

*Assessing Outcomes of Teacher Education:
Quantitative Case Studies From Individual
Taiwanese and Japanese Teacher Training
Institutions*

**Carrie Jia-Li Huang & W. L. Quint Oga-
Baldwin**

**The Asia-Pacific Education
Researcher**

ISSN 0119-5646

Asia-Pacific Edu Res
DOI 10.1007/s40299-014-0203-4



**THE ASIA-PACIFIC
EDUCATION
RESEARCHER**



 Springer

 Springer

Your article is protected by copyright and all rights are held exclusively by De La Salle University. This e-offprint is for personal use only and shall not be self-archived in electronic repositories. If you wish to self-archive your article, please use the accepted manuscript version for posting on your own website. You may further deposit the accepted manuscript version in any repository, provided it is only made publicly available 12 months after official publication or later and provided acknowledgement is given to the original source of publication and a link is inserted to the published article on Springer's website. The link must be accompanied by the following text: "The final publication is available at link.springer.com".

Assessing Outcomes of Teacher Education: Quantitative Case Studies From Individual Taiwanese and Japanese Teacher Training Institutions

Carrie Jia-Li Huang · W. L. Quint Oga-Baldwin

© De La Salle University 2014

Abstract Much of the research on assessing and comparing teacher education has focused on schools of education in westernized contexts. While teacher training programs in East Asia have received comparatively less attention than those in North America, Europe, and Australia, they may also offer practical insight through their similarities and differences. This study reports on an international quantitative comparison of undergraduate teacher education outcomes at individual Japanese and Taiwanese universities of education, viewed from both students' perspectives and outcomes on high-stakes qualification examinations. A sample of graduating students from one Japanese ($n = 408$) and one Taiwanese ($n = 525$) teacher training institution each completed surveys regarding the degree of preparation for teaching attributed to their undergraduate experience. Survey instruments were taken from previous research assessing teacher education programs. Exploratory and confirmatory factor analyses indicated good fit for a three-factor model in both contexts, with factors including preparation for understanding and interacting with students, preparation for designing curriculum and instruction, and preparation for assuming in-school responsibilities. Subsequent

MANOVA and univariate analyses indicated that the Taiwanese teacher training cohort perceived themselves significantly more prepared for teaching than the sample from the Japanese institution. Likewise, a larger portion from the Taiwanese institution chose to enter the teaching profession. Implications for teacher education practice based on institution- and policy-level differences are discussed.

Keywords Taiwan · Japan · Teacher education · Assessment · Outcomes

Introduction

Teacher education labors under the accusation of being highly varied, often impractical, and without strong oversight of its goals and outcomes (Levine 2006). In many schools of education, there is heavy emphasis on quality assurance and outcomes (Darling-Hammond 2006a), though other institutions may not provide the same synchronized course of study. While a wealth of literature exists on the subject of teacher education, with several high-ranking international publications dedicated to its study and no lack of policy level discussions (e.g., Ravitch 2007), the amount of actual data on the outcomes is surprisingly sparse (Hattie 2009 pp. 110–112).

Research on teacher education has indicated that teachers who attend traditional teaching programs show better classroom management abilities (Good et al. 2006). Preparation for a variety of teaching situations may shape teacher candidates' sense of readiness (Siwatu 2011). Teachers who received specific training for classroom management also felt more prepared for real life difficulties and classroom situations (O'Neill and Stephenson 2012). Other studies have shown the importance of feelings of

Carrie Jia-Li Huang, W. L. Quint Oga-Baldwin are equal co-authors.

C. J.-L. Huang
Office of Teacher Education and Careers Service, National
Taiwan Normal University, 162 Heping E. Road, Sec. 1, Taipei
106, Taiwan, ROC
e-mail: carrie0802@ntnu.edu.tw

W. L. Q. Oga-Baldwin (✉)
Department of English Language Education, Fukuoka University
of Education, 1-1 Akama Bunkyo Machi, Munakata, Fukuoka
811-4192, Japan
e-mail: qogab1@fue.ac.jp

professional self-efficacy for positive outcomes and teacher well-being (Tschannen-Moran and Woolfolk Hoy 2007). Finally, the degree of preparation teachers perceive may be largely based on the quality and integration of learning opportunities during tertiary studies (Schmidt et al. 2011).

In investigating the contributions of teacher education, appropriate assessment may help to understand program outcomes (Darling-Hammond 2006b). Assessment criteria for teacher education programs may include pre-service teachers' (PSTs) knowledge, teaching candidates' in-service performance, impacts on future student learning, and the number who enter and stay with the profession (Cochran-Smith 2001). This knowledge and performance may also be assessed in terms of teachers' attributions for how they came to possess their requisite degree of training (Housego 1992).

Based on the criteria of PSTs' knowledge and degree of preparation, this paper hopes to investigate teacher education in a cross-national setting. While the "let 1,000 flowers bloom" approach has been prevalent in the United States (Whitcomb et al. 2007, p. 197), the process in other countries with more centralized educational policy toward schools of teacher education may offer a different understanding of training educators. The current study uses teacher candidates' sense of preparedness and outcomes on teacher qualification examinations to investigate one Japanese and one Taiwanese teacher training institution.

Background: Teacher Education in Taiwan and Japan

Both Japan and Taiwan have followed similar trends over the past two decades. In both countries, teaching is still regarded as a relatively high status career, though a declining one (Fwu and Wang 2002; Shimahara 2002). Since the 1990s, both countries have been experiencing a rapid population decline, with a corresponding drop in the number of school-aged children. The reduced number of children has further lead to a decrease in the number of teachers necessary to staff schools. During this period, government de-regulation and liberalization agendas similar to those discussed by Cochran-Smith and Fries (2001) pushed schools of education in both countries to change into more generic comprehensive universities (Grossman 2004; MOE 2004). These policies also allowed all universities, public, and private, to train teachers and grant teaching licenses, creating greater market competition for teaching positions under an open system (Lee 2008; Iwata 2004). Looking at the generalities of each country's centrally managed teacher education requirements will provide context for assessing program outcomes.

Teacher Education in Japan

A 4-year bachelor's degree is the primary requirement to become a teacher in Japan. Universities of education in Japan, as publically funded autonomous corporate bodies, retain individual control over local governance while receiving government funding (Newby et al. 2009). Nationally, there are a total of eleven regionally organized teacher training institutions. As with all public university corporations in Japan, education schools are assessed by external audit of finances, outcomes, and curricula. Standards for teacher education are established by the Ministry of Education, Science, and Culture (MEXT 1997; Newby et al. 2009).

Most teacher education students are undergraduates. A small number enter teaching after attaining a professional (masters) degree. Japanese PSTs complete a wide variety of general education, pedagogy, and substantive coursework. These courses, specified by MEXT, include pedagogy, educational policy and theory, and pedagogical content knowledge (Shimahara 2002). The coursework is designed to prepare PSTs both to perform teaching-related tasks and to take the examination to become a full-time licensed teacher. Class credit requirements for a first class teaching license are listed in Table 1. These credits contribute to the 128 credits required for a bachelor of arts.

Teachers trained at universities of education in Japan account for roughly 65 % of elementary educators, 40 % of lower secondary, and 15 % of upper secondary teachers (Iwata 2004). Remaining percentages come from public and private comprehensive universities, which allow teachers to enter the field through an open licensing system (Shimahara 2002). Following policies to promote market-based competition, the open system was designed improve outcomes for national and private universities (Iwata 2006). Increasing concern with issues of quality assurance in higher education (Amano and Poole 2005; Newby et al. 2009) has put pressure on teacher training programs to increase the academic rigor and real-world skill attainment among graduates (Iwata 2004).

Students are expected to complete 3–5 weeks of practicum experience in training schools during their third and

Table 1 Licensing credit requirements for Japanese teacher education university graduates

Level	General education/ liberal arts	Pedagogy	Subject specialization	Total
Kindergarten/Pre-K	8	35	6	49
Elementary	8	41	8	57
Lower Secondary	8	31	20	59
Upper Secondary	8	23	20	51

fourth years. During practicum, PSTs work with an experienced teacher to generate lesson plans and teach observed lessons (Shimahara 2002). Practice teaching is assessed through classroom observations and reflective journals, rated by both university and cooperating school faculties. Students who complete the practicum on top of the requisite coursework and bachelor's degree requirements are granted teaching licenses.

Hiring into full-time status as teachers requires passing a high-stakes, multiple stage teacher qualification examination. The Teachers Employment Selection Exam (TESE) is a locally run test involving both written and interview components designed to examine the applicants' professional knowledge, lifestyle, beliefs, and behavior (Lamie 1998). Tests are offered only once annually. Some of the criteria used to assess professional suitability are subject matter knowledge, familiarity with current educational policies, and ability to integrate with the existing local educational framework.

In general, induction into a teaching career is handled on the job after graduation. While there is a perception among both pre- and in-service teachers that actual teaching skill comes through experience (Howe 2005), trainees must also engage with class subject matter at a high level in order to pass the high-stakes TESE. Universities are expected to prepare students for entry into the workplace rather than train them to do a specific job (Hawley and Hawley 1997). As such, the main responsibility of schools of education is to train PSTs to pass the examination, though this perspective is slowly changing in response to student and employer demands (Newby et al. 2009). In preparing students for the TESE and ultimate rigors and demands of entering the profession, teachers, and administrators at Japanese teacher training institutions must achieve a balance of theory and practice to achieve positive outcomes on the qualification exam.

Teacher Education in Taiwan

Similar to Japan, all teacher candidates must acquire a bachelor's degree. Since the enactment of the Teacher Education Act of 1994, teachers trained at universities of education in Taiwan account for roughly 50 % of elementary teachers and 42 % of secondary teachers (MOE 2013). The remaining percentages come from public and private comprehensive universities, in promotion of open market competition in the tertiary education system. As all universities of education are under the direction of the Taiwanese Ministry of Education (MOE), teacher training curricula must receive government approval. Qualification exams and teacher education program evaluation are used to ensure quality, responding to marked-oriented reforms for teacher education (Wu et al. 2011). Since 2005,

qualification has been managed through a high-stakes examination created and managed by the Taiwanese government. Standards for teacher accreditation are based on United States policies related to those established by the National Commission on Teaching and America's Future (NCTAF 1996), including mechanisms for quality control such as accreditation, licensing, certification, and in-service training (Chang et al. 2007). According to Tang (2007), teacher education coursework has high commonality in different institutes. Teacher curricula were further aligned with the teacher qualification test to allow the largest number of teacher education students possible to enter the teaching profession.

As in Japan, teacher quality is managed through educational legislation designed to ensure a knowledge base. Under the Teacher Education Act (MOE 2005), program accreditation is contingent upon a balanced curriculum of liberal arts, education, and substantive coursework. These required education courses include foundational educational theories, pedagogy, pedagogical content knowledge, and teaching practice preparation (Lee 2008). No mandated minimum credit requirements exist for substantive fields of study, though students must complete 128 credits to earn a bachelor's degree. Table 2 shows the required minimum education and liberal arts credits for each licensing level.

Students who fulfill the requisite credits enter a half-year practicum. During practice teaching, responsibilities to be assessed include teaching (45 %), mentorship (30 %), administrative (15 %), and training activities (10 %). Assessments are scored with equal weight by both the university faculty and cooperating schools. Candidates who satisfactorily complete the practicum and are awarded a teaching license may take the Teacher Employment Selection Examination. The Taiwanese TESE also involves a written exam, demonstration lesson, and interview (Yen 2004).

As in Japan, Taiwanese teacher education is overseen by the MOE and driven by market patterns and competition. Unlike Japan, undergraduate programs require a longer and more carefully managed in-school practicum experience.

Table 2 Licensing credit requirements for Taiwanese teacher education university graduates

Level	General education/liberal arts	Education	Total
Kindergarten/Pre-K	28	48	76
Elementary	28	40	68
Secondary	28	26	54
Special education	28	40	68

The Current Research

In investigating pre-service teacher preparation in both Taiwan and Japan, this research hopes to address some of the quality assurance issues both in terms of teacher education candidates' preparedness for professional practice as well as hiring upon graduation. Previous research indicates differences in motivation to enter teaching and perceptions of professional ability across cultural contexts (Klassen et al. 2009; Watt et al. 2012), and thus looking students' perceptions of their learning in university may offer additional information on students who enter the profession. In this study, two teacher training institutions were used as cases to answer the following research questions:

- (1) What factors comprise teacher education graduates' feelings of preparation for teaching in selected Japanese and Taiwanese institutions?
- (2) What differences in these factors may be found between and within the cohorts from the selected Japanese and Taiwanese institutions?

Methods

Instruments

In order to assess perceptions of professional preparation for teaching, we elected to use the instrument implemented by Linda Darling-Hammond (Darling-Hammond 2006b) to assess the redesigned Stanford Teacher Education Program. The 36-item survey was designed to measure self-assessment of teacher preparation with regard to five specific competencies necessary for thriving in school environments, looking specifically at teachers' ability to (1) design curriculum and instruction, (2) support diverse learners, (3) use assessment to guide learning, (4) create a productive classroom environment, and (5) develop professionally (Darling-Hammond et al. 2002). Surveys were translated into both Japanese and Chinese, and checked through back-translation by bilingualized native speakers of both target languages and English. Items were then reviewed by in-service teachers to ensure the real-world validity of the items. In the pilot phase, teachers agreed that the items represented the demands of their jobs to a high degree.

In order to assess success on the high-stakes teacher selection tests, exam results were marked according to the following outcomes: (4) full pass, (3) passed written test only, (2) did not pass written test, (1) did not attempt the test.

Sample

Using a quantitative case study methodology, this study compared the professional preparation and outcomes from two specific teacher training universities, Fukuoka University of Education (FUE) in Japan and National Taiwan Normal University (NTNU) in Taiwan. While these cases represent single universities, rather than the state of teacher training in an entire country, they offer a comparison of two institutions working under the policies, practices, and regulations of their respective countries. While the specific results here may not generalize beyond these universities, the cases show a snapshot of teacher training practices and outcomes in East Asia.

The sample from Fukuoka University of Education consisted of 408 students, with 179 preparing as primary teachers, 91 training to be secondary teachers, 28 pre-service special education teachers, and 110 liberal arts/lifelong learning majors, representing 63.9 % of the graduating students. Following the legal and cultural trends outlined above, the cohort included students from non-teacher education majors. While differences from other institutions in content and focus at the teacher and class level exist, policy and institutional practices conform to other Japanese teacher training institutions (International Consortium of Universities of Education in East Asia, 2011).

The sample from National Taiwan Normal University included 525 pre-service secondary school trainees. These students represent 33.9 % of the graduating class, representing the majority of teacher trainees. As noted, while different Taiwanese teacher training programs may display some degree of variance in their implementation, NTNU represents one of the seven nationalized teacher training institutes, and as such has a close relationship with the MOE.

The FUE sample was collected in the fall of 2011 after results were posted from the Japanese teacher qualification examination. Japanese surveys were distributed and collected with the assistance of students' faculty advisors. The Taiwanese sample was collected by online survey in May 2012. Prior to the survey, the respondents had completed their teacher qualification examination in March 2012.

Analysis

Research Question 1: To investigate the degree to which students at each teacher training school feel prepared to enter the teaching profession, this study used exploratory and confirmatory factor analysis (EFA and CFA, respectively) to find the latent factors associated with teacher preparation. The data management and EFA procedures

were conducted in Stata 12 (StataCorp 2011), then imported to MPlus for confirmatory measures. The original model hypothesized the five factors indicated in Darling-Hammond's work on assessing teacher programs (design curriculum and instruction; support diverse learners; use assessment to guide learning; create a productive classroom environment; develop professionally; Darling-Hammond 2006b). Following recommended validation procedures (Muthén and Muthén 2009), the FUE sample was randomly split in half and investigated using exploratory procedures to create a viable model hypothesis. A parallel analysis was run to confirm the number of factors to be included in CFA procedures on the second half of the data. Maximum likelihood extraction was used in the EFA for greatest replicability in structural equation models, and promax rotation was used to allow factor intercorrelation (Tabachnick and Fidell 2007). The cutoff for loading on a factor was pre-determined as a coefficient greater than .4 and twice the value on any other factor (Muthén and Muthén 2009). Items which failed this cutoff were removed from subsequent analyses.

The remaining half of the Japanese sample and the full Taiwanese sample were analyzed with CFA to verify the results. The CFA on both samples was run using Mplus 6.12 (Muthén and Muthén 1998–2011). Maximum likelihood robust extraction was used to account for non-normality. The chosen fit indices were the χ^2 statistic, root mean square error of approximation (RMSEA), comparative fit index (CFI), and the Tucker-Lewis index (TLI). Standard fit cutoffs (RMSEA <.08, CFI >.9, TLI >.9) were used to decide absolute and incremental fit (Kline 2010).

Research Question 2: Using multivariate analysis of variance (MANOVA) and follow-up univariate comparisons of mean scores for individual factors, we investigated differences in student ratings both between and within countries. Students' nationality and results on the respective teacher qualification test were used to compare the two centrally managed teacher training schools.

Results

Research Question 1: The initial exploratory factor analysis on half of the data from Japan indicated that the originally hypothesized factors from previous work on assessment of teacher education programs (Darling-Hammond 2006b) did not fit the data well. Many items correlated poorly or contributed to unintelligible data. In further investigation of the data, a parallel analysis and scree plot inspection, available in Fig. 1, indicated a possible three- or four-factor model. Re-running the full data set under three- and four-factor parameters similarly revealed a poor fit to the data. Items were then removed based on weak loading

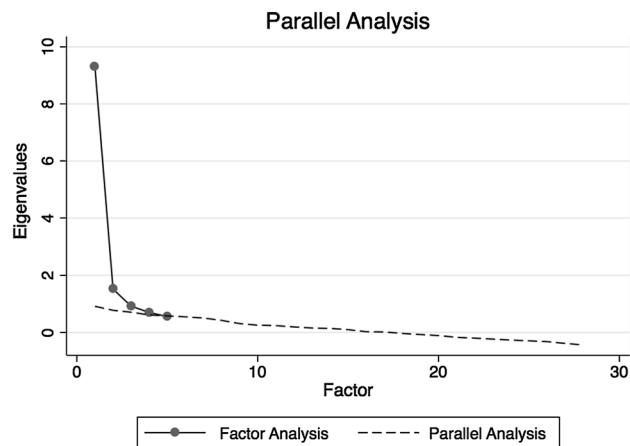


Fig. 1 Parallel analysis runs against the scree plot of the initial EFA

coefficients or high cross-loading values. Removing these poorly fitting items from the original 36, we were able to demonstrate simplex structure for three factors using 12 items. Decisions were made in conjunction with consideration for the item wordings and the formation of logically consistent factors. The functioning item wordings and their coefficients can be found in Table 3. All factor loading coefficients were above 0.4, and were at least double the loading on any other factor.

We interpret the above factors to indicate preparation for understanding and interacting with students (factor 1, henceforth US), preparation for designing curriculum and instruction (factor 2, henceforth CI), and preparation for assuming in-school responsibilities (factor 3, henceforth IR). Cronbach's alpha scores for each of these latent factors was found to be acceptable, US = 0.77, CI 0.75, IR 0.78.

In the confirmatory factor analysis conducted on the second half of the Japanese sample verified the three-factor solution as valid. The model fit was deemed acceptable, $\chi^2(62) = 67.658$, ns, RMSEA = 0.041 (90 % CI 0.009, 0.064), CFI = 0.958, TLI = 0.947. Final verification of the model using the Taiwanese sample demonstrated similarly strong fit, $\chi^2(62) = 130.619$, ns, RMSEA = 0.055 (90 % CI 0.043, 0.066), CFI = 0.966, TLI = 0.957. The standardized coefficients, factor correlations, and descriptive statistics are for both the Japanese and Taiwanese samples are shown in Tables 3 and 4.

In the Japanese sample, the range of measurement coefficients was from 0.48 to 0.7 for the US factor, from 0.54 to 0.64 for the CI factor, and from 0.63 to 0.76 for the IR factor. The Taiwanese sample generally showed higher loadings, 0.71–0.84 (US), 0.66–0.76 (CI), 0.79–0.81 (IR). Coefficient alpha for each factor showed good reliability for the NTNU sample, 0.84 for each individual factor, respectively. The FUE sample was on the borderline of acceptability, US = 0.69, CI 0.73, IR 0.72, but still satisfactory.

Table 3 Factor loading coefficients for the final three-factor model

Anchor: How well do you think your teacher preparation prepared you to...	Factor 1 Understanding and interacting with students (US)	Factor 2 Designing curriculum and instruction (CI)	Factor 3 Assuming in-school responsibilities (IR)
Understand how factors in the students' environment outside of school may influence their life and learning	<u>.74</u>	.09	-.05
Use a variety of assessments (e.g., observation, portfolios, tests, performance tasks, anecdotal records) to determine student strengths, needs and programs	<u>.68</u>	-.11	.08
Give productive feedback to students to guide their learning	<u>.58</u>	.24	-.04
Understand how students' social, emotional, physical, and cognitive development influences learning	<u>.4</u>	.12	.19
Develop curriculum that builds on students' experiences, interests and abilities	.02	<u>.65</u>	.13
Teach the concepts, knowledge, and skills of your discipline(s) in ways that enable students to learn	-.07	<u>.61</u>	-.09
Evaluate curriculum materials for their usefulness and appropriateness for your students	.12	<u>.55</u>	-.04
Use instructional strategies that promote active student learning	.18	<u>.53</u>	.1
Use knowledge of learning, subject matter, curriculum, and student development to plan instruction	.11	<u>.41</u>	.06
Assume leadership responsibilities in your school	.02	.01	<u>.83</u>
Plan and solve problems with colleagues	-.11	.03	<u>.78</u>
Resolve interpersonal conflict	.18	.06	<u>.51</u>
Cronbach's alpha coefficient	.77	.75	.78

Highlighted coefficients indicate selected factor loadings ($n = 201$)

Table 4 Comparison of FUE and NTNU CFA loadings for the three factor model

Anchor: How well do you think your teacher preparation prepared you to...	Factor 1: US Japan/Taiwan	Factor 2: CI Japan/Taiwan	Factor 3: IR Japan/Taiwan
Understand how factors in the students' environment outside of school may influence their life and learning	.57/.77		
Use a variety of assessments (e.g., observation, portfolios, tests, performance tasks, anecdotal records) to determine student strengths, needs and programs	.48/.84		
Give productive feedback to students to guide their learning	.70/.71		
Understand how students' social, emotional, physical, and cognitive development influences learning	.67/.72		
Develop curriculum that builds on students' experiences, interests and abilities		.62/.75	
Teach the concepts, knowledge, and skills of your discipline(s) in ways that enable students to learn		.54/.66	
Evaluate curriculum materials for their usefulness and appropriateness for your students		.64/.76	
Use instructional strategies that promote active student learning		.57/.68	
Use knowledge of learning, subject matter, curriculum, and student development to plan instruction		.59/.75	
Assume leadership responsibilities in your school			.76/.81
Plan and solve problems with colleagues			.67/.80
Resolve interpersonal conflict			.63/.79
Cronbach's alpha coefficients	.69/.84	.73/.84	.72/.84

Research Question 2: Having confirmed the salient latent variables relating to teacher preparation in each country, we used these factors as justification in data

reduction in order to explore differences between and within the two schools. Using the mean scores from the three main factors, a MANOVA test indicated a significant

Table 5 Correlation matrix of latent variables for <<Japanese University Name>> and <<Taiwanese University Name>>

Factor	Japan (n = 207)			Taiwan (n = 525)		
	1	2	3	1	2	3
1. US	–			–		
2. CI	.83	–		.91	–	
3. IR	.67	.54	–	.82	.68	–
Mean	3.90	4.17	3.39	4.57	4.68	3.96
SD	.79	.71	.98	.73	.73	1.04

difference between the two institutions profiled, Pillai's trace = 0.1631, $F(3, 925) = 60.07$, $P < 0.00$. Univariate comparisons at the country level showed similar significant differences for all three factors, US, $F(1, 931) = 178.82$, $P < 0.00$, eta-squared = .16, CI, $F(1, 928) = 111.18$, $P < 0.00$, eta-squared = 0.11, and IR, $F(1, 930) = 73.99$, $P < 0.00$, eta-squared = .07. As seen by the descriptive statistics in Table 4, the Taiwanese sample reported significantly higher perceptions of preparation for teaching at almost all levels (Table 5).

Looking more specifically at the different profiles based on the results of the teaching examination, we see no significant difference between the groups at FUE, Pillai's trace = 0.0224, $F(9, 1200) = 1$, $P = 0.43$, though the groups did differ significantly at NTNU, Pillai's trace = 0.0323, $F(9, 1563) = 1.89$, $P = 0.05$. These results are visualized in Fig. 2, which shows a greater variability for the Taiwanese sample, and remarkably similar scores for the Japanese sample. Interestingly, the Taiwanese candidates who did not attempt the examination reported the highest feelings of preparation. Table 6 provides the descriptive statistics, including confidence intervals and sample sizes for each group.

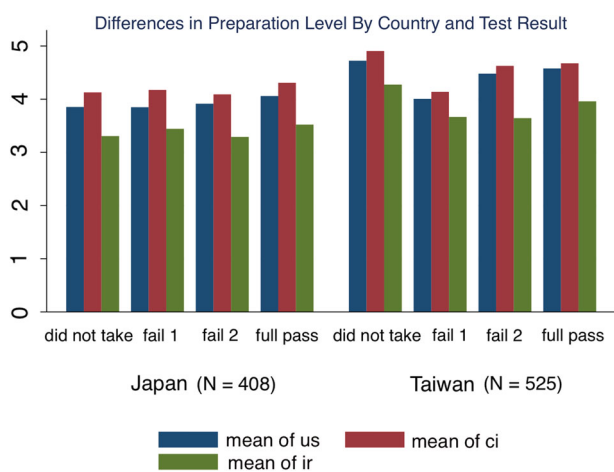


Fig. 2 Differences in preparation level by country and test result

Specific differences between successful and unsuccessful candidates in both countries further illustrate differences in feelings of preparation for teaching. The largest meaningful differences may be seen in successful and unsuccessful candidates. Over a third of the Japanese sample, 142 out of the total 408, elected not to take the test. At the same time, five times as many from Taiwan received a full pass, 463 of the 525 candidates, compared to only 83 from the Japanese sample. Taiwanese scores for successful candidates were significantly higher than the Japanese sample as well, though showed smaller differences between scores for non-successful applicants.

Discussion

Research Question 1: The survey revealed 3 valid and identifiable factors across both contexts. While the original survey hypothesized 5-factors related to the California Standards for the Teaching Profession (Darling-Hammond 2006b), a 3-factor solution more closely resembles the data in both Japan and Taiwan. These differences may reflect both cultural and administrative differences between the California standards and Eastern countries. Further, unlike scales such as the Teacher Self-Efficacy Scales (Tschannen-Moran and Woolfolk Hoy 2007), the scales used in this research were used to assess highly localized programs of teacher education in the United States, which may differ quite strongly at different institutions even within the same state (Levine 2006). Though the factors differed significantly in content from the original instrument used to assess teacher programs, the results were similar across the investigated contexts, indicating good external reliability of the new simplified measures.

While all of the original factors were rated as important to work and life for in-service teachers, PSTs indicated that understanding and interacting with students, developing curriculum and instruction, and assuming in-school responsibilities were most comprehensible as factors in East Asia. Factors which are highly salient to North American society, such as “supporting diverse learners,” appear to be less crucial in largely monocultural Japan and Taiwan. As such, while schools of education in all three countries include coursework for equity and human rights, the emphasis on understanding heterogeneous students’ needs appears much more central to the original samples of teachers at Stanford University, but not so at Fukuoka University of Education or National Taiwan Normal University.

Interestingly, while other scales have found evidence for perceptions of classroom management ability as a method of measuring teachers’ self-efficacy in other contexts e.g., (Klassen et al. 2009; Tschannen-Moran and Woolfolk Hoy

Table 6 Mean and 95 % confidence intervals between and within countries

	Taiwan									
	Japan	Did not attempt (<i>n</i> = 142)	Fail test 1 (<i>n</i> = 118)	Fail test 2 (<i>n</i> = 65)	Full pass (<i>n</i> = 83)	Did not attempt (<i>n</i> = 34)	Fail test 1 (<i>n</i> = 13)	Fail test 2 (<i>n</i> = 15)	Full pass (<i>n</i> = 463)	
US	3.85 (3.74, 3.96)	3.84 (3.70, 3.99)	3.91 (3.68, 4.15)	4.06 (3.88, 4.23)	4.72 (4.52, 4.92)	4.01 (3.38, 4.63)	4.48 (4.24, 4.71)	4.57 (4.51, 4.64)		
CI	4.12 (4.01, 4.24)	4.17 (4.05, 4.29)	4.09 (3.89, 4.29)	4.31 (4.14, 4.47)	4.91 (4.68, 5.12)	4.13 (3.51, 4.76)	4.62 (4.42, 4.83)	4.67 (4.61, 4.74)		
IR	3.31 (3.15, 3.46)	3.44 (3.26, 3.62)	3.29 (3.04, 3.54)	3.52 (3.29, 3.75)	4.27 (3.92, 4.62)	3.66 (2.90, 4.43)	3.64 (2.89, 4.39)	3.96 (3.86, 4.05)		

2007), the original items for creating a positive learning environment did not correlate clearly with any of the factors, and were removed from the analysis due to poor fit. This contrasts with previous findings indicating that teacher training in western contexts better prepares students for classroom management and dealing with classroom difficulties (O’Neill and Stephenson 2012).

Differences between the original sample at Stanford and the FUE and NTNU samples may stem from program differences, as well as differences in educational policy and practice in Western and Eastern countries. One consideration on this finding should be the cultural elements of monocultural hierarchical societies in Eastern countries, wherein student respect for teachers is often a basic expectation of the classroom environment (Fwu and Wang 2002; Shimahara 2002). This may help to explain why factors involving multicultural learners, diverse student needs, and conceptions of classroom management may not converge in the same fashion across cultures (Howe 2005; Sternberg 2007).

Research question 2: Feelings of preparation among the NTNU sample were significantly higher than the sample from the Japanese university. This may relate to a combination of both government policies toward teacher education discussed previously as well as the way in which teachers are prepared at the local, institutional level. Students in Taiwan complete a longer and more intensive practicum, and thus may perceive greater readiness for the practical aspects of teaching; where Japanese students are only required to spend between 3 and 5 weeks in schools, Taiwanese policy requires that students spend 6 months. Previous research has indicated that these longer opportunities to learn in a professional setting may have an impact on teacher preparation (Schmidt et al. 2011). As noted above, policy practices and philosophies, such as credit requirements and market-oriented competition, are relatively similar between the two countries. While the qualitative local experience of the schools is necessarily different, the primary policy level attribution for the difference rests on the practicum experience and the details of its implementation.

The remarkably similar ratings by PSTs at FUE, regardless of their outcome on the test, indicates strong similarity in the training program. Students in this Japanese sample came from a mix of majors and courses, some students studying education and some focused on more general liberal arts, in line with current policies and orientations in higher education (Iwata 2004). While the students who passed rated themselves marginally higher, differences in their feelings of preparation were not statistically or practically significant. This may stem from liberalization policies for teacher education, designed to address demographic factors such as a shrinking need for

teachers (Grossman 2004; MEXT 1997). In generalizing the university mission and increasing diversification, the teacher education portion of the curriculum may also lose focus.

At the same time, the high number of candidates passing into teaching from NTNU compared with low number of candidates entering the profession from FUE may relate to candidates self-assessed preparedness. We may infer from the differences in scores that the perception of preparedness influences the desire to take the test. Competence beliefs have been shown to influence decisions to enter teaching (Tschannen-Moran and Woolfolk Hoy 2007; Watt et al. 2012). Further, the role of universities in Japan is often viewed as preparing students to enter the workplace (Hawley and Hawley 1997). PSTs from the institution in Japan may feel that learning more practice-oriented skills, such as classroom management and guiding learning in response to assessment, may not uniformly represent their teacher training experiences, though qualitative inquiry into this matter is necessary for confirmation.

While the Taiwanese sample demonstrated both higher preparation and numbers of students entering teaching, this is not enough to indicate a causal relationship between degree of preparation and students' desire to enter the profession. Future studies of undergraduate teacher preparation in these contexts should include motivational factors such as those suggested by the FIT-choice model (Watt et al. 2012) as predictors to control for students' internal desire to become teachers, as well as longitudinal consideration for students' intended career path.

Conclusions and Implications

The present study reported on PSTs' perceptions of their university's system of teacher preparation in order to assess program outcomes. Pre-service teachers at both institutions identified three factors, understanding and interacting with students, developing curriculum and instruction, and assuming in-school responsibilities, as recognizable factors in their teacher training. Samples from the two teacher training schools demonstrated recognizable differences on these factors. The sample from the Taiwanese university demonstrated higher perceptions of preparation and substantially greater numbers of students qualifying to become teachers. The Fukuoka University of Education sample assessed a lower degree of preparation, and subsequently demonstrated a significantly higher rate of students electing not to take the qualification examination. While governmental policies toward improving teacher preparation and promoting diversified educational roles for teacher training institutions in both countries are quite similar, localized methods of training teachers appear to differ. Of note, the government mandated half-year practicum (MOE 2005)

overseen by both National Taiwan Normal University and the respective cooperating training schools, stands in stark contrast to the standard 3- to 5-week practicum conducted at FUE. Our study furthers the idea that sense of preparedness relating to localized programs of instruction may influence the decision to enter teaching (Schmidt et al. 2011).

Some care must be taken in the interpretation of these results, as samples here come from only two teacher training institutions in each country, and thus may not represent the situation in all similar universities. Current policies in both countries allow schools of education to enact policies in response to local needs (Lee 2008; Iwata 2004). Indeed, just as in the US and other countries, regional practices may vary (Levine 2006). At the same time, government policies strongly influence all nationally funded schools of education in both countries, influencing operational decisions (Tang 2007; Newby et al. 2009). While institution level differences in local practices, university culture, and outcomes exist, it is beyond the scope of this research to say whether the centralized policies found in each country have a unifying or divisive effect on teacher candidates' self-perceptions and decisions to enter teaching.

Future studies of educational institutions should also consider longitudinal models of teacher preparation and pass rates in order to demonstrate year-to-year changes in cohorts of students. While the current study indicated clear similarities in PSTs understandings of the modified assessment scale and clear differences in high-stakes test outcomes, long term measurement is needed to indicate a clear relationships between feelings of preparation and examination results. Consideration will also need to be given to candidates entering teaching prepared by schools other than departments of education. Finally, a better knowledge of the qualitative experiences of teacher candidates in each country, including specifics of the local university culture as compared with other similar institutions, may offer a clearer understanding of how pre-service teachers react to their coursework and practicum experiences.

Acknowledgments The researchers would like to thank Chizuru Mori, James Baskind, and Hiroyuki N. Bovee for their assistance with the Japanese translation and back-translation of the items in this survey. We would also like to express gratitude to the anonymous reviewers for their helpful feedback.

References

- Amano, I., & Poole, G. S. (2005). The Japanese University in crisis. *Higher Education*, 50(4), 685–711. doi:10.1007/s10734-004-6372-y.
- Chang, S.-J., Fang, D.-L., Chiu, A.-L., & Lee, C.-H. (2007). The evaluation of institutions for teacher education: The evaluation

- system of NCTAF and its implications. *Kaohsiung Normal University Journal*, 22, 1–22. (in Chinese).
- Cochran-Smith, M. (2001). Constructing Outcomes in Teacher Education: Policy, Practice and Pitfalls. *Education policy analysis archives*, 9(11), n11.
- Cochran-Smith, M., & Fries, K. (2001). Sticks, stones, and ideology: The discourse of reform in teacher education. *Educational Research*, 30(8), 3–15.
- Darling-Hammond, L. (2006a). *Powerful teacher education*. San Francisco: Jossey-Bass.
- Darling-Hammond, L. (2006b). Assessing teacher education: The usefulness of multiple measures for assessing program outcomes. *Journal of Teacher Education*, 57(2), 120–138. doi:10.1177/0022487105283796.
- Darling-Hammond, L., Chung, R., & Frelow, F. (2002). Variation in teacher preparation: How well do different pathways prepare teachers to teach? *Journal of Teacher Education*, 53(4), 286–302. doi:10.1177/0022487102053004002.
- Fwu, B.-J., & Wang, H.-H. (2002). The social status of teachers in Taiwan. *Comparative Education*, 38(2), 211–224. doi:10.1080/03050060220140584.
- Good, T. L., McCaslin, M., Tsang, H. Y., Zhang, J., Wiley, C. R. H., Bozack, A. R., et al. (2006). How well do 1st-year teachers teach: Does type of preparation make a difference? *Journal of Teacher Education*, 57(4), 410–430. doi:10.1177/0022487106291566.
- Grossman, D. L. (2004). Higher education and teacher preparation in Japan and Hong Kong. *Nagoya Journal of Higher Education*, 4, 105–126.
- Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses in education*. London: Routledge.
- Hawley, C. A., & Hawley, W. D. (1997). The role of universities in the education of Japanese teachers: A distant perspective. *Peabody Journal of Education*, 72(1), 233–244.
- Housego, B. (1992). Monitoring student teachers' feelings of preparedness to teach and teacher efficacy in a new elementary teacher education program. *Journal of Education for Teaching: International research and pedagogy*, 18(3), 259–272. doi:10.1080/0260747920180304.
- Howe, E. R. (2005). Japan's teacher acculturation: Critical analysis through comparative ethnographic narrative. *Journal of Education for Teaching: International Research and Pedagogy*, 31(2), 121–131. doi:10.1080/02607470500127251.
- International Consortium of Universities of Education in East Asia. (2011). *The 8th International Symposium of Teacher Education Institutions in East Asian Countries Proceedings*. Seoul: Seoul National University of Education.
- Iwata, Y. (2004). *Recent trends on teacher education reform in Japan*. Paper presented at the International Conference on Teacher Education, Beijing, China. Retrieved from <http://www.u-gakugei.ac.jp/~currict/about/iwata.info/20041023beijing.pdf>.
- Iwata, Y. (2006). *Teacher education and Neo-liberalism—Japan and other countries*. Paper presented at the Second International Conference on Teacher Education, Shanghai, China. Retrieved from <http://www.u-gakugei.ac.jp/~currict/about/iwata.info/20061027shanghai.pdf>.
- Klassen, R. M., Bong, M., Usher, E. L., Chong, W. H., Huan, V. S., Wong, I. Y. F., et al. (2009). Exploring the validity of a teachers' self-efficacy scale in five countries. *Contemporary Educational Psychology*, 34(1), 67–76. doi:10.1016/j.cedpsych.2008.08.001.
- Kline, R. B. (2010). *Principles and practice of structural equation modeling* (3rd ed.). New York: The Guilford Press.
- Lamie, J. M. (1998). Teacher education and training in Japan. *Journal of In-Service Education*, 24(3), 515–534. doi:10.1080/13674589800200055.
- Lee, F.-J. (2008). Teacher education. *Education Yearbook of the Republic of China 2008* (pp. 241–287). Taipei, Taiwan: National Institute of Educational Resources and Research.
- Levine, A. (2006). *Educating school teachers*. Washington, DC: The Education Schools Project. Retrieved from <http://www.edschools.org>.
- MEXT (Ministry of Education, Culture, and Science, Japan). (1997). *Reform policies for a new era in teacher education*. Retrieved from http://www.mext.go.jp/b_menu/shingi/old_chukyo/old_shokuin_index/toushin/1315369.htm (in Japanese).
- MOE (Ministry of Education, Republic of China). (2004). *Number of Teachers Education Planning Program*. Taipei, Taiwan: Ministry of Education. (in Chinese).
- MOE (Ministry of Education, Republic of China). (2005). *Teacher Education Act*. Retrieved from: <http://english.moe.gov.tw/content.asp?CuItem=8560&mp=1>.
- MOE (Ministry of Education, Republic of China). (2013). *Yearbook of teacher education statistics Republic of China 2012*. Taipei, ROC: MOE. (in Chinese).
- Muthén, L. K., & Muthén, B. O. (1998–2011). *Mplus user's guide* (6th ed.). Los Angeles, CA: Muthén & Muthén.
- Muthén, L. K., Muthén, B. (2009). Exploratory factor analysis, confirmatory factor analysis, and structural equation modeling for continuous outcomes. *Mplus Short Courses*. Retrieved from http://www.statmodel.com/course_materials.shtml.
- National Commission on Teaching and America's Future. (1996). *What matters most: Teaching for America's future*. New York: National Commission on Teaching and America's Future.
- Newby, H., Weko, T., Breneman, D., Johanneson, T., & Maassen, P. (2009). *OECD Reviews of Tertiary Education*. Japan: OECD Publishing.
- O'Neill, S., & Stephenson, J. (2012). Does classroom management coursework influence pre-service teachers' perceived preparedness or confidence? *Teaching and Teacher Education*, 28(8), 1131–1143. doi:10.1016/j.tate.2012.06.008.
- Ravitch, D. (2007). Challenges to teacher education. *Journal of Teacher Education*, 58(4), 269–273. doi:10.1177/0022487107303325.
- Schmidt, W. H., Cogan, L., & Houang, R. (2011). The role of opportunity to learn in teacher preparation: An international context. *Journal of Teacher Education*, 62(2), 138–153. doi:10.1177/0022487110391987.
- Shimahara, N. K. (2002). *Teaching in Japan: A cultural perspective*. New York: Routledge Falmer.
- Siwatu, K. O. (2011). Preservice teachers' sense of preparedness and self-efficacy to teach in America's urban and suburban schools: Does context matter? *Teaching and Teacher Education*, 27(2), 357–365. doi:10.1016/j.tate.2010.09.004.
- StataCorp. (2011). *Stata Statistical Software: Release 12*. College Station, TX: StataCorp LP.
- Sternberg, R. J. (2007). Culture, instruction, and assessment. *Comparative Education*, 43(1), 5–22. doi:10.1080/03050060601162370.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston: Pearson Education.
- Tang, W. L. (2007). The dialogue between teacher education idea and practice: A survey on educational profession curriculum. In S. C. Chou & L. H. Cheng (Eds.), *The challenge and reflection of education innovations* (pp. 3–26). Kaohsiung: Li-Wei. (in Chinese).
- Tschannen-Moran, M., & Woolfolk Hoy, A. (2007). The differential antecedents of self-efficacy beliefs of novice and experienced teachers. *Teaching and Teacher Education*, 23(6), 944–956. doi:10.1016/j.tate.2006.05.003.
- Watt, H. M. G., Richardson, P. W., Klusmann, U., Kunter, M., Beyer, B., Trautwein, U., et al. (2012). Motivations for choosing

- teaching as a career: An international comparison using the FIT-Choice scale. *Teaching and Teacher Education*, 28(6), 791–805. doi:[10.1016/j.tate.2012.03.003](https://doi.org/10.1016/j.tate.2012.03.003).
- Whitcomb, J., Borko, H., & Liston, D. (2007). Stranger than fiction: Arthur Levine's educating school teachers—The basis for a proposal. *Journal of Teacher Education*, 58(3), 195–201. doi:[10.1177/0022487107300941](https://doi.org/10.1177/0022487107300941).
- Wu, C.-J., Huang, J.-L., & Chang, M.-W. (2011). The retrospect and prospect of teacher education policy in Taiwan. In National Academy for Educational Research (Ed.), *Retrospect and Prospect of China's Centennial Education* (pp. 1–20). New Taipei, ROC: Editor. (in Chinese).
- Yen, L.-C. (2004). The analysis on issues of methods for school teachers' qualification. *The theory and practice of teacher's qualification exam* (pp. 29–43). National Institute of Educational Resources and Research: Taipei, Taiwan.