

Developing and Validating a Survey of Korean Early Childhood English Teachers' Knowledge

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Received: October 8, 2015 Accepted: November 20, 2015 Online Published: November 23, 2015

doi:10.5539/elt.v8n12p170 URL: <http://dx.doi.org/10.5539/elt.v8n12p170>

Abstract

The main purpose of this study is to develop and validate a valid measure of the early childhood (EC) English teacher knowledge. Through extensive literature review on second/foreign language (L2/FL) teacher knowledge, early childhood teacher knowledge and early childhood language teacher knowledge, and semi-structured interviews from current early childhood English teacher, the initial survey questionnaire was developed. Then, think-aloud interviews were conducted with samples from four groups with different teaching experience as they took the survey to see whether or not they understood the survey questions and whether or not the survey questions/statements represented their professional knowledge accurately. Lastly, a finalized survey was distributed to 40 current early childhood English teachers (K-2) in Korea. The theoretical framework of teacher knowledge was drawn upon Grossman's (1999) "model of teacher knowledge" such as subject matter knowledge, general pedagogical knowledge, pedagogical content knowledge and knowledge of context. The data were analyzed by using descriptive statistics, Cronbach-alpha, and split-half. The findings will show subcomponent of teacher knowledge, characteristics of the participants and survey items' reliability. The implications of analyzing teacher knowledge survey to gain insight into developing curriculum in early childhood English teacher education.

Keywords: teacher knowledge, early childhood English teachers (K-2), teacher education, pedagogical content knowledge

1. Introduction

The importance of English Education for children has been recognized widely in countries where English is learned as a second/foreign language (Butler, 2015; Curtain & Dahlberg, 2010; Moon, 2009; Nikolov, 2009). However, the surge in interest in L2/FL education for young learners has not been matched by the number of studies that examined this area of research (Borg, 2015). In particular, Butler's (2015) recent review of teaching young language learners in East Asia has shown that empirical study of foreign language teaching and learning in the context is still limited.

A number of studies have demonstrated that adult and young language learners are different in the ways that they acquire language and attain fluency (Brown, 2000; Philp, Oliver, & Mackey, 2008; Pinter, 2011). Cognitive and biological factors explain some of these differences. Consequently, teachers of young learners need to have certain qualifications that teachers of adult learners may not need to have (Curtain & Dahlberg, 2010; Johnston, 2009). According to Nikolov (2009), teachers of young learners are expected to be proficient in their students' first language (L1) as well as in the target language, be familiar with the content and methodology of the general curriculum, and know the principles of how young children learn in general and how they learn languages in particular. Only a handful of studies have specifically mentioned the need for research in L2/FL teacher education of young learners (Borg, 2006; Moon, 2009; Pinter, 2011). Furthermore, the scarcity of information on what constitutes EC teacher knowledge is regrettable because it informs us on how to prepare effective teachers in EC language education. In Korea, where this measurement instrument was used following its validation, over 80% of Pre-K programs provide English classes (Park, 2009). At the same time, few teachers receive training in early childhood language education (Butler, 2015; Chen, 2011). Examining what these teachers know and need to know to be effective is a crucial step in the process of developing a national English curriculum for preschool and kindergarten, which does not currently exist, and preparing quality English language teachers of young

learners.

Therefore, the purpose of this paper is to delve into what teachers need to know about EC language education and develop a valid EC teacher knowledge survey. Based on a review of the literature, a survey questionnaire of what teachers think they know about EC language education was created and distributed to 40 teachers.

2. Theoretical Framework

Shulman's (1987) model of teacher knowledge has made a major contribution in the study of teacher knowledge by conceptualizing teacher knowledge, emphasizing subject matter knowledge and coining the term pedagogical content knowledge. Grossman's (1990) research into the knowledge base of teachers of six novice teachers of English guided by Shulman's theory provided empirical support for reducing the number of categories from seven to four: subject matter knowledge, general pedagogical knowledge, pedagogical content knowledge, and knowledge of context.

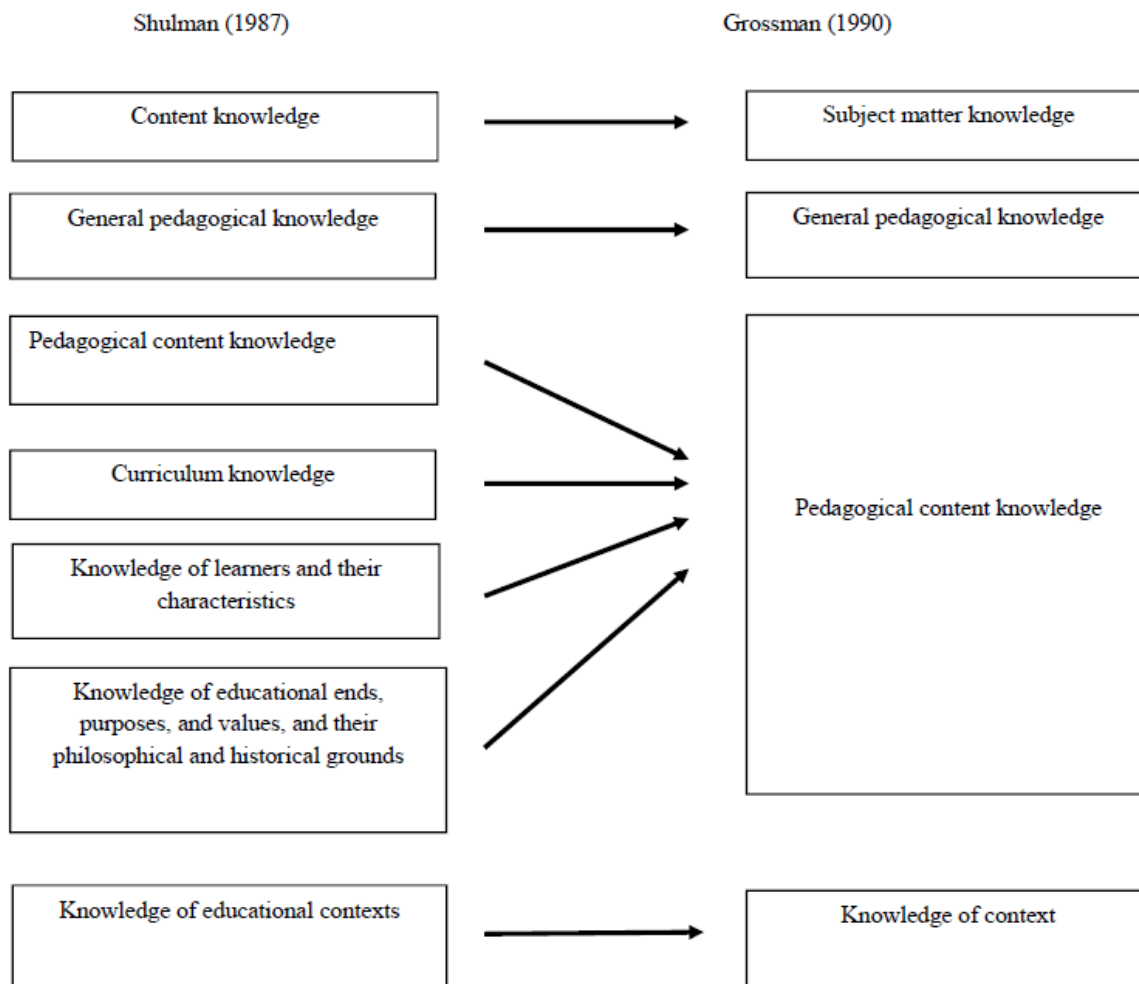


Figure 1. Comparison of Shulman and Grossman teacher knowledge models

According to Grossman, subject matter knowledge (SMK) refers to basic concepts and principles of the discipline that frame and evaluate claims within the field. Grossman indicates that subject matter knowledge includes knowledge of the content of a subject area as well as knowledge of substantive and syntactic structure of the discipline. Second, general pedagogical knowledge (GPK) refers to skills related to teaching. Some examples of pedagogical knowledge are academic learning time, wait time, small group instruction, and classroom management. In addition, knowledge and beliefs concerning learning, learners, and the aims and purpose of education are considered general pedagogical knowledge. The importance of general pedagogical knowledge was highlighted by researchers that found that teachers' general pedagogical knowledge promotes student achievement. Next, pedagogical content knowledge (PCK) refers to a teacher's knowledge of how to

transform content to fit a particular teaching context and situation. Curricular knowledge takes into account a student's developmental learning path and allows teachers to determine when students are ready to learn specific topics and concepts. An effective teacher knows how to make their subject matter knowledge accessible for students. Also, the notion of pedagogical content knowledge includes a teacher's awareness of children's background. Lastly, knowledge of context (KC) includes teachers' understanding of the teaching environment that may impact their instruction. This includes teacher awareness of school culture and parents' expectations. The four domains of teacher knowledge (subject matter knowledge, general pedagogical knowledge, pedagogical content knowledge, and knowledge of context) were used as a theoretical framework for this review aimed at identifying the components of each of these domains as they relate to the teaching of English for young learners.

With the above in mind, my research questions for this study are: 1) What constitutes the early childhood (EC) English teacher knowledge? And 2) How can early childhood (EC) English teacher knowledge be measured validly and reliably?

3. Method

3.1 Instrument

The initial instrument was developed by the researcher based on a review and synthesis of the literature on L2/FL teacher knowledge, EC teacher knowledge and EC language teacher knowledge. The initial version of the survey contained 68 items in three sections: Section A consisted of 40 items on EC English teachers' knowledge of teaching and children with a five-point Likert scale. Section B consisted of three open-ended questions about teaching concerns and challenges in order to examine teachers' in-depth opinions about teaching children and qualifications that EC language teachers should have. Section C consisted of 10 selected-response items and 6 open-ended questions to solicit participants' background information.

3.2 Validity

Validity refers to the degree to which the instrument measures what it has been designed to measure (Dörnyei & Taguchi, 2010). Three major facets of validity for a psychometric instrument include: Construct validity, Content validity, and Criterion validity. Although face validity is not regarded a technical characteristic of a measurement instrument, it was also considered in this study

3.2.1 Construct Validity

Construct validity demonstrates the extent to which the items on an instrument relate to theoretical concepts that underlie them (Brown, 2001). To establish construct validity, this study underwent substantive validity procedures including theoretical conceptualization, literature review, and creation of a research- and theory-based item pool. The first step was to conceptualize the construct of "teacher knowledge" based on Grossman (1990) and Shulman (1986, 1987). Once teacher knowledge definition has been developed, extensive and thorough literature review of research on L2/FL teacher knowledge, EC knowledge, and EC language knowledge was conducted to investigate subcomponents of each domain of teacher knowledge. In addition, the U.S. standards of EC teaching credentials, Teacher Knowledge Test (TKT): Young Language Learners (YL) and the Praxis II early childhood tests were analyzed. Therefore, the developed instrument is theory and research based. Next, an item pool was developed. Special attention was given to the wording of the items so that they would be accessible to classroom teachers.

3.2.2 Content Validity

Content validity is the other important aspect of the degree to which the various items in an instrument adequately represent the content of the various domains of the construct that they purport to evaluate (Raykov&Marcoulides, 2010). Content validity for the survey instrument was established by review of a panel of experts. The panel of experts, consisting of four faculty members, was asked to examine clarity, suitability and content validity of the instrument. I contacted four faculty members with expertise in language education, language teacher training, young language learners of EFL and TESOL. In addition, two of the faculty had expertise in the development and validation of survey questionnaires. I asked the four experts to evaluate the survey questions/statements for their relevance to the knowledge of EC language teacher by completing a Content Validity Review Form attached to the questionnaire and providing their comments and specific suggestions on the questionnaire itself. Based on the feedback from the panel of experts, some questions were reworded and additional items were added.

3.2.3 Criterion Validity

Criterion validity refers to the degree to which "there is a relationship between a given test's scores and

performance on another measure of particular relevance, typically referred to as criterion measures” (Furr& Bacharach, 2008, p.187). Concurrent validity and predictive validity can be evidence of criterion validity. This particular study was not able to establish concurrent validity as, to the best of the author’s knowledge, a well-established instrument that measures the same construct does not exist. Similarly, predictive validity, which is established by comparing the results of an instrument to some future characteristic or trait, could not be established in this study.

3.2.4 Face Validity

Face validity refers to the degree to which an instrument appears to be relevant to a specific concept as judged by non-experts such as test takers (Furr& Bacharach, 2008). Even though face validity is not a technical characteristic of a measurement instrument, it has its own unique function so other types of validity cannot be replaced (Brown, 2001). For this particular study, face validity plays a pivotal role with regards to two language issues pertaining to the items. First is a translation issue of some concepts that exist in English but not in the Korean language. The latter is the use of technical terms which classroom teachers may not be familiar with but inevitably had to be included in the survey. Indeed, Furr and Bacharach (2008) mentioned that the apparent meaning and relevance of an instrument’s content may influence a taker’s attitude, in this survey to take it more seriously and to be honest. Therefore, face validity was important here as it helped to resolve several language issues that may have affected a survey taker’s motivation and attitude.

For this study, face validity was established by asking two groups of non-experts to describe what they think the instrument appears to measure. Firstly, I asked three non-experts to take the survey and comment on its clarity and format. Then, I conducted a think-aloud process and collected data from a sample of four Korean focal teachers who represent a target teacher population for whom the survey was designed. These teachers were asked to think aloud as they took the survey to see whether or not they understood the survey questions and whether or not the survey questions/statements matched these teachers’ representations of their professional knowledge. Through think-aloud protocol, the researcher was able to discover appropriate terms for teachers to understand questions/statements properly. Think aloud data were used to revise and improve the content and format of the survey. The think aloud protocol is attached in Appendix A.

3.3 Reliability

Reliability refers to consistency of the survey items. Following the validation procedures described above, the revised version of the survey was examined for reliability. Writing clear questions plays a crucial role in constructing a valid and reliable survey questionnaire. Technical terms that might not be familiar to some of the teachers were avoided. Specific examples or elaborations on the technical terms were provided if the term was deemed necessary. The final version of the EC teacher knowledge survey questionnaire was examined to assess its reliability. A different approach to establish reliability can be used such as test-retest reliability, alternate forms reliability, and internal consistency reliability (Furr & Bacharach, 2008). The reliability test used in this study was internal consistency reliability including Cronbach alpha and split-half reliability. The Cronbach alpha is the most well-known form of internal consistency reliability coefficient. This provides level of consistency across the parts of measuring instrument. Similarly, split-half reliability runs for two subsets of instrument designed to assess same construct.

In order to establish reliability, the survey was administered in February of 2015 to 68 EC language teachers with a request to forward it to their colleagues. Following Dörnyei and Taguchi (2010), a cover letter describing the purpose of the research and link for free downloading adobe readers for interactive PDF survey accompanied the questionnaires. After one or two days an email reminder was given to teachers. Within five to seven days the first follow-up was conducted. After two to three days from the first follow-up starting date, a phone or email reminder was given. Then, the questionnaires were coded to identify respondents and to control non-response error. A total of 40 questionnaires were returned from 68 participants representing a response rate of 58.8%. The choice of sample size for pilot studies is debatable. Michael (1995) suggested that “samples with N’s between 10 and 30 have many practical advantages” (p. 101), including simplicity, ease of calculation, and the ability to test hypotheses. More recently, Johanson and Brooks (2009) recommended that 30 representative participants from the population of interest is a reasonable minimum requirement for a pilot study where the purpose is preliminary survey or scale development.

3.4 Data Analysis

3.4.1 Validity

Three types of validity were established in this study: construct validity, content validity, and face validity.

Construct validity was established through items being written based on theoretical conceptualization. Particularly, the procedures of construct validity were included with examining theoretical relationship in constructs and investigating the empirical relationship between the measures of constructs. Content validity was examined by four faculty members with expertise in the areas of EC teacher education and L2/FL teacher education. Their suggestions were tabulated and categorized. If at least two out of the four proposed a revision of an item, the corresponding change was made. All suggestions related to translation and addition of items were considered and carefully implemented into the revised survey. Additionally, some suggestions given by individual experts were considered and used to either revise or clarify the survey items. For instance, one expert suggested changing 'parents' expectation' to 'parents' motivation' under sub-section of KC. The intention of the question was to learn how much teachers know about the expectation that parents possess to English institute and/or teachers. Also, the term 'parents' motivation' may be interpreted differently by classroom teachers. In this case, the item was left unchanged. The face validity was established by three non-language education colleagues, who examined the format and clarity of the survey. Their written comments were tabulated and implemented if at least two out of three colleagues agreed on a specific change. In fact, those colleagues gave a variety of suggestions but little feedback on format (e.g., font, spacing). The suggestions from only one colleague were considered when the same issue was raised by at least one teacher who participated in survey validation think-aloud. In addition, a sample of Korean teachers elicited their thought while they took the survey. The transcribed think aloud data tabulated whether the teachers understood questions clearly. If they did not, I wrote down their suggestions for revising the items. The think-aloud data provided data on whether or not teachers' interpretation of questions matched my conceptualization of teacher knowledge through survey items. These data allow to differentiate between two possible reasons for the teachers' difficulties in understanding the items: (a) the item wording was not clear or too technical, and (b) the teacher does not possess sufficient specific target knowledge/skill. If the latter was the case, then the items were not changed.

3.4.2 Reliability

The Cronbach alpha and Split-half were used for reliability analysis of the Section A of the instrument. Sections B and C, which consist of questions regarding teacher concerns, challenges, and background information questions, were not assessed for reliability due to the fact that they contain open-ended questions and multiple-choice questions, where reliability is not a factor. When the completed questionnaires were returned, these data were first organized and summarized. The first stage of data analysis is referred to as the quantification stage. In this stage, all data that are in non-numerical categories were given codes in the form of figures of symbols that could be counted and added up for future tabulation, statistical analysis and interpretation. After coding and categorizing the collected data, the data were analyzed by SPSS 19.0 version for Windows. Reliability coefficients were calculated to establish the degree to which the questionnaire is internally consistent and reliable. Procedures used for validating the survey questionnaire are illustrated on the chart provided in Appendix B.

4. Results and Discussion

4.1 Validity

4.1.1 Construct Validity

Following an in-depth review of the literature on teacher knowledge in order to define and operationalize the construct of early childhood English teacher knowledge, I developed a research-based instrument designed to measure this construct. Grossman's (1990) 'model of teacher knowledge', which defines this construct in general terms as consisting of four components, subject matter knowledge, general pedagogical knowledge, pedagogical content knowledge, and knowledge of context, provided a theoretical framework for the literature review. The theoretical and empirical relationships within the construct were examined to establish construct validity. The initial survey included five items related to subject matter knowledge (SMK). In particular, linguistic knowledge initially included solely phonological and suprasegmental knowledge because the English instruction for children typically focuses more on oral rather than written language. Also, the teacher knowledge of child development was regarded as a sub-component of pedagogical content knowledge (PCK). After examination of the theoretical and empirical relationships, three substantial changes were made. First, five items included under SMK were expanded to 26 items to reflect teacher knowledge in first and second language acquisition theory. Second, the survey items on lexicon, grammar and pragmatic knowledge were added under linguistic knowledge to reflect the integral components of linguistic knowledge that a teacher needed to have independently of the level of English instruction. As a result, the sub-components of SMK -- first language acquisition theory, second language acquisition theory and linguistic knowledge -- became sub-sections of the survey. Lastly, a focused

literature review on child development knowledge in EC education indicated that knowledge of child development is a type of GPK rather than PCK. Thus, the final version of the survey included child development knowledge in the section about GPK. Through the analysis and synthesis of theory and research, I was able to identify the theoretical relationship among the concepts that comprise the construct thus establishing the construct validity of the survey.

4.1.2 Content Validity

The content validity is the degree to which the survey content matches the theoretical content of what is being measured. Expert reviews were used in this study to establish the content validity of the newly-developed instrument. To assist experts' review, initially, the Content Validity Review Form was included with the questionnaire. The experts were asked to complete this form and provide their comments and suggestions on the questionnaire. The Content Validity Review Form consisted of a binary system (relevant/irrelevant) to evaluate each item. However, only two out of the four experts filled out this form and therefore the data were incomplete. The four experts agreed that the content of the survey covers the knowledge that teachers of young language learners need to be equipped with. A total of 29 suggestions were received and revisions were made to incorporate 17 of those suggestions. The suggestions fell into five distinctive categories including translation, formatting, rewording, providing examples, and adding items. Suggestions from two Korean experts to improve English-Korean translations were implemented. The boldfacing of the sub-sections was recommended to improve the readability of the survey. Some rewording was needed to clarify the meaning of a sentence about reading practice. The intention was to ask about the reading practice enforced by parents, but it could have been interpreted as the children's reading practice. So, the item was revised to avoid ambiguity. Examples were provided for items that included technical terms that teachers may not be familiar with including recast, frequency of linguistic features, and role of language use. Items concerning a teacher's knowledge of the national curriculum and language variety/dialects were added following experts' suggestions. One of the experts was concerned about the teachers' analytical ability to judge their own knowledge, so this expert's suggestion of piloting the survey using a think-aloud protocol with a few teachers led to another validation procedure described below.

4.1.3 Face Validity

Face validity is the degree to which a survey instrument looks valid to the untrained eye (Brown, 2001). Brown (2001) argues that face validity is usually assessed by similar groups of respondents; however, it will be more powerful to recruit people who are not familiar with taking surveys or are not in the educational field. I worked with three students who are not in the education field in order to get their feedback on the format. All three individuals indicated that the Likert scale options of 4 (A lot) and 5 (Not sure) were hard to distinguish. In response to this suggestion, I included a thick dotted line separating option 5 (not sure) to clarify that does not refer to the degree of teacher knowledge (as options 1 through 4 do); rather, it represents uncertainty on the part of the survey taker regarding a particular item.

In addition, think-aloud interviews were conducted with teachers who varied in terms of their teaching experience: under 1 year, 1 to 5 years, 5 to 10 years, and over 10 years. The interview participants were asked to think aloud as they took the survey to see whether or not (1) they understood the survey questions and (2) the survey questions/statements represented their professional knowledge accurately. This process of validation led to substantial changes in item wordings. The teacher comments were tabulated and used to improve the survey contents. The comments were categorized into two categories: problems due to unfamiliarity with technical terms and problems due to item/question misinterpretation. The problems were found in the sub-sections on first and second language acquisition theories and linguistic knowledge, which all belong to SMK. These focus teachers provided suggestions specifically related to question clarity and rewording of technical terms to reflect their classroom use. For example, three out of the four teachers did not understand the terms 'behaviorist', 'cognitivist' or 'interactionist'. Once I explained these terms, the teachers realized that they knew them. They even gave appropriate examples of how each theory could be applied to teaching practice. So, the items on language acquisition theory were reworded to reflect teacher representations of the theories. The term 'recast' was replaced with 'use of corrections, repetitions, explanations' since none of teachers knew the word. Another source of confusion was the term 'interlanguage'. None of the teachers had ever heard of this term. So, the term 'interlanguage' was replaced with 'how second/foreign language develops'. Furthermore, linguistic terms such as phonology and morphology were replaced with less technical terms known to the teachers (e.g., sounds, rhythm/intonation, grammar etc.). Pragmatics was replaced with 'conversational routines and language functions of English (e.g., greetings, apologies, requests, etc.)', and the term 'sociolinguistics' was elaborated on 'sociolinguistic of English language (e.g., cultural references, idiomatic expressions, formal/informal language

use, dialects, etc.)’.

Moreover, teachers had difficulty with the concepts of ‘Child First Language Acquisition’ and ‘Child Second/Foreign Language Acquisition’. Therefore it was necessary to specify to clearly differentiate the items related to first language (L1) acquisition, e.g., ‘The role of cognitive development in L1’, ‘The role of caretakers in L1 acquisition’, etc.

To summarize, validity of the survey proposed here was established through the following three sources: construct, content and face. First, the survey items were developed and organized through an examination of theoretical and empirical relationships among the concepts within the construct. Then, expert judgments and non-expert and practicing teacher reviews were used to evaluate the content of the items and their use by the target population (i.e., a group of practicing teachers). As a result of the above validation procedures, the survey was significantly revised and its improved version was subsequently piloted on a group of teachers to establish its reliability.

4.2 Reliability

Reliability refers to the consistency of an assessment instruments and is measured by establishing correlations between items, scale measures or instrument under a given subscale. Reliability is estimated in one of three ways: test-retest reliability, alternate forms reliability and internal consistency reliability (Furr & Bacharach, 2008). The internal consistency is a well-known approach to estimate reliability. It has three different methods to estimate reliability including split-half, Cronbach-alpha and Spearman-Brown. The Cronbach alpha and split-half reliability were used for establishing reliability in this study since computing internal consistency is the appropriate reliability estimate when items have three or more possible responses (Furr & Bacharach, 2008).

Table 1. Reliability for sub-scales

Domain of knowledge	Sub-scale	K	Reliability		
			Cronbach-alpha		Split-half
			Sub-scale	Domain	
SMK (26 items)	FLA	10	.94		.97
	SLA	10	.95	.96	.96
	LK	6	.87		.93
GPK (9 items)	ML	6			
	GR	1	.96		
	CD	2			
PCK (9 items)	LPY	6	.86		
	TLA	3	.85	.88	
KC (8items)	HP	5			
	SK	2	.91		
	NC	1			

Note. SMK=Subject matter knowledge, GPK=General pedagogical knowledge, PCK=Pedagogical content knowledge, KC= Knowledge of context, FLA=First language acquisition, SLA=Second language acquisition, LK=Linguistic knowledge, ML=Management of learning GR=Groupings, CD=Child development knowledge, LPY= Language play TLA=Teacher language awareness HP= Home/parents, SK= School/kindergarten, NC= National curriculum.

The reliability statistics, Cronbach’s alpha and Split-half reliability coefficients, are presented in Table 1. GPK and KC are calculated as wholes because two of the sub-scales have less than three items each. Split-half reliability coefficients were calculated for FLA, SLA, and LK in addition to the Cronbach’s alpha as each of these variables had an even number of items and a sufficient number of items. Cronbach’s alpha reliability coefficient ranges from 0 to 1. An alpha level of .70 or higher is often used as a cut-off for “adequate” scales (Kline, 1993). Cronbach’s coefficient alpha for this survey’s scale and subscales was above .85; thus, the survey

can be considered a reliable measure. Another issue related to reliability is the predictable relationship between the number of items on an instrument and the reliability of that instrument. TLA has three items showing the lowest alpha level (.85) in the instrument illustrating the relationship between the number of items and reliability. Despite the fact that a small number of items in TLA is involved, the reliability of all subscales is surprisingly high.

The Cronbach alpha reliability coefficients indicate the degree to which each of the subscales was internally consistent and reliable. The alpha coefficients for the four domains of teacher knowledge ranged from .88 to .96. In addition, the subscale alphas varied from .85 to .95. Split-half of reliabilities for SMK and its subscales (FLA, SLA and LK) confirmed its internal consistency with values between .93 and .97. In short, the reliability of subscales and four domains of teacher knowledge (SMK, GPK, PCK and KC) were found to vary, but all of them are fairly highly reliable and consistent even considering the small number of items involved. However, not all of the items were calculated internal consistency as some included single or few items. Multi-items scales are necessary to establish internal consistency. Thus, teacher knowledge regarding groupings, child development, school/kindergarten, national curriculum should add more items to calculate internal consistency for future study.

4.3 Respondents Feedback

The survey included two optional open-ended questions aimed to obtain respondent feedback on the survey items. The first open-ended question was about any knowledge that EC language teachers use or need that is not included in this survey. The other was about general comments on the survey. Not many teachers responded to these two questions but some of them gave valuable comments which were used to improve the survey. For example, one teacher suggested including teacher knowledge on K-12 English textbook contents as part of “national curriculum knowledge”. This suggestion was implemented in the final version of the survey. Five out of the eight respondents indicated that taking the questionnaire provided them with an opportunity to refresh their knowledge of what EC language teachers need to know. Two teachers were concerned about the subjective nature of the questionnaire and how it may have misjudged their level of knowledge. Their concern is valid since the nature of self-reported knowledge research is always subjective. This limitation will be addressed in the follow-up study that will combine the data obtaining through this survey with direct classroom observation.

4.4 Final Version of Survey

The finalized survey used a similar format as the initial draft of the survey. Some modifications including addition and deletion of items to clarify questions were made following validation procedures. The final version of the survey consists of the following four sections representing the four sub-components of EC English teacher knowledge: subject matter knowledge (28 items: language acquisition theories, linguistic knowledge, target language proficiency), general pedagogical knowledge (12 items: management of learning, group organization, knowledge of child development), pedagogical content knowledge (9 items: language play, teacher language awareness), and knowledge of context (11 items: parents, employer, school, home environment, national curriculum). 60 items assess the teachers’ perceptions on how much they know about teaching and children. The last two sections will be used to collect data on teachers’ concerns and challenges, and demographic information. The items of the survey are summarized in Table 2.

Table 2. Early childhood English teacher knowledge survey items

Section	Questions	Number of items
A (Teacher Knowledge)	First language acquisition theory	10
	Second language acquisition theory	10
	Linguistic knowledge	6
	Management learning	6
	Groupings	3
	Child development	3
	Language play	6
	Teacher language awareness	3
	Home/Parents	5
	School/Kindergarten/Company	3
	National Curriculum	3
B (Concern and challenges)	Concern/future teacher training/ the most important areas of knowledge	3
	Knowledge that is not included in survey	1
C (Demographics)	Background information	4
	Teaching experiences/situation	6
	Language proficiency	2
	Experienced teacher training	2
	Experience study abroad	2
	General comments on survey	1
Total		79

5. Conclusion

This study defined 12 subscales of four domains of teacher knowledge which served as a basis for an original survey questionnaire of Early Childhood English Teacher Knowledge that I developed and validated through a number of rigorous validation procedures. All of the subscales and the four domains of knowledge (SMK, GPK, PCK, and KC) were found to be reliable. Reliability was found to be related to subscale length to a greater degree on some subscales than others. Due to subscale length, TLA had the lowest reliability at .85, which is acceptable considering that the present survey is still at its piloting stage. In terms of reliability, some subscales with fewer items (i.e., GR, CD, SK, and NC) will need more items added to establish reliability of these sub-scales and indeed applied to the next version of the survey.

There are some limitations this research needs to address in the future. Firstly, the number of participants in the pilot study was lower than the number of the survey items, so it was not possible to complete a confirmatory factor analysis to substantiate the survey's construct validity. It would be desirable to examine construct validity through factor analysis with sufficient number of participants. Secondly, this survey is designed to collect data on self-reported knowledge, and so the results solely rely on what teachers think that they know about each subscale of knowledge. The limitations of self-judgments of one's accomplishments have been studied in social psychology (Heath, Dehoek, & Locatelli, 2012). Therefore, future research will benefit from the addition of classroom observation data to obtain the whole picture of what teachers think they know about EC language education and how the teachers demonstrate their knowledge in the classrooms.

Acknowledgements

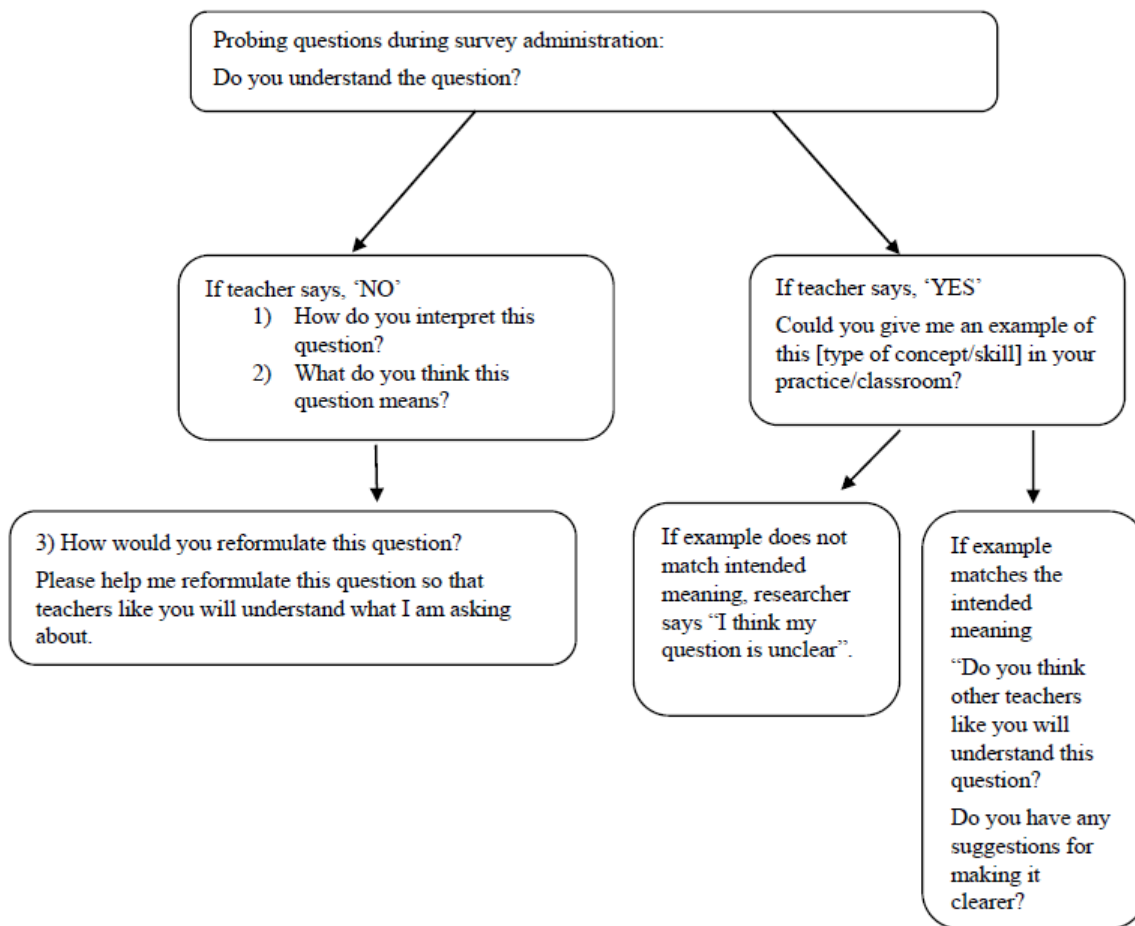
This research is financed by Seoul Theological University Research Fund of 2015. The author wishes to thank Dr. Riazantseva and Dr. Schroeder for their comments on earlier version of this paper.

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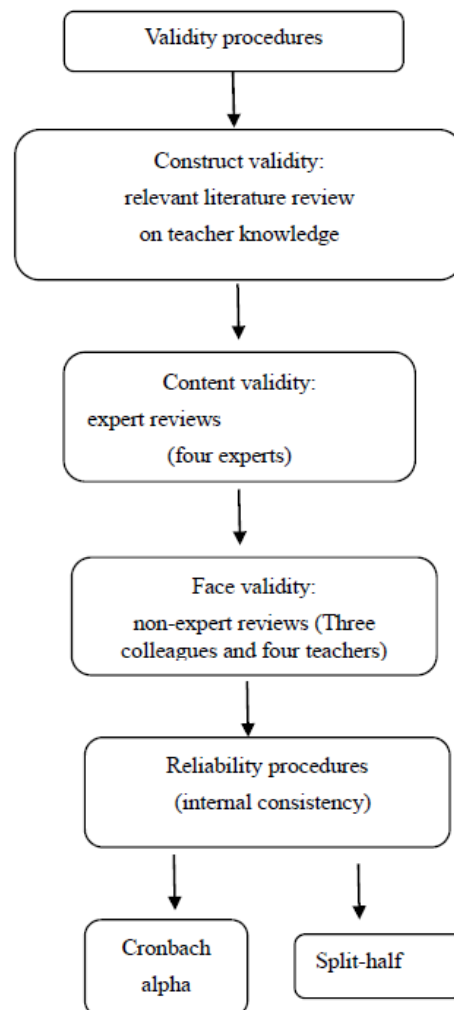
Appendix A

Think-aloud protocol flow chart



Appendix B

A flow chart of the process used to validate the teacher knowledge questionnaire



Note. Adapted from Parisan and Dunning (2009, p. 11).

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