

**APPLICATION OF FIVE-STAGE CONCEPTUAL TEACHING  
MODEL BY UTILIZING *CMAPTOOLS* TO ANALYZE  
CONCEPTUAL CHANGE AND COGNITIVE LEARNING  
OUTCOMES ON LIGHT AND OPTICS TOPIC**

**RESEARCH PAPER**

*Submitted as requirement to obtain degree of Sarjana Pendidikan  
in International Program on Science Education study program*



**Arranged By:  
Muhammad Rifqi Rofiuddin  
1002326**

**INTERNATIONAL PROGRAM ON SCIENCE EDUCATION  
FACULTY OF MATHEMATICS AND SCIENCE EDUCATION  
INDONESIA UNIVERSITY OF EDUCATION  
BANDUNG  
2014**

**Application of Five-Stage Conceptual Teaching Model by Utilizing  
*CmapTools* to Analyze Conceptual Change and Cognitive Learning  
Outcomes on Light and Optics Topic**

Oleh  
Miuhammad Rifqi Rofiuddin

Sebuah skripsi yang diajukan untuk memenuhi salah satu syarat memperoleh gelar  
Sarjana pada Fakultas Pendidikan Matematika dan Ilmu Pengetahuan Alam

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**SHEET OF LEGITIMATION**

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**By:**

**Muhammad Rifqi Rofuiddin  
1002326**

**Approved and Authorized by,**

**Supervisor I**



**Dr. Selly Feranie, M.Si  
NIP.19741108 199903 2 004**

**Supervisor-II**



**Rika Rafikah Agustin, M.Pd  
NIP 19830803 201212 2 001**

**Perceive,**

**Head of International Program on Science Education Study Program**



**Dr. Diana Rochintaniawati, M.Ed.  
NIP.196709191991032001**