on universities to bolster waning enrollment. At the same time, Mainland China is becoming an enormous exporter of international students, and the close geographic proximity between Taiwan and China has resulted in many Chinese students enrolling in Taiwanese institutions. Between 2012 and 2013, over 75% of Chinese exchange students studied in the United States, Great Britain, Australia, or Canada. In contrast, Taiwan was unable to attract a meaningful number of these students. Thus, the issue of whether institutions in Taiwan appeal to Mainland Chinese students is worthy of exploration. This study recruited 228 Chinese students that studied at universities in 2012 in order to identify factors that influenced the enrollment of students from Mainland China in Taiwan. Survey results led us to four important findings as follows: 1) sociocultural and school-related factors had the biggest influence on the decision to study in Taiwan; 2) college selection did not influence pull factors, learning satisfaction, or the intention to pursue further education; 3) school-related and personal factors influenced learning satisfaction as well as the intention to pursue further education; and 4) learning satisfaction has a direct and mediating influence on the intention to pursue further education. These findings yield recommendations that can serve as a reference for Taiwanese universities.

Keywords : Mainland Chinese students, pull factors, learning satisfaction, intention to pursue further education, Taiwanese universities

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Introduction

Research background

Institutions of higher education are taking actions to globalize and increase the international exchange of students (Rizvi & Lingard, 2000). In Taiwan, however, higher education faces unprecedented difficulties. Although in 2012 college admission rates reached 94.4%, the highest rates in three years, 46 departments in 17 universities were unable to fill all admission vacancies (a shortfall of 217 nationally). This was nearly triple the shortfall of the previous year (59 vacancies). Birthrates in Taiwan have been showing a gradual decline, such that in 2012 the schooling population aged 6-21 years old accounted for only 19.2% of the total population. In the next 20 years, this population cohort is expected to decline to 13.3%, and a total enrollment deficit is projected at 233,000 students with enrollment declines in universities accounting for 117,000 of these students (Council for Economic Planning and Development, 2012). According to the statistics announced at the end of 2017, more than 17 universities and colleges' admission rates are below 60% (Ministry of Education, 2017).

Rising tuition and falling birthrates are likely to continue reducing enrollment at a number of colleges and universities prompting many institutions to consider opening their doors to Mainland Chinese students. The Taiwanese government expects the enrollment of Mainland Chinese students will improve the situation of reduced enrollment rates that could result in the closure of institutions (Chou & Yang, 2012; Tai, Mok, & Xie, 2002).

The deregulation of educational policy toward academic exchanges with Mainland China started from November 1987; all outstanding professionals of Mainland China were permitted to visit Taiwan since 1987. In 1993, Chinese professionals and students were allowed to visit Taiwan for cultural and educational exchanges. Even then, the number of individuals involved in cross strait exchange programs exceeded several tens of thousands (Chou & Yang, 2012).

Taiwan and Mainland China are geographic neighbors with similar culture in terms of lifestyle and language. Thus, the exchange of students between these two areas not only can foster cross-strait relations, but also bring positive influence to both the government and academia (Y.-H. Chiang, 2010). On August 19th, 2010, the Legislative Yuan passed three acts that enabled Mainland Chinese students to study in Taiwan. Briefly, on September 8th, 2010, the Ministry of Education announced the drafting of guidelines for students from Mainland China to live and study in Taiwan. Universities were then expected to submit a recruitment plan for review by the Ministry of Education by the end of that year (Z.-H. Wang, 2013). Following this, the Taiwan's Executive Yuan enacted the *Action Plan for Recruiting Overseas Students* (to run from 2011 to 2014), *Guidelines for Mainland Chinese Students Studying in Taiwan Colleges*, and established the University Entrance Committee for Mainland Chinese Students (W.-T. Huang, 2013). Thus, the recruitment process officially opened up to China in 2011. Nevertheless, the public universities and colleges were opened to recruit Mainland Chinese students until 2014 by setting different rules and restrictions compared to private universities and colleges, for

example, each public school is restricted to an admission quota of only five persons each year. However, a drastic political shift occurred in 2016 when the Democratic Progressive Party became the ruling party in Taiwan again, and the policies on cross-straits issues changed. It affects the Mainland Chinese students' recruitment plan and also has an impact on their willingness to study in Taiwan. Based upon the statistics of the Ministry of Education, the number of non-degree seeking Mainland Chinese students dropped from 32,648 in 2016 to 25,824 in 2017 with a decrease rate of 20.9%; and degree-seeking Mainland Chinese students dropped from 2,935 in 2016 to 2,139 in 2017 with a decrease rate of 24.5% (Ministry of Education, 2018). Indeed, the universities and colleges in Taiwan are facing a more challenging environment now.

Motivation and purpose of research

Recruiting overseas students has become an important goal for many countries as it is a means to further develop higher education. At the same time, China has gradually become a major source of students studying abroad (Y.-H. Chiang, 2010), increasing to 2,644,700 students in 2012, 90% of whom paid their own expenses. Between 2007 and 2011, the number of Chinese nationals studying abroad increased by 20% every year; in 2012 it reached 399,600, a record high increase of 17.65%, making China the largest exporter of students in the world (China Education Online, 2013).

Taiwan cannot afford to disregard the flow of Mainland Chinese students. Between 2012 and 2013, over 75% of Chinese exchange students studied in the United States, Great Britain, Australia, or Canada. Additionally, the excellent education system in Hong Kong helped it to attract 7% of Chinese exchange students (China Education Online, 2013). In contrast, Taiwan was unable to attract a meaningful number of these students. Thus, the issue of whether institutions in Taiwan appeal to Mainland Chinese students is worthy of further investigation.

As recruitment efforts by universities have thus far been unsatisfactory, this study sought to identify factors that can help these institutions attract Mainland Chinese students more successfully. We also provide recommendations that can serve as a reference for school administrators.

Literature review

Push-pull factors

Several studies have adopted the push-pull theory when analyzing the factors governing the choice of destination by international students (M. M. Li, 2007; Yang, 2007; Zheng, 2012). Influential factors can be divided into pull factors that attract exchange students to specific countries and push factors that encourage students to leave their home countries (Y.-H. Chiang, 2010).

Naidoo (2007) proposed three influential factors: 1) sociocultural factors: including the target countries' ethnicity, academic prestige, opportunities for immigration, cultural similarities, geographic proximity; 2) economic factors: including tuition fees, exchange rates, and cost of living; and finally 3) political factors: including foreign policy and educational aid.

Mazzarol and Soutar (2002) described six factors that influence the student's choice of host country: 1) visibility and availability of information about the host country in the student's home country; 2) recommendations from friends and relatives; 3) tuition fees as well as living and transportation costs; 4) environmental factors (e.g., weather conditions and living environment); 5) geographical proximity; and 6) social network links (i.e., friends or relatives living in the host country). Altbach (2004) further listed the push factors affecting international students, including 1) professional inadequacy of higher education institutions in the home country; 2) a lack of master's or doctorial programs; and 3) sociopolitical factors. He listed the pull factors as 1) institutional prestige; 2) opportunities for admission; 3) a desire to live in a developed country, such as the United States; and 4) the possibility to immigrate to a developed country.

In summary, factors which influence the decision to study overseas can roughly be divided into sociocultural factors, economic factors, recommendations by relatives and friends, as well as the academic expertise and prestige of the institutions. Therefore, we believed the five factors also have the influence on the Mainland Chinese students' decision to study in Taiwan.

Factors that attract Mainland Chinese students

Previous studies have examined the factors that pull Mainland Chinese students towards universities in Taiwan. In a survey of 698 students, Mazzarol and Soutar (2002) identified the following push factors for Mainland Chinese students: the desire to better understand western countries (91%); better curriculums overseas compared with the home country (62%); difficulties in pursuing higher education locally (39%); the desire to migrate (38%); and the fact that certain courses was unavailable in the home country (33%). In terms of visibility and information, those researchers identified the following factors as tending to pull students towards a specific host country: a reputable education system (88%); good access to information (87%); high quality of education (87%); and academic performance (79%). In terms of costs, Mazzarol and Soutar (2002) listed: job opportunities (85%); the proportion of international students (85%); low racial divide (75%); low cost of living (66%); low tuition fees (65%); good environment and public order (65%); well-known public colleges or universities (65%); low transportation costs (63%); and eligibility for admission (57%). According to Liu, Hung, and Chung (2009), only four categories significantly impacted students' choice of overseas institution: school information, media information, agency information, and network information.

The economic factor also strongly influences Mainland Chinese students considering studying abroad (M. Wang, 2012). The family economy is not only the main factor affecting Chinese students' enrollment in higher education, but also an influential factor for overseas study (Y. Huang & Shi, 2006; Liu et al., 2009). According to Liu et al. (2009), after controlling for personal characteristics and family background, factors governing the

choice of study destination were as follows: the expected benefits from overseas study, employment prospects, and other economic factors.

Wu (2013) also listed motivations which influenced Mainland Chinese students to study abroad, including: 1) admiration for the national power and prestige of advanced countries; 2) the desire to study advanced theory and cutting-edge technologies at a top university; 3) scholarships to relieve economic pressure; and 4) the ability to receive specific professional training unavailable at home. L. Chen (2011) further pointed out that institution quality, teaching quality, economic concerns, lifestyle, daily life, language, the convenience of application procedures, and a sense of fair treatment by the host country are all important considerations for Chinese students who wish to study abroad.

In research that used the Analytic Hierarchy Process (AHP) method to investigate 22 Mainland Chinese students studying in Taiwan, Y.-H. Chiang (2010) described five important factors: 1) emotional factors (e.g., relatives and friends working or studying in Taiwan, recommendations of others, and personal interest); 2) economic factors (e.g., tuition fees, living expenses, scholarships, and accommodation costs); 3) school-related factors (e.g., reputation, marketing, and quality of faculty and curriculum); 4) cultural factors (including language and food); and 5) factors specific to Taiwan (e.g., experiencing learning in a Taiwanese environment, meeting Taiwanese students, and the desire to come to Taiwan for tourism).

Based on a questionnaire survey of students from six senior high schools in Nanjing, M. Wang (2012) pointed out that 37.93% wished to study in Taiwan; of these, nearly 90% hoped to enter a public university and only 10.2% selected a private university. M. Wang further found that the factors that most strongly influenced Mainland Chinese students to study in Taiwan comprised of: 1) academic factors (e.g., type of school and courses offered); 2) economic background; 3) policies and availability of information; and 4) economic factors.

Lin (2012) listed the factors that pulled Chinese students to study in Taiwan as follows: close proximity to China, shared language, and similar culture. Lin also found that recommendations of classmates who had been exchange students in Taiwan were important, and that Mainland Chinese students often opted to go to Taiwan in order to broaden their horizons.

In summary, factors that influenced Mainland Chinese students to study in Taiwan can be categorized as follows: personal motivations, economic considerations, socioeconomic considerations, recommendations of others, and issues related to specific schools. This study proposed the pull factors that attract students to Taiwan from Mainland China to be as follows: school-related factor, economic factor, sociocultural factor, recommendations of others, and personal factor.

Learning satisfaction and the intention to pursue further education

This study sought to identify learning satisfaction and the intention to continue studying at the same institution among Mainland Chinese students. Satisfaction refers to the feeling that desires or needs have been achieved (Chang, 2011). It can comprise personal attitudes, beliefs, and emotions towards an entity. Thus, campus satisfaction can

be defined as the subjective evaluation of school life by university students based on cognitive and emotional reactions, so a more positive evaluation of a school indicates greater satisfaction (M.-Y. Chiang, 2007). Students' learning satisfaction refers to the gap of how much they could accept between expectations and outcomes associated with learning, so it is important for fostering learning to meet the learning needs of students and supply them with a good learning environment (Cai, Lin, Chen, & Cheng, 2012). Obviously, the learning satisfaction felt by Mainland Chinese students is determined by how well their expectations compare with actual or perceived outcomes (Liao, 2011).

Binner (1993) summarized the factors that influence learning satisfaction into seven categories: quality of teachers, teaching materials, teaching techniques, curriculum, staff, support services, and extracurricular activities. Cai et al. (2012) also listed factors that influenced the learning satisfaction of Mainland Chinese students studying in Taiwan: quality of teaching, quality of administration, learning effectiveness, peer bonding, and life counseling.

In a survey of students from Peking University, Bao and Zhang (2009) listed various factors as influential in the decision to pursue further education upon graduating, for example: personal characteristics, social and economic background, teaching environment, academic participation of students, academic performance, and other economic considerations. Obviously, the factors of Mainland Chinese students to continue studying in Taiwan are various; however, very little research on this topic is available. We propose that the pull factors that attracted students to Taiwan from Mainland China may ultimately influence the learning satisfaction they experience as well as the intention to pursue further education at the same institution.

C.-C. Chen (2008) studied university policies and strategies for recruiting foreign students to Taiwan and conducted questionnaire surveys among foreign students. Results from that study indicated a high degree of satisfaction, high degree of loyalty, a positive educational experience, and a willingness to recommend Taiwan to relatives and friends. Cai et al. (2012) came to similar conclusions in their study, which investigated learning satisfaction in Mainland Chinese students and the intention of these students to return to Taiwan for further education. The various dimensions of learning satisfaction showed significant positive correlations with the continuation of studies in Taiwan with a correlation coefficient of .418 ($p < .001$) and explained variance of 16.7%. Clearly, learning satisfaction has an important influence on the intention to pursue further education.

In summary, this study proposed pull factors that draw Mainland Chinese students to study in universities in Taiwan likely impact their learning satisfaction, attitudes towards learning, and the desire to pursue further education.

Research design

Research framework

According to the literature review, we proposed school-related factor (SRF),

economic factor (EF), sociocultural factor (SF), recommendations of others (RO), personal factor (PF) as relevant pull factors which could affect learning satisfaction (LS) of Mainland Chinese students as well as the intention to pursue further education (IPFE) of these students. Learning satisfaction can influence whether students continue to study in Taiwan and may also mediate the pull factors that affect the decision to pursue further education. The college which students attended might lead to differences in pull factors, learning satisfaction, and intention to pursue further education; therefore, we included these as background variables. The research framework is presented in Figure 1.

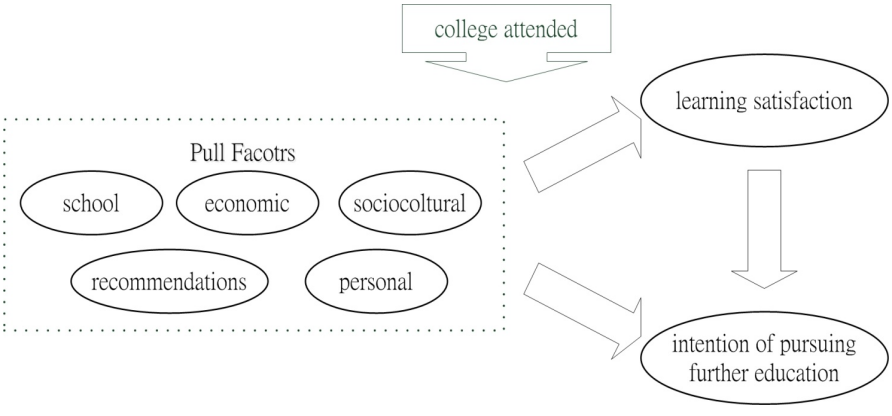

Figure 1. Research framework.

Research sampling

We invited the staff of the admission offices of 18 universities (randomly selected 30% from 60 universities with more than 10 degree-seeking Mainland Chinese students) to assist in distribution and collection of questionnaires in March of 2013. Each university was responsible for five to 20 questionnaires, respectively, based on the number of the degree-seeking Mainland Chinese students. Totally we distributed 264 questionnaires, all of which were returned (a retrieval rate of 100%). Of these, 11 questionnaires were invalid (all the answers were identical). The 253 valid questionnaires accounted for 84.33% of the total population. Samples with one or more omissions were also eliminated, leaving 228 samples for analysis. Most participants were from the northeast and southeast coastal provinces of China, and they were enrolled in various colleges, including: literature (13.7%), law and business administration (37.4%), polytechnic studies (18.3%), arts and communication (22.8%), and other (7.8%). All of the samples are from private universities because public universities did not recruit degree-seeking Mainland Chinese students until 2014.

Research instruments

Based on the literature review, three scales were designed to measure pull factors, learning satisfaction, and the intention to pursue further education, respectively. A 4-point Likert scale was adopted for all items, where: 1 = strongly disagree; 2 = disagree; 3 = agree; and 4 = strongly agree. We conducted reliability and validity tests to confirm the appropriateness of survey questions. Cronbach's α coefficient was adopted for reliability. We used exploratory factor analysis to establish the construct validity of the scales. We also used principal axis factoring coupled with Promax oblique rotation in analysis. Factors with eigenvalues greater than 1 were selected as explanatory variables. Analytical methods are explained in more detail below.

The pull factor survey had 21 items, and EFA identified the five types of factors mentioned above as having influences on the decision of Mainland Chinese students to study in Taiwan. Combined, these variables explained 60.75% of variance. All survey items fell under the original latent variable construct, thereby indicting good construct validity. The overall α coefficient of the scale was .92, and the α coefficients for the five factor types were .92, .84, .81, .79, and, .77, respectively, thereby indicating good internal consistency. The learning satisfaction scale included five items and learning satisfaction was the only factor identified, with an explained variance of 56.94%, indicating moderate construct validity. An α coefficient of .87 indicates the good internal consistency of the scale. The intention to continue studying scale included three items and it was the only factor identified, with an explained variance of 65.32%, indicating moderate construct validity. An α coefficient of .85 indicates the good internal consistency of the scale. The questionnaire items are listed in Table 1.

Table 1
Dimensions of Latent Variables and Questionnaire Items

Latent variables	Indicators	Questionnaire items
		I chose to study at a university in Taiwan because:
SRF	X1	Universities in Taiwan are international institutions.
	X2	Universities in Taiwan offer high quality education.
	X3	Universities in Taiwan promote a high degree of innovation.
	X4	Universities in Taiwan offer a wide range of departments.
	X5	Universities in Taiwan offer well-designed curricula.
	X6	Universities in Taiwan boast a team of high-quality instructors.
	X7	Universities in Taiwan have excellent technical capabilities.
	X8	Universities in Taiwan provide a variety of learning resources.
	X9	Universities in Taiwan feature a rich campus life.
	X10	Universities in Taiwan have a wonderful learning environment.

Latent variables	Indicators	Questionnaire items
EF	X11	It is more affordable to study in universities in Taiwan, compared with other countries.
	X12	Compared to other countries, the cost of living in Taiwan is lower.
SF	X13	Taiwan and China share similar cultural backgrounds.
	X14	There is no language barrier for Mainland Chinese students studying in Taiwan.
	X15	Taiwan has a safe environment.
RO	X16	Recommendations of my family.
	X17	Recommendations of my classmates or friends.
	X18	Recommendations of my teachers.
PF	X19	I have relatives or friends living in Taiwan.
	X20	I was aware of the universities in Taiwan.
	X21	Marketing efforts by universities in Taiwan appealed to me.
LS	Y1	I am satisfied with the course content.
	Y2	I am satisfied with the instructors.
	Y3	I am satisfied with the learning environment.
	Y4	I am satisfied with the learning resources.
	Y5	I am satisfied with administrative services.
IPFE	Y6	I find universities in Taiwan much more appealing.
	Y7	I am likely to enroll in another program or apply for graduate school in Taiwan.
	Y8	If I were able to choose again, I would still study at a university in Taiwan.

Note. SRF = school-related factor; EF = economic factor; SF = sociocultural factor; RO = recommendations of others; PF = personal factor; LS = learning satisfaction; IPFE = intention to pursue further education.

Research model

The independent variables in the research model included five categories of pull factors that influenced Mainland Chinese students to study at a university in Taiwan: SRF, EF, SF, RO, and PF. LS was a mediating variable, and the dependent variable was IPFE. LS and the five pull factors all had a direct impact on intention to pursue further education. Pull factors also indirectly impacted IPFE through LS. The overall research model is presented in Figure 2.

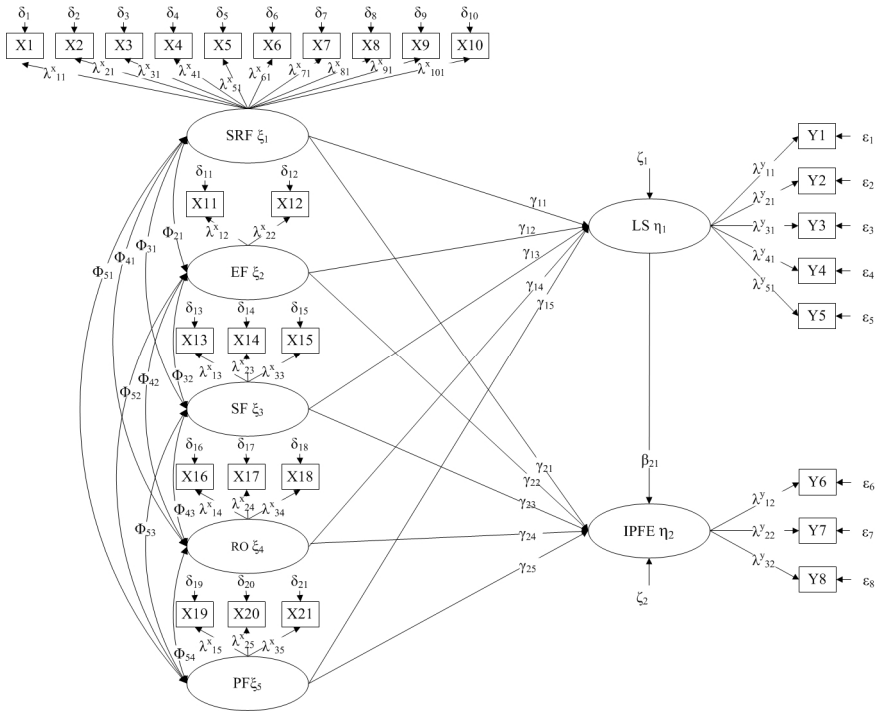

Figure 2. The research model of pull factors, LS, and IPFE.

Note. Indicators corresponding to questionnaire items are presented in Table 1. SRF = school-related factor; EF = economic factor; SF = sociocultural factor; RO = recommendations of others; PF = personal factor; LS = learning satisfaction; IPFE = intention to pursue further education.

Data analysis

This study used SPSS software to gain insight into the differences in learning satisfaction, the intention to pursue further education, or the pull factors according to the college that students attended. Pull factors were analyzed using multivariate analysis of variance (MANOVA); learning satisfaction and the intention to pursue further education were analyzed using analysis of variance (ANOVA).

Structural equation modeling (SEM) was performed using AMOS software to identify correlations among variables. Bagozzi and Yi (1988) claimed that preliminary fit criteria, overall model fit, and fit of internal structural model must all be considered in SEM. For estimation and testing of the overall model, we adopted a strictly confirmatory strategy rather than modifying the statistical model to verify the theoretical model. Finally, we used bootstrapping methods to test the influence of individual variables. Bootstrapping is not restricted by sample distribution pattern, making it appropriate for small sample sizes and giving it the ability to verify direct results, indirect effects, and total effects (M.-N. Li, 2009).

Analysis and discussion

General information

This study used descriptive statistical analysis to investigate pull factors, LS, and IPFE. As shown in Table 2, the average value of the pull factors is between 2.59~3.30, with a standard deviation between 0.51 and 0.79. Because all averages were over 2.5, our results indicated that the decisions of most Mainland Chinese students to study in Taiwan were affected by all the pull factors. SF (M=3.30) had the greatest influence, SRF (M=3.13) had the second greatest influence, and PF (M=2.59) had the lowest influence comparatively. The average score for LS was 3.12 (with a standard deviation of 0.47), indicating that the participants were satisfied studying at universities in Taiwan. The average score for IPFE was 2.84 (with a standard deviation of 0.68), indicating that participants were slightly willing to continue studying at universities in Taiwan.

Table 2
Descriptive Statistical Analysis of Latent Variables

Latent variable	M	SD
Pull factors		
school-related factor (SRF)	3.13	0.51
economic factor (EF)	2.82	0.73
sociocultural factor (SF)	3.30	0.53
recommendation of others (RO)	2.86	0.70
personal factor (PF)	2.59	0.79
Learning satisfaction (LS)	3.12	0.47
Intention to pursue further education (IPFE)	2.84	0.68

Note. N = 228.

Table 3 presents summary statistics from MANOVA analysis of pull factors according to college attended. In analyzing the effects of college attended (literature, law/business administration, science and technology, art communication), the homogeneity of variance yielded a Box M value of 77.58 ($p < .01$), and the Bartlett's test of sphericity yielded an χ^2 value of 368.78 ($p < .001$), indicating that MANOVA analysis was appropriate. However, no significant differences were observed among groups (Wilk's $\Lambda = .918$, $p > .05$). When individual factors were tested, F values (between 0.89 and 2.71) were not found to be significant.

Results of these analyses indicate little variation in terms of factors that attracted students from various provinces in southeast coastal China to study at a Taiwanese university. The average difference in origin was between 2.42 and 3.37 with a standard

deviation of between 0.41 and 0.78. The average difference among student subpopulations according to college selection was between 2.42 and 3.41 with a standard deviation of between 0.44 and 0.93.

Table 3

Summary Table of MANOVA for Pull Factors

College attended	SRF	EF	SF	RO	PF	Wilk's Λ
Literature	3.24 (0.57)	3.02 (0.83)	3.41 (0.47)	3.02 (0.74)	2.76 (0.93)	.918
Law/business administration	3.08 (0.49)	2.85 (0.74)	3.25 (0.56)	2.78 (0.69)	2.42 (0.73)	
Science and technology	3.20 (0.44)	2.78 (0.71)	3.38 (0.52)	2.90 (0.76)	2.78 (0.68)	
Art and communication	3.04 (0.57)	2.72 (0.75)	3.22 (0.59)	2.90 (0.71)	2.52 (0.81)	
F value	1.46	1.08	1.31	0.89	2.71	
R^2	.022	.016	.019	.013	.039	

$^{*}p < .05$.

Table 4 presents ANOVA to compare LS and IPFE among student groups classified by the college they attended. In analyzing student subpopulations according to college selection, the F values did not reach the level of significance; therefore, college selection does not appear to influence learning satisfaction or the intention to pursue further education. Average learning satisfaction was between 3.06 and 3.22, with a standard deviation of 0.34~0.60. The average intention to pursue further education was between 2.71 and 3.04 with a standard deviation of 0.61 and 0.77.

Table 4

Summary Table of ANOVA for LS and IPFE

	LS			IPFE		
College attended	M	SD	F	M	SD	F
Literature	3.15	0.60	1.18	2.93	0.77	2.42
Law/business administration	3.06	0.34		2.71	0.70	
Science and technology	3.22	0.54		3.04	0.61	
Art & communication	3.09	0.53		2.83	0.63	

Test for the model

Data validation

Before conducting a fitness test on the research model, we had to determine whether the data of each observed variable was normally distributed. Kline (2011) reported that when the absolute value of skewness is less than 3.0 and the absolute value of kurtosis is less than 10.0, distribution can be viewed as normal. In this study, the skewness and kurtosis of the 29 observed variables complied with those standards, such that all observed variables in this study were normally distributed. Therefore, we adopted maximum likelihood (ML) for parameter estimation.

To elucidate relationships among the 29 observed indicators, a correlation test was performed. Correlation coefficients ranged between .13 and .76 and reached the level of significance for most of the 29 observed indicators (0.001).

Model fitness test

Figure 3 shows the standard coefficients of estimation parameters in the model using the maximum likelihood method. Note that measurement errors of observed indicators and residual errors of endogenous latent variables were all positive and did not have negative error variance. Additionally, all error variances reached the level of significance (0.01 or 0.001). Factor loadings between latent variables and observed indicators were between .53 and .92, and factor loadings of observed indicators were in line with the 0.50 -0.95 standard. Moreover, the standard error of estimated parameters was between .07 and .24. These results show that preliminary fitness criteria were fully met.

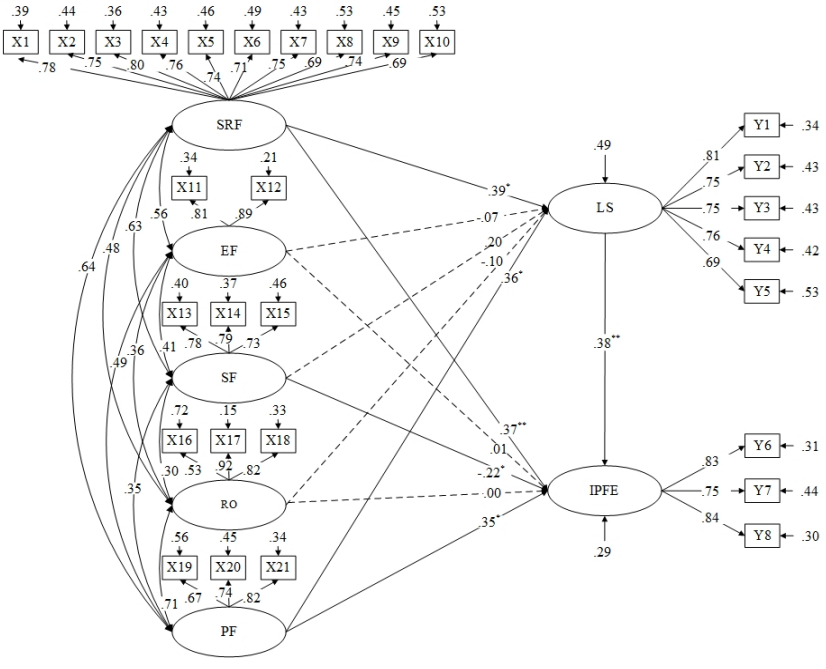

Figure 3. Standard coefficients of estimation parameters.

Note. SRF = school-related factor; EF = economic factor; SF = sociocultural factor; RO = recommendations of others; PF = personal factor; LS = learning satisfaction; IPFE = intention to pursue further education.
$^{*}p < .05$. $^{**}p < .01$.

Overall model fitness was assessed using three tests: absolute fit, incremental fit, and parsimonious fit. In terms of absolute fit, $\chi^2_{(356)}$= 611.16 (p < .05), RMR=.03, RMSEA=.05, SRMR=.05, GFI=.85, and AGFI=.82. In terms of incremental fit, NFI=.85, RFI=.83, IFI=.93, TLI=.92, and CFI=.93. In terms of parsimonious fit, PGFI=.70, PNFI=.75, PCFI=.82, and χ^2/df= 1.72. The above indicators were integrated and most model fitness indicators were in line with established standards, indicating that the theoretical model used by this study possesses good fitness with the actual data.

Table 5 shows the internal structure fit of the model collated in this study. Individual item reliabilities of the 29 observed indicators were between .28 and .85, and almost all indicators were higher than the standard .50. Values for the combined reliability of latent variables were .92, .84, .81, .81, .79, .87, and .85, respectively, with all values exceeding the standard of .60 (Bagozzi & Yi, 1988). Average extracted variances in latent variables were .55, .72, .59, .60, .56, .57, and .65, respectively, all higher than the standard of .50 (Bagozzi & Yi, 1988). These results demonstrate that the model has good internal structural fit.

Table 5

Internal Structural Fit of the Model

Observation indicators	Factor load	Reliability coefficient	Measured error	Composite reliability	Average variance extracted
SRF				.92	.55
λ^x_{11}	.78	.61	.39		
λ^x_{21}	.75	.56	.44		
λ^x_{31}	.80	.64	.36		
λ^x_{41}	.76	.58	.42		
λ^x_{51}	.74	.55	.45		
λ^x_{61}	.71	.50	.50		
λ^x_{71}	.75	.56	.44		
λ^x_{81}	.69	.48	.52		
λ^x_{91}	.74	.55	.45		
λ^x_{101}	.69	.48	.52		
EF				.84	.72
λ^x_{12}	.81	.66	.34		
λ^x_{22}	.89	.79	.21		
SF				.81	.59
λ^x_{13}	.78	.61	.39		
λ^x_{23}	.79	.62	.38		
λ^x_{33}	.73	.53	.47		
RO				.81	.60
λ^x_{14}	.53	.28	.72		
λ^x_{24}	.92	.85	.15		
λ^x_{34}	.82	.67	.33		
PF				.79	.56
λ^x_{15}	.67	.45	.55		
λ^x_{25}	.74	.55	.45		
λ^x_{35}	.82	.67	.33		
LS				.87	.57
λ^y_{11}	.81	.66	.34		
λ^y_{21}	.75	.56	.44		
λ^y_{31}	.75	.56	.44		
λ^y_{41}	.76	.58	.42		
λ^y_{51}	.69	.48	.52		
IPFE				.85	.65
λ^y_{12}	.83	.69	.31		
λ^y_{22}	.75	.56	.44		
λ^y_{32}	.84	.71	.29		

Effects among individual variables

According to the analytic results of the research model by bootstrapping, there are significant effects among latent variables (Table 6). SRF and PF had a significant direct effect on LS and IPFE; moreover, they generate a significant indirect effect on IPFE through LS, so LS is proved a mediator. The total effects of SRF and PF on IPFE were .52 and .49, respectively. Although the others did not have a significant direct effect on learning satisfaction, SF may have had a small indirect effect on IPFE through LS; however, the final total effect on IPFE was -.14, which does not reach the level of significance (0.05).

Table 6
Values of Standardized Effects of Variables Included in the Hypothetical Model

Path affected	Direct effects	Indirect effects	Total effects
SRF → LS	.39*		.39*
SRF→ IPFE	.37**	.15**	.52**
EF → LS	-.07		-.07
EF → IPFE	.01	-.03	-.02
SF → LS	.20		.20
SF → IPFE	-.22*	.08*	-.14
RO → LS	-.10		-.10
RO → IPFE	.00	-.04	-.04
PF → LS	.36*		.36*
PF → IPFE	.35*	.14*	.49**
LS → IPFE	.38**		.38**

*$p < .05$. **$p < .01$.

Discussion

This study explored factors that attract Mainland Chinese students to study at Taiwanese universities, including sociocultural factors, school-related factors, recommendations of others, economic factors, and personal factors. Our findings were consistent with most previous studies; however, factors differed somewhat according to the order of importance (see L. Chen, 2011; Y.-H. Chiang, 2010; Lee, 2010; M. M. Li, 2007; Mazzarol & Soutar, 2002; M. Wang, 2012; Yang, 2007). In our study, economic factors were not as important as indicated by other researchers. One possible explanation may be that most of the Mainland Chinese students in Taiwan came from families with relatively high socioeconomic status along the southeast coast. Another possibility is that a big part of

previous studies surveyed exchange students and short-term trainees, while our study was conducted using undergraduates. Pull factors attracting undergraduate students would undoubtedly vary from pull factors attracting exchange students.

The variable of college selection was not found to influence all the pull factors, learning satisfaction and the intention to pursue further education. This result differs from the findings of C.-Y. Chen (2010) and Liao (2011); however, contradictions among studies also can likely be attributed to differences in sample populations (comprehensive versus university students).

SEM analysis revealed that, in our study, only school-related factors and personal factors had a significant impact on learning satisfaction and the intention to pursue further education. This confirms findings from many previous studies, which found that school prestige, curriculum, facilities, etc. play important roles in attracting students from China to Taiwan (C.-Y. Chen, 2010; L. Chen, 2011; Y.-H. Chiang, 2010; Lee, 2010; Mazzarol & Soutar, 2002; M. Wang, 2012; Wu, 2013). These results demonstrate that the status of the school, as perceived by the student, has considerable influence on learning satisfaction and the intention to pursue further education.

Implication

There are four important findings in this study: 1) sociocultural and school-related factors were shown to have the strongest influence on the decision of Mainland Chinese students to study at Taiwanese universities. After accounting for subsequent effects of learning satisfaction and the intention to pursue further education, school-related factors were found to play the most important role; 2) the college students selected had no impact on the pull factors, learning satisfaction or intention to pursue further education. That is, pull factors for these students had no difference and no distinction on the learning satisfaction and intention to pursue further education; 3) school-related factor and personal factor have an impact on satisfaction and the intention to pursue further education. Although sociocultural factor had significant direct and indirect influences on the intention to pursue further education, the overall effect was not significant; and 4) learning satisfaction had a direct impact as well as a mediating effect on the intention to pursue further education. It means that learning satisfaction largely determines whether a student will continue to study at a Taiwanese university. Learning satisfaction also mediated the effect of school-related factor and individual factors regarding the intention to pursue further education.

In conclusion, based on the major findings, it is strongly suggested that universities must increase learning satisfaction when dealing with Mainland Chinese students. This study found school-related considerations to be important pull factors that strongly influenced student satisfaction and the intention to pursue further education in Taiwan. Therefore, the universities should attempt to become more attractive to Mainland Chinese students by focusing on internationalization, the quality of education, the curriculum, and learning resources. In addition, colleges should seek to employ a team of highly qualified teachers and to promote a good learning environment. The effect of learning satisfaction

on the intention to pursue further education cannot be disregarded. Not only does learning satisfaction directly influence the pursuit of higher education, it also regulates the impact of school and personal factors. According to the qualitative results of Cai et al. (2012), tertiary education institutions in Taiwan should continue to move toward internationalization, introduce good teachers, and establish sound counseling mechanisms for Mainland Chinese students, and only under the situation of a common language and low opportunity cost can Taiwanese schools compete with first-class global universities.

Finally, the study was restricted by a sample of Mainland Chinese students in Taiwanese universities, and unable to obtain personal opinions from a broad range of students. We recommend that subsequent research should collect data for at least two academic years and look for other factors that could affect school selection and the intention to pursue further education. The primary aim of this type of research is to increase the enrollment of students from Mainland China, however, student retention is also important.

Address for correspondence

Hsin-Chih Lin
Associate Research Fellow
National Academy for Educational Research
No.2, Sanshu Road, Sanxia District, New Taipei City, 23703, Taiwan
Email: seize610@gmail.com

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The antecedents of in-service teacher burnout: A study of their occupational health and perception

Angus C. H. Kuok
University of Saint Joseph, Macau, China
Stacy M. I. Lam
University of Saint Joseph, Macau, China

Abstract

As Macau is one of the cities with high students' grade retention rate, the local teachers, therefore, have a considerably heavy workload to prepare the students to achieve the requirements of a particular academic setting. This study examined 173 full-time in-service secondary school teachers at Macau via questionnaire. The result shows in-service teachers feel emotional exhaustion in teaching students. However, teachers perceive their competence in teaching and would not depersonalize the students as an object. Moreover, significant variations are found among the three factors of burnout for teachers. That is, teachers experience higher emotional exhaustion than reduced personal accomplishment and depersonalisation. By reviewing previous studies about teachers' burnout as compared to the present findings, an upward trend of teachers' emotional exhaustion is suggested. The increase of emotional exhausting could be related to the launch of new policies in terms of enhancing the professionalism of teachers. Needs for achievement, which is negatively correlated to burnout, is found to be a powerful predictor. Organisational socialisation in terms of training, understanding, co-worker support, and future prospects are discovered to have negative correlations to burnout. Particularly, understanding and future prospect are found to be the negative predictors of reduced personal accomplishment and emotional exhaustion, respectively. The results and implications are interpreted for teachers' professional development and school administration.

Keywords : in-service teacher, burnout, organisation socialisation, needs for achievement, implications

Introduction

Macau, known as the 'Monte Carlo of the Orient', is famous for its gaming and hospitality industry due to its rapid expansion. The industry has become more prominent ever since the gambling concessions shifted from an over-65-year-old monopoly on casino operation to an open market in 2002 (Healy, 2004). In addition, as Macau is one of the premier gaming destinations in the world, the gross gaming revenue exceeds the Las Vegas Strip in some reported occasions, such strong revenue generated from the industry enables Macau to be the largest gaming city in the world (Macau Gaming Inspection and Coordination Bureau, n.d.).

Therefore, some positive and negative social phenomena have been reflected in the society since 2002. The high demand of human resources in the gaming industry impacts the local unemployment rate. The rate remains at a surprisingly low level of 1.9% (Macau Statistics and Census Service, 2016). However, the job changing rate has gradually increased from 9.5% to 12.1% (Macau Statistics and Census Service, 2016), suggesting that there is an imbalance of human labour among the industries at Macau. Also, as Sharma (1997) suggested, it was difficult for employers in recruiting and retaining qualified workers when the unemployment rate of a city was under 3%. Cities like Macau are encountering low unemployment rate but high job changing rates, suggesting that there are challenges to retain their employees in different industries at Macau (see Kuok, 2017; Kuok & Taormina, 2015).

Challenges of education in Macau

Moreover, this challenge is not only found in gaming and relevant industries, it also affects the ways of education and concepts of the new generation. Interestingly, there are voices from society and schools addressing the ways for teaching youth in order to help them to develop their competence and better preparation in life (Luk , Chan, Cheong, & Ko, 2010), but there is a paucity of concerns on the educators who are responsible to teach the new generation. A large proportion of Macau citizens know that the local economy is closely linked to the gaming industry, and they perceive there will be lots of job opportunities from the gaming industry. Educators in Macau experience difficulties and challenges of educating the youth because they need to educate the new generations who bear ideas for working in the gaming industry. That is, the gaming industry provides more opportunities and benefits that they can see at the moment, but outweigh the possible disadvantages in the long term. Thus, educators may experience a form of 'cognitive dissonance'—any incompatibility one might perceive between two attitudes or between behavior and attitudes (Festinger, 1957), e.g., how could the teachers convince their students not to place a high value on money when the society emphasizes the benefits of working in the gaming industry.

Although the salary between teachers and workers at casinos are not addressed by studies and statistics from local statistical department of government and experts, some

local newspapers actually report that there are a lot of teachers who have resigned and shifted to work at casinos for the past 10 years ("It is a torment," 2015).

Surprisingly, the students' high grade retention is another critical issue that the secondary school teachers have been facing in Macau, which has one of the highest grade retention rates among the Organisation for Economic Co-operation and Development (OECD) countries (Ikeda & Garcia, 2014). By comparing the grade retention rate among the non-tertiary education, students in secondary school have the highest grade retention rate in Macau, 23%, that is, in every four students, one of them has been retained. Moreover, around 56% of students in Macau have not been retained between primary to secondary school. It revealed that nearly half of the students in Macau have been retained, and the majority of them are from secondary school. Therefore, teaching in secondary school has become more complicated and stressful, and teachers are more prone to experience burnout under such a teaching environment.

New policy of education

In 2012, the Education and Youth Affairs Bureau of Macau launched the *System Framework for Private School Teaching Staff of Non-tertiary Education* to enhance the professional quality and to strengthen job security for private school teachers (Macau Education and Youth Affairs Bureau, 2016).

An important issue for this policy is to provide a guideline for the number of periods per week for teachers of different education levels. According to the preliminary information from teachers, the policy in theory attempts to reduce the over-loaded phenomenon of schoolwork. However, apart from actual classroom teaching, teachers indeed allocate more time on the preparation work. With the preparation of annual plans, course material preparation, in-class activities arrangement, homework correction, student consultation, parent meetings, teaching reflections and report writing, etc., teachers run after deadlines and easily get overwhelmed.

Also, by following the trend of other countries in the Asia-Pacific region, the Macau government is committed to equating schooling with equality of opportunity and the promotion of social justice (Macau Printing Bureau, 2016). The enactment of such a significant educational reform involves many parties, including those who will play a central role, i.e., the teachers.

Among non-tertiary education, secondary school teachers in Macau are encountering an immense workload. As secondary school teachers do not only focus on the students' academic needs, but also address the emotional and motivational needs of these adolescents (Hougen, 2015), secondary school teachers need more attention and resources to interact with adolescents. In the life-span development of human being, the cognitive development of adolescents is in the stage of formal operation (Piaget, 1963), i.e., they can understand abstract concepts and start to use their own way of thinking. Therefore, teachers who interact with this group of adolescents are stressed and have even more to handle than other levels of education. In addition, in this era of electronic devices, students can gain information (both good and bad) via the Internet easily, and generate great

challenges for secondary school teachers to fulfil their responsibilities and roles.

However, after reviewing the literature of Macau teachers' feelings at work, there is not any relevant study about teachers' feelings after the policy of *System Framework for Private School Teaching Staff of Non-tertiary Education* has launched. Its aim is to enhance the professional quality and to strengthen job security for private school teachers (Macau Education and Youth Affairs Bureau, 2016). On the other hand, for those studies about teachers' feelings before the policy has launched, they either focused on how stress or demographics are related to burnout (Cheuk & Wong, 1995; Luk et al., 2010). Therefore, the present study aims to: 1) find out the level of burnout among in-service teachers under this new policy, and 2) discover the antecedents of in-service teachers' burnout.

Burnout

Freudenberger (1974) first mentions the term burnout among human service workers for describing a state of fatigue and frustration arisen from unrealistic, excessive demands on personal resources, which lead to physical and mental exhaustion. However, it lacked a commonly accepted definition until Maslach and Jackson (1981) created the Maslach Burnout Inventory (MBI) in which burnout is "a syndrome of emotional exhaustion, depersonalisation, and reduced personal accomplishment that can occur among individuals who work with people in some capacity" (Maslach, Jackson, & Leiter, 1996, p. 4). Therefore, it has been used in work settings. Moreover, Lee and Ashforth's (1993) study confirmed this three-dimensional (emotional exhaustion, depersonalization, and reduced personal accomplishment) model of burnout through factor analysis.

As noted in Maslach's (1982) definition, emotional exhaustion refers to a depletion of emotional resources. Emotionally exhausted employees feel that they have no suitable resources as well as can not give any more to their job, i.e, the energy that they originally possess for their work has been used up, do not have further resources or rooms for performing their work (Maslach, 1982). Also, it "prompts actions to distance oneself emotionally and cognitively from one's work, presumably as a way to cope with the work overload" (Maslach, Schaufeli, & Leiter, 2001, p. 403).

Depersonalisation (known as cynicism) describes a process in which employees develop callous or uncaring attitudes toward their job, their performance as well as work-related demands, namely, customers, clients, and co-workers (Maslach, 1982). It is "an attempt to put distance between oneself and service recipients by actively ignoring the qualities that make them unique and engaging people" (Maslach et al., 2001, p. 403). They act this way as they perceive the demands from work are more manageable when they downgrade the importance of demands or treat them as objects, they do not treat them as human being or the same level as oneself.

Reduced personal accomplishment (known as lack of personal inefficacy) refers to diminished perceptions of ability on the job. Employees perceive not being able to perform well as how they do originally (Maslach, 1982). Further, as Maslach et al. (2001) mention "exhaustion or depersonalisation interferes with effectiveness: It is difficult to gain a sense of accomplishment when feeling exhausted or when helping people toward whom one is indifferent" (p. 403). Reduced personal accomplishment seems to arise from a lack of

relevant resources, while emotional exhaustion and depersonalisation (cynicism) are generated in the presence of work overload and social conflict (Maslach et al., 2001).

Although the Maslach Burnout Inventory (MBI) is applied in most of all studies concerning burnout (Shirom, 2003), there are some other established burnout concepts and questionnaires, namely, the Copenhagen Burnout Inventory (CBI; see Kristensen, Borritz, Villadsen, & Christensen, 2005), the Oldenburg Burnout Inventory (OLBI, see Demerouti, Bakker, Vardakou, & Kantas, 2003), the Shirom Melamed Burnout Measure (SMBM; see Shirom & Melamed, 2006), Gillespie-Numerof Burnout Inventory (GNBI; see Gillespie, 1984) or the Tedium Measure (TM; see Malakh-Pines, Aronson, & Kafry, 1981).

The job demand-resource model of burnout

As stated by Demerouti, Bakker, Nachreiner, and Schaufeli (2001), the job demands-resources model proposes that there are two types of working conditions, job demands and job resources, that are differentially related to specific outcomes (e.g., burnout), particularly for the type of occupation with high job demands but limited resources.

Teachers and workers in the front line service are occupations that involve high-intensity interpersonal contact with people, and they are prone to experience a disappointment for stressful condition at work (e.g., due to job demands), which can be described as job burnout (Malanowski & Wood, 1984). Thus, when teachers are in the state of burnout, they experience emotional exhaustion, i.e., the draining of emotional resources due to workload; depersonalisation, i.e., a negative and callous attitude towards one's job and downgrade the work-related demands, like treating students as objects; and reduced personal accomplishment, i.e., the tendency to evaluate one's work (including teaching, preparation, and consultation) negatively.

Previous studies emphasise to study the relationship between job stress and burnout for teachers in Chinese society (Cheuk & Wong, 1995; Zhang & Zhu, 2007) or to discover the relationships between teachers' demographics and burnout (Luk et al., 2010). That is, these studies intend to study the impact of teachers' personal issues on burnout. However, there is not any study to discover the impact of issues related to the level of organisation and society (i.e., job resources) on teachers' burnout in Chinese society. These studies may provide a clear picture to the teachers, schools, society, and even government for further understanding the latest situation of teaching profession.

Although variables at the organisational level have not been studied for teachers' burnout, previous studies suggest organisational variables relate to the frontline service workers' burnout in Chinese society, e.g., organisation socialisation (Taormina & Law, 2000) and turnover intention (Taormina & Kuok, 2009), suggesting the generalisation of testing organisational behaviours on teachers' burnout in Macau.

Organisation socialisation

The socialisation process explains how a well-trained and well-integrated workforce is essential to the efficient functioning of any organisation. Organisational socialisation has four domains, they are: 1) training, 2) understanding, 3) co-worker support, and 4) future prospects (Taormina, 1997).

Training. Taormina (1997) stated that training is "the act, process, or method by which one acquires any type of functional skill or ability that is required to perform a specific job" (p. 30). That is, to provide organisational instruction for upgrading the employee's job skills. As this study focuses on teachers, training here refers to the instruction of secondary school designed to upgrade the teachers' job skills. Insufficiency of training weakens the performance of the job, an employee cannot be expected to adequately and efficiently perform the work that he or she is hired to do when one is without training in the appropriate job-relevant skills (Taormina, 1998). This view is supported by Heifetz and Bersani (1983), burnout is produced by both excessive environmental demands and unsatisfactory training (Taormina & Law, 2000).

With sufficient training, teachers can enhance their competence and satisfy in teaching. Teachers have the positive perceptions of the training received enhance their self-confidence and reduce teachers' stress (Nordhaug, 1989), as a result, chances of experience emotional exhaustion decreases. Thus, (H1) the more positive evaluations teachers have of the training provided by their schools, a) the less emotional exhaustion; b) the less depersonalisation; c) the less reduced personal accomplishment they experience.

Understanding. It refers to "the extent to which employees believe they can comprehend their job roles, know the goals and values of the company, and apply knowledge about the job" (Taormina, 1997, p. 34). That is, the extent to which management shares their company's goals and values their employee strengthens employee understanding of working environment. As this study focuses on teachers, understanding here is the degree to which teachers know their work roles (e.g., educate students) and how their schools function. Teachers, who know how to perform tasks and how their school function (i.e. good understanding of job roles), have higher levels of self-assurance and confidence (Taormina & Law, 2000). Therefore, their understanding guides them to commit fewer mistakes, they perceive lower levels of burnout as the chance of experiencing stress decreases. Thus, (H2) the better jobs understanding the teachers have, a) the less emotional exhaustion; b) the less depersonalisation; c) the less reduced personal accomplishment they experience.

Co-worker support. It refers to "the emotional or instrumental sustenance that is provided by other employees with the objective of alleviating worry or doubt" (Taormina 1997, p. 37). Favourable social interaction with workmates is critical to an employee for socialising in an organisation successfully (Taormina, 1998). In a social group, if a worker perceives one is being accepted by other co-workers, such kind of support can lead the workers (teachers) to socialise in the workplaces (schools) more successfully (Taormina, 1994). In addition, social support from supervisors is a key variable to predict the workers' burnout (Jackson, Schwab, & Schuler, 1986). Supportive relationships can ease stressful situation which reduces the chance of experiencing burnout. (Peterson, Halsey, Albrecht, & McGough, 1995). Moreover, co-worker support assists employees (teachers) to possess

a sense of community that can reduce burnout (Taormina & Law, 2000). This idea is supported by the study of Golembiewski, Boudreau, Sun, and Luo (1998), high sense of community is related to less emotional exhaustion, less depersonalisation, and more personal accomplishment. Consequently, (H3) the more the co-worker support teachers receive, a) the less emotional exhaustion; b) the less depersonalisation; c) the less reduced personal accomplishment they experience.

Future prospects. It refers to "the extent to which an employee anticipates having a rewarding future with a company in terms of the acceptability of one's recognition, advancement, benefits, and salary increments" (Taormina, 1997, p. 40). As this study is about teachers at schools, future prospects can be referred as the extent to which a teacher anticipates having a rewarding future as they expect with a school in terms of the acceptability of one's future promotions, benefits, and salary increments. Lack of the above rewards for their work leads them to possess less satisfaction about their job and career (Sweeney, McFarlan, & Inderrieden, 1990). Employees result in considering the idea of preferring to be in a different job (Jackson et al., 1986), and to form negative feelings about one's job (Gaines & Jermier, 1983). Conceptually, teachers with negative view about their future prospects are more likely to have unstable emotion and stress that lead to job burnout. Hence, (H4) the more career opportunities teachers can expect in future, a) the less emotional exhaustion; b) the less depersonalisation; c) the less reduced personal accomplishment they experience.

Beside the organisational variables, this study suggests a personality variable for testing the relationship to teachers' burnout. That is, needs for achievement, an internal motive to strive for goals (McClelland, 1961). Teacher is stressful and easily to experience burnout (Cheuk & Wong, 1995; Zhang & Zhu, 2007). However, some teachers are willing to stay at the professional in education even a severe atmosphere of working at casinos with high salary and opportunities is emphasized by Macau citizens, suggesting teachers may not gain the sense of competence through high salary, rather, they have a will to educate students and are glad to see their development, not limited to knowledge, but also the emotional, cognitive, behavioural aspects (Knowles & Brown, 2000).

Needs of achievement

Needs of achievement has been regarded as an internal motive, and people who possess this attribute are thought to work hard to achieve their goals (McClelland, 1961). People with high needs for achievement require freedom in doing their work, desire opportunities for job promotion (Jenkins, 1987). Also, high needs for achievement workers have a strong desire to become superior performers and they are personally responsible for accomplishing goals (Harrell & Stahl, 1984). In addition, when people encounter failure in jobs, this incentive can help them to cope with problematic situation, e.g., burnout. Like teachers with high needs for achievement, they have strong sense to educate students to become holistic people even they encounter obstacles in educating their students (e.g., students' poor academic performance, poor conduct, and misbehaviours). Therefore, needs for achievement is a self-attributed motive, and people who possess this attribute work hard to achieve their goals and do their best very often (Thrash & Elliot,

2002). Therefore, they are less likely to experience burnout. Thus, (H5) the more the need of achievement the teachers have, a) the less emotional exhaustion; b) the less depersonalisation; c) the less reduced personal accomplishment they experience.

Time spending on workload

Workload consists of quantitative and qualitative demands in a working situation, such as working hard, working under time pressure, and strenuous work (i.e., job demands), therefore, higher workload contributes to higher stress (Janssen, Jonge, & Bakker, 1999). That is, there is a positive relationship between workload and emotional exhaustion (Lee & Ashforth, 1996).

With reference to Macau, there are some studies about the relationship between stress or workload and burnout among teachers, their results confirmed that teachers at Macau was overloaded (Cheuk & Wong, 1995). Surprisingly, the workload of Macau teachers was more than double for the teachers in other cities in China (Ng, 2002). In 'System Framework for Private School Teaching Staff of Non-tertiary Education', it provides the guideline about the number of teaching periods across different education levels within non-tertiary education. This policy is a good reference point for schools to follow and to try to shape a better teaching environment for both teachers and students. Also, the original 25-28 periods per week among junior secondary teachers is no longer existed. However, time spent on teaching students is only a small portion of the work, they are in fact spending a great amount of time for preparing many miscellaneous stuffs related to teaching, namely, preparing course materials, homework corrections, students consultation, meeting parents, and administrative works brought by the execution of the 'framework'. All these are not counted as the criteria of this new policy.

Although qualitative approach is widely used to measure workload, it is a good way to measure workload by quantitative approach in further studies (Jackson et al., 1986). In the present study, workload refers to the total amount of time teachers spend on these miscellaneous stuffs related to teaching except lecturing. Thus, (H6) the more time teachers spend for workload except lecturing, a) the more emotional exhaustion; b) the more depersonalisation; c) the more reduced personal accomplishment they experience.

Method

Respondents

The respondents were 173 (79 male, 94 female) full-time teachers from secondary schools in Macau. Their average age was 31.01 years (SD = 9.04). By the highest education level achieved, 80.3% obtained only the bachelor's degree, 9.3% obtained both bachelor's degree and master's degree, and 10.4% obtained the bachelor's degree with additional years for studying in education. With regard to marital status, 114 (65.9%) were single, 59

(34.1%) were married. With the specialised subject that the teachers were responsible, 47 (27.2%) were English teachers, 26 (15%) were Chinese teachers, 10 (5.8%) were Social Science teachers, 20 (11.6%) were Science teachers, 37 (21.4%) were Mathematics teachers, and 33 (19.1%) were teachers who taught in other areas like Computer, Religion, Art, and Physical Education.

Measures

Burnout. This variable was assessed using the Maslach Burnout Inventory (MBI) (Maslach & Jackson, 1981). The concept of burnout in this inventory included three dimensions: nine items scale for Emotional Exhaustion (e.g., 'I feel emotionally drained by my work.'); eight items scale for Reduced Personal Accomplishment (e.g., 'I can easily understand how my students feel about things.'); five items scale for Depersonalisation (e.g., 'I worry that this job is hardening me emotionally.'). This MBI has been translated in Chinese with back-to-back translation and showed excellent internal consistency in the studies about human services providers within Chinese societies (Kuok & Taormina, 2017; Taormina & Kuok, 2009; Taormina & Law, 2000). The items were scored on a 7-point Likert scale (1 = strongly disagree to 7 = strongly agree). The original reliabilities of the three dimensions were .90, .71, and .79, respectively. The respective reliabilities for the present study were .85, .85, and .81.

Organisational socialisation. This variable was assessed using Taormina's (2004) Organisational Socialisation Inventory (OSI). The OSI has four subscales, namely: training (e.g., 'The type of job training given by this school is highly effective.'); understanding (e.g., 'I know very well how to get things done in this school.'); co-worker support (e.g.,'Other workers have helped me on the job in various ways.'); and future prospects (e.g., 'There are many chances for a good career with this school.'). Each of the four subscales included five items, using a 7-point Likert scale (1 = strongly disagree to 7 = stro ngly agree). The original reliabilities of the four OSI domains were .76, .79, .81, and .76, respectively. The respective reliabilities for the present study were .94, .83, .86, and .83.

Needs for achievement. This variable was measured with five items by using the Steers and Braunstein's (1976) Manifest Needs Questionnaire (MNQ). The example item is 'I do my best work when my job assignments are fairly difficult.' The items were scored on a 7-point Likert scale (1 = strongly disagree to 7 = strongly agree). The original reliability of the MNQ was .66, respectively. The respective reliability for the present study was .76.

Time spending on workload except lecturing. The total amount of time spent for workload except lecturing in this study was measured in quantitative way that included: hours of preparing teaching materials per week; hours of correcting homework or tests per week; consultation hours with students during recess and after school per week; hours of meeting parents per week, advisor hours in administration and association per week.

Procedure

As the target group of this study was full-time secondary school teachers, eight secondary schools were selected randomly from school list from Macau Education and Youth Affairs Bureau. In addition, this study was not conducted inside the schools that teachers were working to avoid any harm or pressure from the school. The data was obtained during lunch breaks and after finishing work in the late afternoon in order to let the respondents have more spare time to fill the questionnaire.

In accord with international guidelines for the ethical treatment of research participants, guidelines of the American Psychological Association were used. For every time when the teachers left the schools, the teachers were approached individually, asked for their consent to fill in a questionnaire with telling them the purpose of the study (i.e., to assess teachers' feeling about their work). The teachers were assured of their anonymity, announced that their given answers were strictly confidential, would only be aggregated with answers of many other people as using to analysis statistical in research. For those teachers who agreed to participate in the study, provided them a questionnaire and a pencil, then waited for them to complete the questionnaire. A total of 173 completed questionnaires were obtained. About 173/282 (61.3%) of teachers out of all the teachers who were asked to fill in the questionnaire agreed to participate in the study.

Results

Means comparisons among the three components of burnout

Although no demographic differences were hypothesised, t-tests and Anovas were conducted for the demographics on the burnout measures, there was no significant difference between male and female teachers, between single and married teachers, as well as among their degrees and teaching subject.

Furthermore, even though no hypotheses was made to find out the differences between the three factors of burnout, one of the objectives of this study is to investigate the burnout level of the in-service teachers after the new policy of *System Framework for Private School Teaching Staff of Non-tertiary Education* has launched. Interestingly, there were significant variations among the mean scores of each factor of burnout, emotional exhaustion (M=4.13, SD=1.04) was significantly higher than reduced personal accomplish ment (M=3.09, SD=0.75), $t(173) = 11.70$, $p < .001$, while reduced personal accomplishment was significantly higher then depersonalisation (M=2.42, SD=1.01), $t(173) = 8.90$, $p < .001$.

Test for multicollinearity

This was assessed by a 'tolerance' (1- R^2) test for each independent variable. According to Hair, Anderson, Tatham, and Black (1998, pp. 191–193), a tolerance value of less than 0.10 is problematic. This test uses all the independent variables (for the planned regressions), and regresses each one on all the other independent variables (excluding the demographics because they are naturally correlated). The tolerance values for the independent variables ranged from .51 to .98, all above the .10 cutoff, indicating that multicollinearity was not a concern.

Test for common method bias

Common method bias is a statistical phenomenon in which statistical relationships may be based on the measurement method but not on the measure of the construct. This was assessed by factor analyzing all the variables in this study together, and using the 'maximum-likelihood' approach with a forced, one-factor solution (see Harman, 1960). If a ratio of the resultant Chi-square value over the degrees of freedom is less than 2.00:1, it indicates common-method bias (i.e., a single factor). For this study, the ratio was 5.14:1, suggesting that common-method bias was not a concern.

Intercorrelations

Means, standard deviations, and intercorrelations were computed for all variables to test the hypothesised relationships between the antecedents and burnout.

The negative relationships among the four socialisation variables and the three factors of burnout were found as expected, but there were some variations on the significant level. Training was found to have significant negative correlations with emotional exhaustion (r=-.17, p < .05) and depersonalisation (r=-.17, p < .05), which supported H(1a) and H(1b), but not H(1c). Understanding was found to have significant negative correlations with depersonalisation (r=-.27, p < .001) and reduced personal accomplishment (r=-.33, p < .001), which supported H(2b) and H(2c), but not H(2a). Co-worker support was found to have significant negative correlations with depersonalisation n (r=-.20, p < .05) and reduced personal accomplishment (r=-.26, p < .005), which supported H(3b) and H(3c), but not H(3a). Future prospect was found to have significant negative correlations with emotional exhaustion (r=-.23, p < .005) and reduced personal accomplishment (r=-.23, p < .005), which supported H(4a) and H(4c), but not H(4b).

Needs for achievement was found to have significant negative correlations with emotional exhaustion (r=-.23, p < .005), depersonalisation (r=-.43, p < .001), and reduced personal accomplishment (r=-.40, p < .001), the results supported H(5a), H(5b), and H(5c).

H(6a) and H(6b) expected positive correlations between time spending on workload except lecturing and emotional exhaustion as well as depersonalisation, respectively, which were not supported. Moreover, an opposite result was found between time

spending on workload except lecturing and reduced personal accomplishment, i.e., a significant negative correlation (r=-.18, p < .05), which H(6c) was not supported. These results were shown in Table 1.

Table 1

Mean, Standard Deviation, and Intercorrelations among the Variables (N = 173)

Variable	Mean	SD	1	2	3	4	5	6	7	8	9
1. Emotional exhaustion	4.13	1.04	(.85)								
2. Depersonalisation	2.42	1.01	.30****	(.81)							
3. Reduced personal accomplishment	3.09	0.75	-.18*	-.39****	(.85)						
4. Training	1.15	1.21	-.17*	-.17*	-.13	(.94)					
5. Understanding	5.14	0.88	-.14	-.27****	-.33****	.47****	(.83)				
6. Co-worker support	5.03	0.97	-.10	-.20*	-.26***	.56****	.38****	(.86)			
7. Future prospects	4.05	1.09	-.23***	-.08	-.23***	.56****	.33****	.34****	(.82)		
8. Needs of achievement	5.35	0.68	-.25***	-.43****	-.40****	.19*	.37****	.29***	.12	(.76)	
9. Time spending on workload except lecturing	28.33	15.58	.08	-.02	-.18*	.10	.20**	.07	.06	.17*	--

Note. Burnout, socialisation, and needs of achievement values from 1 to 7. Reliabilities are in parentheses ( ) along the diagonal.
$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .005$. $^{****}p < .001$.

Regressions

To assess the strengths of the relationships among the variables, a series of linear regressions was conducted. By using emotional exhaustion, depersonalisation, and reduced personal accomplishment as criterion measures, with the predictors being organisation socialisation (training, understanding, co-worker support, and future prospects), needs for achievement and the time spending workload except lecturing entered as control variables.

For emotional exhaustion, the variables, needs for achievement and future prospect, were proved to be good negative predictors. Needs for achievement showed that ΔR^2 was .05 with a significant level p < .01. The second predictor was future prospect, it showed that ΔR^2 was .04 with a significant level p < .05. These variables combined and formed as powerful predictors ($R2$ = .10, F = 3.03, p < .01). These results were shown in Table 2.

Table 2
Results of Antecedents in Explaining Emotional Exhaustion

Criteria/Variables	Beta	t-value	Δ R^2	R^2	F	df
Emotional exhaustion				.10	3.03**	6,165
Training	-.053	-0.59				
Understanding	.005	0.05				
Co-worker support	.063	0.64*				
Future prospects	**-.177**	**-2.03***	**.04**			
Needs for achievement	**-.328**	**-2.63****	**.06**			
Time spending on workload except lecturing	.016	1.05				

*$p < .05$. **$p < .01$. ***$p < .005$. ****$p < .001$.

For depersonalisation, only needs for achievement was proved to be powerful and negative predictor ($R2 = .18$, $F = 7.43$, $p < .001$). These results were shown in Table 3.

Table 3
Results of Antecedents in Explaining Depersonalisation

Criteria/Variables	Beta	t-value	Δ R^2	R^2	F	df
Depersonalisation				.18	7.43****	6,165
Training	-.074	-0.91				
Understanding	-.140	-1.48				
Co-worker support	-.004	-0.04				
Future prospects	.086	1.10				
Needs for achievement	**-.560**	**-6.07****	**.18**			
Time spending on workload except lecturing	.000	0.02				

*$p < .05$. **$p < .01$. ***$p < .005$. ****$p < .001$.

For reduced personal accomplishment, the variables, needs for achievement, understanding, and future prospects were proved to be good negative predictors. The strongest predictor was needs for achievement: it showed that ΔR^2 was .16 with a significant level $p < .001$. The second predictor was understanding: it showed that ΔR^2 was .04 with a significant level $p < .05$. The third predictor was future prospects: it showed that ΔR^2 was .01 with a significant level $p < .05$. These variables combined and formed as powerful predictors ($R2 = .21$, $F = 8.77$, $p < .001$). These results were shown in Table 4.

Table 4

Results of a Stepwise Model for Antecedents in Explaining Reduced Personal Accomplishment

Criteria/Variables	Beta	t-value	Δ R^2	R^2	F	df
Reduced personal accomplishment				.21	8.77****	6,165
Training	-.116	-1.94				
Understanding	**-.171**	**-2.43***	**.04**			
Co-worker support	-.109	-1.66				
Future prospects	**-.119**	**-2.06***	**.01**			
Needs for achievement	**-.328**	**-4.01****	**.16**			
Time spending on workload except lecturing	-.093	-1.32				

*$p < .05$. **$p < .01$. ***$p < .005$. ****$p < .001$.

Discussion

In-service teachers' burnout at Macau

In-service teachers are fairly emotionally exhausted, but they do not treat their students as objects and they perceive the ability of their job. Moreover, there are significant differences among the three factors of burnout, i.e., emotional exhaustion is higher than both reduced personal accomplishment and depersonalisation, while reduced personal accomplishment is higher than depersonalisation. Therefore, this result suggested that the secondary school teachers at Macau are prone to be emotionally exhausted. And the discrepancy between emotional exhaustion and depersonalization or reduced personal accomplishment further reveals emotional exhaustion is the critical variable of burnout among the teachers.

Teachers remain emotionally exhausted

In addition, by comparing to a previous study of teachers' burnout that was conducted before the new policy launched (Luk et al., 2010), the result of this study showed that after the execution of the new policy, teachers' emotional exhaustion remains and is even in the trend of increasing, while the level of depersonalisation and reduced personal accomplishment remains in fair level, which is similar to the previous ones in Luk et al., (2010) study of teachers' burnout. Therefore, it suggests that more attention is needed for teachers' emotional exhaustion.

Factors predicting in-service teachers' burnout

Needs for achievement is the strongest negative predictor of all three factors of burnout, namely, emotional exhaustion, depersonalisation, and reduced personal accomplishment, suggesting that teachers who possess an internal motive to work hard to achieve their goals (McClelland, 1961), i.e., they have the motive to educate the students and provide contribution to the next generation and are less likely to be emotionally exhausted, treat students as objects, and to perceive they cannot perform as they can be originally.

While future prospects is another negative predictor of emotional exhaustion, revealing that teachers who anticipate having a rewarding future in schools in terms of the acceptability of ones' recognition, advancement, benefits, and salary increments, they are less likely to be emotionally exhausted.

Another organisational socialisation variable, understanding is found to be a negative predictor of reduced personal accomplishment. Teachers who believe they know the goals and values of the school and can apply knowledge about the job, they are less likely to perceive their inability on their job.

Surprisingly, time spent on workload except lecturing does not have positive correlations to burnout as expected, rather it poses a significant negative correlation to reduced personal accomplishment. One of the possible explanations is the more time the teachers spend on preparing materials, correcting homework, and consulting students. As a result, the teachers perceive their readiness and capability of their job, i.e., a good teacher needs to be prepared cognitively and psychologically, and all this preparation consumes time.

Conclusions and implications

Any policy implemented after a certain period of time, it is worth to consider an in-depth and multi-dimensional review for better sustainable development. The *System Framework for Private School Teaching Staff of Non-tertiary Education* has been carried out in 2012, it is necessary for educational department to review the generalisation of the new policy in the private schools. Getting feedback from this group of teachers (the actual practitioners) can be more helpful and direct as their comments are context-based from their everyday experience and classroom practice. In addition, as the teachers' understanding about their role at school or in the educational system is a predictor of their burnout, the educational department can maximize the teachers' understanding of the policy by sending specialists to the school for communicating the unexpected concerns and problems of this new policy with teachers, therefore enhancing the teachers' understanding of one's job under the new policy.

Furthermore, as future prospects is another predictor of teachers' burnout, the educational department can even empower the private schools with the flexibility to develop their own rules and standard for promotion to establish a standardised policy to

initiate their teachers to create their own career path. For schools, they need to establish a policy related to career development with clear criteria and their interest. Suggestion likes after certain years of teaching, teachers can be reviewed to see whether they have the potential for different career paths, like in Singapore, teachers can choose to be teacher for lecturing; specialist in curriculum and research; or school leader for administration, each with salary increments, as well as different assessment and training according to their potential are provided (Stewart, n.d.). As a result, the teacher can perceive their future at school, which helps to maintain a high quality teacher workforce. Then, they are less likely to experience emotional exhaustion and perceive higher competence at work.

In terms of a more personal aspect, needs for achievement has found to be a powerful negative predictor of burnout. Unlike other front line service workers, teaching is not just an occupation that solely provides service to 'customers/students'. Rather, teachers are educating students for developing their emotional, cognitive, and behavioural aspects (Knowles & Brown, 2000), suggesting that teachers who have a strong desire for achieving this mission are more likely to overcome the obstacles they encounter, and they are less likely to experience burnout.

A possible implication for school management is to develop a non-financial recognition program to increase teachers' needs for achievement (c.f., Rose, 1998; Silverman, 2004), i.e., a type of intangible rewards to the teachers. Like many higher education institutes, secondary schools can establish a teaching evaluation system, for which the students can provide feedback (both pros and cons) to the teachers. According to McClelland's (1961) motivation need theory, high achievers perform best when they perceive there is only 50% of probability for success and like to set goals that require stretching themselves a little. Thus, if there are ways for the teachers monitoring their performance and receiving suggestions, all these help to adjust their strategies in teaching. In return, they would be less emotionally exhausted as they are prepared for making changes.

All and all, policies established by the education department anticipate at facilitating a more constructive and supportive environment for teaching and in certain ways to balance their lecturing hours every week. Nonetheless, lecturing is just a small portion of teaching; teachers need to spend a great amount of time for 'non-lecturing' activities such as preparing course materials, homework corrections, student consultation, meeting parents, and administrative work. If the aim of establishing a 'framework' is to enhance the professional quality and to strengthen job security for private school teachers, the criteria of those 'non-lecturing' tasks for teachers should also be addressed. As a result, it helps to retain a group of competent teachers who are a boost to the next generation.

Limitations and future studies

A limitation in this research is the targets are mainly secondary school teachers who are supposed to experience more challenges in terms of their responsibilities and high grade retention rate. Future studies can address on teachers' experience of burnout in different education levels.

Furthermore, this research has shown Macau teachers are at a high level of needs of achievement. Teaching is a high demanding profession, therefore by understanding factors that contribute to the level of needs of achievement in future literature will be able to retain more teachers in schools from changing to other professions.

Address for correspondence

Angus C. H. Kuok
Assistant Professor
Department of Psychology, Faculty of Social Sciences, University of Saint Joseph
Estrada Marginal da Ilha Verde, 14-17, Macau, China
Email: anguskuok@gmail.com

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Exploring teacher inquiry through a teacher research community: Inquiry as stance and multicultural education as inquiry*

Jonghun Kim
Hongik University, Korea

Abstract

This study examines teachers' collaborative inquiry as a professional development intervention to develop and implement a multicultural education program based on Cochran-Smith and Lytle's concept of *inquiry as stance*. Through such an examination, this case study investigates how teacher inquiry is actualized, what strategies are engaged to teacher inquiry, and what impacts of teacher inquiry work for their teaching practice. The findings of the study reveal how inquiry as stance acts as a framework for understanding teacher inquiry and collaboration. Furthermore, this study expands these findings to offer evidence of teacher inquiry regarding the four facets of inquiry as stance: knowledge, practice, communities, and purpose.

Keywords : inquiry as stance, teacher research community, teacher inquiry, collaboration, multicultural education

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Introduction

Most public schools in South Korea now face the influx of cultural diversity due to three demographic shifts: increasing student populations from families of marital immigrants, foreign workers, and North Korean defectors. These groups of students are called 'multicultural students' in South Korea. Whereas the student population in elementary and secondary education keeps decreasing each year, the number of multicultural students has rapidly increased for the last decade. For example, the South Korean Ministry of Education (2018, p. 2) reports that the number of multicultural students has risen nearly twice over the last five years, from 46,954 in 2012 to 109,387 in 2017. In this circumstance of cultural diversity at schools, teachers are expected to effectively teach students with different languages and cultural backgrounds.

Meanwhile, teacher inquiry or practitioner research has been recently recognized as a promising way to make crucial changes in student achievement and education reform. Research on teacher inquiry highlights the significance of teacher inquiry in an acutely challenging educational climate (Cochran-Smith & Lytle, 1999, 2009; Henson, 2001; Hubbard & Power, 1999), such as the radical shift into a multicultural society in South Korea. Indeed, teacher inquiry is regarded as an effective pedagogical strategy particularly in linguistically and culturally diverse classrooms (Ahn & Lee, 2013; Chang & Jeon, 2013; Kim & Choi, 2015; Mo, 2009).

The notion of teacher inquiry leads to a new understanding on the image of teachers in relation to a critical question about teaching and its foundation: what knowledge informs teaching practice? In teacher inquiry, teachers are recognized not as technicians merely consuming or delivering prescribed knowledge, but as practitioner researchers generating local knowledge as well as theorizing their practice. In this light, teacher inquiry, according to Cochran-Smith and Lytle (1999, p. 250), involves "knowledge-*of*-practice," which refers to the knowledge generated by teachers who intentionally investigate and theorize their own practice. For Cochran-Smith and Lytle (1999), "knowledge-*of*-practice" is different from "knowledge-*for*-practice" or formal knowledge generated by university-based researchers and "knowledge-*in*-practice" or practical knowledge embedded in the practice of highly experienced teachers. Developing the idea of "knowledge-*of*-practice," Cochran-Smith and Lytle (2009) conceptualize the "inquiry as stance" to explore the relationship amongst knowledge, practice, and teacher research. With the inquiry stance, teachers "emanate from neither theory nor practice alone but from critical reflection on the intersections of the two" (Cochran-Smith & Lytle, 2009, p. 42).

Although an increasing amount of attention is paid to teacher inquiry, working to support teacher professional development in teacher education (Bransford, Darling-Hammond, & LePage, 2005; Bransford, Fischer, & Hopson, 2001), less is known about the dynamics of how teacher inquiry itself happens and how it is carried out in practice. Thus, it is timely and relevant to investigate the nature of teacher inquiry as a professional development intervention. It is particularly important for teachers when responding to the diverse issues caused by the radically shifting demographics of their students.

This study aims to offer an insight into teacher inquiry through a designated teacher research community based on the concept of *inquiry as stance* (Cochran-Smith & Lytle, 1999, 2009), linking it to the current multicultural education reforms in South Korea. The research focuses on a teachers' research community at Park Hill Elementary School (pseudonym, hereafter referred to as P-TRC), a spontaneously organized teachers' group located in a large industrial city in South Korea. Examining the community-based inquiry of an elementary school teachers' research group, this study highlights the nature of teacher inquiry and its serving as an essential foundation for teaching practice. In focusing on the P-TRC—a group that has been tasked with developing a multicultural education program in the school—this study examines the following: a) what are the core conditions of the research community actualizing teacher inquiry, b) what key strategies enable teacher inquiry into the research community, and c) what are the impacts of teacher inquiry on their teaching practice. Ultimately, the findings described in this study offer evidence that teachers in the research community do not simply develop a school-based program but make changes through inquiry in their teaching practice.

Theoretical and contextual background

Teacher inquiry is defined as a teacher's intentional way of learning and studying to improve their own teaching profession (Stremmel, 2007). In other words, inquiry for teachers refers to systematic ways that generate local knowledge "that is intended to influence local action but also includes interpretive frameworks and theories of practice that are useful and usable in other contexts" (Cochran-Smith & Lytle, 2009, p. 95). Cochran-Smith and Lytle (2009) conceptualize this position or attitude of teachers as "inquiry as stance." Inquiry as stance emphasizes how to generate knowledge, how to learn, and how to enhance teaching practice in a sustainable way.

For teachers, an inquiry stance is a long-term positioning or a consistent perspective rather than one moment or activity. In this light, Cochran-Smith and Lytle (1999) use the term *stance* to show that teachers' efforts to achieve better teaching practice are not temporary but last for a long time. Just as we embody a physical posture, inquiry stances are intellectual activities and/or perspectives that refer to ways of standing, ways of seeing, and lenses for seeing through (Cochran-Smith & Lytle, 1999, p. 288). Inquiry as stance is, therefore, not a how-to toolkit for teachers to follow, but "a worldview, a critical habit of mind, a dynamic and fluid way of knowing and being in the world of educational practice that carries across professional careers and educational settings" (Cochran-Smith & Lytle, 2009, p. 120).

According to Cochran-Smith and Lytle (2009), inquiry as stance is an amalgamation of four components: knowledge, practice, community, and purpose. When teachers are adapting an inquiry stance, they:

- Take "a perspective on *knowledge* that rejects the formal knowledge-practical knowledge dualism and instead puts forward a conception of local knowledge in global contexts";

- Adopt "an expanded view of *practice* as the interplay of teaching, learning, and leading";
- Have "an understanding of practitioner *communities* as the primary medium or mechanism for enacting inquiry as stance as a theory of action"; and
- Take "the position that the overarching *purpose* of practitioner inquiry is to provide education for a more just and democratic society" (Cochran-Smith & Lytle, 2009, pp. 126–127, *Italics added*).

In particular, teacher inquiry is a shared responsibility, like other teaching practices. Cochran-Smith and Lytle (1999) describe inquiry as stance as "the positions teachers and others who work together in inquiry communities take toward knowledge and its relationships to practice" (p. 288). Many scholars also characterize this as collaborative inquiry and have focused on collaboration and collegiality among teachers as playing an essential role in enhancing the inquiry process (see, e.g., Meirink, Meijer, & Verloop, 2007; Putnam & Borko, 2000; Schnellert & Butler, 2012). In particular, research suggests that collaboration among teachers deeply influences the formation of new knowledge and facilitates their learning (McLaughlin & Talbert, 2006; Meirink et al., 2007). In collaborative inquiry, teachers work jointly, and thereby they can better study, learn, and reflect their own teaching experience. The underlying assumption embedded in the impact of collaboration—that inquiry occurs in a socially situated learning environment, in particular, through a community—is directly underpinned by a sociocultural theory of learning (e.g., Wenger, 1998; Wenger & Snyder, 2000).

Recently, there has been a growing interest in teachers' communities in South Korea and other countries that are attempting to improve the quality of teacher education. Such attempts are variously referred to as a teacher learning community (TLC), a teacher research community (TRC), or a professional learning community (PLC), but they commonly emphasize the linkages and cooperation among teachers wishing to improve the quality of education. In particular, a teacher community is recognized as a crucial vehicle for teachers' professional development as well as school reform.

Teachers' collaborative inquiry, or teacher research communities, is particularly important in the context of South Korea, where teacher education and educational policies are highly centralized (Cho, 2003; Seo, 2009, 2013). Traditionally, teacher education in South Korea has been formulated by the government with a focus on how teachers acquire prescribed content knowledge in an effective way and deliver it successfully to students; thus, it has been criticized for its technical-rational orientation as well as its uniformity (Seo, 2009; So, 2003). In this context, the recent interest in teacher collaboration or teacher learning communities is significant in that it guarantees teacher autonomy and spontaneity in teaching practice and acknowledges that teachers themselves are the subject of professional development (Park, 2015; Seo, 2009, 2013).

Furthermore, teachers' inquiry or collaborative research is a way to ensure that schooling is ready to cope with the social changes that affect it and to solve related problems. Multicultural education that responds to demographic changes in society is a good example for considering the importance of teacher collaboration in South Korea. Even though the government has distributed multicultural education policy every year since 2006 (Ministry of Education & Human Resources Development, 2006), it merely

consists of guidelines that suggest an orientation to, or principles of, multicultural education. That is, teachers and schools are expected to actualize and contextualize the policies based on their unique circumstances. As the ratio of multicultural students has increased rapidly in South Korea over the past two decades, it is now apparent that the provision of culturally appropriate education for them is no longer the responsibility of individual teachers, but must be approached through cooperative pedagogical efforts. P-TRC in this study is an attempt by teachers to collaboratively respond to the demographic changes facing schools.

Method

Setting and participants

This study examines the nature of teachers' collaborative inquiry based on the notion of inquiry as stance, with the data drawn from a case study of a designated teacher research community in South Korea. Research settings and participants were selected for data collection using purposive sampling (Maxwell, 1996; Patton, 1990). Such a method satisfied two critical conditions for the study: 1) a relatively high portion of multicultural students, and 2) the existence of a teacher research community for special pedagogical needs. Park Hills Elementary School, a major site of data collection for this study, is a K-6 public school located in a large industrial city of South Korea, with a growing population of marital immigrants and foreign workers over the past decade. Although South Korean students make up an absolute majority of the student population (94.7%), as shown below in Table 1, the portion of multicultural students (5.3%) attending Park Hills Elementary School was much higher than that of the nation in general (1.07%) in 2014 (Ministry of Education, 2015).

Table 1
Racial Breakdown of Student Population

Racial background	Number of students	Percentages
Chinese	13	2.2
Southeast Asian	11	1.9
Japanese	4	0.7
North Korean	3	0.5
South Korean	560	94.7
In total	591	100

Note. Southeast Asian refers to Vietnamese, Filipino, and Cambodian.

Because of the relatively high portion of multicultural students, Park Hills Elementary School decided to create a teachers' research community with the aim of

developing and implementing a multicultural education program. Participants for this study consisted of seven founding members of the community: six volunteers from each grade (1-6) and the school's vice-principal who had also joined the community. They are all native Koreans.

Table 2
Profile of Teacher Inquiry Community Members

Participant	Grade taught	Gender	Teaching experience (years)
Lee	Vice principal	M	25
Nina	1	F	18
Ken	2	M	9
Sue	3	F	16
Eugene	4	F	15
Kyle	5	M	6
Young	6	F	7

Note. The participants' names have been replaced with pseudonyms.

Data collection and sources

This study mainly draws on data from three methods: participatory observation, interviews, and artifacts. Data collection was conducted under the school principal's approval. All the participants provided informed consent to observe research community meetings, do interviews, and utilize data for this article.

Participatory observation on research community meetings. The biweekly meetings took place after school in the teacher's lounge, lasting approximately 1-1.5 hours each. The meetings were audio-recorded. During the participatory observation, my field notes were created, and then transferred to the computer and elaborated upon immediately after each gathering. In particular, group meetings during the implementation of the program provided community members the opportunity to reflect on what they had developed, shared, and taught. Participatory observation during regular meetings across the year helped me grasp how the participants worked collaboratively, and in particular how the inquiry stance was formed, elaborated, and continued.

Pre-and post-group meeting interviews. Teachers were interviewed before and/or after research meetings throughout the year of data collection. Topics included teachers' views of the P-TRC, their experiences in and out of the research community related to the project, and the changes they made in relation to their teaching. Interviews were conducted based on semi-structured questions (Patton, 1990) as follows: what motivated teachers to conduct their inquiry?; what is the purpose of collaborative research among teachers?; in what ways did the participants conduct their research?; what difficulties or problems have they encountered in their inquiry?; how did they respond to these problems?; what did they experience or learn through teacher inquiry?; what changes and improvements have been made to individuals' teaching practice through community work? These questions arose from the main research questions, and were partially revised during interviews with

participants according to their responses. Each interview lasted 30-50 minutes and all the interviews were audiotaped. As Quinn (2005) states, "[i]nterviews can provide a density of clues to cultural understanding that is virtually unobtainable in any other way" (p. 7). In addition to the participatory observation, interviews therefore provided me with a deep understanding of how the participants study for the development process learn from each other, implement what they have created, and sustain their inquiry stances.

National, district, and school documents. Prior to and during the study, several documents were reviewed related to multicultural education published at the national, regional, and school level. These documents included South Korean multicultural education policy documents, the regional guidelines of multicultural education programs and school curriculum documents. As secondary data of the study, the documents shed light not only on school circumstances but also on the role of teacher inquiry as a means to actualize a higher-level policy.

Data analysis

Transcripts (for participatory observation and interviews) and the researcher's field notes (on the meetings and classroom observation) were analyzed from the beginning phase of the data collection and were continually analyzed throughout the research project. Throughout the data analysis, I also made analytic notes to capture crucial concepts and categorized them while scrutinizing the data (Strauss & Corbin, 1990). The categories were developed from descriptive to analytical (Miles & Huberman, 1994), as well as those categories that were in relation to key factors of the conceptual framework in this study (e.g., inquiry, collaboration, and stance). In the analysis of weekly meeting data, the focus was not on understanding what the participants spoke about in detail but rather on how teachers' inquiry was manifested in conversation and interaction. In addition, the data collected from interviews were also analyzed by focusing on the dynamics of inquiry with the participants.

As to the issue of validity, data triangulation was conducted in the process of analyzing and interpreting the data by comparing the main sources of data collection (i.e., biweekly meeting transcriptions, interviews, and field notes). Crucial themes that emerged in research meetings were initially identified and then compared with ones drawn from interviews, as well as those supported by field notes. In the process of categorizing themes, I frequently shared the data with the participants and invited them to examine, confirm, and provide feedback on my analysis and interpretation. In doing so, themes and sub-themes—to be found in the following section of this paper—were finally identified. Detailed evidence gathered from the participants, field notes, and so forth were then reorganized according to these themes.

My positionality is crucial to data analysis as well as data collection. I self-identify as a practitioner researcher just like the participants of the P-TRC because I had worked as an elementary school teacher for over 10 years (2001-2011) and had also been a part of a teacher research community during a full academic year to develop and implement a school-based instructional program before getting involved with the P-TRC as a researcher. The similarities between the participants and I possibly made teachers more comfortable with me as an observer and interviewer than with other researchers from

outside of an elementary school setting. In turn, my experience of teaching at elementary schools and participating in a research community also helped me understand the things about which the participants collaborated and inquired.

Findings

The following section is organized around three tenets of teacher inquiry: a) the conditions enabling teacher inquiry in the research community, b) the strategies that teachers use for inquiry, and c) the impacts of teacher inquiry on teaching practice. Across these factors, the section also discusses how inquiry as stance, a theoretical framework of this study, is articulating teacher (collaborative) inquiry.

Commonality and intentionality: The fundamental conditions of teacher inquiry

For practitioner researchers, the act of working together in the research community can be recognized as being purposeful and intentional rather than natural or arbitrary. For the P-TRC, the intentionality of teacher engagement with the community (Cochran-Smith & Lytle, 1999, 2009; Dana & Yendol-Hoppey, 2009) acts as an important variable in actualizing teacher inquiry and sustaining inquiry stances. At the beginning of the project, the teachers had tried to verify the most pressing issues for multicultural students in order to help them. They found that all multicultural students had a common need for Korean language education, although the extent of that need differed. Teachers in P-TRC seemed to understand that the Korean language was not only necessary as a tool for communicating with friends and teachers in order to adapt to school life, but it was also a basis for all subject-matter learning. This confirms Bransford et al.'s (2005) explanation of teachers' inquiry as "diagnostic and strategic judgment to address the needs of those whom they serve" (p. 9).

Owing to the lack of language proficiency among multicultural students, teachers were experiencing difficulties in teaching and supporting them, and these difficulties led to teachers sympathizing with others who taught multicultural students; ironically, their difficulties helped build closer relationships among themselves. The shared challenges faced by teachers promoted solidarity among them, and it also encouraged close relationships as a basis for collaboratively solving issues. Firmly built relationships among the P-TRC teachers enabled them to adopt and maintain the inquiry stance related to the purpose of the community—developing school-based Korean language materials. Although the participants were willing to join the community, building a community based on closer relationships among teachers was necessary for the further steps of communicating, interacting, and working together. In interviews, novice teachers like Kyle and Young, who were teaching higher grades in the school (Grades 5 and 6),

attributed their satisfaction with the research community to the unique relationship among teachers, which they couldn't find other than through the P-TRC:

> The community meeting is meaningful for me because I'm always feeling that I learn from others. Members in this group are experienced, enthusiastic, and knowledgeable, so they always teach me even though they are not willing to. (Kyle, interview)

> This meeting is the only place where I think that "I'm doing research" in the school because others ask me to work rather than study and learn. This is why I enjoy taking part in this group. (Young, interview)

The relationship among teachers in the P-TRC was quite different from what the participants had experienced before. Whereas in their workplace it was common for teachers to work according to a designated position, the community members began to rebuild the relationship with colleagues in the community so that they could work more interactively. For example, all-staff meetings happening every Monday afternoon looked quite inactive because there were only one-way announcements or directions given from school administrators, including the principal and vice-principals, and there were not many questions or further discussion on them. However, the P-TRC meetings were quite different in terms of the quality of teachers' interactions, as Ken stated, "At least within the community, I communicate with Lee in meetings not as through he is the school's vice principal but as one of my colleagues on the project." Accordingly, the participants shared their ideas, discussed meeting topics, and sought effective ways to achieve their goal based on equal and close relationships.

In addition, members were encouraged by their familiarity with the inquiry topic to deeply involve themselves with the community. The notion of familiarity in this study, however, does not mean as it did in previous research (e.g., So, 2013; Zuidema, 2012), only individual interest and understanding about the topic examined. It is characterized as praxis-oriented in which members confronted daily classroom issues. These interactive relationships created a supportive environment for collaborative inquiry, relationships that ran counter to the traditional relationships among teachers in South Korea. These relationships contribute to an environment that may be characterized as bureaucratic, hierarchical, and top-down. In this sense, community building and teachers' collaboration within the community presented as an opportunity to verify more just and democratic connections among teachers.

Close relationship among teachers played a crucial role in encouraging the participants to keep inquiry stances throughout their works. In the whole process of the research project, teachers' inquiry stances based on the close relationship were shown in various ways such as sharing personal experiences and problems and making formal and/or informal connections. The findings of this study are in line with conclusions from earlier research on relationship building among teachers as a condition of collaborative inquiry (e.g., Mindich & Lieberman, 2012). As Hargreaves and Dawe (1990) emphasized teacher autonomy, components essential to a teacher research community is the creation of a collaborative and collegial atmosphere that fosters reflection, appraisal, and even critique among teachers.

Collaboration within/beyond the community: The strategies that teachers use for inquiry

Over time, the teachers in P-TRC had begun to cooperate in the development of Korean language teaching materials. First of all, they gathered previously developed and disseminated materials related to Korean language education for multicultural students, which provided a platform for launching the development of a school-based program. Participants' examination of existing materials was one of the most important ways of promoting teacher inquiry in the P-TRC. Additionally, they examined the degree of Korean language ability of each multicultural student in order to establish the foundational understanding for the research topic. As practitioner *researchers*, they expanded teachers' understanding about multicultural education by engaging with and understanding materials as well as students. This study unearths a great amount of evidence that verifies that collaborative inquiry to provide students with the best materials shaped teachers' perspectives and awareness of the research topic (Biesta & Burbules, 2003), rather than providing practical recipes to develop programs and materials.

Teacher inquiry can be launched and sustained by identifying what issues teachers are required to understand, study, and learn more about to address pedagogical needs (Schnellert & Butler, 2012; Stremmel, 2007). As their work became more intense, the P-TRC members faced some crucial questions including, what does the Korean language program mean to Park Hill School?; for whom are we supposed to develop programs, only multicultural students or all students at the school?; what contents should we obtain and why? These questions do not only encourage the participants to seek practical solutions, but also engage teachers' belief and perspective on multicultural education and program development. For most P-TRC teachers, collaboration played an essential role in promoting their inquiry process, as inquiry as stance emphasizes teacher learning as a collective and not simply an individual activity (Cochran-Smith & Lytle, 2009). The data suggest that teacher inquiry in the research community began with teachers' strategic devices to enact collaboration.

A crucial intervention in general is role allocation according to the participants' interests and capacities in regular group meetings. However, the strategies of collaboration intentionally taken by the P-TRC were more specific and systematic. A good example is the making of pairs as a sub-group in the community, showing how their efforts at collaboration work to enhance teacher inquiry. There were three small groups of two participants: Nina and Ken (Grades 1 and 2), Sue and Eugene (Grades 3 and 4), and Kyle and Young (Grades 5 and 6). As teachers working within smaller groups, they worked more effectively. Collaboration within a small group provided more active ways of communicating and sharing ideas and feedback with each other, and ultimately they expanded their work and conversations to the whole community, which enabled the "collective intellectual capacity of practitioners" (Cochran-Smith & Lytle, 2009, p. 118). In the interview, Ken explained meaningful values of collaboration:

> Conversation with Nina for creating the materials of the lowest level saved us a lot of time. The time issue was important to me. But more importantly, working together let

> me see what I couldn't think of before. She was better than I was in terms of displaying what we wanted to study with students, even though I had more ideas about the topics and related activities. (Ken, interview)

In addition to collaboration *within* the community, the opportunities for sharing ideas with same-grade-level teachers, non-members of the P-TRC, offered structured opportunities to verify and clarify their understanding of the project: collaboration *beyond* the community. Many participants shared stories of their experiences in community meetings, stating how they improved understanding and knowledge when they shared the products of the community with same-grade teachers. Sue explained how collaboration beyond the community worked in her inquiry stances:

> When I introduced the materials we had created in the community to my colleagues in Grade 3, their reactions varied—some asked questions, some welcomed it but no feedback, and others talked about how they could use them in their classrooms. But the important thing was, I learned more than they did even though I myself shared the materials. Their questions made me look back on what I had done, their feedback made the materials more applicable which I shared again with the research community, and even their chilly reaction led me to reflect on the work. (Sue, interview)

This double quality of collaboration—within and beyond the community—is significant because it reveals teachers' "stance" of inquiry as a sustainable process inside and outside the community. Interestingly, teachers' inquiry stance can be supported by collaboration, but in a later phase of the community project, the situation reversed itself and teachers' collaboration sustained the inquiry stance. Therefore, teachers' collaboration supported teachers to take and sustain inquiry stances not only within the community but also beyond the community.

Organized and systematic strategies to work together "can inform both one's own practice and that of others" (Bransford et al., 2005, pp. 16–17). In this study, collaboration both within and beyond the community supported teachers taking an inquiry stance, and the emphasis on collaborating in a communal effort enabled participants to get involved to their colleagues' opinion and action via mutual ways: from the community to same-grade teachers and from the same-grade teachers to the research community. Collaboration made teachers' actions and reflections not an individual business but a social practice (Clarke, 2009; Zeichner, 1996).

Integration of research and practice: The impact of teacher collaboration

Whereas in the past it was common for teachers in the P-TRC to think of inquiry as separate from teaching practice, teachers began to intentionally connect or integrate inquiry and practice. In other words, when they were developing the program, teachers were trying to keep in mind the classroom situation and, in turn, they problematized their understanding about practice based on what they did inquiry. As Nina described:

> Before coming to this group, I understood both research and teaching as place-based notions, I mean, teaching in the classroom and researching outside the classroom, such as at universities. However, something changed in my mind. As time went by, what I did in my classroom with multicultural students was connected to what we thought, shared, discussed, and developed in this community. (Nina, interview)

Similar to Nina, the participants had recognized blurred boundaries between their research and practice as the inquiry made progress. One of the most outstanding changes for participants was that they valued both group meetings and classes to reflect their inquiry and practice. Reflection, in particular, plays a crucial role in linking inquiry and practice for teachers in this study. For the participants, discussion in the community was based on their reflection upon what they taught in the classroom, and at the same time, their teaching practice acted as a way of reflecting the materials that they have developed. In doing so, reflection linked teachers' inquiry and practice in the P-TRC.

Reflection enhancing the linkage between teacher inquiry and practice was an on-going process when teachers were developing and implementing the programs. In interviews, Eugene described the cycle of reflection that she had experienced from the research project and how it encouraged an inquiry stance for her:

> The research group is a place where I can look back on what I did in the classroom. I used the materials that our team had developed, and then I shared my experiences with the community members. The meeting is the important moment for me because I can get others' stories and their feedback on my teaching. Based on the conversation in the community, I can plan for my next class. (Eugene, interview)

The reflective cycle, as evidenced by Eugene, can be found throughout the project. The data confirmed the notion of inquiry as a continual process (Cochran-Smith & Lytle, 2009), and the participants' reflective inquiry and practice heavily rely upon Clandinin and Connelly's (2000) argument that "experiences grow out of other experiences and experiences lead to further experiences" (p. 2). The efforts of taking inquiry stances impacted the participants from a continual and general perspective rather than a one-time event. For the P-RTC members, inquiry stance based on reflection therefore can be accepted as "a theory of action grounded in the dialectic of knowing and acting, inquiry and practice, analyzing and doing" (Cochran-Smith & Lytle, 2009, p. 119).

In addition, by "studying their own schools" (Anderson, Herr, & Nihlen, 2007, as cited in Cochran-Smith & Lytle, 2009, p. 27), the participants began to envision a school as a site for changes along with broader contexts outside school. Consider, for example, Nina and Kyle's answers to the question of their thoughts on national multicultural education policy in the later phase of the project:

> When I saw the statistics of multicultural family students for the first time from the national policy document, I was so frightened by its size and growth, even though I had somehow imagined it. I understood that what we were doing was not only about Park Hill, but was about the issue that a number of schools across the country are confronting nowadays. (Kyle, meeting conversation)

> To be honest, I couldn't say that I fully understood what multicultural education was or how it should be described in national policy. However, I believe that our efforts are making the policy tangibly adequate for the circumstances of our school. (Nina, meeting conversation)

The importance and value of such changes testify to how inquiry stances work in teaching practice and how important teachers' continued inquiry is within and beyond the research community. Practitioner inquiry in P-TRC is not only developing and implementing school programs so as to support multicultural students in school, but it stands as a project for "enhancing educators' sense of social responsibility and social action in the service of a democratic society" (Cochran-Smith & Lytle, 2009, p. 58).

Overall, the findings of this study led us to conceptualize inquiry as stance as a list of components that fit within the concepts of knowledge, practice, communities, and purpose of teacher inquiry (see Table 3 below).

Table 3

Comparison of Cochran-Smith and Lytle's and the Participants' Presentations of Inquiry as Stance

Cochran-Smith & Lytle (2009)	Participants
Knowledge: Local and global contexts	
· Inquiry stance as a way of knowing and being · Practitioners as knowers · Rejecting the formal knowledge-practical knowledge distinction · Knowledge is local but interactive with larger and global contexts	· Recognizing multicultural students' pedagogical needs · Reflective thinking on their teaching practice from the larger perspective · Blurring the boundaries between inquiry and teaching practice
Practice: The interplay of teaching, learning, and leading	
· The interplay of teaching and learning, the synergies of learning and leading, and the synthesis of theorizing and acting · Putting theory into practice · An expanded view of practice · Practitioners as activists and knowledge generators	· Realizing the value of existing materials · Learning to teach · Keeping an inquiry stance in and out research group · Learning by sharing
Communities: Catalysts for practitioner learning	
· Practitioner inquiry communities as the primary medium for enacting the theory of action · Varieties of educational collaboration to improve the cultures of practice · Schools as critical sites of learning for teachers · Teachers' learning by identifying and critiquing their own experiences, assumptions, and beliefs	· Building a relationship not based on the hierarchy, but based on their capabilities and interests · Making inquiry group as a site of studying and learning · Sharing idea and experience within and/or beyond the group
Purpose: A more just and democratic society	
· Transforming what it means to educate for the ultimate goal of enhancing students' learning and their life chances · Inquiry for justice and change · Working from inside the lived world of real problems of practice	· Providing culturally relevant learning materials · Inquiry for marginalized student groups · Working together to achieve the goal of the community

Conclusion

This study has attempted to investigate the nature of teacher inquiry through a designated teacher research community based on the concept of *inquiry as stance*. For this purpose, the study tried to answer three research questions: what are the core conditions of the research community actualizing teacher inquiry?; what are key factors that enable teacher inquiry in the research community?; what are the impacts of teacher inquiry on their teaching practice?

While this study extends our understanding of teacher inquiry in a teacher research community, it also raises questions, especially about the universalization of inquiry stances. While inquiry stances are not about a one-time event but about continual ways of being, the data did not clearly indicate how teachers' inquiry stances worked out in the community in their everyday lives. For instance, the findings of the study do not show whether the participants continued to make relationships in a more equal and democratic fashion (as they did in P-TRC), whether they worked collaboratively on other tasks and jobs in the school, or whether they struggled to meld inquiry and practice not only into the program that they had created but also into their general teaching practice. Therefore, a further examination of teachers' practice in connection with their inquiry stances is necessary to shed light on what teachers need to know and do in order to sustain inquiry stances as a component of a broader and on-going habit of mind.

Despite these limitations, however, this study gives hope for interlacing ideas of what can be changed with how to change when teachers adopt inquiry stances. Throughout the research project, the participants could see small, though tangible, signs of evidence of progress toward the application of a multicultural education program that catalyzes teaching transformation. This study reveals how practitioner researchers can address these issues at the ground level through inquiry-based discourse and ongoing reflection. In this light, the findings of the study provide three implications for teacher education and multicultural education.

First, the findings of the study suggest that research and practice should be appropriately harmonized to improve teacher education and teachers' professional development. This study is conceptualized as a practice-driven teacher inquiry, the aim of which is a "union of theory and practice" (Schubert, 1991, p. 214). The study is therefore grounded in the following ideas: inquiry is an essential vehicle of teaching practice; and teacher inquiry is not simply instrumental in the sense of solving problems that arise in the classroom, but an ongoing and habitual perspective among teachers as a theory of action. Whether teachers in P-TRC realize the value of the inquiry for teaching practice, it makes one step toward making better practice by addressing how teacher inquiry has been actualized and specified for children of marital immigrants, foreign laborers, and North Korean defectors, that is multicultural students at a school level. Given the challenges of providing culturally relevant pedagogy for multicultural students, teachers are supposed to keep the role of inquiry among teachers in mind, which is difficult to be taken place, but necessary and possible. In pedagogical terms, this implies that research is important to more effectively respond to emerging challenges in schools, such as the growth of a multicultural student population. In turn, teacher inquiry should always be action-oriented, as can be seen in the case of P-TRC. It is necessary to consider ways to

support and activate teacher inquiry in order to improve teaching practice.

Second, in bringing together inquiry as stance and teacher research community, this study demonstrates the importance of collaboration among teachers in multicultural education. To date, national policy responses to demographic change have largely focused on an individual teacher's responsibility. Although multicultural education policy requests teachers to meet special needs of multicultural students, it pays little attention to how teachers work together. This study provides evidence that teacher collaboration in an inquiry community was essential to provide culturally relevant pedagogy, multicultural education program, and school-level responses to a culturally marginalized student group. These culturally responsive efforts were realized when teachers work in a collaborative way to understand the distinctiveness of multicultural students. This finding has implications for teachers as well as policy-makers in terms of providing more culturally appropriate educational support. Teachers' professionalism should be extended through formal and/or informal communities, which enhance collaboration and connectedness among teachers. In particular, teachers' collaborative inquiry plays an important role in multicultural education, as investigated in this study, in terms of figuring out the most suitable ways to address the needs of multicultural students at a school. The importance of teacher collaboration is to express solidarity toward pedagogical responsibility for multicultural students, which is not properly placed at the individual level of the teacher but at the school level.

Third, in illuminating the importance of local knowledge and contextualization in relation to teaching practice, this study contributes to further scholarship on multicultural education as an essential vehicle making better and more just schools. Although multicultural education policies are developed and distributed at a national level, the realization of these policies is undertaken at the level of teachers and schools. In other words, national policies provide overall guidelines, and the policies must be implemented to meet the unique circumstances of each multicultural student. In particular, the contextualization of education policy is more important in the case of a highly centralized society like South Korea, even though it has become more decentralized over time. This finding has considerable implication not only for my study, but also for multicultural education in South Korea, where cultural awareness in classrooms and teacher education programs has continually been requested in specific contexts. In light of the burgeoning trends of teacher community and professional development in the field of teacher education, the effort and products of a teacher research community like the P-TRC can be interpreted as a powerful way to enhance this trend. In addition, in a broader context of national education policy, teachers taking inquiry stances to prepare and handle challenging circumstances (such as radical changes of racial/ethnic diversity in schooling) play a crucial role in activating the national policy.

Address for correspondence

Jonghun Kim
Assistant Professor
Department of Education, School of Education, Hongik University
94, Wausan-ro, Mapo-gu, Seoul, 04066, Korea
Email: ilovetem@hongik.ac.kr

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The new teaching career policy in Chile: Perspectives from school principals

Marta Quiroga
Pontificia Universidad Católica de Valparaíso, Chile
Felipe Aravena
Pontificia Universidad Católica de Valparaíso, Chile

Abstract

In the Chilean educational context emerges a new policy as a system of professional teacher development called the New Teaching Career Law which will be implemented in 2017. This study aims to investigate from the perspective of school principals (n=173), the impact of the organizational, relational, and individual dynamics of the New Teaching Career Law. The study employed a mixed-method research design using a descriptive-exploratory approach. The results of this study suggest that the process of teacher sorting considers the following points the most important elements in evaluating a teacher's performance: experience, continuous professional development, and results of the teacher evaluation portfolio. However, principals do express doubt regarding the relationship between the categorization obtained by teachers and the effectiveness of them in the school context.

Keywords : teaching, teachers, school principals, policy implementation, school leadership

Introduction

The Chilean education system has been shaped by neoliberal policies. According to the OECD, Chile has a high level of socioeconomic segregation, and this is evident in both the stratification levels and the types of school (Bellei, Muñoz, Pérez, & Raczynski, 2004; Mizala & Romaguera, 2002). According to the OECD, in 2010 there were 186,475 teachers working in the Chilean school system. In this system, Chile has three types of schools serving three different communities: municipal (public), private subsidized, and private. The first type, the municipal schools, is fully funded by the municipalities: 43.5% of teachers work in municipal schools. The second type, the private subsidized schools, is both unique and idiosyncratic. The private subsidized schools were created in the 1980s during the dictatorship period, and 45.5% of teachers are working in these schools (Mizala & Torche, 2012). The private schools have their own curriculum, are not supervised by public stakeholders, and are not accountable to the education ministry, except where student wellbeing is involved (Mizala & Romaguera, 2002). A large group of educators (11.9%) work in private schools. Although the differences between municipal, private-subsidized, and private schools can be important in terms of teaching conditions, being a teacher in Chile is not recognized as an attractive option for students (Ávalos, Cavada, Pardo, & Sotomayor, 2010).

Traditionally, the teaching profession in Latin America and also in Chile has not received much recognition from society (Ávalos et al., 2010; Fanfani, 2005; Vegas, 2005). This can be observed in relation to working conditions, especially in terms of salary and future career pathways (Acuña, 2015; Bellei et al., 2004). For example, the OECD in 2013 asserted that significant improvements in educational quality depend on the initial improvement of teaching quality. In practical terms, such an assertion demands the improvement of both initial teacher training and continuing teacher training. It also involves building policies that encourage the best students to enter into pedagogy careers by developing control and quality assurance mechanisms at universities and training centres. Hence, it is necessary to construct systemic and integrated educational policies that support the development of a teaching career that impacts the quality of education at a national level (Ingvarson & Kleinhenz, 2006). From this need emerges a new system of professional teacher development called the New Teaching Career Law, which was implemented in 2017.

The creation of a system of professional teacher development at the national level presents a new situation with possible effects that need to be investigated. The present study aims to investigate from the perspective of school principals, the impact of the organizational, relational, and individual dynamics of the new 2017 teaching career law. This study contributes to the policy makers' ability to anticipate effects that may arise once the law is implemented.

A new teaching career law: A new teaching situation?

The teacher evaluation system is based on the Framework of Good Teaching created in 2005, which defines teaching standards implemented centrally by the Center for Research and Pedagogical Experiments (CPEIP). Teachers in the municipal sector must be evaluated every four years. The mandatory procedure is composed of four inputs: self-assessment (10%), a one-pair interview (20%), the third-party report (school principals, 10%), and portfolio (60%). The portfolio includes evidence of planning units, evaluation tools, evidence of students' results, filming a class session, and a reflection on their practice. These elements are evaluated by public policy implementers from rubrics and are assigned a level of performance to the teacher expressed by the following levels: insufficient, basic, competent, or outstanding. From this evaluation process, the objective of the New Teaching Career Law is to sort the teachers into five main categories and associate each category with better economic remunerations.

The five main categories are: access, initial, early stages, advanced, and expert. The process of sorting teachers into the five categories with the national database indicates that 33% teachers are in the access level (without evaluation); 9% initial, 37% early stages, 4.9% advanced, and expert 0.7% (Ministry of Education, 2016).

Since the challenge of constructing a system of professional teacher development is understood as a large-scale national reform, the New Teaching Career Law functions to simplify the process. To do so, the new law translates various isolated reforms into a new legal provision within the national scenario. The New Teaching Career Law ends with the balkanization of disorganized and disjointed reforms that have worked in recent decades for teachers in Chile (Cavieres, 2011).

The new law called "Professional Teacher Development System: Teaching Career Law" has two main objectives:

1) To dignify teaching, support its exercise and increase its value for new generations; understanding the decisive mission that this profession fulfills in society, and

2) To contribute to the construction of an inclusive system, where quality education is a right for all (Ministry of Education, 2016).

In regards to the first objective, the law raises four key aspects of teacher professionalization. First, it addresses entering the discipline of pedagogy and the development of a professional career. Second, it substantively improves the conditions for the teaching exercise through a new scale of remuneration based on different levels of professional development and the increase of non-teaching hours. Third, it creates new rights for teachers, such as the accompaniment of a mentor in the first years of exercise and access to continuous training in formal courses. Finally, it benefits all teachers who are performing in kindergartens, schools and high schools that receive funding from the State (Ministry of Education, 2016).

The New Teaching Career law is based on the massive evaluation of the professional performance of teachers. Vaillant (2008)—through a review of teacher evaluation and performance systems in the United States, Australia, and Latin America—agrees with the

results proposed by Ingvarson and Kleinhenz (2006), pointing out that there are obstacles to mass evaluation of teacher professional performance. These include factors such as: 1) an interference between teacher performance assessment and systems for measuring the quality of student learning, 2) a reduced ability to apply in an orderly manner, 3) the inability to capture from the mass evaluation, key aspects of everyday classroom practices, and 4) the isolation of the teacher from the interaction in his/her performance peer group and school organization by considering he/she the "unit of analysis" in his/her classroom. This last factor addresses an element of the law that is critical when considering the internal evaluation of the teachers' performance. In other words, policy makers must consider from an organizational perspective the teacher evaluations conducted by school principals as implementers (Honig, 2006).

Implementation of educational policies

The current research presents an implementation of a new policy considering its possible effects on the school system (Hill & Hupe, 2002). In other words, one must question what could happen when policy is established in the world of action (O'Toole, 2000). The anticipated effects of the New Teaching Career Law are limitedly addressed from a hypothetical perspective as they only become reality when the policy is implemented. Therefore, it is necessary to gather information from multiple perspectives and observe what happens when different actors, systems, and levels of action work together to make changes (Hill & Hupe, 2002). The fact that professional dispositions are products of their context further necessitates a multi-level approach to the effects of the new law (Honig, 2006).

In regards to the implementation of educational policies, Honig (2006) argues that people, contexts, and the educational policy itself all act as important factors. Pesonen et al. (2017) adds that the knowledge, experiences, capacities, and values of those who implement the policies also influence proper implementation of policy. From a socio-constructivist perspective, Bridwell-Mitchell and Sherer (2017) argue that accountability market logics, bureaucratic logics, and communal sentiment logics also play important roles. Each of these elements is projected in the variable time it takes to draw a long-term comprehension of the effects of the educational changes (Hill & Hupe, 2002; O'Toole, 2000; Pesonen et al., 2017).

All policy implementation has *targets* defined by first-line actors or a clear group of individuals that respond to educational policy (Honig, 2006). In this case, the new teacher career law's formal first-line actors are the teachers. School principals are informal actors that influence the interpretation of the policy message, even if they have not been pre-defined as the central target of the implementation. Furthermore, there is considerable evidence that shows how the interpretations of implementers (in this case, school principals) function as critical policy factors, especially when they come from the top down (Cho & Wayman, 2014; Coburn, 2001; Stillman & Anderson, 2015). This teacher-principal dynamic warrants a clear understanding of how school principals comprehend the new teacher career law.

The role of Chilean school principals in the implementation of the New Teaching Career Law

Effective educational systems have school principals and teachers who develop high-performance skills to achieve better outcomes in their students (Snipes, Doolittle, & Herlihy, 2002; Spillane, 2005). International literature (Anderson, 2008; Darling-Hammond, Meyerson, LaPointe, & Orr, 1999; Robinson, Lloyd, & Rowe, 2008; Sergiovanni, 1995; Spillane, 2006) and national literature alike (Bellei et al., 2004; Donoso, Benavides, Cancino, Castro, & López, 2011; Weinstein & Muñoz, 2014) show empirical evidence that teachers are the first factor in determining student learning outcomes. In response to this, school principals behave as secondary factors that indirectly affect student learning (Brighouse & Woods, 2002; Gurr, Drysdale, & Mulford, 2005; Hallinger & Heck, 1996; Hargreaves & Shirley, 2012; Harris, 2009; Marzano & Waters, 2009). Therefore, it is important to analyze from the voice of school principals how this policy is perceived.

School principals exercise leadership by influencing, mobilizing, and transforming schools. More precisely, their leadership can provide direction, inspiration, and motivation within schools (Hargreaves & Shirley, 2012; Mulford & Silins, 2003). By establishing the necessary conditions for developing collaborative cultures, leading principals aim to impact and improve the performance of students (Anderson, 2008; Leithwood, Harris, & Hopkins, 2008). Leadership, as a process of influence and change, is primarily exercised by school principals and their teams. Therefore, developing capable, committed, and motivated teams to build and change instructional practices is a complex and highly demanding task that involves distributing responsibilities and fostering emerging leaderships (Gurr et al., 2005; Harris, 2009).

Considerable international evidence suggests that school principals can influence the modification of teacher professional performance in the classroom (Anderson, 2008; Hallinger & Heck, 1996; Marzano & Waters, 2009). At the national level, it is possible to identify a number of studies that prove educational leadership to be a key factor in school improvement. In a literature review of 14 empirical studies carried out in Chile, Horn and Marfan (2010) conclude that educational leadership influences the achievement of quality learning. Their work confirms a crucial congruency between international theory and the national scenario: educational leadership has an indirect impact on student learning.

The New Teaching Career Law stresses the important role of school principals and their management teams. However, their role is complicated since the principals and their teams do not have a school principal career law. This creates an imbalance in public policy regarding the professional and teaching situation of the teacher. For instance, it is currently possible to find Chilean teachers who receive better remuneration than their respective principals. This impacts both the expectations of principals and the possibility of recruiting more and better candidates to assume the leadership of schools. Considering this incongruence, it appears that teachers are in better working conditions than school principals.

Despite the shortfalls, the New Teaching Career Law introduces professional opportunities for teachers never seen before in the history of Chilean education. All these opportunities are a positive advance in working conditions, social and teacher's

performance. School principals are ultimately responsible for such opportunities to be transformed into practices that effectively impact student learning (Spillane & Lee, 2014). However, since their responsibility does not include decision-making power in the evaluation of professional teaching performance, school principals have been seen as marginal actors in the policy implementation.

Method

This study employed a mixed-method research design using a descriptive-exploratory approach (Creswell, 2007). First, the concept mapping technique was implemented (Johnson & Onwuegbuzie, 2004). Next, a survey was created based on the identified clusters from concept mapping. The survey was then distributed and returned by 173 participating school principals. The advantage of using mixed-methods is that research findings can be strengthened by the triangulation of quantitative and qualitative sources (Creswell, 2007; Teddlie & Tashakkori, 2009).

Participants

The concept mapping technique was applied to the participants of a training program for school principals provided by the Ministry of Education. The group was composed of 17 participants: 12 were male and five were female. Participants belonged to different regions of the country: 53% came from regions in southern Chile, 23.5% from the north, and the remaining 23.5% from the center of the country. Participants worked in diverse types of schools: urban secondary (n=7), basic schools (n=5), and schools that provide complete education from kindergarten to fourth grade (n=5). All of them had more than 13 years of experience as principals. The average age was 55 years. Each participant had held a leadership position in their respective school for a minimum of eight and a maximum of 22 years. Hence, they were a group of experienced managers that knew their teaching staff and had experience with the implementation of public policies. Although the sample was not intentionally selected for this study, geographic diversity, experience in the position, and school diversity within the group ensured a broad understanding of educational policy and its effects in schools (Creswell, 2007).

The survey was published in an online system where school principals from three educational districts were invited to participate via email. A total of 378 people were prompted to respond, 45.5% (n=173) of which answered.

Instruments

The concept mapping technique involves the creation of concept maps by the participants (Dagenais et al., 2015; Dagenais, Ridde, & Péladeau, 2012). A concept map

functions as a tool to identify relationships between concepts and ideas (Trochim & Cabrera, 2005) and to establish patterns (Creswell, 2007) that are organized in clusters. The concept mapping technique was implemented in four stages:

Brainstorming. The 17 school principals were invited to answer the following question: what effects have they observed in their schools since the implementation of the New Teaching Career Law? Each participant created an average of five statements. Participants were instructed so that each statement referred to a specific idea or concept. A total of 85 statements were compiled, reproduced, and redelivered to each participant.

Hierarchy. Each participant rated each statement according to the Likert scale: a score between numbers 1 and 5, with 5 signifying "strongly agree" and 1 signifying "strongly disagree."

Design. Once the declarations were finished, the participants were asked to group the clustered declarations by giving each one a representative name.

Analysis of hierarchies. A database was created to organize the 85 declarations and assessments of the 17 participants. A hierarchical cluster analysis and a matrix were developed, which led to the identification of four clusters. From the identified clusters, the research team decided not to use the statements associated with the desire of the principals to also have a principal career in the overall research analysis. This decision was made based on the fact that the statements were not directly associated with the effects of the teaching career law. Therefore, of the 85 compiled statements, only 68 were used in our organized analysis.

In order to enhance the triangulation between the data produced by the concept mapping technique and the survey, the researchers carried out the following methodological steps (Trochim & Cabrera, 2005): a) statements made by the participants expressed a complete idea, that is, they were not made up of a single word or emotion but rather comprehensive, subjective thoughts; b) emergent categories were developed from the declarations, identifying the following: categorization of the process, organizational effects, personal effects, role of school principals, teacher professional development, and purpose of the law; c) subsequently, statements were selected from each of these aspects. The diction was clarified and/or expanded in order to adhere to the categories created, which were validated by the participating managers. The instrument consisted of 18 statements, with five response options based on the Likert scale.

Table 1

Association between Category and Asseverations

Category	Asseverations
Categorization process (critiques of the mechanism and procedures)	Teaching categorization in regard to years of professional experience, professional degrees, and portfolio evaluation do not necessarily measure quality of student learning outcomes.
	Teacher categorization does not include teacher commitment.
	Teachers do not know which factors are determinant to establish the category.
	Portfolio results harm the teachers in the process of categorization.

Organizational effects	The differences between teacher remunerations negatively affect school climate.
	School principals experience more difficulty professionally developing teachers categorized as "expert".
Personal effects	There is disappointment amongst the teachers listed in the access level.
	Teachers categorised in initial levels feel less respected by their colleagues.
	The categorization process generates fear in teachers because every four years they must be re-evaluated and can fall from level.
	Validation among colleagues.
	The teachers categorised in the highest levels are proud.
	The New Teaching Career Law increases teachers' commitment.
Role of school principals	In the categorization process, school principals should have more influence because they know first-hand how teachers perform.
	An evaluation from school principals should be included to help categorize teachers.
Teacher professional development	Teaching as a career favours beginning teachers.
	Teachers with more years of professional experience that are not being evaluated through a portfolio have limited their potential to be categorized in a better level.
	It is an incentive for the teacher professional development.
Purpose of the law	The categorization process will impact student learning outcomes.

Data analysis

The data were analysed using the SPSS software (version 11.0). A hierarchical cluster analysis and a proximity matrix were developed from the 17 participants' responses to the 85 declarations created with the concept mapping technique. This led to the identification of the four clusters. The results of the survey were also analysed using descriptive statistics tools, which allowed for the triangulation of data (Creswell, 2007).

Results

Concept mapping: Organization of cluster by the teaching directors

There were 85 statements created, of which 29% were ranked in level 5, that is to say, very much in agreement; 41% on a level 4, agree; 19% on a level 3, slightly agree; 9.4% on a level 2, disagree; and 1.2% on a level 1, strongly disagree.

Table 2 shows the 10 clusters created by the participants, specifying their name and a brief explanation. The standard deviation was calculated for each of them. According the

calculations, clusters 7, 8 and 10 have the lowest standard deviation. In other words, the declarations included in these particular clusters showcased more agreement among the participants. The statements included in cluster 10 were excluded from the analysis because they referred to the need for new legislation of school principal career professional development. It is feasible to group clusters 1 and 6 into one, since both include declarations on economic aspects: the first cluster contains statements that ratify the economic commitments specified in the law, and the second cluster contains projective economic statements. Both show concern about the wage differences between teachers with the same workload—an important aspect to be analyzed in future studies. Clusters 2 and 7 complement each other, since both consider how the law will contribute to the social status of the teaching profession.

Table 2
Clusters Created by School Principals

Nº	Name	Average	*SD*
Cluster 1	Economic concern: Describes concerns about the salary increase and its effects on teachers.	3.8	1.2
Cluster 2	Professional assessment: Teaching is strengthened with greater demands.	4	1
Cluster 3	Evaluation mechanism criticism: The teacher evaluation procedure is not associated with the quality of student learning.	3.4	1.2
Cluster 4	Organizational climate: Salary differences between teachers will cause conflicts between teachers.	4	1.1
Cluster 5	Professional performance: The teacher evaluation will improve the performance of teachers.	4.1	1.2
Cluster 6	Economic improvement: Teachers with better results in teacher evaluation will earn increased salaries.	4	1.2
Cluster 7	Assessment and empowerment of teaching: Socially improve the evaluation of the role of teachers.	4.6	0.8
Cluster 8	Improvement: The teaching career is a stimulus for the permanent formation of the teachers.	4.2	0.8
Cluster 9	Emotions: A set of emotions that provoke uncertainty among the evaluated teachers.	4	1.2
Cluster 10	Absence of directive career: School directors do not have a professional career.	4	0.8

As explained in the methodology section, statements were identified for each cluster, which were validated and transformed into the survey questions. The survey was answered by 173 people, 58% (n=93) have between zero and five years of experience, 15.6% (n=27) have between six and 10 years, 9.8% (n=17) are between 11 and 15 years, and 20.8% (n=36) had 16 or more years of experience. The results are presented in the following table 3, which organizes cluster, questions, percentage of response options, and standard deviation.

Table 3

Relationship between Cluster and Survey Questions

Cluster	Questions	5	4	3	2	1	SD
1	Teacher sorting does not include the teacher's commitment to the school.	47.4%	39.9%	5.8%	5.8%	1.2%	0.89
1	Teachers do not know how to weigh and combine the factors that determine the level of sorting they are left with.	24.9%	39.9%	20.8%	12.1%	2.3%	1.04
1	The data of the portfolio of the teacher evaluation harms the teachers in the process of sorting.	18.5%	20.2%	30.6%	27.7%	2.9%	1.13
1	Framing teachers from the years of teaching experience, improvement and results of the portfolio does not ensure quality learning.	32.9%	37.6%	12.1%	13.3%	4.0%	1.15
2	It is more costly for teaching managers to lead the teachers at the expert level.	9.8%	19.1%	23.7%	33.5%	13.9%	1.20
2	Differences in remuneration among teachers will negatively affect the school climate.	17.9%	23.1%	21.4%	27.7%	9.8%	1.27
3	There is disappointment among teachers in access.	43.4%	39.3%	11.0%	5.2%	1.2%	0.91
3	Low-level teachers feel disadvantaged by their peers.	31.8%	32.9%	23.1%	10.4%	1.7%	1.05
3	Validation against peers.	17.9%	46.2%	18.5%	9.8%	7.5%	1.12
3	The Teaching Career Law increases commitment to the profession.	8.7%	24.3%	27.7%	25.4%	13.9%	1.18
3	Sorting generates fear in the teachers because every four years they must be re-evaluated and they can descend of level.	17.9%	38.2%	17.3%	19.7%	6.9%	1.19
3	The teachers in the expert level I or II are proud.	51.4%	34.7%	10.4%	2.3%	1.2%	0.84
4	Teachers should be more influential in their teaching as they are directly familiar with teachers' pedagogical practices.	39.9%	38.7%	9.2%	5.2%	6.9%	1.15
4	The evaluation of the teacher's direct superior should be included in the sorting process.	38.7%	43.4%	6.9%	8.7%	2.3%	1.01
5	It is an incentive for teacher improvement, so you can ascend.	13.9%	41.0%	19.7%	16.8%	8.7%	1.17
5	The teaching career favors only teachers with few years of experience.	21.4%	26.0%	26.6%	17.9%	8.1%	1,23
5	Teachers with more years of service who have not been evaluated are limited their chances of promotion in the teaching career.	39.9%	39.3%	11.0%	6.4%	3.5%	1.04
5	Teacher sorting will improve student learning.	6.4%	17.9%	35.3%	22.5%	17.9%	1.14

Discussion

Teacher sorting and role of school principals

Seventy percent of the respondents strongly agree or agree with the evaluation criteria (improvement, years of experience, and portfolio result) to classify teachers. However, when asked their opinion on the results of the teaching portfolio in regard to the categorization process, only 18% strongly agreed and 20% agreed that the category was fair. This can be explained by two reasons: first, that a teacher's commitment to the school cannot be evaluated in the portfolio, and second, that a principal's evaluation of teachers' practices is not a criterion included in the portfolio or in the system of teacher sorting. Commitment to the school and principal evaluation of teacher practices are both mentioned in the concept mapping technique. Both aspects measured an average of 4.7 out of 5 on the Likert scale—figures that demonstrate their relevance within the current Chilean education context.

According to survey results, 78.6% of participants believe that principals should influence the process of teacher sorting. For example, a teacher sorted in the expert level within the context of the school may not necessarily demonstrate the skills and commitment associated with that particular level. From the perspective of the principals, we can infer that the results of the teacher evaluation generated at the macro level by the Ministry of Education are not perceived with the same value by principals at the individual school level. This incongruence is due in part to the discrepancies between performances in school and the characterization of performance level reported by public policy. This lack of alignment may imply that the ultimate goal, namely, to improve learning, is not achieved in all educational communities. From this perspective, it would be important to undertake site-based studies (Anyon, 1997; Orr, 1999) to better identify in which contexts this lack of alignment generates the greatest impact.

Personal and organizational effects

Statements created using the concept mapping technique express opposing emotions about the Teaching Career Law and its effects, from uncertainty, bewilderment and fear to feelings of pride and motivation. These more personal aspects were questioned in the survey. Results measured that 82.7% of participants feel there is disappointment amongst teachers enrolled in the access level (lowest level), and 86.1% of the respondents expressed that teachers enrolled in the expert level feel proud. When asked about the effects of teacher sorting on the relationships between educators, 67% of the respondents indicated that teachers enrolled at lower levels feel diminished, while 64.1% stated that high level teachers feel validated by their peers.

Relational capital refers to the quantity and quality of interactions and social relationships between people, which affects their access to knowledge and information; their sense of expectancy, obligation and trust; and to the extent that they are likely to conform to the same standards or codes of conduct (Ingvarson & Kleinhenz, 2006). This

vocabulary is important to our study as different emotions awakened by teacher sorting can complicate the personal and functional relations between teachers (Macmurray, 1974). Furthermore, the quality of personal relationships, professional trust, and social capital building are crucial for school improvement (Hargreaves & Fullan, 2014).

According to the interviewees, the age of teachers should also be factored in when analyzing the effects of the law. The survey suggests that 79.8% strongly agreed and agreed that older teachers, who have not been previously evaluated, have limited possibilities of promotion. Regarding teachers with less years of experience, the opinions were divided: 21.4% strongly agree, 26% agree, 17.9% disagree, and 8.1% strongly disagree according to the acquired of the sorting process. These unequal results suggest that professional mobilization within the teaching career is perceived as a process of uncertainty.

Teacher professional development

An essential aspect of the Teaching Career Law is the use of continuous teacher training as a mechanism for career advancement, which combined with years of experience and results in assessment determines the position of the teacher. In Chile, the return to democracy has encouraged the improvement of teaching, and thus, greater salary compensation for educators (Cavieres, 2011). The new law establishes the CPEIP as the agency in charge of defining the offer, contents, modality and delegation of bodies of recognized prestige. Fifty-four percent of respondents agree that ascending in levels is an incentive for the teaching career.

Professional development should translate into a strengthening of human capital, or development of the knowledge and skills necessary for the profession. Specifically, teachers must know the subject and how to teach it. They must know the students and understand how they learn. Furthermore, educators of all levels must be familiar with the cultural diversity and individual circumstances of each student, as well as the process of selecting the correct and most innovative teaching practices. Professional development depends on teachers having the emotional capacity to empathize with different groups of students in and out of school, because fundamentally "human capital refers to personal talent" (Hargreaves & Fullan, 2014). In other words, continuous training should focus on the development of those skills, which align with the Chilean Framework of Good Teaching.

Finally, when respondents were asked whether or not the implementation of the Teaching Career Law would improve learning, divided opinions were again evident: only 6% strongly agree, 17% agree, 35% disagree, and 17% strongly disagree. That is, from the indirect users of the policy (Honig, 2006), there is no consensus as to whether or not the Teaching Career Law will have an effect on student learning. It may happen that actual results of implementation will be territorially diverse and depend more the tailored characteristics of the different educational communities, leadership styles, and dispositions of the political authorities of each territory.

Conclusions

The results of this study suggest that, from the perspective of school principals, the process of teacher sorting considers the following points the most important elements in evaluating a teacher's performance: experience, continuous training, and results of the teacher evaluation portfolio. However, principals do express doubt regarding the relationship between the category of teachers and the effectiveness of them in the school context. These doubts can be expressed from both a local and a macro perspective.

From a local perspective, teacher evaluation and feedback are not considered in the process of sorting, so the weaknesses and strengths of their daily teaching practices do not influence their categorization. From a macro perspective (Ministry of Education, 2016), the quality of human capital is a basic requirement that ensures teaching quality. For this reason, the teacher evaluation process is focused on gathering evidence of performance through the portfolio. Gathering evidence from the portfolio makes easier the identification and quantification of the training needs at the national level. It also aligns assessment and professional development with the teacher who, according to Garet et al. (2010), is a fundamental aspect of the human capital development model. However, in the Chilean case, it turns out that the provision of training is aligned with the results of evaluations and not with the needs of teachers in their everyday educational contexts. That is, one could ascend in their teaching career without, in actuality, being an effective teacher for the students.

From the results, it appears that the law has emotional effects on school principals, which can in turn affect relational capital in educational communities that, according to Hargreaves and Fullan (2014), constitute the "fuel" of the organization. If relation capital is weak, everything else is doomed to fail. Therefore, the school principals, as indirect users of the Teaching Career Law, are called to lead their respective teaching staff in gleaning the best results from the implementation of the policy. Behrstock-Sherratt and Jacques (2012) highlight the importance of aligning evaluation and teacher professional development.

Implications for further research can be drawn. Firstly, it would be important to research from the teachers' perspectives the effects of the implementation of the teaching career law. With this perspective, we could then see the differences observed by school principals and teachers in terms of the effects of the implementation of the policy. Secondly, it will be important to investigate the impact of the teaching career law in three main aspects: teacher performance, motivation and commitment; school effectiveness and improvement; and student learning outcomes. Finally, results come from a convenience sample from one region. It means that the results from the analysis cannot generalize. It will be necessary to research in a larger scale at the national level what are the implications for other regions more isolated in the northern and southern areas.

Address for correspondence

Felipe Aravena
Researcher
Leadership Centre, Pontificia Universidad Católica de Valparaíso
Brasil Avenue 2950, Valparaíso, Chile
Email: felipe.aravena@pucv.cl

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Relationship among education fever, the college-admission policy, and shadow education in South Korea*

Soojeong Lee
Dankook University, Korea

Abstract

The purpose of this study is to examine whether the changes of the 'college admission policy' have affected students' use of 'shadow education.' Additionally, the study seeks to examine the relationship between 'education fever' in Korea and the policy of college admission system. Data for this study were drawn from a 2004 cohort (1st-9th waves) of the Korean Education and Employment Panel (KEEP). The subjects for this study were middle-school seniors (9th graders) in 2004, high-school seniors (12th graders) in 2007 when the additional panel data of 'special-purpose high school students' are added, and first-year college students in 2008 when the data about the college-admissions system that the students chose are added. A weighted ordinary least squares (OLS) regression was used to estimate both the collective and the relative effects of each of the variable sets, family background, student characteristics, school characteristics and quality, education fever, and type of college-admission system on students' uses of shadow education in South Korea. The findings show that the variable reflecting diverse college admissions policies in itself scarcely influences shadow education expenditures. Instead, some significant positive impacts of 'education fever' variables like 'self-study', 'levels of education desired', and especially, 'prestige-oriented college choice' on shadow education were found. The results imply that, without considering 'education fever', any policy efforts, such as changes of the national college admission system, might not be successful in reducing Korean students' use of shadow education.

Keywords : shadow education, Koreans' education fever, college admission system, prestige-oriented choice, education policy

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Koreans' education fever, shadow education, and college admission policy: Shadow education as a symptom of Koreans' education fever

South Korea, like many other East Asian countries, continues to experience parental strong zeal for providing their children with better educational opportunities, as is well expressed in the phrase 'education fever' (Hyun, Lee, & Lee, 2003; Joo, 2000; D. S. Kim, 1998; H. Kim, 2004a; Y. H. Kim, Lee, & Park, 1993; C. J. Lee, 2005; S. J. Lee & Shouse, 2008, 2011; Seth, 2002). Education fever, according to S. J. Lee and Shouse (2007, pp. 32–33), can be defined to be an amalgam of intensified social disposition, orientation, expectation, and activity that highlights, reinforces, and to an extent exaggerates the value and pursuit of higher academic attainment among families and students across socioeconomic levels. As one of major symptoms of the education fever in South Korea, Korean parents' huge spending on supplementary education activities such as private tutoring services or "shadow education" for their children, which aim at preparing students to earn high scores on high school and college entrance exams, have been mentioned (Hyun et al., 2003; Joo, 2000; D. S. Kim, 1998; H. Kim, 2004a; C. J. Lee, 2005; Seth, 2002). The term of shadow education has been used by such scholars as Baker and LeTendre (2005), Stevenson and Baker (1992), and Tsukada (1991) to describe the supplementary educational activities such as private tutoring services done in such countries as South Korea, Taiwan, and Japan. The shadow education, according to those scholars, means by educational activities occurring outside formal schooling, designed to enhance students' formal school careers, set up to specifically *shadow* the requirements of public school (Baker & LeTendre, 2005, p. 56; Stevenson & Baker, 1992, p. 1639).[1] It is not unusual for South Korean adolescents to spend several hours each evening in shadow educational activities. According to Korea Statistics (Statistics Korea, 2018), 82.3% of elementary school students, 66.4% of middle school students, and 55.0% of high school students participated in shadow education in 2017. Average monthly expenditure on shadow education per participation student was 384,000 won (elementary school students: 307,000 won; middle school students: 438,000 won; high school students: 515,000 won) in 2017.

Uneffective governmental reforms of the national college admission system to reduce shadow education expenditures

The problem is in that a large percents of Korean students have participated in diverse types of the shadow education, and thus most parents have experienced heavy financial burden on expenditures for shadow education. Related to such shadow education, in addition, the Korean government and educators have been greatly concerned about several problems, such as causing students' low engagement in schooling and too much extra study, and contributing to overall educational inequality (Y. T. Kim, Jung, Kang, & Kwun, 1979; K. B. Lee, 2003; Yun, 1997).

It has been, therefore, one of major policy issues for a long time to alleviate students' reliance on shadow education. The South Korean government has, for example, implemented various policy measures, such as reforms for change of the national college admissions' system, which aimed at reducing parents' spending on shadow education. Those policy measures, however, have not been evaluated to be effective for reducing the expenditures for shadow education (S. J. Lee & Shouse, 2011).

Necessity for examining the impacts of the national college admission policy on shadow education

Regarding the causes of Korean students' dramatic use of shadow education or the factors influencing their uses, as S. J. Lee and Shouse (2011, p. 214) pointed out, prior studies have mostly noticed factors such as family socioeconomic status (SES), low-quality formal schooling, students' desire to improve low school grades or scores on high school and college entrance exams, and public reaction to current education system such as the High School Equalization Policy (HSEP) and the collge admissions policy reform (Choi, Kim, Yu, Kim, & Lee, 2003; H. Kim, 2004a, 2004b; K. O. Kim, Kim, Suh, & Rhee, 2003; K. S. Kim, 1999; T. Kim, Lee, Lee, & Lee, 2003; Kwak, 2005; J. Lee & Hong, 2001; K. B. Lee, 2003; M. N. Lee, 1991; Yun, 1997). However, any factor except for SES-related variables has not been sufficiently supported by empirical studies. Furthermore, those factors alone do not sufficiently explain the contemporary South Korean shadow education phenomenon (K-S. Kim et al., 2005; Sung, 2004), Instead, S. J. Lee and Shouse's (2011) study found that neither school quality nor student's academic achievement level was a key predictor to parent spending on shadow education, but that Koreans'desire for prestigious matriculation which is *a collective mental states and behaviors, "prestige orientation"*significantly predicted parent spending especially among lower SES students and yielded strong impact among students with the least likelihood of prestigious matriculation. According to them, shadow education serves as a purpose that is as much symbolic as instrumental. S. J. Lee and Shouse's (2011) study, however, has also some limitation in that it did not examine the impacts of college admission policies on students' demand on shadow education nor considered its relationship with Koreans' education fever. Only if having a longitudinal data showing changes of college admissions policies, it would be possible to effectively examine the impacts.

Therefore, this study aims at examining the impacts of the changes of college admissions policy, which put less importance of College Scholastic Ability Test (CSAT) score to the college admission system on students' use of shadow education, with those of Koreans' education fever on it. As mentioned above, the present types of college-admission process such as 'general admission' and 'special admission' reflect those changes of college admissions policy. Therefore, it can be possible to examine the effects of those changes of college admission policies for reducing students' spending on shadow education, by analyzing how differently college students, who were admitted to the colleges by types of college-admission process, spent on shadow education during

their high-school days by types of college-admission process.

Competition for college admission and governmental policies to reduce shadow education

For reducing parents' burden on shadow education, the Korean government has implemented the years various policy measures. It, as a desperate attempt, even temporarily banned private tutoring practices in the 1980s. It has especially focused on easing the intensified competition among students for getting admissions to a few high-ranking high schools and colleges. It comes from the government's judgment that students' reliance on shadow education stems from the intensified competition for getting better scores in the entrance exam for admissions to 'better' schools of higher grade (Joo, 2000; S. J. Lee, 2006; S. J. Lee & Kim, 2015).

As a major strategy, therefore, the government has tried to reform the college admissions system with the aim of reducing the competition among high school students preparing for the college entrance exam. It is why the national college entrance examination system has been most revised until now. Based on those policy intention, a major purpose of the big reforms for the national university admission system in recent years, such as the "Reform Measures for the 2002 University Admission System" and the "Reform Measures for the 2008 University Admission System" (Ministry of Education & Human Resources Development, 2004) was to decrease the weight of CSAT score, that is, the national college entrance exam score, as the primary criterion for evaluation in university admission process; and conversely, to give a long-term decisive factor such as high-school GPA increased weight in the process. Based on the same intention, the government intended to diversify criteria for evaluation (screening materials), ways of admission process, and times for applying (screening periods). Therefore, it has requested universities and colleges to enforce extendedly diverse methods of 'special admission' into their admission system. While CSAT score and high-school GPA are considered as the important criteria for screening in 'general admission,' the entrance opportunities made available by way of 'special admission' would supposedly consider a few diverse yet important screening materials, such as a high school principal's recommendation, an essay exam, and an interview or test conducted by the university rather than the CSAT score and high-school GPA (S. J. Lee, 2011). This policy direction more strongly appeared in the introduction of the "Admission Officer System" after the mid of 2000. The ultimate purpose of the introduction of the Admissions Officer System was to mitigate students'competition for preparing for the entrance exam and also to reduce students' use of shadow education, while making universities and colleges use only high-school records including GPA score except the CSAT scores in their admission process to evaluate applicants' potentials and abilities.

Theoretical perspectives on the reasons for Korean parents' spending on shadow education

As the reasons why Korean students rely on shadow education, as mentioned above, Korean scholars and educators have mentioned several factors such as SES, low-quality formal schooling, and students'and parents' dissatisfaction with public education, students' wanting to make up their low school achievement, reaction to education policies like the national college entrance system itself, and Koreans'education fever that means students' intense competition for entering colleges and universities and parents' desires for providing their children with better educational opportunities. The above factors mentioned in prior studies (as the reasons for and the purposes of Korean students' using shadow education) can be explained divided by the following two different theoretical perspectives. Relating to the cause of Korean parents' spending on shadow education, on the other hands, most prior studies have shown the positive impact of SES, such as parent education and monthly income on shadow education expenditures. However, the factor of family SES could be neither a cause nor a reason for using shadow education because it is natural that family SES predicts parental expenditures on shadow education in case of their wanting for spending on.

Firstly, from the perspective of s*tatus competition* (Collins, 1971, 1979; Hurn, 1978), Korean scholars have pointed out, as the reason for students' use of shadow education, the purpose of 'making up low-level achievement' caused by 'low-quality school' (Hyun et al., 2003; Joo, 2000; Y. H. Kim, 1999; C. J. Lee, 2005; K. B. Lee, 2003; O, 2000). Regarding the factors, some studies (K. O. Kim et al., 2003; T. Kim et al., 2003; Kwak, 2005; J. Lee & Hong, 2001) even pointed out parent concerns over poor quality public schooling caused by the High School Equalization Policy (HSEP) (S. J. Lee & Shouse, 2011, p. 214). According to the argument, students with low-level achievement grades in low-quality schools use more shadow education, and Korean parents want to invest in shadow education as they believe it can help their children to win in the competition among students for getting educational credentials in better schools, especially, colleges.

Secondly, some studies (K-S. Kim et al., 2005; M. N. Lee, 1991; Sung, 2004), however, did not support the above arguments while finding no regular pattern of association between school quality and shadow education expenditure. Instead, those studies have worked as evidences for the explanation based on the perspective of *institutional theory*. From the perspective of *institutional theory*, students' use of shadow education is affected by the climate of the society where shadow education is already a taken-for-granted practice throughout students' school careers rather than by status competition (Baker & LeTendre, 2005; Baker, Akiba, LeTendre, & Wiseman, 2001; Bray, 1999; Meyer, 1977; Stevenson & Baker, 1992). We can also find another conclusive opposite evidence that high-school students attending good-quality schools with high-level achievement students like 'special-purposed high school' use more shadow education. For example, Statistics Korea (2018, February) reported that shadow education participation rates of students who were within to 10% of upper grades was 78.7%, and that the higher school performance, the higher average monthly expenditures on shadow education in 2017. Moreover, S. J. Lee and Shouse's (2011) study found that neither school quality nor

student's academic achievement was critical factors affecting parent spending on shadow education.

Thirdly, from both the two different perspectives of s*tatus competition and institutional theory,* Korean students' use of shadow education can be interpreted. This approach is, as S. J. Lee and Shouse (2011) mentioned, based on the following two ideas. On one hand, students' use of private tutoring services might result from Koreans' earnest collective desires for admission into a few prestigious colleges or universities and the credentials resulting from subsequent successful study. On the other hand, the phenomenon might be regarded as "the norm," a socially constructed, taken-for granted practice throughout South Korean students' school careers. This latter view would help explain why prior studies have found student ability or school quality to wield little influence upon students' use of shadow education.

Hypotheses from both the functional and institutional perspectives: No sole impetus for shadow education of the college admission policy itself

From the latest perspectives, neither the just intense competition for college entrance nor the college entrance exam policy itself represents the sole impetus for shadow education. This is explained by both the perspectives of functionalist and institutionalism. It is because the intense competition for college entrance among students and their excessive use of shadow education start from Koreans' education fever, that is, an infinite competition among them desiring for high status by being admitted to prestigious colleges. At the same time, those desires and activities also start from the socio-psycological or sociocultural beliefs widespread over all society. The beliefs are that their use of shadow education could be profitable for achieving the status. If taking these perspectives, shadow education activities might not so much diminish with only the changes of college admissions system itself, but might be affected only when accompanied by the change of sociocultural factor, education fever.

This study, accordingly, hypothesized that with only the changes of college admissions system itself, shadow education activities might not so much diminish. In other words, it expected that, without some changes in their collective mental states like Koreans' education fever, recent reforms on the college admissions policies 'Introduction of Admission Officer System', where aimed at reducing intense competition among students for high scores in preparing for college entrance exams by putting less importance of CSAT in the college admission system, might not be so much influential to students' use of shadow education nor competition among them.

This study, therefore, examined the impacts of the policy reforms of the national college admission system, which cutted down the weight of CSAT score as a screening criteria in the college admission process, and the Korean student's education fever on students' use of shadow education, while hypothesizing that neither the variables such as school quality and student's academic achievement level nor policy itself of the national

college admissions system would be a key predictor to parental spending on shadow education, and that the factors like Koreans' education fever and family background would influence the effects of the college admissions policy on students' use of shadow education. For this, this study compared the impacts of the two types of 'general screening' and 'regular admission' on students' use of shadow education with those of the other two types of 'special screening'and 'nonscheduled (rolling) admission.' It is because, compared with the two types of 'general screening' and 'regular admission,' the two types of 'special screening'and 'nonscheduled (rolling) admission' where the CSAT score is less or not considered as screening criteria. By analyzing how differently college students admitted to the colleges by those different types of college-admission process spent on shadow education during their high-school days, in other words, it can be possible to examine the effects of those changes of college admission policies for reducing students'spending on shadow education.

Methods

Data and sample

Data for this study were drawn from 2004 cohort (1st-9th waves) of the Korean Education and Employment Panel (KEEP), a nationally representative survey conducted by the Korea Research Institute for Vocational Education and Training since 2004. The population of KEEP consists of middle school 9th graders, academic high school seniors, and vocational high school seniors in South Korea as of March 2004. The KEEP sampling utilized a stratified cluster design.[2] The subjects for this study are middle-school seniors (9th graders) in 2004, high-school seniors (12th graders) in 2007, where the additional panel data of 'special-purpose high school students' are added, and first-year college students in 2008, where the data about college-admission system that the students chose are added.

Measures

Following the conceptual framework for this study, dependent and independent variables were developed from the KEEP student, parent, and school data. The dependent variable is family monthly expenditure on private tutoring.[3] The independent variables represent family SES [family income, parent education (female guardian formal education level)], individual characteristics including student's achievement level, school characteristics [urbanicity of school location, type of high school (general high school, special-purpose high school, vocational high school)], school quality (satisfaction of school life, facility/environment), education fever (weekly self-sudy hours, level of education desired, prestige-oriented college choice), college-admission system (general screening, special screening, nonscheduled (rolling) admission, regular admissions). Table 1 presents the descriptive statistics for the variables used in this study.

Table 1
Descriptions of Variables Used in Regression Analysis

	Cases of both using and not using shadow education (N=635)		Cases of only using shadow education (N=290)	
	M	SD	M	SD
Expenditures on private tutoring (10,000 won)	14.637	27.495	32.051	33.142
Individual characteristic				
Gender (male=1)	0.452	0.498	0.376	0.485
Student academic achievement Student's within-school percentile ranks(1st-9th)	4.48	1.858	4.062	1.702
Family background Female guardian education (0-20)	11.543	2.779	12.521	2.615
Family income	360.535	231.395	433.617	279.638
School characteristics / quality				
Urbanicity (metropolitan city) of school location	0.502	0.5	0.61	0.489
Special-purpose high school	0.09	0.286	0.162	0.369
Vocational high school	0.416	0.493	0.21	0.408
Satisfaction of school life (1=satisfaction)	0.494	0.5	0.628	0.484
Satisfaction of school facility / environment (1=satisfaction)	0.4	0.49	0.452	0.499
Education fever				
Self-study hours (weekly)	10.485	13.526	16.274	15.269
Level of education desired	2.998	0.891	3.434	0.879
Prestige-oriented college choice	0.302	0.46	0.431	0.496
College-admission system				
General screening	0.717	0.451	0.776	0.418
Special screening	0.283	0.451	0.224	0.418
Nonscheduled (rolling) admission	0.619	0.486	0.462	0.499
Regular admissions	0.381	0.486	0.538	0.499

Family (Student) background. This set of variables included family average monthly family income and parent education (female guardian formal education level). *Average monthly income* represents the natural log of parent reports, at a time when 10,000 won equaled approximately 10 US dollars. Also based on parent reports, *parent education,* exactly, *female guardian formal education,* was ranked on a 20-point scale (no school 0 ~

doctor 20), ranging from 'no schooling' to 'doctoral degree.'

Student achievement and gender. The set of 'individual characteristics' variables included student gender (male=1) and student's achievement level. *Student academic achievement* represents student's school percentile ranks (1-9) as reported by homeroom teachers was ranked on 9-point scale (high grade: 1-3, middle grade: 4-6, Low grade: 7-9).

School characteristics. This set of variables included urbanicity of school location and type of high school. *Urbanicity of school location* was recoded metropolitan city=1, based on the KEEP survey's classification of residence area into rural, town, city, and metropolitan. Uurbanicity tends to be positively correlated with SES in South Korea. Metropolitan city is the city with population size of over 1,000,000. *Type of high schools* divided into general high school, special-purpose high school, and vocational high school.

School quality. The KEEP dataset contains several items representing various dimensions of school quality, each based on teacher and administrator reports. Included as a control in this study's analyses, the variables of *satisfaction of school life and satisfaction of facility/environment* is measured 1=satisfaction in case more than 4-point on a 5-point Likert scale where 5 means very good and 1 means very poor.

Education fever. This set of variables included *self-study hours, level of education desired,* and *prestige-oriented college choice,* which are represented by the following three variables: 1) *student's weekly self-study hours*, 2) *student's level of education desired* that was ranked on a 4-point scale (high school level=1 ~ doctoral degree=4); 3) *prestige-oriented college choice.* The variable of *prestige-oriented college choice,* as S. J. Lee and Shouse's (2011) study used, was recoded the case of response to 'prestige of college'=1 from the KEEP data set representing the student's report of how much importance they placed on an institution's prestige in choosing the college or university they wished to attend.

College-admission system. This set of variables included *general screening* and *non-scheduled (rolling) admission.* Types of college admission system are divided with 'general screening' or 'special screening' by the ways of admission process and with 'regular admission' or 'nonscheduled (rolling) admission' by the times for applying periods. While the CSAT score and high-school GPA are considered as important criteria for screening in the type of 'general screening' and 'regular admission', they are hardly considered in the type of 'special screening' and 'nonscheduled (rolling) admission'. General screening was recoded the case that a student was admitted to the college through the type of 'general screening' in the process of college admission=1 (special screening=0). Non-scheduled (rolling) admission was recoded the case that a student was admitted to the college through the type of 'non-scheduled (rolling) admission' in the process of college admission=1 (regular admissions=0).

Private tutoring expenditure. The dependent variable selected to measure students' use of shadow education was parent-reported average monthly expenditures on private tutoring for a subject student (unit: 10,000 won, approximately 10 US dollars). This spending is measured on a standardized scale.

Results and discussion

The conceptual analysis model for this study draws upon the following four sets of factors that might affect Korean high school students' uses of shadow education: *student's family background* (family income, female guardian formal education level) and *student characteristics* (gender, student achievement level), *school characteristics* (urbanicity of school location, type of high school) and *school quality* (satisfaction of school life, facility/environment), *education fever* (weekly self-sudy hours, level of education desired, prestige-oriented college choice), *type of college-admission system.*

The dependent variable is family monthly expenditure on private tutoring. A weighted ordinary least squares (OLS) regression was used to estimate both the collective and the relative effects of each of the four independent variable sets on students' uses of shadow education in South Korea. As the method for entering the independent variable sets into the regression equation, *hierarchical analysis* was employed in this study. Model 1 is to estimate the impact of *student characteristics and family SES* on parent expenditure on shadow education. In model 2, *school characteristics and school quality* were added to model 1. In model 3, *education fever* was added to model 2. In model 4, *college-admission system* was added to model 3. Table 2 reports the results of these analyses across four models.

Table 2

Analysis I: Effects of Student Background, Achievement Level, School Quality, Education Fever, and College Admission Sytem on Expenditures on Private Tutoring (Listwise N=635)

	Model 1 b (SE)	Model 2 b (SE)	Model 3 b (SE)	Model 4 b (SE)
Constant	-0.843**	-2.89	-17.556***	-10.175
	-5.14	-5.313	-6.398	-7.38
Student characteristics	-3.931**	-2.887	-2.441	-2.437
Gender (1=male)	-2.004	-2.003	-1.972	-1.969
Academic achievement	-1.894***	-1.761***	-0.960*	-0.994*
	-0.537	-0.522	-0.535	-0.534
Family background	2.178***	1.416***	1.200***	1.143***
Female guardian education	-0.385	-0.391	-0.389	-0.389
Family income	0.029***	0.025***	0.023***	0.023***
	-0.005	-0.005	-0.004	-0.004
School characteristics/quality		7.740***	5.610***	5.263***
Urbanicity of school location		-2.01	-2.009	-2.013
Special-purpose high school		7.074*	2.253	2.44
		-3.644	-3.74	-3.755

	Model 1 b (SE)	Model 2 b (SE)	Model 3 b (SE)	Model 4 b (SE)
Vocational high school		-8.570***	-3.168	-3.17
		-2.123	-2.34	-2.537
Satisfaction of school life		2.836	2.538	2.281
		-2.04	-1.999	-1.997
Satisfaction of school facility / environment		-6.072*	-6.823**	-7.167**
		-3.38	-3.316	-3.311
Education fever			0.291***	0.276***
Self-study hours (weekly)			-0.085	-0.085
Level of education desired			2.758**	2.463*
			-1.287	-1.294
Prestige-oriented college choice			6.555***	6.118***
			-2.163	-2.167
College admission policy				-2.884
General screening				-2.38
Nonscheduled (rolling) admission				-4.755**
				-2.212
Adjusted R-square	0.176	0.229	0.261	0.264
N	635	635	635	635

*$p < .05$. **$p < .01$. ***$p < .001$.

Much effect of family SES, no positive effect of school quality, and some positive effects of student's academic achievement

Family SES variables such as family income and female guardian education, as found in prior studies, explains the most variation (about 17.6%) in expenditures on private tutoring.

School quality-related variables have no positive impact on shadow education expenditures. Neither 'school satisfaction' nor 'school type' has any positive impact on the expenditures. Some negative impacts of 'school environment/facility' even shows.

Positive impacts of student's *academic achievement* on expenditures are found in the analysis. It indicates that the higher ranking in grades students get, the more expenditure on shadow they spend.

Much impact of education fever vs. little impact of college admissions system. The variable reflecting diverse *college admissions policies* scarcely influence expenditures. Only the variable of 'nonscheduled (rolling) admission' shows some effects on a reduction of shadow

education expenditures

College-admission system variables (added in model 4), when compared with *family SES and student achievement level, school characteristics and school quality, education fever* (weekly self-sudy hours, level of education desired, prestige-oriented college choice) variable sets (added in model 1, model 2, and model 3, respectively), explained the least variation (i.e., about 0.3%) in parent expenditure on private tutoring. It implies that the impact of *college-admission system* variables on the response variable is relatively the smallest than the other predictors.

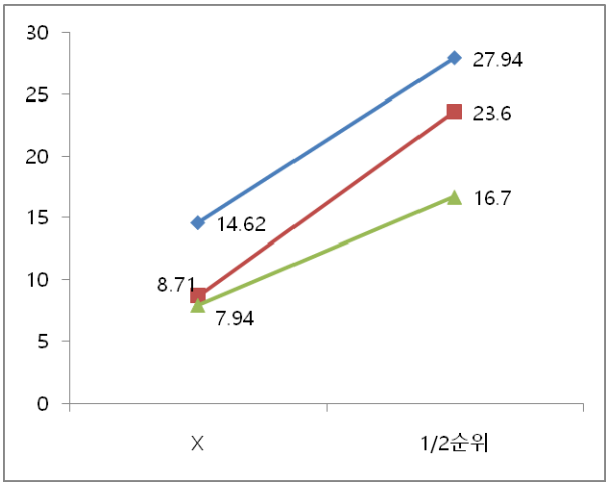
By comparison, the variable of 'prestige-oriented college choice' has some significant positive impacts on shadow education expenditures, while the other variables of education fever don't (see Table 2). It means that students with more education fever use more shadow education.

Relationship among college admissions system, prestige-oriented education fever, and shadow education

The following Figure 1 shows differences in shadow education by 'prestige-oriented college choice' and 'student achievement.' We can find the possibility that the variable of students' prestige-oriented college choice would impact their spending on shadow education regardless of their academic grades.

It also shows much difference in shadow education expenditures between the students with 'prestige-oriented' college choice and those without 'prestige-oriented' college choice. Especially, the difference is bigger in the students with middle and high-grade achievements than those with low-grade achievements. Therefore, Figure 1 gives us insights that the students with 'prestige-oriented' education fever could get higher grades in academic achievements and spend more expenditure on shadow education.

The following Figure 2 and Figure 3 shows differences in shadow education by 'prestige-oriented college choice,' 'student achievement,' and 'college admission system.' From these figures, we can draw the two meanings. First, regardless of both the types of college admission system and the grades of students' academic achievement, students more spend on shadow education in case of having the 'prestige-oriented college choice.'



Note. Blue-color line: high-grade achievement (1st-3rd), red-color line: middle-grade achievement (4th-6th), green-color line: low-grade achievement (7th-9th).

Figure 1. Difference in expenditures on shadow education by 'prestige-oriented college choice' and 'student achievement.'

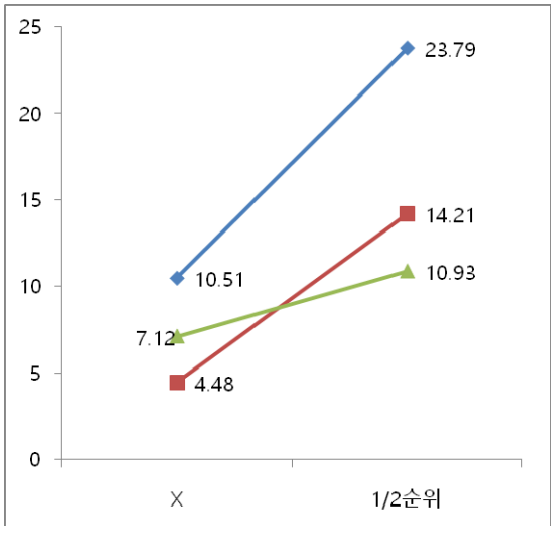


Figure 2. Difference in expenditures on shadow education by 'prestige-oriented college choice' and 'student achievement' in the system of nonscheduled (rolling) admission.

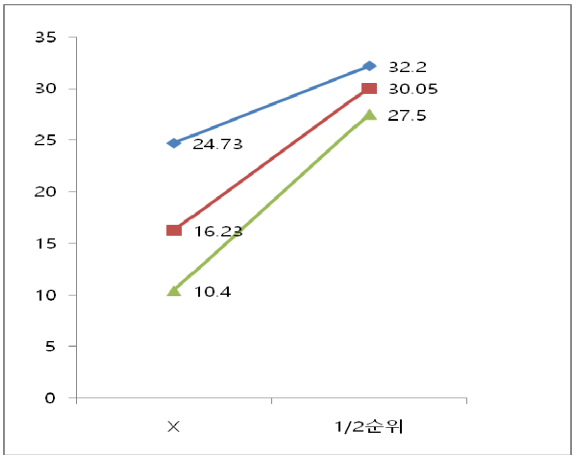


Figure 3. Difference in expenditures on shadow education by 'prestige-oriented college choice' and 'student achievement' in the system of regular admission.

Second, the figures show that the students admitted through nonscheduled (rolling) admission process less spend on shadow education than those admitted through regular admission process. But, it cannot imply that the nonscheduled (rolling) admission process could lessen students' burden of shadow education, because the shadow education needed for nonscheduled admission process is not included in the data of this study.

Third, if comparing with Figure 2 and Figure 3, we can find out that to high-grade students, the difference in shadow education expenditures between 'prestige' and 'no prestige' oriented college choice is bigger in nonscheduled (rolling) admission process than in regular admission process. In other words, that especially, to high-grade students with prestige-oriented college choice, 'nonscheduled (rolling) admission process' does not contribute to lessening their burden of shadow education.

Conclusion

Based on prior studies, the major interest of this study was in examining whether the policy of the college admission system affected students' expenditures on shadow education or not and how the Korean students' education fever, the policy of college admission system, and shadow education were related with each other. All findings of this study, as described above, strongly support that such factors as 'college admission policy' and 'school quality' would not be a key predictor to Koreans' spending on shadow education but Koreans' education fever, which is related to endless competition for their children's being admitted to a few prestigious colleges, might be a key predictor to their

spending.

It is supported by the findings as the following. The variables reflecting diverse *college admissions policies* scarcely influence shadow education expenditures. No variable of college admission systems has any impact on expenditures in the analysis I with only the cases of using shadow education. Only the variable of 'nonscheduled (rolling) admission' shows some effects on reducing shadow education expenditures in the analysis I including cases of 'no-shadow education.' College-admission system variables (added in model 4), when compared with family SES and student achievement level, school characteristics and school quality, education fever (weekly self-study hours, level of education desired, prestige-oriented college choice) variable sets (added in model 1, model 2, and model 3, respectively) explained the least variation (i.e., about 0.3%) in parent expenditure on private tutoring. It implies that the impact of college-admission system variables on the response variable is relatively the smallest than the other predictors.

By comparison, the results show some significant positive impacts of education fever variables like 'self-study' and 'levels of education desired.' Especially, the variable of 'prestige-oriented college choice' has some significant positive impacts on shadow education expenditures, while the other variables of education fever don't (see Table 2). It means that students with more education fever use more shadow education. This result has the same way of S. J. Lee and Shouse (2011)'s study's findings. From these results, we can draw an implication that, as Boyd(1999) mentioned, any policy measure for reducing students' spending on shadow education such as changes of college admission system without considering the factor of culture like Koreans' education fever would not be successful.

Address for correspondence

Soojeong Lee
Associate Professor
Department of Teaching Education, Dankook University
152, Jukjeon-ro, Suji-gu, Yongin-si, Gyeonggi-do, 16890, Korea
Email: sjunglee@dankook.ac.kr

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Footnotes

1. *Shadow education* is a term used by some scholars to describe "educational activities that occur outside formal schooling and are designed to enhance the student's formal school career" (Stevenson & Baker, 1992, p. 1639). According to Baker and LeTendre (2005), "these activities are set up to specifically *shadow* the requirements of the public school that the child attends (p. 56)." Shadow education includes a range of after-school academic activity, such as individual or group tutoring, instruction from for-profit Hagwons (the so-called "cram schools"), self-study or practice exam sheets, Internet tutoring, and after-class lessons within regular public schools (Bray, 1999; S. J. Lee & Shouse, 2011; LeTendre, 1994; Stevenson & Baker, 1992; Tsukada, 1991).

2. In the first stage, the entire country was stratified into 15 administrative districts (the Seoul metropolis, six metropolitan cities, and eight municipality provinces) based on geographical regions and size. Included in this sampling strategy are 100 of each level-school (middle school, academic high school, vocational high school) selected proportionally from the 15 administrative districts based on the ratio of the student enrollment of each district to the student enrollment of the whole country. In the second stage, four third-year classes were randomly selected from each selected school as second-stage sampling units. In the third stage, five students were randomly selected from each selected class by systematic sampling. The resulting KEEP sample consists of 2,000 middle school students, 2,000 academic high school students, and 2,000 vocational high school students along with 6,000 family members, 1,121 homeroom teachers, and 300 school administrators. KEEP designers computed cross-sectional weights for each sample level (student, family, school, and homeroom teacher).

3. In private tutoring, three major forms of private tutoring practices (i.e., individual or group tutoring provided by individual tutors, private instruction provided by a for-profit private institution, and tutoring services of self-study sheets by mail or the Internet) were included.

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Academic achievement growth and differential association on proficiency levels*

Yang-Boon Kim
Korean Educational Development Institute, Korea
Hyejin Shin
Seoul Education Research & Information Institute, Korea

Abstract

The purpose of this study was to explore the differential association to investigate the variables affecting the achievement growth of student, by students' performance proficiency levels using the Korea Education Longitudinal Study (KELS) 2013. Applying a two-level hierarchical linear model, this study explored student- and school-level factors affecting the achievement growth. This study found that the school average socioeconomic status (SES) showed a significant interaction effect with each level on growth of students' achievement scores in most subjects. Among student process variables, *reading enjoyment* showed a significant interaction effect on most levels of fifth grade students' Korean, *advanced* levels in English, and *below basic* levels in math. Regarding school process variables, while the *teacher's interaction* variable showed a positive effect on *advanced* students in English, it showed inconsistent results by levels of each subject by affecting negative impacts on all levels except the *basic* level in Korean. This study pointed out that while there was overall achievement growth in all subjects including Korean, English, and math, *proficient* and *advanced* levels of fifth grade in Korean and *advanced* level students in math showed declines in average scores. Further, the factors affecting improvements of academic achievement were different by subjects and academic achievement levels. Therefore, appropriate actions for subjects and achievement proficiency levels to improve student achievement should be supported differently.

Keywords : achievement growth, differential association, KELS 2013, proficiency levels, Hierarchical Linear Model

* This article has been revised and reorganized based on chapter Ⅳ from the KEDI research report, 'Korean Education Longitudinal Study (KELS) 2013 (Ⅲ): An Analysis of Educational Experiences and Achievements for Elementary School Students (Ⅱ)' (Y. Kim, Namgung, Park, Kim, & Kim, 2015).

Introduction

The student's academic achievement assesses the effectiveness of school education and curriculum and graduation. It is a representative index of educational output used as an important basic data of education selection process. Assessment of academic achievement at elementary level is an essential criterion for inspecting the basic curriculum at the elementary level and is an important reference for students to understand the lack of learning and to use them as basic data for improvement of curriculum. National Assessment of Educational Achievement (NAEA) is a nationwide examination, which is targeted at sixth grade elementary school, third grade middle school, and second grade high school, and evaluates how well the student has achieved the curriculum objectives and content specified in the curriculum. It is the imperative of the nationwide test conducted in the 1960s, but it has been changed to sampled assessment in 1998. Since then, the achievement test was transformed to the national level assessment in the year of 2008 for all the students. The purpose of the assessment is to provide students with basic information for the curriculum improvement as well as the attainment of the educational goals of the curriculum by grasping the changes of the students' academic achievement. It was implemented nationwide, aiming to grasp the academic achievement level of all students in the grade level and to carry out revision education. From 2013, the NAEA in elementary school has been abolished. The NAEA policy proposed to lead 'zero percent (0%) of *below basic* level students' for all schools. Its aim is to diagnose student academic achievement under the national level accountability. Goals of NAEA intended to support if any school struggles with teaching and learning for the under-achieved students. Although the NAEA policy promoted to help low performing students under the accountability, the policy was abolished for the elementary school level in 2013. This was alleviated a testing burden for elementary school students. Due to the abolition, however, many studies pointed out that the proportion of under-achieved students in each school could increase after the test discontinuance (I. Lee, Cho, & Lee, 2014; I. Lee, Lee, Seo, & Jung, 2015; I. Lee, Lee, & Kim, 2015). Considering elementary schools is important in early stage of education, it is necessary to diagnose under-achieved students and support them to prevent cumulating of their limited learning.

Using the Korea Educational Longitudinal Study (KELS) 2013 dataset, therefore, this study aims to diagnose the achievement proficiency level of elementary students who especially show low achievement levels. In other words, the variables that affect academic achievement at each level were analyzed at the school and student level, focusing on achievement standards, such as *below basic, basic, proficient,* and *advanced* in Korean, English, and math. In particular, this study analyzed the effects of different levels of achievement on the assumption that the variables affecting students' academic achievement differed by achievement level. Furthermore, this study investigated school- and student-level factors that affect achievement growth, which was differentiated by proficiency levels.

According to the background, this study defined the different effects of the variables that affect the academic achievement by the students' academic achievement level, and it was defined operationally as *differential association* in this study. Finally, this study searched for the variables that differed according to achievement level.

Literature review

Factors on academic achievement growth

Many studies address factors affecting academic achievement growth, in particular, individual and family background variables including gender, parents' socio-economic status, parents' educational support and control, social and cultural capitals of family were appeared to influence improvement factors on students' academic achievement. Improvement of girls was higher than boys, social and economic backgrounds affected on improvement of academic achievement especially in English, and parents' educational support was the mediating factor for psychological attitude variables (S. Kim, Kim, Kang, Kim, & Shin, 2007, p. 185). Social and economic factors that affected on the developmental trajectory of academic achievement were family poverty and level of education and family structure (K. Kim, 2007, p. 138). In the study of K. Kim (2007, p. 138), this association was shown through parents' supervision on children and private tutoring. According to the study of H. Lee (2014, p. 176), if parents' control became higher, academic achievement received negative impacts. As the average monthly household income became higher, the initial academic achievement increased, and further the rate of decline was slowing down due to the impact on the rate of change. According to H. Park and Kim (2010, pp. 71–76), parents' socio-economic status showed directly and indirectly continuous impacts on the initial value and the change of academic achievement, and social capital of family gave a significant positive impact on the rate of change of English academic achievement.

As individual characteristic variables, psychological characteristics, such as intrinsic and extrinsic motivations, control expectations, subject- and self-efficacies, effort, recognition for future goals, self-regulation strategies, internal and external controls, or view of self and self-esteem appeared to be influential on improvement of academic achievement. According to the study of S. Kim et al. (2007, p. 185), individual psychological characteristics, such as intrinsic and extrinsic motivations, control expectations, and self-efficacy had significant impacts on improvement of academic achievement. However, the study suggested that the influence of intrinsic motivation showed the biggest results. In the study of Cha (2015, p. 265) that investigated an improvement of academic achievement in mathematics, the influence of intrinsic motivation was verified to have a greater impact than private tutoring. The study of E. Lee and Choi (2015, pp. 297–300) suggested that the rate of change in Korean subject was increasing slowly as the higher the initial value of degree of class understanding was, because the initial value had a negative impact on the rate of change. Also, the study showed that academic achievement of Korean did not increase sharply, even though the self-study time was increasing dramatically. In addition, as E. Lee and Choi (2015, p. 300) emphasized, it is important to support a variety of teaching methods and interactive activities to increase the intrinsic motivation and self-efficacy of students. According to the studies that investigated the association of private tutoring for improving academic achievement, private tutoring did not show big association. According to the research of J. Park (2012), the initial value of private education affected positively on academic achievement after controlling the impact of household income, but gave a negative impact on the rate of change. These

results were suggested in the same way in the research of H. Park (2010, pp. 898–899). It showed that private tutoring did not impact on the improvement of academic achievement in mathematics because the rate of change of academic achievement in mathematics was not high during three years of middle school even though the degree of private tutoring was high at the first year of middle school. Meanwhile, the association of private tutoring for English achievement were statistically significant depending on the previous achievement levels, but substantial association were appeared to be insignificant (N. Park & Park, 2010, p. 49). The reason for these results was that private tutoring for top and bottom rank students had positive association, but it was interpreted as self-study time was more effective than private tutoring for middle rank students (Cha, 2015, pp. 262–263).

School background variables, such as school location, established type, average school socio-economic status (SES), and average participation rate of private tutoring were appeared affecting on improvement of students' academic achievement. Academic improvement rates of other regions were higher than Seoul, and average school participation rate of tutoring and especially average school socio-economic background showed a significant difference in Korean, English, and math (S. Kim et al., 2007, pp. 185–186). S. Park and Kim (2014, p. 1096) emphasized that public school students were appeared to have higher odds to belong to the achievement improvement group compared to private school students. S. Kim et al. (2007, p. 186) pointed out that achievement pressure and problematic behavior degree at school level had association on improvement of academic achievements. In addition, it was found that educational activity, structure, staff competence, school climate, and environment among the characteristics of school organization were all affecting positively on academic achievement growth (Joo, Park, Hong, & Lee, 2012, p. 72).

Differential association on achievement proficiency levels

If the factors affecting the academic achievement depend on students' achievement proficiency level differently, it could be defined as differential association on the proficiency levels. In recent years, researches regarding the differential association of educational context variables based on academic achievement levels were carried out using a large-scale assessments data. Ryu and Song (2009) examined factors affecting a possibility to belong to the lower level group than proficient level of achievement in elementary and middle schools, and suggested that variables such as parents' SES, support for learning, teachers' passion, relationship with friends, and degree of learning ability had significant association. Study of Y. Kim and Kim (2015), which investigated factors affecting achievement improvement depending on achievement proficiency levels of fifth grade elementary students, examined factors that affecting academic achievement growth in Korean, English, and math by separating individual family background, student process factors, and school backgrounds. The study of Ihm (2010) analyzed the factors that determining whether under-achievement student was or not, which meaning the below basic level, focusing on student and school-level variables. In addition, the research of Song, Kim, Lee, and Kim (2011) analyzed impact factors of attaining advanced

and below basic level. Ihm and Kim (2012) focused on school teaching-learning activities, in particular, teaching experience, class preparation, emphasis on literature area, and teachers who emphasizing self-directed learning, conversations with parents on entering university, parents' SES, etc., and the study showed the variables were found to be significant. J. Kim, Park, and Si (2014) examined factors affecting the degree of improving academic achievement by dividing lower, average, and higher levels based on the proficiency level of academic achievement at the time of ninth grade.

Accordingly, the results of these research studies were synthesized that the variables affected an attainment for upper academic levels were different by school level, subjects, and academic proficiency levels. Educational context variables which were effective due to achievement levels of previous grade were different. Therefore, supports for attainment of higher academic levels and improvement of academic achievement should be different by the school level, subjects and achievement proficiency levels. Also, it is necessary to take an action to offer differentiated supportive policies considering the different proficiency level at each school level. These studies, however, had some limitations caused by being based on the relative levels and not the absolute levels of academic achievement, using a method that increased the type I error, treating a difference among students based on cross-sectional data. Also, these studies did not treat an improvement of academic achievement based on longitudinal data, and not using vertically equated academic achievement test.

As a result of analyzing similar research subjects based on previous studies, some limitations were found. First, the level of academic achievement was not set at an absolute level, but the relative level was set and analyzed so that the student did not reflect the inherent attributes of the school. Second, the analysis based on the absolute level of academic achievement was conducted, and the data were divided and analyzed at each level. Third, there was a limitation in studying the difference between students based on cross-sectional data and the improvement of academic achievement in students. Lastly, previous studies exploring the factors that affect the level of academic achievement by level showed that high school achievement was not vertically equalized. Accordingly, since this study used vertical equalization data focusing on achievement difference between fifth and sixth grades and explored variables affecting the achievement, this study showed difference comparing to previous studies.

Method

Data

This paper used the data of KELS 2013. The KELS 2013 was conducted to survey for fifth graders in 2013. Totally, 7,286 students from 242 schools participated. Later, sixth grade students in 2014 were conducted as the second stage of the data collection. Totally, 7,066 students participated in both years. After handing missing values which was treated by listwise deletion, totally, 5,258 students were used in this study.[1] Table 1 shows the proportions of each achievement proficiency levels for Korean, English, and math. As

shown in Table 1, the proportion of *below basic* student in English was the highest, which is indicated by 9.64%. For *advanced* level, English was 57.74%, and it was remarkably higher than 11.2% of Korean, and 33.11% of math, respectively. The proportions of *below basic* and *advanced* level students for English were all the highest among three subjects.

Table 1
Proportion of Each Proficiency Levels by Subjects for Fifth Grade

Level	Korean	English	Mathematics
(N=5,258)	**Proportion**	**Proportion**	**Proportion**
Below basic	.0340	.0964	.0744
Basic	.3692	.1369	.1278
Proficient	.4848	.1892	.4667
Advanced	.1120	.5774	.3311

Variables

The dependent variable in this study was an achievement growth between two years, which meant a difference of the test score between fifth and sixth grade. The KELS 2013 had developed a vertical scale to compare test scores longitudinally since the longitudinal comparison of academic achievement levels was a key issue (G. Lee et al., 2013, p. 3). It was a score which converted parameter estimated values of a theoretical performance to be an average of 200 points and a standard deviation of 40 points (G. Lee et al., 2013, p. 196).

The independent variables in this study included student- and school-level variables, which were expected to be related with improvement of students' academic achievement based on reviewing previous research results. Student-level variables included gender, SES, parent's educational expectation, and parents' academic support in terms of family background. For student process in student-level, reading enjoyment, creative thinking skill, test stress, intrinsic motivation, extrinsic motivation, relationship with friends, rule observance, self-study time, class attitude, class understanding, after-school program, private tutoring were included in this study. Next, this study included Seoul (Seoul=1), metropolitan city, small and medium-sized city, private school, school mean SES, students per teacher, in terms of school environment. Finally, teachers' interaction, class atmosphere, achievement pressure, and teacher's passion were included for school process at school-level (see detail variable descriptions and measurements, Y. Kim et al., 2015, p. 170).

Among the independent variables used in the analysis, missing cases of *private tutoring* on each subject and after-school program were excessively much distributed, so it was adjusted by multiple imputation. The variables used the multiple imputation treatment of private tutoring were academic attitude, self-efficacy (in each subject), intrinsic motivation (in each subject), academic achievement scale scores at sixth grade, parents' SES, class understanding, class concentration, self-study time, parents' educational expectations, parents' academic support, and gender. The treatment for

missing values of the *after-school program* added private tutoring with those variables for the multiple imputation treatment for *private tutoring*. Table 2 shows variable descriptions in this study in detail.

Table 2
Variable Descriptions

Dependent variable	
Achievement growth	
Independent variables	
Student level	
Family backgrounds	
Gender	Boy=0, girl=1
Parents' SES	Log average of standardized scores of occupational status grades of parents, academic background of parents and household income
Educational expectation	Level of education which parents expect for their sixth-grade child (1=high school, 2=college, 3=university, 4=master, 5=doctorate)
Educational support	Average of 8 items that students appreciate parents' interest or act on their study (five point scale)
Student process	
Reading enjoyment	Average of 5 items on perception of reading (five point scale)
Creative thinking skill	Average of 5 items on usual thought about own image related with creativity (five point scale)
Test stress	Average of 4 items on test stress (five point scale)
Intrinsic motivation	Average of 4 items on agreement about learning in Korean, English, and math (five point scale)
Extrinsic motivation	Average of 6 items on motivation of study (four point scale)
Relationship with friends	Average of 6 items on own thought about friends (five point scale)
Rule observance	Average of 5 items on rules in school (five point scale)
Self-study time	Average hours per day that study itself except homework and classes in school and educational institute (0=none, 1=1 hour, 2=2 hours, 3=3 hours, 4=4 hours, 5=5 hours, 6=more than 6 hours)
Class attitude	Average of 5 items on usual class attitude (five point scale)
Class understanding	Class understanding (1=less than 20%, 2=21~40%, 3=41~60%, 4=61~80%, 5=more than 81%)
After-school program	Participation on after-school program in Korean, English, and math (0=no, 1=yes)
Private tutoring	Private education participation in Korean, English, and math (0=no, 1=yes), includes all educational institute, tutoring, home-study materials/communications/tutoring by Internet
School Level	
School environment	
Seoul	Seoul (1=yes, 0=no)
Metropolitan city	Metropolitan city (1=yes, 0=no)
Small and medium-sized city	Small and medium-sized cities (1=yes, 0=no)

Private school	National and public school=0, private school=1
School mean SES	Each school's average of parents' socio-economic status
Students per teacher	each school's total number of students/total number of teachers
School process	
Teachers' interaction	Average of 4 items on students' perception on class (five point scale)
Class atmosphere	Average of 8 items on usual class atmosphere (five point scale)
Achievement pressure	Average of 5 items on students' perception on what teachers emphasize (five point scale)
Teacher's passion	Average of 4 items on students' perception on teachers (five point scale)

The academic achievement levels were classified as *below basic, basic, proficient,* and *advanced* based on achievement levels for fifth grade. Because the proportion of *below basic* was relatively lower than any other levels, a model which integrated *below basic* and *basic* could be considered. However, with expectations on policy effect which the ultimate purpose of national academic achievement assessment was to make a proportion of *below basic* to be zero (0%), there was a significance of this research exploring impact of *below basic* students at elementary school level. Each subject's achievement levels of fifth grade students were controlled at student-level to investigate differential association on achievement growth. Each achievement level and interactive variables were controlled at the student-level in the analytical model.

Quantitative analytical model

A two-level Hierarchical Linear Model (HLM) removing the intercepts was utilized in this study. The HLM removing intercepts at both level 1 and level 2 is used when it is able to make a reasonable assumption that estimating parameters directly explains each treatment effect by using all K amount indicating variables toward K amount treatment levels (Raudenbush & Bryk, 2002, as cited in J. Kim et al., 2014, p. 1061).

After estimating improvement of *below basic, basic, proficient*, and *advanced* level through the base model, the differential association affecting the changes of improvement in each level were investigated. For this, each achievement level (*below basic, basic, proficient,* and *advanced*) variables and the interaction of predictor variables with the achievement level were controlled in the model. The gender variable was only controlled by a main effect considering the complexity of the model. In addition, when considering a small percentage of below basic case, this model did not assume a school-level random effect because estimation could be unstable. The independent interaction variables used in the research model were previously centered by grandmean, so they were un-centered in the HLM analysis. The control variables at school-level were centered by grandmean. Basic and analytical research models in this study are as follows.

<Basic model>

$$Growth('14-'13)_{ij} = \beta_{1j}\,('13below\ basic)_{1j} + \beta_{2j}\,('13basic)_{2j} + \beta_{3j}\,('13proficient)_{3j} + \beta_{4j}\,('13advanced)_{4j}, \qquad \gamma_{ij} \sim (0, \sigma^2)$$

$$\beta_{1j} = \gamma_{10}$$

$$\beta_{2j} = \gamma_{20}$$

$$\beta_{3j} = \gamma_{30}$$

$$\beta_{4j} = \gamma_{40}$$

<Research model>

$$Growth('14-'13)_{ij} = \sum_{p=1}^{4} \beta_{pj}\,('13\text{level})\pi_j + \beta_{5j}\,(gender)_{ij} + \sum_{p=1}^{4}\sum_{q=6}^{Q} \beta_{pqj}\,('13\text{level})\pi_j X_{qij} + \gamma_{ij}, \qquad \gamma_{ij} \sim \mathrm{N}(0, \sigma 2)$$

$$\beta_{1j} = \gamma_{10} + \sum_{k=1}^{k} \gamma_{1k} W_{kj}$$

$$\beta_{2j} = \gamma_{20} + \sum_{k=1}^{k} \gamma_{2k} W_{kj}$$

$$\beta_{3j} = \gamma_{20} + \sum_{k=1}^{k} \gamma_{3k} W_{kj}$$

$$\beta_{4j} = \gamma_{40} + \sum_{k=1}^{k} \gamma_{4k} W_{kj}$$

$$\beta_{5j} = \gamma_{50}$$

$$\beta_{6j} = \gamma_{60}$$

ii : student, jj : school

XX : independent variable of student level(pp : number of independent variable of student level)

WW: independent variable of school level (qq : number of independent variable of school level)

Results

Descriptive statistics

The average score changes of each subject according to achievement levels of fifth grade students are shown in Table 3.

Table 3
Average Score Changes of Proficiency Levels by Subject

Subject	*Below basic*			*Basic*			*Proficient*			*Advanced*		
	N	**Mean**	**S.D.**	N	**Mean**	**S.D.**	N	**Mean**	**S.D.**	N	**Mean**	**S.D.**
Korean	179	33.89	39.08	1941	9.20	31.09	2549	-9.22	29.63	589	-27.88	28.04
English	507	26.29	29.75	720	19.43	24.34	995	13.72	27.30	3036	5.05	26.95
Math	391	25.53	34.16	672	17.47	29.69	2454	8.86	30.04	1741	-10.36	28.22

Overall, *below basic* students showed the most score changes across all subjects and showed performance improvement, such as 33 points of Korean, 26 points of English, and 25 points of math. On the other hand, scores of high level students in Korean and math were decreased, and there were shown that 27 points of *advanced* students in Korean and 10 points of math. The distributions of *below basic* and *advanced* students in English were appeared to be the largest among three subjects, so the polarization of academic scores was very clear in English. Descriptive statistics of the independent variables used in the analysis are presented in the Table 4.

Table 4
Descriptive Statistics of Independent Variables

Independent variables							
Student level	**N**	**Mean**	**SD**	*School level*	**N**	**Mean**	**SD**
Family backgrounds				*School environments*			
Gender	5258	.52	.50	Seoul	237	.15	.36
Parents' SES	5258	.04	.98	Metropolitan city	237	.21	.41
Educational expectation	5258	3.40	.89	Small & medium city	237	.34	.48
Educational support	5258	3.31	076	Private school	237	.04	.20
Student process				School mean SES	237	-.15	.65
Reading enjoyment	5258	3.44	.94	Students per teacher	237	14.16	5.64
Creative thinking skills	5258	3.67	.74	*School process*			
Test stress	5258	2.63	1.15	Class atmosphere	237	3.68	.33
Intrinsic motivation_Korean	5258	2.92	.61	Achievement pressure	237	3.34	.31
Intrinsic motivation_English	5258	3.05	.71	Teacher's passion	237	4.25	.29
Intrinsic motivation_math	5258	2.99	.70	Teacher's interaction	237	3.85	.38
Extrinsic motivation	5258	1.70	.59				
Relationship with friends	5258	3.99	.75				
Rule observance	5258	4.12	.60				
Self-study hour	5258	1.80	1.01				
Class attitude	5258	4.14	.56				
Class understanding_Korean	5258	4.51	.72				
Class understanding_English	5258	4.32	.97				
Class understanding_math	5258	4.35	.90				
Private tutoring_Korean	5258	.61	.49				
Private tutoring_English	5258	.91	.29				
Private tutoring_math	5258	.88	.32				
After-school program_Korean	5258	.12	.33				
After-school program_English	5258	.23	.42				
After-school program_math	5258	.19	.39				

Results: Korean

The analysis results for the differential association based on achievement levels including *below basic, basic, proficient,* and *advanced* in Korean are shown in Table 5.

Table 5

Differential Association Result in Korean

Model 1 Base model result in Korean				
Fixed association	**Coef.**	**S.E**	**T-value**	**P-value**
Below basic	43.32	2.18	19.87	.000
Basic	16.99	0.66	25.94	.000
Proficient	-4.12	0.57	-7.22	.000
Advanced	-24.04	1.18	-20.43	.000

Model 2 Research analysis model result in Korean								
	Below basic		*Basic*		*Proficient*		*Advanced*	
Fixed association	**Coef.**	**S.E**	**Coef.**	**S.E**	**Coef.**	**S.E**	**Coef.**	**S.E**
Family backgrounds								
Gender (main effect)					-0.75	0.84		
SES	0.60	3.15	3.08***	0.81	1.53*	0.73	1.38	1.59
Educational expectation	8.01**	2.68	0.69	0.83	2.40**	0.68	0.76	1.38
Educational support	1.64	3.31	-2.11*	0.97	-0.31	0.85	0.81	1.78
Student process								
Reading enjoyment	4.70	2.63	1.50*	0.76	1.62*	0.68	6.14***	1.53
Creative thinking	2.39	3.51	0.63	1.07	0.01	0.98	-1.07	2.14
Test stress	-1.22	1.96	0.52	0.57	0.11	0.51	-1.25	1.06
Intrinsic motivation	0.69	3.44	-0.09	1.21	-0.74	1.09	2.02	2.24
Extrinsic motivation	-3.23	4.05	-3.53**	1.14	-4.32***	1.07	-2.89	2.41
Re. with friends	-2.99	3.61	-0.70	1.01	-1.73	0.89	-2.10	1.76
Rule observance	-0.46	4.15	-0.58	1.38	0.47	1.30	2.60	2.80
Self-study time	-9.01**	2.55	-0.38	0.66	-0.47	0.58	0.85	1.17
Class attitude	2.63	3.91	0.80	1.35	0.89	1.24	1.55	2.62
Class understanding	7.72**	2.50	3.80***	0.91	1.93	1.02	-1.92	3.03
After-school pro.	-6.50	6.35	-1.38	1.96	-1.73	1.77	-6.58	4.30
Private tutoring	-1.93	4.83	-0.16	1.36	-2.02	1.17	-1.13	2.44
School environment								
Constant	53.91***	6.80	22.40***	1.81	-2.24	1.60	-22.34***	3.78
Pre achievement	-0.38**	0.13	-0.12*	0.06	-0.002	0.06	-0.10	0.12
Seoul	-10.51	8.98	-5.92*	2.36	-1.60	2.14	-6.08	4.63
Metropolitan city	-2.86	7.42	-4.15*	2.06	-0.20	1.88	-6.23	4.37
Small & med. city	8.98	7.31	-4.33*	1.99	-1.22	1.76	-2.83	4.03
Private school	-65.59*	31.51	0.31	4.13	-2.17	2.85	-0.83	5.28
School mean SES	20.73*	8.16	1.71	2.04	1.84	1.74	2.68	3.70
Students per teacher	-1.81	0.90	0.31	0.23	-0.13	0.21	-0.36	0.45
School process								
Teacher interatcion	-26.36*	12.26	-6.16	3.55	-6.77*	3.21	-13.93*	6.81
Class atmosphere	-3.40	13.30	1.36	3.11	1.29	2.77	-0.41	6.33
Achievement pressure	23.10*	9.72	1.94	3.05	-1.29	2.67	2.73	5.68
Teachers' passion	48.14**	15.52	12.85**	4.64	11.42**	4.05	26.16**	8.45

*$p < .05$. **$p < .01$. ***$p < .001$.

As the result of unconditional model which used only Korean achievement score of fifth grade students in the model, average changes of each level's achievement score in Korean were estimated to be 43.32, 16.99, -4.12, and -24.04 points, and the high level students' scores were falling down. When examining the analysis results of interaction effect that had impact on Korean achievement score changes, parents' SES variable showed a significant interaction effect to *basic* and *proficient* level students. The score of *basic* students was increasing as 3.08 point, whereas 1.53 points for *proficient* level students if parents' SES increased one unit. The results show that SES is an important factor in the improvement of Korean of *proficient* level because it shows that the grade is increased after controlling the SES, even though the average score of the students of *proficient* level is decreased. Therefore, it is necessary to estimate the SES effect according to the improvement of student performance by using a more rigorous model. Parents' educational expectation showed an interaction effect on academic achievement of scores in Korean for *below basic* and *proficient* level students, and especially *below basic* level students showed 8 points of increase when parents' educational expectation increased one unit. Parents' academic support variable had a negative interaction effect on *basic* level students, so if parents' academic support increased one unit, the score was decreasing 2.11 points.

Among school-level background and environment variables, average school SES variable showed a significant positive impact on *below basic* students, so if average school SES increased one unit, the score was increasing 20.73 points. Private schools showed a significantly negative impact on the performance improvement of *below basic* students in Korean, so *below basic* students in private schools could be expected to decline 65.59 points than public schools. But the standard error of private school variables was drawn to a somewhat large value, and it could be the estimated effect due to the smaller percentage of *below basic* than other levels. Therefore, it is necessary to be careful when the absolute interpretation of the estimated coefficients. There were shown the differences among the regions about performance improvement of *basic* students in Korean, so Seoul was fallen down 5.92 points and metropolitan city was 4.15 points. And further, small and medium-sized cities had appeared to be down 4.33 points than rural areas. The differences of other levels' students against rural areas were not shown.

Among student's process variables, reading enjoyment variable showed a significant interaction effect on academic achievement of all levels except *below basic* students in Korean. Especially, it was analyzed that *advanced* students were affected more than other levels' student, so if reading enjoyment increased one unit, the score was increasing 6.14 points. Extrinsic motivation showed a significant interaction effect on *basic* and *proficient* students, so if extrinsic motivation of *basic* students increased one unit, the score was decreasing 3.53 points, and 4.32 points were decreasing for *proficient* students. Creative thinking skills, test stress, and intrinsic motivation in Korean, relationships with friends, rule observance, and class attitude did not show a significant interaction effect at all levels of achievement growth in Korean. Self-study time variable had a significant interaction effect on achievement growth of *below basic* students in Korean, so if self-study time of *below basic* students increased one hour, the score was decreasing 9.01 points. Class understanding in Korean was analyzed to have an interaction effect to both *below basic* and *basic* student, so if class understanding increased one unit, the score was increasing 7.72

points for *below basic* students and 3.80 points for *basic* students. Therefore, class understanding which students recognized was an important student process variable for especially students who need basic learning. In addition, after-school program and private education participation did not show significant interaction effects on achievement growth in Korean for any achievement levels. Among school educational process variables, variable of teachers' interaction with students had a negative impact on all levels except *basic*, so if students' perception about interaction increased one unit, the score was decreasing 13.93 points for *advanced* students and 26.36 points for *below basic* students. This was interpreted as students' recognition of teachers' interaction with students did not affect positive impact on achievement growth in Korean, such as giving enough opportunities to present, encouraging challenges, and explaining friendly what students do not know. Achievement pressure variable had a positive impact on achievement growth of *below basic* students, so if achievement pressures increased one unit, the score was increasing 23.10 points. Teacher's passion showed a significant impact on achievement growth in Korean at all levels. Especially *below basic* level students were affected most by teacher' passion variable, so if *below basic* students' perception about teacher's passion increased one unit, the achievement growth was predicted to be increased by 48.14 points (48.14/39.14=1.24 SD). The standard error of passion variable was estimated to a slightly larger value, so despite the limitations such as estimated impact due to the relatively low proportion of *below basic* students, teacher's passion which students aware was understood to be the important factors in academic achievement improvement for all levels. Class atmosphere did not show a significant impact on achievement growth in Korean.

Results: English

Next, the analysis results after exploring the student- and school-level variables which affected on improvement of academic achievement according to academic levels such as *below basic, basic, proficient,* and *advanced* in English are shown in Table 6.

Table 6

Differential Association Result in English

Model 1 Base model result in English				
Fixed association	**Coef.**	**S.E**	**T-value**	**P-value**
Below basic	26.47	1.22	21.62	.000
Basic	19.33	1.02	18.90	.000
Proficient	13.72	0.87	15.84	.000
Advanced	5.06	0.50	10.18	.000

Model 2 Research analysis model result in English								
	Below basic		*Basic*		*Proficient*		*Advanced*	
Fixed association	**Coef.**	**S.E**	**Coef.**	**S.E**	**Coef.**	**S.E**	**Coef.**	**S.E**
Family backgrounds								
Gender (main effect)					2.83***	0.78		
Parents' SES	2.76	1.54	0.24	1.27	1.55	1.10	1.61*	0.64
Educational expectation	2.18	1.50	0.97	1.30	0.91	1.03	0.77	0.59
Educational support	-1.49	1.77	0.46	1.52	0.11	1.30	-1.10	0.73
Student process								
Reading enjoyment	0.31	1.38	1.48	1.14	1.92	1.00	2.50***	0.57
Creative thinking	2.67	1.94	-1.18	1.58	-0.84	1.41	-1.27	0.84
Test stress	-0.80	1.09	-0.29	0.90	0.87	0.78	0.39	0.43
Intrinsic motivation	5.57**	1.93	1.10	1.73	2.44	1.46	2.45**	0.85
Extrinsic motivation	-3.35	2.01	0.22	1.80	-0.77	1.62	-0.43	0.92
Re. with friends	-1.56	1.72	1.58	1.59	-1.06	1.32	-1.60*	0.76
Rule observance	-0.87	2.41	-1.70	1.98	2.34	1.96	2.82*	1.12
Self-study time	-0.23	1.30	-0.15	1.10	-0.63	0.90	0.08	0.48
Class attitude	-0.42	2.24	0.10	1.98	3.43	1.89	1.14	1.06
Class understanding	2.93*	1.20	6.26***	1.11	4.30***	1.09	5.09***	0.89
After-school pro.	-5.72*	2.81	-4.56*	2.20	-4.09*	1.92	-0.23	1.21
Private tutoring	7.39*	3.27	-0.25	3.08	2.73	2.86	-0.39	1.84
School environment								
Constant	32.51***	4.60	28.28***	3.70	18.14***	3.30	-0.26	2.18
Pre achievement	-0.001	0.10	0.04	0.08	0.07	0.08	-0.09	0.05
Seoul	-0.72	4.76	-3.51	3.78	-4.16	3.09	1.67	1.85
Metropolitan city	-3.87	4.09	-4.35	3.16	-6.19*	2.73	-0.98	1.68
Small & med. city	-1.88	3.54	-2.13	2.94	-6.51*	2.51	0.07	1.59
Private tutoring	-2.94	16.12	1.66	7.73	4.47	6.25	6.83**	2.30
School mean SES	4.87	4.40	13.96***	3.53	7.00*	2.91	8.03***	1.72
Students per teacher	-0.43	0.43	-1.54***	0.37	-0.82**	0.31	-0.46*	0.18
School process								
Teacher's interaction	8.43	6.00	-6.39	5.61	2.40	4.72	5.75*	2.80
Class atmosphere	-2.33	5.24	-5.23	4.90	-1.08	3.90	1.03	2.57
Achievement pressure	-3.42	5.64	4.49	4.26	-0.25	3.68	-4.58	2.43
Teachers' passion	-9.65	8.18	9.46	7.01	-5.17	5.89	-0.26	3.58

*$p < .05$. **$p < .01$. ***$p < .001$.

As a result of basic model which used only English achievement levels for fifth grade, low level students' English achievement showed a remarkable increase because average changes of each level of English achievement were estimated to be 26.47, 19.33, 13.72, and 5.06. Gender factor, among individual and family background variables, showed a significant difference as a result of analysis models in English for each level, thus girls' achievement score changes were about 2.83 points higher than boys. Parents' SES showed a significant interaction effect on students with *advanced* English achievement, so if parents' SES of *advanced* students increased one unit, the score was increasing 1.61 points. Parents' educational expectations and academic support variables did not show significant interaction effects at all levels. Private schools, among school background and environment variables, gave a significant impact on *advanced* students in English of fifth grade students, so if English achievement scores of *advanced* students in private schools increased 6.83 point higher than the national and public school students. Looking at the differences between regions about improvement of English achievement scores, there were significant differences between metropolitan city and rural areas. Improvement of English scores of *basic* students in metropolitan city was 6.19 points lower than rural areas, and small and medium-sized cities were 6.51 points lower than rural areas. The number of students per teacher showed significant impacts on *basic*, *proficient,* and *advanced* students except for *below basic* student, and particularly for *basic* level students. For example, if the number of students per teacher increased one unit, it was found out that English score decreased 1.54 points. Average school SES showed significant impact on *basic*, *proficient,* and *advanced* students, and for *basic* level students, when average school SES increased one unit, English scores increased 13.96 points (13.96/38.78=0.36 SD) for *basic* students and 8.03 points (0.21 SD) for *advanced* students. For *proficient* students, if average school SES increased one unit, 7.00 points (0.18 SD) were increased.

Among student process variables, reading enjoyment variable showed a significant interaction effect on English score improvement of *advanced* students, so if reading enjoyment of *advanced* students increased one unit, the score was increasing 2.50 points. Intrinsic motivation factor in English showed a significant interaction effect on *below basic* and *advanced* students, and if intrinsic motivation factors in English increased one unit, the score was increased 5.57 points for *below basic* students and 2.45 points for *advanced* students. Relationship with friends and rule observance variable showed significant interaction effect on *advanced* students, so if relation of friends of *advanced* students increased one unit, the score was decreasing 1.60 points whereas 2.82 points were increasing when one unit of rule observance was increased. Class understanding in English variable was analyzed to have a significant interaction effect for all levels, and especially for *basic* students, improvement of scores was predicted most. So, when class understanding in English for *basic* students increased one unit, the score was increasing 6.26 points, and 2.93 points for *below basic*, 4.30 points for *proficient,* and 5.09 points for *advanced* students were shown. After-school program participation in English showed significant interaction effect on *below basic*, *basic,* and *proficient* students, and particularly for *below basic* students, English scores of students who attended after-school program were decreased 5.72 points, 4.56 points for *basic* student, and 4.09 points for *proficient* students. Private tutoring participation had a significant interaction effect with *below basic* students. That is, *below basic* students who participated in private tutoring showed an

improvement by 7.39 points (0.19 SD), and this could be predicted to have an impact of private tutoring of English. Among school educational environment variables, interaction of teaching method showed a significant impact on *advanced* students of English at fifth grade, so if one unit of interaction variable was increased, the score was increasing by 5.75 points. Achievement pressures, class atmosphere, and teacher's passion did not show significant impact on any levels.

Results: Math

Finally, the analysis results after exploring the student- and school-level variables that affected on achievement growth in math for fifth grade in 2013 are shown in Table 7.

Table 7
Differential Association Result in Math

Model 1 Base model result in math				
Fixed association	**Coef.**	**S.E**	**T-value**	**P-value**
Below basic	25.99	1.53	17.01	0.000
Basic	17.64	1.17	15.10	0.000
Proficient	8.75	0.61	14.42	0.000
Advanced	-10.42	0.72	-14.44	0.000

Model 2 Research analysis model result in math								
	Below basic		*Basic*		*Proficient*		*Advanced*	
Fixed association	**Coef.**	**S.E**	**Coef.**	**S.E**	**Coef.**	**S.E**	**Coef.**	**S.E**
Family backgrounds								
Gender (main effect)					3.12**	0.85		
Parents' SES	2.31	1.98	-0.81	1.38	0.90	0.76	2.80**	0.92
Educational expectation	4.00	2.06	1.31	1.38	1.19	0.74	1.23	0.83
Educational support	-0.75	2.20	-5.03**	1.75	1.08	0.89	-0.33	1.06
Student process								
Reading enjoyment	3.48*	1.67	-0.42	1.31	1.34	0.69	0.64	0.85
Creative thinking	1.64	2.27	-1.67	1.92	-1.04	1.00	-1.76	1.25
Test stress	-0.34	1.41	-0.72	1.04	0.04	0.53	0.17	0.62
Intrinsic motivation	3.91	2.33	4.86*	1.97	2.42*	1.05	3.69**	1.29
Extrinsic motivation	-0.45	2.46	-2.18	1.92	-1.09	1.09	-1.31	1.41
Re. with friends	1.61	2.14	-0.63	1.86	-1.72	0.92	-2.61*	1.09
Rule observance	-7.76**	2.76	0.15	2.48	0.83	1.31	2.49	1.64
Self-study time	0.07	1.66	1.40	1.33	-2.16**	0.61	-1.07	0.67
Class attitude	2.68	2.82	0.51	2.42	3.44**	1.25	0.19	1.56
Class understanding	8.03***	1.64	9.22***	1.34	5.65***	0.84	8.10***	1.56
After-school pro.	-4.88	3.68	-3.81	2.68	-0.66	1.48	-2.97	1.94
Private tutoring	0.62	4.27	-2.20	3.37	0.62	1.82	-2.65	2.31
School environment								
Constant	42.78***	5.37	28.00**	4.26	9.26***	2.12	-11.94***	2.88
Pre achievement	-0.03	0.13	0.002	0.11	-0.15**	0.06	-0.24**	0.07

Seoul	1.27	5.89	-2.35	4.20	-0.76	2.19	-1.14	2.70
Metropolitan city	-4.13	5.08	0.05	3.75	-3.36	1.90	-2.72	2.50
Small & med. city	-4.61	4.59	-1.08	3.51	-3.69*	1.76	-2.34	2.40
Private school	-0.72	12.30	-4.54	8.60	16.95***	3.42	3.48	3.20
School mean SES	10.37*	5.23	13.55**	4.11	5.75**	1.94	5.74*	2.32
Students per teacher	-0.49	0.55	-1.05*	0.41	-0.63**	0.21	-0.44	0.27
School process								
Teacher's interaction	-5.89	7.67	-0.24	6.16	-0.90	3.34	0.81	4.10
Class atmosphere	-11.30	6.87	2.24	5.44	-0.44	2.86	-1.65	3.70
Achievement pressure	-1.25	6.21	1.91	5.20	-2.69	2.75	-1.27	3.53
Teacher's passion	21.83*	10.74	3.52	7.75	0.70	4.27	7.77	5.01

*$p < .05$. **$p < .01$. ***$p < .001$.

First, as a result of the basic model which controlled the fifth grade's math achievement levels, each level's average change was estimated to 25.99 for *below basic*, 17.64 for *basic*, 8.75 for *proficient*, and -10.42 for *advanced*, so it could be seen as the rise of low level students' math scores was remarkable. As similar with Korean, it was found that top-level students' math achievement scores were decreasing. Looking at the results after analyzing each level's interaction effect on math achievement growth, girls' change of math scores was 3.12 points higher than boys' change after controlling student and school level interaction effect variables. Parents' SES showed a significant interaction effect on only *advanced* students, so if parents' SES of *advanced* students increased one unit, the score was increasing 2.80 points. Parents' academic support variable showed a negative interaction effect on only *basic* students, so when parents' academic support increased one unit, the score of *basic* students was declined 5.03 points. Meanwhile, parents' educational expectation variable did not show a significant interaction effect of math achievement growth at any levels.

Among school environment variables, school established type showed a significant impact on the *proficient* students, so math score of *proficient* students in private schools was 16.95 points (0.45 SD) higher than public schools. Average of school SES showed a significant impact on all levels, so when average school SES of *below basic* students increased one unit, the math score was increasing 10.37 points (0.27 SD), 13.55 points (0.36 SD) for *basic*, 5.75 point for *proficient*, and 5.74 points for *advanced* students. *Proficient* students in small and medium-sized cities showed a decline of 3.69 points against students in rural areas, and there were no significant differences in other regions against rural areas in other levels.

Among student process variables, reading enjoyment variable showed a significant impact on *below basic* students, so if *below basic* students' reading enjoyment increased one unit, the math score was increasing 3.48 points. Intrinsic motivation variable in math showed a significant interaction effect on all performance levels, except for *below basic* of math test at fifth grade. Especially, *basic* students were positively associated with intrinsic motivation in math, so when *basic* students' intrinsic motivation in math increased one unit, the math score was increasing 4.86 points, 2.42 points for *proficient*, and 3.69 points for *advanced* students. Class attitude variable showed a significant interaction effect on

proficient students, so if *proficient* students' class attitude increased one unit, the math score was increasing 3.44 points. Also, self-study time variable showed a significantly negative impact on *proficient* students, so when self-study time of *proficient* students did not have a positive impact on growth of math scores. Relationship with friend variable showed a significantly negative interaction effect on growth of *advanced* students' math scores, so it could be expected that students who studied well had a low awareness of true friends. Rule observance variable showed a significantly negative interaction effect on only *below basic* students. Class understanding variable showed significant interaction effects on *below basic*, *basic*, *proficient*, and *advanced* students in math achievement changes, and especially *basic* level students were received the most impacts by class understanding, so when *basic* students' understanding in class increased one unit, the math score was increasing 9.22 points (0.24 SD), and 8.10 points (0.21 SD) for *advanced* students. Therefore, students' understanding in math class was suggested as an important variable in improving math achievement. After-school program and private education participations did not show significant interaction effect on achievement growth in math. Teachers' passion among school educational activity variables showed a significant impact on *below basic* students, so if teachers' passion increased one unit, the math score showed growth of 21.83 points (0.57 SD). Interaction of teaching method, class atmosphere, and achievement pressures variables did not show significant impact on proficiency levels of fifth graders in math.

Discussion

The purpose of this study was to explore the differential association to investigate the variables affecting the achievement growth of student, by students' performance proficiency levels using KELS 2013. While there was overall achievement growth in all subjects including Korean, English, and math, *proficient* and *advanced* levels of fifth grade in Korean and *advanced* level students in math showed declines in average scores. This could be interpreted as the phenomenon of the *regression to the mean*, but it is necessary to identify the reason since these problems might be caused by a lack of motivation on the performance test. The summary of analyzing each achievement level's differential association on academic achievement growth is shown in Table 8.

Table 8

Summary of Differential Association on Academic Achievement Growth

		Proficiency levels											
		Korean				English				Math			
Variables	Fixed-effect	Below basic	Basic	Proficient	Advanced	Below basic	Basic	Proficient	Advanced	Below basic	Basic	Proficient	Advanced
Level 1	*Family backgrounds*												
Student level	Gender							+				+	
	Parents' SES		+	+					+				+
	Educational expectation	+		+									
	Educational support		-								-		
	Student process												
	Reading enjoyment		+	+	+				+	+			
	Creative thinking												
	Test stress												
	Intrinsic motiv	.				+			+		+	+	+
	Extrinsic motiv	.	-	-									
	Re. with friends								-				-
	Rule observance								+	-			
	Self-study time	-										-	
	Class attitude											+	
	Class understanding	+	+			+	+	+	+	+	+	+	+
	After-school pro.					-	-	-					
	Private school					+							
Level 2	*School environment*												
School level	Constant	+	+		-	+	+	+		+	+	+	-
	Pre achievement	-	-									-	-
	Seoul		-										
	Metro. city		-					-					
	Small & med. city		-					-				-	
	Private school	-							+			+	
	School mean SES	+					+	+	+	+	+	+	+
	Students per teacher						-	-	-		-	-	
	School process												
	Teacher's interaction	-		-	-				+				
	Class atmosphere												
	Achievement pressure	+											
	Teacher's passion	+	+	+	+					+			

Note. +: positive association. - : negative association.

As shown in Table 8, firstly, girls' achievement growth was higher than boys in English and math but not Korean. Parents' SES affected positively achievement growth for *basic* and *proficient* students in Korean and advanced students in math and English. The result was consistent with the findings in H. Park and Kim (2010) and also consistent with results of Y. Kim and Kim (2015), which it affected on the possibility of improvement from *basic* levels to higher levels. In addition, the findings supported that parents' socio-economic status affected on above the *proficient* levels, while it did not affect attaining *basic* levels (Ihm & Kim, 2012). The parents' educational expectations variable showed a significant interaction effect on the achievement changes of *below basic* and *proficient* students in Korean. Especially, for *below basic* level students, parents' educational expectation was found to be a particularly important factor on achievement growth in Korean. Y. Kim and Kim (2015) suggested the positive impact of parents' educational expectations on the possibility of growth to *proficient* and *advanced* levels in Korean, English, and math, but this study shows limitation of a cross-sectional study. Parents' academic supports were shown to have a negative impact on Korean and math for *basic* level students. In the earlier studies, the impacts of parents' academic supports were reduced by adding students' psychological characteristics and attitude variables, so it was reported that parents' academic supports were the mediator of middle school students' psychological characteristics and attitude variables (S. Kim et al., 2007, p. 177).

Secondly, among school environments, school average SES showed a significant interaction effect with each level on growth of students' achievement scores in most subjects. As a result of the cross-sectional research on fifth grade students, the impact of school average SES was the most powerful influence on improving the achievement levels. This was different with the study results (Y. Kim & Kim, 2015) which of school average SES affected a positive impact on growth to above *proficient* levels, but the collective association of students with parents' high SES was having a positive impact on improvement of academic achievement regardless of the achievement proficiency levels. The number of students per teacher showed a negative impact on each level's changes in English and math, but not Korean. There were differences in academic achievements between other regions and rural areas only for growth of *basic* students in Korean and growth of *proficient* students in English and math. While private schools had impact on *advanced* students in English and *proficient* students in math, private schools showed a negative impact on *below basic* levels in Korean. Therefore, it is necessary to conduct follow-up studies to examine which program works in private schools.

Thirdly, among student process variables, reading enjoyment showed significant interaction effect on most levels of fifth grade students' Korean, *advanced* levels in English, and *below basic* levels in math. Therefore, reading enjoyment was found to have positive impact on students' academic achievement. These results were consistent with the study, which identified significant improvements to *proficient* and *advanced* levels in Korean and English of elementary schools (Y. Kim & Kim, 2015), and the study that it was significant in reducing under-achievements in math (Ihm, 2010). The intrinsic motivation variable of each subject showed greater interaction effect on relatively lower-level students for English, and showed interaction effect on above *basic* levels for math. Therefore, intrinsic motivation of the student could be seen that had different association on each subject. The analysis results of intrinsic motivation showed that since the association of intrinsic

motivation was big, and especially bigger for math (Cha, 2015; S. Kim et al., 2007), and schools should increase students' intrinsic motivations and enhance the interaction association with students by a variety of teaching methods. External motivation was found to receive negative interaction association by score changes of *basic* and *proficient* level students. Relationships with friends variable showed a negative interaction effect on relatively excellent students in English and math, thus it was interpreted as the variable did not have positive impact on improving academic achievement scores even though excellent students was recognizing their relationship with friends positively. Rule observance variable showed a significantly positive interaction effect on English score changes of advanced students.

Since self-study time variable was affecting negative impact on achievement growth of *below basic* students in Korean and *proficient* students in math, it showed different results with Y. Kim and Kim (2015) which hours to study itself variable increased the possibility to be *advanced* levels in math, and J. Kim et al. (2014) which the impact of non-tutor learning time was great. This can be interpreted as the result of *below basic* student in Korean who did not learn how to study themselves, and as intrinsic motivation, class attitude, and class understanding were affecting on *proficient* students in math than self-study time as itself. Class attitude variable showed a significantly positive interaction effect on the proficient-level students in math. This effect was supporting the results of Y. Kim and Kim (2015) which identified the impact on the possibility to be *proficient* and *advanced* levels in Korean, English, and math, but as considering that class attitude variable showed the impact on only a *proficient* level of math in this study, it was interpreted as the influence of class attitude was weaken by adding class understanding. Each subject's class understanding showed positive interaction effect on growth in academic achievement of Korean, English, and math at most achievement levels, so it was suggested that students' class understanding was an important factor in academic achievement. Reading enjoyment was more affecting than the class understanding for *proficient* and *advanced* levels in Korean. After-school program showed a significantly negative impact on most achievement levels in English, and a significant impact on achievement growth of *below basic* students was found for private tutoring in English.

Fourthly, among school process variables, while class method interaction variable showed a positive effect on *advanced* students in English, it showed inconsistent results by levels of each subject by affecting negative impacts on all levels except the *basic* level in Korean. Teachers' passion showed a powerful positive impact on achievement growth in Korean, and especially the greatest influence on *below basic* students. Also, the teacher's passion showed a positive impact on achievement growth of *below basic* students in math. Despite the limitations which it could be resulted from the relatively low percentage of *below basic* students, teachers' passion that students recognized was an important factor for students' academic achievement, and especially predicted to show bigger impact on relatively lower-level students. This results that teachers' passion was showing the biggest impact for *below basic* students in Korean and math were consistent with study results of Ryu and Song (2009) and Ihm (2010) which it was working to break away from school under-achievement or improve from lower levels to *proficient* levels. Meanwhile, achievement pressure had a positive impact on only achievement score changes of *below basic* students in Korean.

Conclusion

While this study explored the variables that affect the degree of achievement score improvement, there is no consistent outcome compared to the results of the variables that affect the achievement score after controlling prior academic achievement since the variables affecting sixth grade's achievement or academic achievement level. Therefore, it is necessary to establish a model to control the initial value of students' prior achievement for future studies, in exploring the variables that affect the improvement of academic achievement. Assessment of academic achievement at elementary level is an essential criterion for inspecting the basic curriculum at the elementary level, so that it an important reference for students to understand the lack of learning and to use them as basic data for improvement of curriculum. In 2009, the Basic Responsibility System was a government-led effort to minimize low achieving students, and it was part of the accountability to minimize the *below basic* students. As a result, from 2010 to 2012, the proportion of *below basic* students in primary and secondary schools in Korea has decreased overall. As this study aims to diagnose the achievement proficiency level of elementary students who especially show low achievement levels, this study emphasizes the need for support to prevent the accumulation of insufficient learning for low achievement levels. Particularly, it is necessary to support fully for the *below basic* students of the Korean by referring to their parents' educational expectations, teachers' passion, and achievement pressure variables. In summary, the factors affecting improvements of academic achievement are different by subject and academic achievement levels. Therefore, appropriate actions for subjects and achievement proficiency levels to improve student achievement should be supported differently.

Address for correspondence

Hyejin Shin
Research fellow
Seoul Education Research & Information Institute
46, Sopa-ro, Jung-gu, Seoul, 04636, Korea
Email: hjshin03@sen.go.kr

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Footnotes

1. Table shows frequency comparison between raw and analysis data.

Division	Male	Female	National/ public	Private	Seoul	Metro politan	SM	Rural
Raw data (N)	3,624	3,701	6,846	354	1,342	1,713	2,764	1,381
Ratio (%)	49.5	50.5	93.5	4.8	18.3	23.4	37.7	18.9
Analysis data (N)	2,514	2,744	4,975	283	1,000	1,283	1,984	991
Ratio (%)	47.8	52.2	94.6	5.4	19.0	24.4	37.7	18.8

Note. SM = small and medium-sized city.

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Understanding the adoption of e-learning in South Korea: Using the extended Technology Acceptance Model approach*

KilYoung Cha
Korea Advanced Institute of Science and Technology, Korea
SangJib Kwon
Dongguk University, Korea

Abstract

In an era of educational paradigm shifts, adoption of e-learning has been a significant phenomenon in South Korea. This study examines characteristics of instructor, teaching materials, perceived mobility, and perceived connectedness as key independent factors for intent to use e-learning systems, by way of effects on perceived usefulness and ease of use. Although the psychological factors influencing e-learning adoption are well defined, the framework that accounts for such effects remains ambiguous. The suggestion herein is that intent to use e-learning is related to the user's motivational factors, a connection that can be explained in terms of the Technology Acceptance Model (TAM). The results indicated that instructor characteristics and perceived mobility were the important factors determining the learners' perceived ease of use and perceived usefulness. In addition, perceived connectedness is positively related to intention to use e-learning (ITU). This study represents a beginning step to investigate the mechanism of adopting e-learning with result implications and the future directions of study.

Keywords : e-learning, technology acceptance model, perceived connectedness, perceived usefulness, intention to use

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Introduction

E-learning, which simply refers to online learning, is a buzzword in the global education industry. As technology advances, e-learning's impact could be greater than that of any other educational development. E-learning is an innovation that epitomizes a significant new educational paradigm (Cantoni, Cellario, & Porta, 2004; Chiappe & Lee, 2017; Kelly & Bauer, 2004; Noesgaard & Ørngreen, 2015; Nortvig, Petersen, & Balle, 2018; Park & Kwon, 2016).

E-learning offers several advantages: 1) real-time education programs; 2) differentiated contents and educational methods; 3) ongoing discussion and the potential to interact virtually with other students; and 4) online supervision with quick feedback. In these high-tech and rapid learning systems, students can learn how to, what, and why, unrestricted by barriers of time (Nortvig et al., 2018; Roblyer & Knezek, 2003; Roblyer & Marshall, 2003). E-learning is a vital tool for many students and businesspeople. It offers an excellent type of learning to that in offline classroom scenarios because it offers high numbers of learner access greater amounts of content and feedback (Beth, Jordan, Schallert, Reed, & Kim, 2015; Cho & Tobias, 2016; Engelbrecht, 2003). Many students are utilizing e-learning and increasing their awareness of specific topics they can study. Yet, despite the important role of this recent educational phenomenon, few studies exist on the role of user-acceptance (B. C. Lee, Yoon, & Lee, 2009; Liaw, 2008; Liu, Liao, & Pratt, 2009; Means, Toyama, Murphy, & Baki, 2013; Noesgaard & Ørngreen, 2015; Park & Kwon, 2016; Park, Kim, & Kwon, 2016). It may be that educational tools using e-learning are still in their initial step of enlargement and growth (Ryan, Kaufman, Greenhouse, Joel, & Shi, 2016).

Therefore, understanding the mechanisms of e-learning acceptance is important for diverse organizations. Advanced e-learning systems and contents can assist employees and students and serve as an innovative tool for planning a national education roadmap for the future. E-learning's popularity in South Korea has grown along with the rapid development of the country's information and communication technology industry (Cho & Tobias, 2016; B. C. Lee et al., 2009; Misko, Choi, Hong, & Lee, 2005; Park & Kwon, 2016). Many leading universities and organizations have established e-learning systems and plan to institute e-learning "campuses" set in online environments (Yoo, Han, & Huang, 2012). Yet despite its popularity in South Korea, very little is known about what determines the adoption of e-learning (Grzybowski, 2013; B. C. Lee et al., 2009; S. Lee, Byun, Kwon, & Kwak, 2008; Park & Kwon, 2016; Yoo et al., 2012).

This study, therefore, aimed to explore a user-acceptance model based on the Technology Acceptance Model (TAM) that investigates key psychological determinants of acceptance of e-learning tools. To accomplish this, survey data from students using e-learning in educational context were empirically analyzed based on the TAM (Park et al., 2016) with regard to key factors in the usage of e-learning.

By examining e-learning adoption in South Korea, this research attempts to fill a void in understanding of user-adoption criteria and attitudes toward e-learning. Similar to previous research of Human Computer Interaction (HCI) interactions and internet of things, user's attitudes and perspectives are very crucial elements affecting the diffusion of e-learning, including online tools (Park, Cho, Han, & Kwon, 2017). Therefore, this research intends to investigate important factors that stimulate learners to make use of

e-learning for their education and investigate how these key elements contributing to forecasting the general adoption of e-learning devices by combining them with TAM.

Literature review

Trends of e-learning

E-learning is defined as internet-based learning that uses online media, knowledge sharing, and guidance to support learners' demands, free of space and time barriers (Engelbrecht, 2005; B. C. Lee et al., 2009; Yoo et al., 2012). Ultimately, e-learning positively impacts both business and academia, for example, through cost reduction, sharing of the latest information, and quick and proactive feedback (Ryan et al., 2016). The e-learning approach has been widely used since the 1990s to achieve educational goals around the world, and e-learning tools have become important in the educational market. Businesses and academic institutions have resultantly accepted e-learning (Alavi & Leidner, 2001; B. C. Lee et al., 2009; Nortvig et al., 2018).

Today, more than in the past, information and communication technologies develop and change rapidly. At the same time, the amount of refined knowledge and information is quickly rising, the amount of information changes rapidly, and the social environment demands lifelong learning in all areas of society (Brown, Kerwin, & Howard, 2013; Keren & Fridin, 2014). Accordingly, educational institutions and research providers supply online consulting, task-based learning, and lessons to meet learners' diverse demands (Cho & Tobias, 2016; Lancellotti, Thomas, & Kohil, 2016; Olsson, Mozelius, & Collin, 2016; Park & Kwon, 2016).

Previous studies have indicated that online technical infrastructure, learner motivation, perceived psychological factors, and student characteristics are important determinants of e-learning performance and outcome (Dillon & Gunawardena, 1995; Leidner & Jarvenpaa, 1993; Nortvig et al., 2018; Volery & Lord, 2000). Recent research has examined the broad factors that impact user acceptance of e-learning (Cho & Tobias, 2016; B. C. Lee et al., 2009; Roca & Gagne, 2008). However, less empirical research has fully explored the relationship between the TAM and e-learning (Park et al., 2017). The majority of previous studies investigated what affects instructors' acceptance of e-learning tools (Fedynich, Bradley, & Bradley, 2015; Hu, Clark, & Ma, 2003; J. Lee, 2014; Myers, Bennett, Brown, & Henderson, 2004). Additionally, many educational institutions have linked e-learning with instructor motivation, such as willingness to incorporate e-learning and curriculum contents (B. C. Lee et al., 2009; Nortvig et al., 2018; Ryan et al., 2016). In this study, therefore, we attempt to add to the literature by investigating how TAM relates to e-learning. In other words, in response to the void of previous studies on the psychological factors for adopting e-learning, this study investigated intention to use e-learning by examining the TAM.

Technology Acceptance Model in e-learning

Davis (1986) developed the TAM to describe online tools or technologies and service-usage behavior (Davis, 1986, 1989). TAM describes and forecasts user perception and approach toward and acceptance of a new information technology, product, and service (Davis, 1989; Davis, Bagozzi, & Warshaw, 1989). Previous research has suggested that the TAM has been accepted with regard to the understanding of technology or service acceptance (Venkatesh, Morris, Davis, & Davis, 2003). A number of studies have also indicated positive correlations between user acceptance of specific technologies and their usage behavior (Kwon, Park, & Kim, 2014; Park, Kim, Kim, & Kwon, 2018). As per the theory of reasoned action from the field of social psychology, the outcome of a specified behavior is determined by the strength of one's intent to engage in the behavior along with that person's attitude about it (Fishbein, 1979; Madden, Ellen, & Ajzen, 1992).

According to previous literature on e-learning, the instructors' ability and commitment are key driving factors that affect student trust (Dillon & Gunawardena, 1995; Webster & Hackley, 1997). Perceived usefulness (PU), perceived ease of use (PEU), attitude (ATT), and intent to use (ITU) are also important factors that affect adoption of technology and services (Davis, 1989; Davis et al., 1989). Previous studies have referenced the TAM research model to predict technology adoption. The TAM has been an especially effective tool in examining user acceptance of mobile or Internet-based platforms (Chen, Lee, & Chen, 2005; Kwon et al., 2014; M. K. O. Lee, Cheung, & Chen, 2005; Liaw, Huang, & Chen, 2007; Rauniar, Rawski, Yang, & Johnson, 2014; Roca & Gagne, 2008; Sun, Tsai, Finger, Chen, & Yeh, 2008).

Existing studies using TAM have proposed the reliability and trustworthiness of TAM in analyzing user perceptions (Park, 2013). TAM research has confirmed a broad range of novel technologies, service tools, and information communication instruments (Park & del Pobil, 2013; Park et al., 2017). However, few studies have concentrated on understanding the adoption of e-learning (Park et al., 2016).

Research model and hypotheses

Research model

Based on the previous TAM and e-learning literature, we suggest that research is needed to analyze the intent to use e-learning. The research model consists of four independent factors, two key variables, and a final dependent variable (intent to use e-learning). The four independent variables were chosen through in-depth interviews with 30 users and students who had experienced e-learning in South Korea. Participants were asked to write the motivational factors that affected their use of e-learning.

The four independent variables were instructor characteristics, teaching materials, perceived mobility, and perceived connectedness. *Teaching materials* are defined as teaching contents that may be more or less suited to e-learning (Lancellotti et al., 2016; B. C.

Lee et al., 2009). *Instructor characteristics* is a measure of the extent to which instructors provide feedback, guidance, and consideration for learners (B. C. Lee et al., 2009; Park & Kwon, 2016). Learners also enjoy interacting with other students and sharing knowledge through e-learning (Montrieux, Vangestel, Raes, Matthys, & Schellens, 2015). In this research, *perceived connectedness* is defined as the extent to which learners feel they are connected with other people, contents, and resources (Park & Kwon, 2016; Shin, 2010; Shin & Kim, 2008). Learners' feelings of connection to other learners could be positively related to intent to use e-learning. Finally, *perceived mobility* is defined as users' awareness of the portability of a certain service or technological environment (Huang, Lin, & Chuang, 2007; Kwon et al., 2014). Mobility allows swift response, convenient use, and convenient access to online services through Internet-based networks anytime and anywhere. Perceived mobility thus positively impacts perceived ease of use (Liang, Huang, Yeh, & Lin, 2007).

PU and PEU are the two key variables in this study. PU is the extent to which learners are convinced that a service or system will improve their outcomes (Davis, 1989; Park & Kwon, 2016). PEU is the degree to which users trust that utilizing a certain e-learning tool will be convenient and useful (Davis, 1989; Kwon et al., 2014). TAM theory and related literature indicate that PU is an important factor that affects intent to use e-learning (B. C. Lee et al., 2009; Park et al., 2017; Shin & Choo, 2011). In this research, ITU is the dependent variable. The research model is shown in Figure 1.

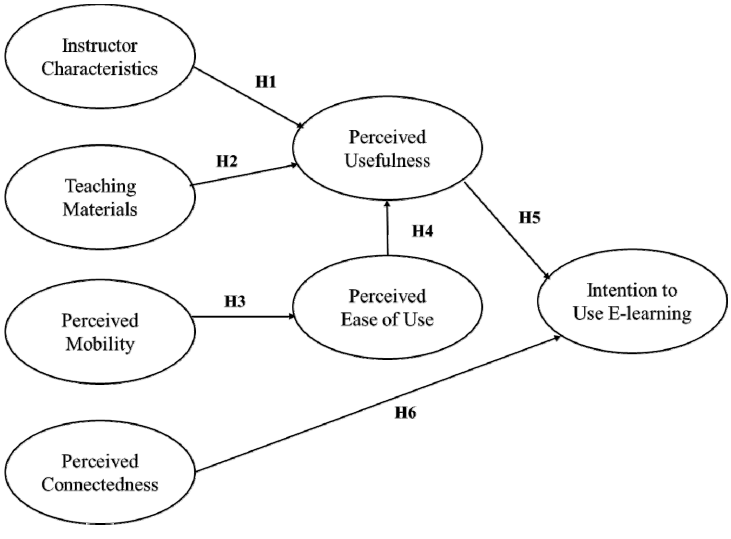

Figure 1. Proposed research model.

Hypotheses

Hypothesis 1. B. C. Lee et al. (2009) suggest that instructors' characteristics and teaching materials affect PU. In particular, the instructor's guidance style impacts learners' motivation, active participation, and the positivity of their attitude toward e-learning environments (J. Lee, 2014; Park & Kwon, 2016; Webster & Hackley, 1997). Also, some education and TAM studies have suggested that instructors' competencies are positively related to two outcomes: perceived use of e-learning and academic performance (J. Lee, 2014; Park & del Pobil, 2013). Based on this logic, the following hypothesis is suggested:

H1. Instructors' characteristics relate positively to learners' PU of e-learning.

Hypothesis 2. Previous studies demonstrated that the learning level on demand positively predicts perceived usefulness (Lederer, Maupin, Sena, & Zhuang, 2000; Nortvig et al., 2018). In e-learning environments, learner-oriented contents and services that accurately supply learners with a level of understanding will promote PU (Lancellotti et al., 2016; Park & Kwon, 2016). Specifically, course design impacts learner enjoyment, achievement, and their perceived use of learning system (Gray & Diloreto, 2016; J. Lee, 2014). Therefore, the following hypothesis is suggested:

H2. Teaching materials relate positively to learners' PU of e-learning.

Hypothesis 3. Perceived mobility (PM) positively impacts the PEU of mobile-oriented, tool-based environments (Kwon et al., 2014; Siau & Shen, 2003). PM allows quick, simple, and adaptive learning through online networks, such as wireless system (Gray & Diloreto, 2016). For example, Park and del Pobil (2013) showed that perceived rapid system quality is associated with online service usage. PM is also related to user satisfaction and quality level in a mobile-based scenario (Huang et al., 2007; Kwon et al., 2014). The following hypothesis is proposed:

H3. PM relates positively to PEU in e-learning.

Hypothesis 4. According to TAM research, PEU affects PU directly or indirectly (Venkatesh & Davis, 2000). Park et al. (2017) proposes that PEU is one of the most important factors of PU and satisfaction with online systems. Based on previous studies, this study proposes that PEU positively impacts PU in e-learning environments (Pituch & Lee, 2006). Therefore, the following hypothesis is suggested:

H4. PEU regarding e-learning positively impacts PU of e-learning.

Hypothesis 5. PU determines learners' use intentions concerning a specific technology or services (Davis et al., 1989). Prior study has demonstrated that PU positively affects

intent to use e-learning tools (Liaw, 2008). As the positive relationship between PU and intention to use has been established (Davis, 1989; Park & Kwon, 2016; Park et al., 2017). The following hypothesis is proposed:

H5. Learners' PU positively impacts their intent to use e-learning.

Hypothesis 6. Perceived connectedness (PC) is a key factor that affects users' intent to use the e-learning environment. Individuals prefer to share knowledge through interacting with other students. E-learning systems are efficient environments for interaction with learners and instructors, and users can subsequently benefit from interactive learning tools based on active feedback (Gray & Diloreto, 2016; Jaggars & Xu, 2016; Jennings & Angelo, 2006; Muirhead, 2004). Connectedness with other learning resources and instructors also contributes to the user's intent to use e-learning (Kwon et al., 2014; Shin & Kim, 2008). The following hypothesis is suggested:

H6. PC positively impacts intent to use e-learning.

Research method

Data collection and measurements

This study used a cross-sectional survey. A survey was conducted at a university in South Korea in May 2016. The subjects were undergraduates enrolled in management courses, who all had experience using e-learning curriculum and contents (n = 213). All participants in the data collection had experience of at least five online courses and using e-learning (Gray & Diloreto, 2016). First, in-depth interviews with 30 students with e-learning class participation experience were conducted to validate the research variables. Then, data related to the variables were collected via survey. Two translators carefully translated items from English to Korean, and two academic professors of business administration and educational research reviewed the items. The survey was distributed to 260 students, and complete responses were received from 213, for a total response rate of 81.9% (82 women and 131 men). The average age of respondents was 22, and all were of Korean nationality.

Table 1
Sample Demographics (n = 213)

Item	Frequency	%
Gender		
Male	131	61.5
Female	82	38.5
Age		
19-20	71	33.3
21-22	71	33.3
23-24	54	25.3
25~26	15	7.0
26+	2	1.1
Year in college		
Freshman	80	37.6
Sophomore	79	37.1
Junior	28	13.1
Senior	26	12.2

Measurement items were adopted from prior validated research. The study model consisted of seven variables: instructor characteristics, teaching materials, perceived mobility, perceived connectedness, perceived usefulness, perceived ease of use, and intent to use e-learning. Survey participants responded on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Table 2 lists all measurement items.

Table 2
Measurement: Questionnaire Items

Construct	Items	Measures
Instructor characteristics	IC1	The instructor provides high-quality instruction.
	IC2	The instructor provides information on learning progress.
	IC3	The instructor delivers instructions clearly.
Teaching materials	TM1	E-learning provides me with sufficient teaching materials.
	TM2	E-learning provides me with teaching materials that are easy to use.
	TM3	E-learning provides me with teaching materials that fit with the learning objectives.
Perceived mobility	PM1	Mobility is one of the most outstanding advantages of e-learning.
	PM2	It is convenient to use e-learning context anytime-anywhere.
	PM3	The mobility of e-learning makes convenient use possible.
Perceived connectedness	PC1	I feel nice when I can access e-learning at my convenience.
	PC2	I feel like being connected to the real classroom because I can see feedback that I want.
	PC3	I feel emotionally comforted because I can learn something interesting with e-learning.
Perceived usefulness	PU1	E-learning improves my learning performances.
	PU2	E-learning helps me accomplish my learning effectively.
	PU3	E-learning provides useful services and knowledge to me.

Construct	Items	Measures
Perceived ease of use	PEU1	E-learning methods are easy to understand.
	PEU2	E-learning is easy to use.
Intention to use e-learning	IUE1	I prefer e-learning to traditional learning.
	IUE2	I will recommend e-learning classes to other learners.
	IUE3	I am willing to participate in other e-learning opportunities.

Note. From Davis (1989), Huang et al. (2007), B. C. Lee et al. (2009), Nowak & Biocca (2003), Shin & Shin (2011), Yenisey, Ozok, & Salvendy (2005).

Results

Model validation

Table 3 shows the results of confirmatory factor analysis and reliability testing. The validation method suggested by Fornell and Larcker (1981) was analyzed for validity and convergent reliability (Hair, Black, Babin, & Anderson, 2006). The table summarizes internal validity and convergent reliability results. Cronbach's α was above the recommended reliability of 0.7, indicating high reliability and validity (Guilford, 1965; Hair, Anderson, Tatham, & Black, 1998). That is, all components of the study are considered reliable. Additionally, the factor loading value is above 0.30, and the model can therefore be considered trustworthy (Tabachnick & Fidell, 1996). Further, prior research has suggested that structural equation modeling (SEM) results require a composite reliability above 0.70 and average variance greater than 0.50 for studies with more than 200 samples. The results confirm items' stable validity. For SEM analysis, as recommend in previous studies (Anderson & Gerbing, 1988), this study acquired a data collection larger than 200 for reliability (Hair et al., 2006).

In addition, the overall fit indices of the research model were satisfactory. The fit indices of the research model were: $\chi 2/d.f. = 2.730$, incremental fit index = 0.918, normed fit index = 0.916, comparative fit index = 0.917, Tucker Lewis index = 0.901, and root mean-square error of approximation = 0.049 (Bentler & Bonett, 1980; Hair et al., 2006). All correlations between constructs should be lower than the values of the square roots of the Average Variance Extracted (AVE) values (Fornell & Larcker, 1981). This research model satisfied all these standards (see Tables, 3, 4, and 5).

Table 3

Internal Validity and Convergent Reliability

Construct	Item	Internal validity		Convergent reliability		
		Cronbach's alpha	Item-total correlation	Factor loadings	Composite reliability	Average variance extracted
Instructor characteristics	IC1	0.861	0.860	0.755	0.871	0.693
	IC2		0.897	0.838		
	IC3		0.896	0.867		
Teaching materials	TM1	0.829	0.871	0.699	0.856	0.673
	TM2		0.837	0.631		
	TM3		0.881	0.966		
Perceived mobility	PM1	0.872	0.856	0.741	0.751	0.900
	PM2		0.912	0.839		
	PM3		0.909	0.913		
Perceived connectedness	PC1	0.812	0.922	0.900	0.878	0.716
	PC2		0.914	0.914		
	PC3		0.706	0.534		
Perceived usefulness	PU1	0.921	0.915	0.839	0.930	0.815
	PU2		0.926	0.894		
	PU3		0.948	0.913		
Perceived ease of use	PEU1	0.907	0.956	0.897	0.912	0.839
	PEU2		0.957	0.922		
Intention to use e-learning	IUE1	0.882	0.901	0.833	0.926	0.740
	IUE2		0.907	0.876		
	IUE3		0.890	0.821		

Table 4

Fit Indices of the Research Model

Fit indices	Values	Recommended level	Sources
$\chi 2/df$	2.730 ($p < .01$)	< 3.0	Bagozzi and Yi (1988)
NFI	0.916	> 0.90	Bentler and Bonett (1980)
IFI	0.918	> 0.90	Browne and Cudeck (1993)
CFI	0.917	> 0.90	Fornell and Larcker (1981)
TLI	.901	> 0.90	Fornell and Larcker (1981)
RMSEA	0.049	< 0.080	Jöreskog and Sörbom (1996)

Table 5

Results of Discriminant Validity

Construct	1	2	3	4	5	6	7
1. Instructor characteristics	0.832						
2. Teaching materials	0.561	0.820					
3. Perceived mobility	0.317	0.209	0.949				
4. Perceived connectedness	0.375	0.268	0.736	0.846			
5. Perceived usefulness	0.567	0.432	0.501	0.527	0.902		
6. Perceived ease of use	0.557	0.478	0.494	0.456	0.738	0.915	
7. Intention to use e-learning	0.215	0.239	0.564	0.337	0.337	0.261	0.860

Hypotheses testing

SEM is known as a superior analysis method for investigating large samples of data (Anderson & Gerbing, 1988; Hair et al., 2006). For our data (n = 213), SEM is suited for the purpose of statistical power based on a large sample. As summarized in Table 6, all the hypotheses regarding e-learning and psychological motivation factors are supported, except H2 and H5. In greater detail, instructor characteristics (β = .226, CR = 4.042, p < .001) and perceived ease of use (β = .582, CR = 13.486, p < .001) positively impact perceived usefulness. Thus, hypotheses 1 and 4 are confirmed. Perceived mobility is also positively related to perceived ease of use (β = .573, CR = 8.275, p < .001), so hypothesis 3 is supported. Finally, perceived connectedness (β = .635, CR = 12.510, p < .001) was shown to have a positive influence on intent to use e-learning, therefore, hypothesis 6 is supported. However, teaching materials did not have a significant effect on perceived usefulness (H2, p > .1), and perceived usefulness did not have an impact on intention to use e-learning (H5, p > .1). Therefore, all hypotheses, excluding H2 and H5, were supported.

Table 6

Hypothesis Test Results

Hypotheses	β	SE	CR	p value	Supported
H1: IC → PU	0.226***	0.056	4.042	.000	Yes
H2: TM → PU	0.022	0.062	0.346	.730	No
H3: PM → PEU	0.573***	0.069	8.275	.000	Yes
H4: PEU → PU	0.582***	0.043	13.486	.000	Yes
H5: PU → IUE	0.021	0.059	0.360	.719	No
H6: PC → IUE	0.635***	0.051	12.510	.000	Yes

***p < 0.001. **p < 0.01. *p < 0.05.

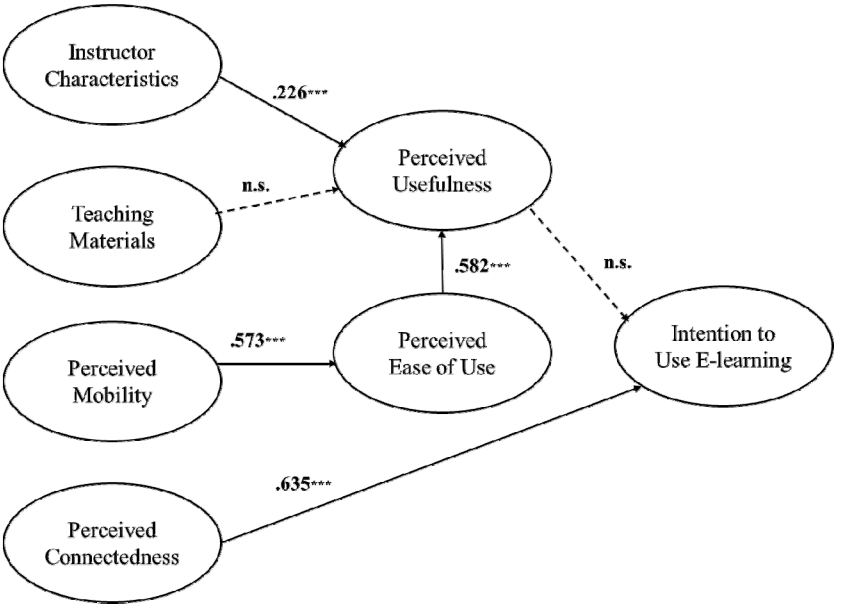

Figure 2. Summary of the results.

Discussion and conclusion

This study can provide a framework for adoption for examining how effective the motivational factors of learners are in accomplishing e-learning selection and increasing learner satisfaction. The findings suggest that perceived mobility, perceived connectedness, and instructor quality play a significant role for students in acceptance of e-learning systems and their context. This research demonstrates that learners who view the e-learning context as more convenient with regard to interaction and mobility are more likely to demonstrate intent to use e-learning. Additionally, students who view their instructors as likely to provide feedback and guidance are more likely to demonstrate intent to use e-learning. These findings are consistent with the theoretical background (Imamoglu, 2007; B. C. Lee et al., 2009; Liaw, 2008; Littlejohn, Falconer, & Mcgill, 2008). Therefore, this study suggests that institutions should focus on connectedness, mobility, and instructor support in order to strengthen adoption among South Korean learners.

The research results suggest practical contributions for e-learning educational policy researchers. From the educational policy viewpoint, the findings of this study can be utilized as an instruction for enhancing current e-learning infrastructures and launching new e-learning tools, researchers and providers should examine how to optimize intention to use from e-learning users (Nortvig et al., 2018). Based on the results, this study suggests knowledge for the Korean educational industry. The developers of e-learning services

should aim to provide mobile and a linked feedback community and the interfaces for the usability of the online learning platforms by considering learner-oriented strategy, rather than a learning material-oriented strategy in the e-learning services designing procedures (Lancellotti et al., 2016; J. Lee, 2014). This research presents that an easily connectable and mobilizing infrastructure is required to enhance the learners' intention to use and usefulness of e-learning (J. Lee, 2014; Potter, 2015; Ryan et al., 2016).

The lack of a significant relationship between teaching materials and perceived usefulness may be related to trends in e-learning platforms in South Korea. For example, using online teaching textbooks in e-learning environments is not common in South Korea. Thus, the majority of students may not feel the positive relationships among the teaching materials, perceived usefulness, and adoption of e-learning (B. C. Lee et al., 2009; J. Lee, 2014; Park et al., 2017). In addition, learners did not consider the teaching materials and usefulness of e-learning interface to be related to learning performance and merit, and rather determined connection with other students for collective intelligence (Lancellotti et al., 2016; Park & Kwon, 2016; Potter, 2015; Ryan et al., 2016).

There are several limitations to this research, which provide direction for future research. First, the sample is entirely South Korean. The determinants of an e-learning system may be different in South Korea than in other countries. E-learning is used worldwide, so the study results may not be applicable to other countries or educational environments. This study suggests evidence regarding e-learning adoption in the Korean educational context. Cross-national e-learning adoption research may reveal more conclusive statements regarding online education generally.

Second, this study did not consider any other variables that can be combined with the ultimate dependent variable, e-learning adoption. Critical factors may exist between TAM variables. For example, users' learning motivation (Nortvig et al., 2018), student identity (Barber, King, & Buchanan, 2015; Baxter & Haycock, 2014), curriculum design (Cheng & Chau, 2016; J. Lee, 2014), and educator-learner relationship (Cho & Tobias, 2016) could be analyzed to investigate the adoption of e-learning (Nortvig et al., 2018).

Third, the effect sizes were somewhat modest (Kwon et al., 2014). Future research conducted with a larger sample would provide more decisive results regarding the determinants of e-learning adoption as it relates to perceived usefulness, perceived ease of use, and learner motivation and behavior.

Despite these limitations, this research has important implications with respect to explaining the mechanisms by which learners choose to adopt e-learning systems and for understanding the relationship between e-learning and the TAM. We expect that the study results will stimulate continued research in investigating the determinants of e-learning adoption, as well as contribute to expanded utilization of TAM, which helps both e-learning practitioners and researchers study the growth of e-learning.

Address for correspondence

SangJib Kwon
Professor
College of Management & Economics, Gyeongju Campus, Dongguk University
123, Dongdae-ro, Gyeongju-si, Gyeongsangbuk-do, 38066, Korea
Email: risktaker@dongguk.ac.kr

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