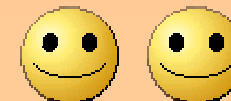
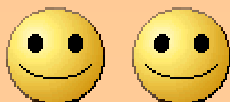




Research Title

A comparison of higher levels thinking abilities and science achievement the constructive model and normal teaching of Mattayom Suksa 2 Students' Phothong "Jindamane" School

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Research Year	May 16, 2001 - September 30, 2002





Learning management



Have to improve learning skill form student by used

- Thinking process.
- Critical thinking process.
- Decide process.



Science teaching



Teacher have to establish science to student by used

- Problem
- Hypothesis
- Analysis hypothesis
- Experimental
- Conclusion

Driver & Bell Theory


Orientation

Elicitation

Restructuring of ideas

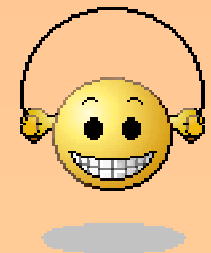
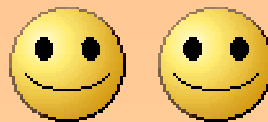
Application of ideas

Review

- 
- Clarification and exchange of ideas
 - Construction of new ideas
 - Evaluation of new ideas

Objective

1. To compare the student' high level thinking in science solving problem abilities of Mattayom Suksa 2 student between used constructive activity module and normal teaching.
2. To compare the student' high level in critical thinking abilities of Mattayom Suksa 2 student between used constructive activity module and normal teaching.
3. To compare the student' science achievement of Mattayom Suksa 2 student between used constructive activity module and normal teaching.



Hypothesis

1. The student' high level thinking in science solving problem abilities between used constructive activity module and normal teaching are different.
2. The student' high level in critical thinking abilities between used constructive activity module and normal teaching are different.
3. The student' science achievement between used constructive activity module and normal teaching are different.



Type of research : Experimental Research

This experimental is process by used Randomized Control Group Pretest- Posttest design the following table.

GROUP	PRETEST	EXPERIMENT	POSTTEST
RE	T ₁	X	T ₂
CR	T ₁	-	T ₂

Population and Sample Group

Population are Mattayom Suksa 2 student of Phothong "Jindamane" School in Phothong district, Angthong province, Semester 2 Year 2001, amount 7 classrooms, Total 315 students.

Sample Group are Mattayom Suksa 2 student of Phothong "Jindamane" School in Phothong district, Angthong province, Semester 2 Year 2001, amount 80 students, Purposive sample random 2 classrooms from 7 classrooms, 40 students are experimental group and 40 students are control group.

Variable

- Independent variable are constructive activity module
- Dependent variable are The student' high level thinking in science solving problem abilities, high level in critical thinking abilities and student' science achievement



Achievement

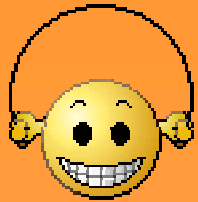
1. Science Master Plan for a topic "Earth and Change" by used constructive activity module amount 6 activities and this are constructive by own base

2. Science Master Plan for a topic "Earth and Change" by use normal teacher plan of The Institute for the Promotion of Teaching Science and Technology (IPST) use with control group.

3. This 6 activities was modify from steps and principle of Driver and Bell

Activity 1	What' s the world?	efficiency	89.50 /90.00
Activity 2	How does particle of substance nab?	efficiency	90.00 /97.50
Activity 3	The symbol of element	efficiency	96.50 /97.00
Activity 4	A magnetic field	efficiency	95.00 /96.87
Activity 5	How does the earth outer move?	efficiency	93.75 /96.00
Activity 6	How does the earth outer erode?	efficiency	87.50 /91.66

Activity standard efficiency is 80.00 /80.00



Achievement (Continue)

4. The high level thinking in science solving problem abilities test amount 40 points by ? - Coefficient of Cronbach the value is 0.72

5. high level in critical thinking abilities test is subjective test amount 30 points by use Watson and Greysor theory. The value of p between 0.31-0.86 and the value of r between 0.27-0.86 then find reliability by KR-20 of Kuder-Richardson the value is 0.75

6. Science achievement test for a topic "Earth and Change" is objective test 5 choices 40 points. Find p and r by use 27% of Chung-Teh Fan the value of p between 0.32-0.83 and the value of r between 0.29-0.83 then find reliability by KR-20 of Kuder-Richardson the value is 0.82

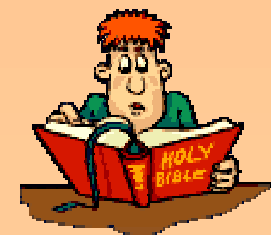


Analysis of data

Prove hypothesis 1, 2 and 3 for compare the student' high in critical thinking abilities and the student's science achievement by use t-test for independent samples.

Summarize research

1. The student' high level thinking in science solving problem abilities higher than normal teaching.
2. The student' high level in critical thinking abilities between the experimental abilities higher than normal teaching.
3. The student' science achievement between the experimental higher than normal teaching.



Suggestion

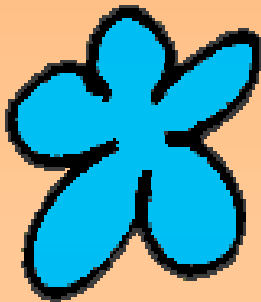
1. Constructive activity module, student can practice activity by themselves , thinking practice and group work.
2. Constructive activity module, student have creativity and use critical thinking abilities for implement problem.
3. Constructive activity module, make teacher to develop teaching and focus to student.

Suggestion for the next research

1. Require the constructive activity module used with other subject.
2. Require the constructive activity module used with other variable such as science creative and abilities to decide.

Benefit of research

Constructive activity module is the guideline to support student for exchange experience and sharing the new experience, student can create knowledge by themselves.



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