

# Confirmatory factor analysis of chinese language teacher's functional competencies development: a case study in Thailand

## Análisis factorial confirmatorio del desarrollo de competencias funcionales del profesor de idioma chino: un estudio de caso en Tailandia

SIEWSENG Yaowatida<sup>1</sup>

TUNTINAKHONGUL Ampapan<sup>2</sup>

TUNGKUNANAN Pariyaporn<sup>3</sup>

### Abstract

The Chinese language teacher's functional competencies have been caught attention due to the high demand from parents and students who expect their Chinese language learning as a quality program. A Majority of research investigates what components of teacher's functional competencies are but those components are not for Chinese language teachers. Through an extensive literature review, seven dimensions of the Chinese language teacher's functional competencies are identified in this study. These seven dimensions are then examined using Confirmatory Factor Analysis and prevailed the congruence with the empirical studies.

**key words:** chinese language teacher, functional competencies, confirmatory factor analysis.

### Resumen

Las competencias funcionales del maestro de idioma chino han llamado la atención debido a la gran demanda de padres y estudiantes que esperan que su aprendizaje del idioma chino sea un programa de calidad. Una mayoría de investigaciones investiga qué componentes de las competencias funcionales de los docentes son, pero esos componentes no son para los docentes de idioma chino. A través de una extensa revisión de la literatura, en este estudio se identifican siete dimensiones de las competencias funcionales del profesor de idioma chino. Luego se examinan estas siete dimensiones utilizando el análisis factorial confirmatorio y prevaleció la congruencia con los estudios empíricos.

**Palabras clave:** profesor de idioma chino, competencias funcionales, análisis factorial confirmatorio.

## 1. Introduction

In educational context, competency refers to a set of values, knowledge and skills which any professional teachers have to possess in order to be qualified in teaching profession. All teachers are expected to gain those teacher competencies through teacher training for successful completion of a teacher education programme

<sup>1</sup> Educational Administration. Faculty of Industrial Education and Technology. King Mongkut's Institute of Technology Ladkrabang. yaowatida13@gmail.com

<sup>2</sup> Educational Administration. Faculty of Industrial Education and Technology Mongkut's Institute of Technology Ladkrabang. ampapankmitl@gmail.com

<sup>3</sup> Educational Administration. Faculty of Industrial Education and Technology. King Mongkut's Institute of Technology Ladkrabang. pariyaporn.tu@kmitl.ac.th

Houston,(1987) cited in Bakhru, (2015). The teacher competencies can be categorized as general and functional ones. The general competencies include core knowledge and skills necessary for managing teaching and learning, while the functional competencies can be regarded as technical knowledge and abilities related to specific fields or tasks within the subject areas concerned (Brinckmann,2008). More importantly, teacher competencies are considered one of the critical factors for students' achievements either academic performance or personal development (Kishwar Naz, 2016 ).

In addition, many studies showed that part of high students' achievement were a result of qualified teacher with functional competencies (Babu & Mendro, (2009); Sanders & Rivers, (1996), Koster et al, (2005). Babu and his colleagues stated that the teachers' functional competencies are one of the most powerful influences on student success since they separate effective teachers from ineffective ones (Babu & Mendro, 2003). Sanders & Rivers (1996) found that Teacher functional competencies are also referred to as technical competencies. These are the skills that professionals are required to use on a daily or regular basis. Koster and his colleagues found that the teacher educators who possess very high level of functional competencies were able to provide instructions, give guidance and support to student teachers effectively, thus render a substantial contribution to the development of students into competent teachers (Koster et al., 2005).

In Thailand, all teachers are required to have qualifications which include competencies for teaching in schools. All of those competencies are well defined by the regulations issued by Office of the Basic Educational Commission, Ministry of Education of Thailand. It is common that the teachers are prepared from higher education level in order to gain such needed competencies for being qualified teachers. However, when it comes to language teaching, in Chinese language particularly, those graduates who have preferences in teaching Chinese language are unable to be well trained or not properly prepared for gaining sufficient skills and competencies for teaching Chinese from higher educational institutions where such programs are offered (Lu, J. & Zhao, Y, 2011). This may be due to the fact that the functional competencies for teaching Chinese have never been clearly stated. Therefore, learning Chinese language in Thailand can be different and impractical depending on the experiences of the teachers who may be well-trained from qualified programs or vice versa (Wisedjinda, 2018).

Another work which stated the functional competencies of Chinese teachers were highly required for managing classroom of Chinese language learning effectively was found from a research report of Office of the Education Council Ministry of Education (2016). This report also described that functional competencies of a professional guideline should consist of nine areas of competencies; 1) Language and Technology for Teachers, 2) Curriculum Development, 3) Psychology for Teachers, 4) Educational Measurement and Evaluation, 5) Classroom Management, 6) Educational Research, 7) Educational Innovation, 8) Information Technology and 9) Teacheness.

In the schools for basic education sector, the demands of Chinese language teachers in Thailand are getting higher and higher. It appears that, the fast-growing number of Chinese language teachers affects the proficiency and quality of Chinese language education in Thailand since there is no well-defined study of what the functional competencies of Chinese Language teacher are (Office of the Education Council Ministry of Education, 2016). In addition, Chinese language teachers did not design the proper Chinese language curriculum which reflects on content of Chinese art & culture. Jarukorn, Paradee & Charoenwit (2015) found that Chinese language teacher did not use appropriate or instructional tools for teaching and learning. Puwakorn (2016) asserted that Chinese language teacher lacked pedagogical. Hatai Sae-jia (2016),

Puwakorn (2016) ,Wipawan (2016) conducted the study on the poor quality of Chinese teaching and learning in Thailand. Their works was highlighted the main problem of Chinese teaching and learning which the professional than development of Chinese Language teacher. The strongly suggested that these teachers were in need of competency development. Likewise, a study of Yan Ye (2017) indicated that Chinese language teaching and

learning in Thailand suffered with several reasons such as the lack of qualified teachers; their focus on grammar and not communication; the inadequacy of the curriculum contents; and the lack of localized materials. Such study did not compose what the functional competencies of Chinese language teachers must be. It is apparent that those studies pointed out the same root cause; that is the ambiguity picture of competency frame of Chinese language teachers as Thai education agency has not specified the core components of functional competencies of Chinese language teacher.

Therefore, the demand of Chinese language teachers in Thailand are getting higher and higher. It appears that the number of Chinese language teachers have been higher than expected. This has become a concern for the quality of teaching Chinese in Thailand since there is not yet a well-defined study of what the functional competencies of Chinese language teacher are. Moreover, a study from (Yan Ye, 2017) indicated that Chinese language teaching and learning in Thailand suffered from a lack of qualified teachers; the focus on grammar not communication; the inadequacy of the curriculum; and the lack of localized materials. Such the study did not state what the functional competencies of Chinese language teachers must be. Hence, this research attempted to affirm those components with Confirmatory Factor Analysis method.

---

## **2. Methodology**

### **2.1. Population and Samples**

The population for the study was the total number of 901 Chinese language teachers in schools of Basic Education Commission. The samples included 500 Chinese language teachers in schools under the Office of the Basic Education Commission. The sample size was determined following the methods by Hair, et al.,(2010) which stated that in analysing the components, researchers commonly use a sample size from 5 – 20 times larger than the number of observed variables. In this present study, there are 20 observed variables, thus, allowing a total sample size ranging from 105 – 420. Therefore, a sample of 500 participants was set by the researchers using stratified random sampling.

### **2.2. Variables**

The variables were synthesized based on the studies of Yan Ye (2017); Office of Chinese Language Council International (2019); Phongphan (2015); Chen, Z., & Yeung (2015); Chinese Teacher Training Center (2019); Li Juan (2014); Chris Livaccari (2019). After the synthesis of the 7 components of Chinese language teacher's functional competencies in Thailand using content analysis and explore the opinions from Chinese language teachers, these components were statistically analysed with CFA. Chinese language teacher's functional competencies following 7 components were emerged: : 1) Chinese Curriculum and Curriculum Development; 2) Creation of a Conducive Classroom Environment; 3) Psychology of Learning; 4) Development of Teacher Professionalism; 5) Communication Skill and Knowledge; 6) Understanding of Multiculturalism; and 7) ICT for Instructional Media Production.

### **2.3. Research tools**

The questionnaire used in this study was designed and verified for its reliability at 0.96. It consisted of 54 questions contributing in 7 components as follows: 1) Chinese Curriculum and Curriculum Development; 2) Creation of a Conducive Classroom Environment; 3) Psychology of Learning; 4) Development of Teacher Professionalism; 5) Communication Skill and Knowledge; 6) Understanding of Multiculturalism; and 7) ICT for Instructional Media Production.

### **2.4. Data collection**

The data were collected using the questionnaire distributed to the participants who were Chinese language teachers in schools of Basic Education Commission. The 494 questionnaires were returned (98.80%) and they were checked for their completion before the analysis process.

### 2.5. Data analysis

The confirmatory analysis was used to examine whether the theoretical data based on the studies with empirical data. Confirmatory Factor Analysis (CFA) performs its function as a multivariate analysis for testing concepts based on multiple measured indicators (Hair, et al., 2010). Estimation methods in CFA include a maximum likelihood factor that determines the optimal value of the factor loading. A valid indicator can be used as convergence if the loading value on standard regression weight is higher than 0.5 or  $p < \alpha = .05$ , the chi squared ( $\chi^2$ ) value is small, the significance probability is higher than .05 ( $p > .05$ ),  $\chi^2 / df$  is lower than 2.00 (Bollen,1989), RMR is lower than 0.08 (Hu & Bentler,1999), GFI is higher than 0.09 (Byrne, 2001), AGFI greater than or equal 0.90 (Schumacker & Lomax ,2010) and RMSEA is lower than 0.08 (Schumacker & Lomax , 2010). This method consisted of the Kaiser-Meyer-Olkin (KMO) test was utilized to find the suitability of the data (0.755 = good) (Joreskog & Sorbom, 1999). Bartlett’s Test of Sphericity to measure the sampling adequacy (1947.717 ,  $p$ -Value = 0.00). Pearson’s Correlation Coefficients was tested to find out the relationship between each pair of observed variables. Therefore, it could be confirmed that the test results were in accordance with the preliminary agreement. CFA was examined to check the validity of the model by LISREL 8.54. This analysed the fit of a model and its respective parameter estimates.

### 3. Results

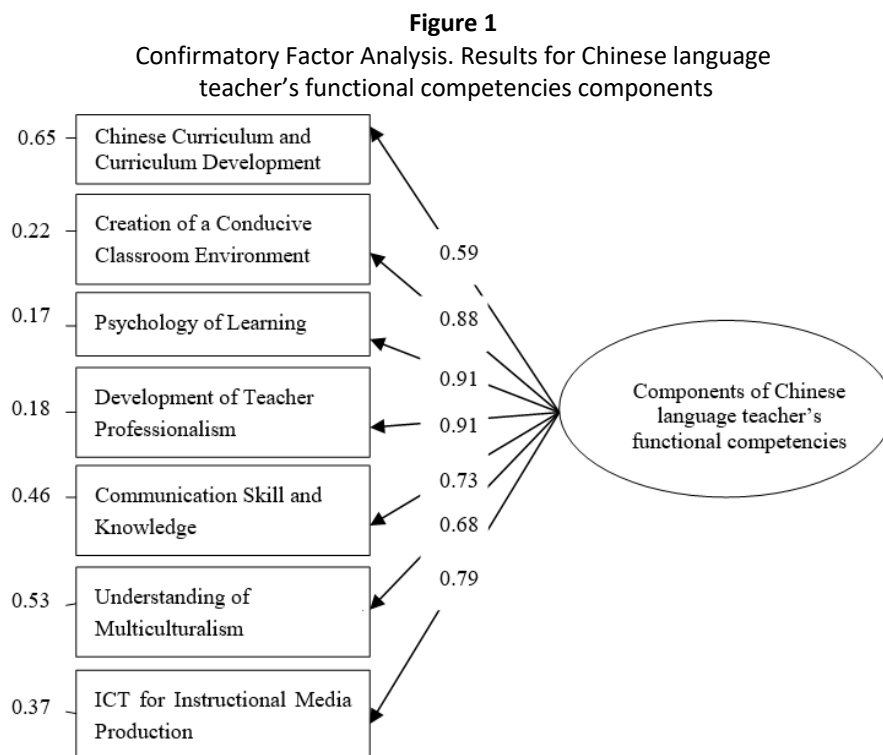
The results for Confirmatory Factor Analysis (CFA) of Chinese language teacher’s functional competencies components as shown in Table 1 and figure 1.

**Table 1**  
Confirmatory Factor Analysis Results for Chinese language teacher’s functional competencies components.

Goodness-of-fit index	Criteria	Statistics	Outcome	Reference
$\chi^2$ -test	P-value exceeds 0.05	0.81	Passed	Byrne (2001)
$\chi^2 / df$	<2.00	0.12	Passed	Bollen (1989)
RMR	<0.08	0.00	Passed	Hu & Bentler (1999)
GFI	>0.90	1.00	Passed	Byrne (2001)
AGFI	$\geq 0.90$	0.99	Passed	Schumacker & Lomax (2010)
RMSEA	<0.08	0.00	Passed	Schumacker Lomax (2010)

\*\*p < .01

From table 1 the statistical analysis revealed that, at the 0.05 significant level, the p-value was 0.81. The goodness of fit index (GFI) was 1.00, while the adjusted goodness of fit index (AGFI) was calculated as 0.99. Both GFI and AGFI confirmed that this was a good fitting model as they both exceeded 0.90. RMR was lower than 0.08. Then the root means the square error of approximation (RMSEA) was 0.00. It can be confirmed that there was consistency across the defined criteria with a value of less than 0.08. Overall, the results of the confirmed component analysis were consistent with the empirical data. When considering the weight value of the components, it was found that the analysis results were confirmed and the weights of all the variables were statistically significant at the 0.05 level.



Chi-Square= 3.71, df=7, P-value= 0.81218, RMSEA= 0.00

From figure 1, when considering the weights, it was found that Chinese Curriculum and Curriculum development = 0.59, Creation of a Conducive Classroom Environment = 0.88, Psychology of Learning = 0.91, Development of Teacher Professionalism = 0.91, Communication Skill and Knowledge = 0.73, Understanding of Multiculturalism = 0.68 and ICT for Instructional Media Production.= 0.79.

#### 4. Discussions

The findings from CFA method revealed that these seven functional competencies of Chinese language teachers in Thailand were testified as essential for qualified Chinese language teachers through the validation of goodness of fitted model. When considering the weight value of each component, Psychology of Learning and Development of Teacher Professionalism have the highest weights determined through the measurement model. This could reflect that both components play a dominant role as compulsory components of Chinese language teacher functional competencies. Such findings concur with the findings from the study by Zhu Chen & Alexander S. Yeung (2015) on Self-efficacy in Teaching Chinese as a Foreign Language in Australian Schools that learning psychology is an important component for teachers because it enables teachers to understand that Chinese language students have different perceptions. At the same time, H. Chen (2011) and Huang (2011) also concluded from their studies that Chinese language teachers should understand learning psychology because basic knowledge of psychology enables teachers to categorize students and design learning activities to be interesting and responding to the needs of students who learn Chinese as their second language. In addition, Hill, et al.,(2008) also pointed out that some teachers may have good knowledge of the subject but lack of learning psychology, which makes Chinese language learning unsuccessful because it is difficult to adjust teaching and learning activities for Chinese language to fit students whose first languages are non- Chinese. Teachers lacking of psychological knowledge may fail in helping students learn Chinese language. As Phongphan (2015) explained, the teachers were required to use psychology to motivate their learners. In addition, Aksoy (2016)

found that knowledge of psychological factors involved in the process of language learning and teaching were indispensable for teachers who teach languages.

In terms of Development of Teacher Professionalism, the research and education development of Office of the Education Council Ministry of Education Thailand (2016) related it to the ability of teachers' knowledge, attitudes and skills in educating and teaching including the ability to understand students. The research suggests that to increase development of teacher professionalism, teachers should engage in activities that include education, teaching and learning process and professional development. The findings from that study also correspond with the findings from the study by Attaran & Hu Yishuai (2015) on Teacher education curriculum for teaching Chinese as a foreign language that the development of professional teachers and the building of professional identities of teachers were greatly important to the development of learning and teaching because it was believed that professional teachers will have their own techniques to teach and to develop themselves, which is an essential component that leads to the change in education. Such findings concur with the study by Duff and Lester (2008) that the efficiency of teachers is caused from profession building and development of competencies, skills and attributes. In addition, Wang et al., (2013) studied on Learning and Development of Teacher Professionalism which could be regarded as precious teacher's functional competencies for Chinese teaching and learning process. These two components should be paid higher attention when it comes to designing guidelines or plans that enable all Chinese language teachers to improve their professional capacities and achieve the quality of Chinese teaching and learning after all.

---

## 5. Conclusion

From the overview of the study in the schools for basic education sector, the demands of Chinese language teachers in Thailand are getting higher and higher. Moreover, the findings may equip any educational institutions with this set of components as the information necessary for planning and developing the policy for recruiting quality Chinese language teacher in the long run.

---

## Bibliographic references

- Aksoy, K. (2016). Review of Exploring Psychology in Language Learning and Teaching. *Eurasian Journal of Applied Linguistics*, 2(1), pp.65-70.
- Attaran, M., & Yishuai, H. (2018). Teacher education curriculum for teaching Chinese as a foreign language. *MOJES: Malaysian Online Journal of Educational Sciences*, 3(1), 34-43.
- Babu, S., & Mendro, R. (2003). *Teacher accountability: HLM-based teacher effectiveness indices in the investigation of teacher effects on student achievement*. Paper presented at the AERA Annual Conference. Chicago: IL.
- Bollen, K. A. (1989). A new incremental fit index for general structural equation models. *Sociological Methods & Research*, 17(3), 303-316.
- Brinckmann, J. (2008). *Competence of top management teams and success of new technology-based firms*. Wiesbaden: Gabler.
- Byrne, B. M. (2001). Structural equation modeling with AMOS, EQS, and LISREL: Comparative approaches to testing for the factorial validity of a measuring instrument. *International journal of testing*, 1(1), 55-86.
- Chen, H. (2011). A Chinese beginning teacher's professional identity transformation: An auto-ethnographic study (Master's thesis, University of Western Sydney, Australia).

- Chen, Z., & Yeung, A. S. (2015). Self-efficacy in teaching Chinese as a foreign language in Australian schools. *Australian Journal of Teacher Education*, 40(8), 2.
- Chris Livaccari. (2019). *Global Competence for Chinese Language Teachers*. Retrieved from <https://asiasociety.org/china-learning-initiatives/global-competence-Chinese-language-teachers>.
- Duff, P., & Lester, P. (2008). Issues in Chinese language education and teacher development. *Issues in Chinese language education and teacher development*, 5-48.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis: A global perspective*. (7<sup>th</sup> ed.). New Jersey: Pearson.
- Hatai Sae-jia. (2016). *Research report for the development of Chinese language teaching in Thailand Primary level*. Bangkok: Prigwan Graphic.
- Hill H. C., Ball, D. L., & Schilling, S. G. (2008), Unpacking Pedagogical content knowledge: Conceptualising and measuring teachers' topic-specific knowledge of students. *Journal for Research in Mathematics Education*, 39(4), 372-400.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), pp.1–55.
- Huang, X. (2011). A 'self-study' of a Chinese teacher-researcher's practice of transnational knowledge exchange: Stimulating students' Mandarin learning in Australia (Master's thesis, University of Western Sydney, Australia).
- Jarukorn j., Paradee A., Charoenwit S. (2015). Situations, Problems and Guided Development of Teaching and Learning of Chinese Language of Secondary Schools in Nonthaburi Province under the Secondary Educational Service Area Office 3. *Journal of the Royal Thai Army Nurses*, 16 (3), 95-104.
- Jintana Wisedjinda & Somphong Chitradub . (2018). Guidelines for Chinese Instruction in Upper Secondary Schools. *Veridian E-Journal*, 11 (2), 445-455.
- Joreskog, K. G., Sorbom, D., Du Toit, S., & Du Toit, M. (1999). LISREL 8: New statistical features. *Chicago: Scientific Software International*, 6-7.
- Kishwar Naz (2016). Effects of teachers' professional competence on students' academic achievements at secondary school level in Muzaffarabad District, Munich, GRIN Verlag, Retrieved from: <https://www.grin.com/document/352095>
- Koster, B., Brekelmans, M., Korthagen, F. A. J., & Wubbels, T. (2005). Quality requirements for teacher educators. *Teaching and Teacher Education*, 21(2), pp.157-176.
- Li Juan. (2014). Needs for skill development among Chinese teacher in school Chonburi province. Faculty of Human Resource Management (Unpublished masters dissertation) Burapha University, Chonburi, Thailand.
- Lu, J. & Zhao, Y. (2011). *Teaching Chinese as a foreign language in China: A profile, in Teaching and learning Chinese in global contexts*. London: Continuum International.
- Puwakorn C. (2016). *Research report for the development of Chinese language teaching in Thailand Secondary level*. Bangkok: Prigwan Graphic.
- Office of Chinese Language Council International. (2019). *Chinese Tests*. Retrieved from [http://www.english.hanban.org/node\\_9906.html](http://www.english.hanban.org/node_9906.html).

- Office of the Basic Educational Commission, Ministry of Education of Thailand. (2016). *the professional standards of teaching profession*. Bangkok: Kurusapa Ladprao.
- Office of the Education Council Ministry of Education. (2016). *Research report for the development of Chinese language teaching in Thailand Secondary level*. Bangkok: Prigwan Graphic.
- Sanders, W. L., & Rivers, J. C. (1996). Cumulative and residual effects of teachers on future student academic achievement. Knoxville, YN: University of Tennessee Value-Added Research and Assessment Center.
- Schumalker R. E., & Lomax. (2010). *A Beginners Guide to Structural Equation Modeling, (3<sup>rd</sup> ed.)* New York: Routledge Taylor & Frances Group.
- Wang, L., Lai, M., & Lo, L. N. K. (2014). Teacher professionalism under the recent reform of performance pay in Mainland China. *Prospects*, 44(3), 429-443.
- Wanlapha Phongphan. (2015). The Competencies Promotion of Chinese Language Teacher in Secondary School in The Eastern Region of Thailand. *Journal of Education and Social Development*, 11 (1), 98-111.
- Wipawan S. (2016). *Research report for the development of Chinese language teaching in Thailand Synthesis overview*. Office of the Education Council Ministry of Education Bangkok: Prigwan Graphic.
- Yue, Y. (2017). Teaching Chinese in K–12 Schools in the United States: What Are the Challenges?. *Foreign Language Annals*, 50(3), 601-620.