

THE EFFECT OF INTERACTIVE MULTIMEDIA FUNCTION TO ENHANCE STUDENTS' GENERIC SCIENCE SKILLS

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INTRODUCTION

- GLOBAL CHALLENGES → INCREASE COMPETITIVENESS
- TO WIN THE COMPETITIVENESS → DEVELOPMENT OF THINKING SKILLS
- THINKING SKILLS → LEARNING SCIENCE
- THINKING SCIENCE → GENERIC SCIENCE SKILLS

SCIENTIFIC PRINCIPLES

- CONSISTENCY & UNIVERSAL FRAMEWORK
- PROSES TO GET KNOWLEDGE FROM PHENOMENA
- ALWAYS CHANGE
- ONLY AN APPROACH TO “ABSOLUTE”
- NOT VALUE FREE
- CANNOT DECIDED “TRUE” OR “FALSE”

SCIENTIFIC THINKING (GENERIC SCIENCE SKILLS)

- DIRECT AND INDIRECT OBSERVATION
- SENSE OF SCALE
- SYMBOLIC LANGUAGE
- LOGICAL SELF CONSISTENCY
- LOGICAL INFERENCE
- CAUSALITY
- MATHEMATICAL MODELLING
- CONCEPT FORMATION
- SPATIAL

METHOD

R & D TO DEVELOP & VALIDATION INTERACTIVE MULTIMEDIA FOR :

- **INSTITUTE OF TEACHER TRAINING** : EARTH & SPACE SCIENCE (MOTION OF EARTH & PLANETS)
- **SENIOR HIGH SCHOOL** :
CHEMISTRY (RATE OF REACTION)
PHYSICS (SPECIAL RELATIVITY)
BIOLOGY (HUMAN URINE EXCRETION)
BIOLOGY (HUMAN NEURAL SYSTEM)

THE RELATIONSHIP OF SCIENCE DISCIPLINES, TOPICS, AND GENERIC SCIENCE SKILLS

No	Science discipline	Topics	Generic science skills
1.	Earth and Space Science	Motion of earth and planets	Sense of scale, logical consistency of natural laws, logical inference, symbolic language, indirect observation, concept formation,
2.	Chemistry	Rate of reaction	Symbolic language, indirect observation, causality, mathematical modeling, concepts formation
3.	Physics	Special relativity	Sense of scale, logical consistency of natural laws, logical inference, causality, mathematical modeling,
4.	Biology	Human urine excretion	Indirect observation, logical inference, causality, concepts formation
5.	Biology	Human neural system	Indirect observation, logical inference, causality, concepts formation

RELATIONSHIP BETWEEN TOPICS AND NUMBER OF RESEARCH SUBJECT ON EACH CLASS

No	Place and educational level	Topics	Number of subject	
			Experimental class	Control class
1	Teacher training program at Bandung	Motion of earth and planets	60	60
2	Senior high school at kota Ternate	Rate of reaction	30	26
3	Senior high school at Palembang	Special relativity	26	26
4	Senior high school at Yogyakarta	Human urine excretion	32	36
5	Senior high school at Garut	Human neural system	77	76

INTERACTIVE MULTIMEDIA FUNCTION IN LEARNING SCIENCE

SCIENCE DISCIPLINE	TOPICS	FUNCTION
EARTH & SPACE SCIENCE	MOTION OF EARTH & PLANETS	MEDIA
CHEMISTRY	RATE OF REACTIONS	TEACHING MODEL
PHYSICS	SPECIAL RELATIVITY	TUTORIAL
BIOLOGY	HUMAN NEURAL SYSTEM	TUTORIAL
BIOLOGY	HUMAN URINE EXCRETION	SIMULATION

CONCLUSION

- GENERIC SCIENCE SKILLS: AS NEW PARADIGM IN LEARNING SCIENCE, MAKE STUDENTS LEARN SCIENCE CONCEPTS EASIER, DEVELOPED THROUGH INTERACTIVE MULTIMEDIA, INCREASED PARALEL WITH EDUCATIONAL LEVEL, DEPENDS ON THE MULTIMEDIA FUNCTION AND SCIENCE DISCIPLINES
- MAXIMUM NUMBER GENERIC SCIENCE SKILLS DEVELOPED AS MEDIA ON E-LEARNING
- PHYSICS AND CHEMISTRY DEVELOPED GSS MORE THAN BIOLOGY