

学位論文の要旨 (論文の内容の要旨)
Summary of the Dissertation (Summary of Dissertation Contents)

論 文 題 目

Dissertation title

Development of the Instrument to Measure Technological Pedagogical Content Knowledge (TPACK) of Pre-Service Science Teacher in Indonesia

広島大学大学院国際協力研究科

Graduate School for International Development and Cooperation,
Hiroshima University

博士課程後期

教育文化専攻

Doctoral Program

Division of Educational Development and
Cultural and Regional Studies

学生番号

D142936

Student ID No.

氏 名

ARIF HIDAYAT

Name



Seal

The aims of this research were to design and examine instruments measuring the development of science preservice teachers' Technological, Pedagogical, and Content Knowledge (TPACK) in technology integration of teaching practice program. The study investigated TPACK domains i.e.: Content Knowledge (CK), Pedagogy Knowledge (PK), Technology Knowledge (TK), Pedagogical Content Knowledge (PCK), Technological Pedagogical Knowledge (TPK), Technological Content Knowledge (TCK), and TPACK itself, where its derivation leads to define indicators and items development of the instruments.

Regarding with study of the research in the dissertation, it is devoted into 7 chapters as follow: Chapter 1 as Introduction focused on the brief background of the research and covering research questions and objectives, and the significance of the study as well. The objective of the research is to design and examine an instrument measuring development of TPACK for preservice science teacher in Indonesia. Chapter 2 as theoretical review discussed starting from new movement of Indonesia Curriculum where technology integration becomes essential needed, adapted framework of technology integration in science education and how to support and overcome barriers, definition of TPACK and measuring TPACK, and closed with example of TPACK in the science lesson. While chapter 3 is emphasized on research methodology which talking about research design, participant, and sampling, instrument and data collection.

Furthermore, Chapter 4 about Instrument Development and Data Processing. It discussed about a set of TPACK development instrument that researcher produced. As many as 31 indicators with 116 items of the TPACK development tool with 6-point Likert type scales result initially from this research. How each domains are elaborated and synthesized are describe here, including first stage of validation process on this instrument who applied to 1628 respondents of preservice science teachers in Indonesia. Also in this chapter discussed about the construct validity of this tool which is examined through confirmatory factor analysis using Principal Axis Factor (PFA). A result of the instrument is produced in this chapter but not coming to the multiple PFA method yet.

In Chapter 5, as result and description, a multiple PFA method is applied after selecting items without sharing of factor loading to ensure there is no ambiguous of items respective to the formed elements. Regarding those applied, the result shows after the modification and/or deletion of 49 of the survey items, the 67 items-survey are considered as a reliable and valid instrument. This instrument would help educators designing studies to assess preservice science teachers' development of TPACK. While in Chapter 6 Analysis of the Result, one of the finding shows some domain are getting less or smaller indicators and items except for the Technological Content Knowledge.

Finally, the research questions are answered in the Chapter 7 Implication for Practice. Moreover, some future research recommendations are included for the investigation i.e.: (1) Understanding of those preservice science teachers' TPACK affected their practices during student teaching actions; (2) The teacher preparation program needs to take for improving on development properties of preservice science teachers' TPACK and (3) identification of significant relationships between preservice teachers' TPACK during the program and their use of technology in their future teaching career. References and Appendixes are also included after Chapter 7.

備考 論文の要旨はA 4判用紙を使用し，4,000字以内とする。ただし，英文の場合は1,500語以内とする。

Remark: The summary of the dissertation should be written on A4-size pages and should not exceed 4,000 Japanese characters. When written in English, it should not exceed 1,500 words.