

ABSTRACT

Samia Hussien Gooda (2006): The effectiveness of Using geometric Constructions approach on developing some mathematical Communication Skills among Prep – Stage Students. Benha university, Faculty of Education, Dept. of Curricula and Teaching methods.

This study aimed at the effectiveness of Using geometric Constructions approach on developing Some mathematical Communication Skills (Written and oral) and The achievement among.

Prep Second grade Students in Qalupia Province. The Sample of Study Consisted of (107) Students which was divided into an experimental group whose number was (52) Students and a control group whose number was (55) Students. There Searcher also has prepared list of Communicatin Skills (Written and Oral) in Mathes. This list included five basic Skills (Listening – Speaking – reading – Writing – Representation). Each Skill of Those included agroup of Subsidiary Skills. Forexample, Listening Skill included (8) Subsidiary Skills. Speaking Skill included (7) Subsidiary Skills, reading Skill included (5) Subsidiray Skills, Writing Skill included (7) Subsidiary Skill, and representation Skill included (3) Subsidiary Skill. Along Side, The researcher has Prepared the Study Tools That included [Listening Testin Maths, Personal interviews (estimating Cord of Speaking in Maths), Writing Communication Test in algebra, Writing Communication Test in geometry, achievement Test in relative numbers unity, achievement Test of Similarity Unity] and one of difference unity and Controlling these tools, Counting their reliability Coefficient, ease and difficulty index, and eventually the discrimination of the achievement test. Moreover, She has applied these Study tools Previously on the Study Sample (The experimental and Controlling group) Then She has Taught the Selected Units (relative muber, Similarity, difference) for The experimental group according to the Teacher guide That has been prepared by the researcher by using geometric Constructions approach. As for The Controlling group it has been taught according to the Teacher's way and after that she has applied the Study tools on the two Study groups (experimental and Controlling).

Eventually, The results of Study has shown the effectiveness of using geometric Constructions approach on developing Some. Mathematical Communication Skills (Written and Oral) among Students and they Found also apositive and astrong Statistic relation between Communication Skills (Written and oral) in maths and the achievement of Students who have Learned by Using geometric Constructions approach.

SUMMARY

Introduction:

This Study aimed at the research of The effectiveness of Using Geometric Constructions approach in developing Some mathematical Communication Skills (Written and Oral) and The achievement among Second. Year Prep stag Students. This is because it was observed that there is the Lack of Mathematical Communication Skills among Second year Prep stag Students and The Lack of their ability touse the mathematical language in the expression of their ideas and explaining them to others because mathematical teachers in the Prep grade rarely give the good opportunities to pupils for explaining and clarifying their ideas and expressing them in awritten or oral form and explaining and Transforming Them coherently to others. Along side, it was observed that there is alimentation in Maths Circulums in developing Som Mathematical Communication Skills.

The Statement of The Problem :

The Problem of the Present Study is represented in the Lack of Matheatical Communication Skills (Writien, Oral) among Second – year prepstag Students. to Face Such aproblem, the Present Study Tried to answer the following main question :

What is the effectiveness of Using geometric Construction approach on developing some written and oral mathematical Communicaiton Skills and on achievement among Prep-stage Students?

This main question has following sub – questions :

- 1-What are the mathematical Communication Skills (Written / oral) required for prep-stage Students?
- 2-What is the form of the Chosen units in the light of geometric constructions approach?
- 3-What is the effectiveness of using geometric Constructions approach on developing some mathematical Communication Skills among Prep – Stage Students?
- 4-What is the effectiveness of Using geometric Constructions approach on achievement among prep-Stage Students?
- 5-What is the relation between two dependent Variable That belong to [Mathematical Communication Skills (Written – oral) and the achievement] among Prep-Stage Students?

Hypotheses :

To answer the Study's questions, it had been finished the revision of research of the previous research that discussed the variations of this Study and on this basis it had been translated the study's questions into the Following Prophetic hypotheses :

- 1-The Geometric constructions approach takes Part on developing some listening Skills in Math For the second year prep-Stage Students.
- 2-the Geometric constructions approach takes part on developing some Speaking Skills in math for the second year Prep-Stage Students.
- 3-the Geometric constructions approach takes Part on developing Some Written Mathematical Communication Skills in Algebra for the Second year prep – Stage Students.
- 4-The Geometric Construction approach taks parton developing some written mathematical Communication Skills in Geometry for the second year Prep – Stage Students.
- 5-The Geometric construction approach takes Part on developing some Written and oral mathematical Communication skills for the second year Prep-Stage Students.
- 6-The Geometric construction approach Takes Part on improving the achievement in math for the Second Year prep – Stage Students.
- 7-There is astrong and Positive relation between Written and Oral Mathematical Communication Skills and The achievement of Students who Studied by the Geometric Construction approach.

Limitations of the Study :

This Study is limited on the Following :

- 1-Asample of Second – year prep-stage students in El-Qalubya.
- 2-Teaching some of unities of algebra and geometry for second – year prep-stage Students.
- 3-Written and oral mathematical Communication skills.
- 4-Achievement at the levels of knowledge, understanding, application and Problem Solving.

Procedures of The Study :

The Following Procedures Will be Followed :

- 1-Reviewing the literature and the related studies about mathematical Communication and geometric constructions approach.
- 2-Preparing alist of written and oral mathematical communication skills and submitting it to ajury to verify its Validity.
- 3-Preparing the schooser units in the light of geometric construction approach, Through :
 - a- Choosing the units from second – year Prep – Stage text book.
 - b- Identifying learning domain in the Content of units.

- c- Identifying the instructional objectives and wording them operationally.
- d- Organizing the units in the light of the geometric constructions approach.
- e- Identifying the activities and instructional aids for the approach.
- f- Identifying the evaluation procedures and tools.
- g- Identifying the learning resources.
- h- Preparing the Teacher's guide.
- i- Preparing the Student's Workbook.
- j- Submitting the units, the Teacher's guide the work book to Jury.
- 4- Designing The Tools of the Study and Verifying Their Validity :
(Prepared by the researcher).
- a- Listening Test in Math.
- b- Estimating Card of Speaking in Math.
- c- Writing Communication Test in algebra.
- d- Writing Communication Test in geometry.
- e- Achievement test in relative numbers unity.
- f- Achievement test of similarity unity.
- g- Achievement Test of difference unity.
- 5- Choosing a sample from Second – year prep stage Students and dividing them into two groups : experimental and control.
- 6- Applying the study tools previously on the student of The two group : experimental and control.
- 7- The Verification of the equality of the two study group from the Previous applying results of tools.
- 8- Teaching for the experimental group according to the geometric construction approach and for the controlling group according to the usual way.
- 9- After That, the application of the study tools on the group students (experimental and Control).
- 10- Tabulating The data and analyzing them Statistically.
- 11- analyzing the results.
- 12- Suggesting the recommendations and Suggestions.

Results :

- 1- The effectiveness of the geometrical constructions approach on developing some written and oral mathematical communication skills for Second year Prep-stage Students.
- 2- The effectiveness of The geometrical constructions approach on achieving of maths for Second year prep-stage students.
- 3- it was observed that there is a strong and Positive relation between written and oral mathematical communication skills and The achievement of Students who studied by the geometrical constructions approach.

Recommendations :

In The light of what is achieved by this study of results, it can be recommended with :

Firstly : As For the Learner :

- 1-Interaction the Learner's role inside the class and developing conversation and dis cussion between him and the teacher and his colleagues where created a kind of democracy and the Freedom of Opinion and expression this is because the teacher's role is no longer limited to the receiver only but giving him the suitable chance for expressing his ideas and showing them and trans forming Them to others in acaherent way. and explaining them and finally clarifying the way of achieving resolution and the operations that Followed this.
- 2-Enriching the teacher with agroup of enriching activities for developing writtien and oral mathematical communication skills inside and outside the class.

Secndly : As For the Teacher :

- 1-Training mathematical Teachers before and during service on the geometric construction approach and its different stages and interaction this approach in Teaching.
- 2-Teaching geometrical elgebra in university for students of education Faculty of maths department for enriching them with maths andits branches and completing of these braches with each other.
- 3-Interesting in developing maths language inculding its symbols, Terms, gestures, expressions, geometrical Charts, Table, graphic and combining this Language with real life of learners and life situations.
- 4-Interesing in reading maths, its skills and its developments and recommending Learner with reading agroup of special text about maths Scientists and gathering information about this.
- 5-Interesting in conversation and dis cussion in class and developing speaking Skills with maths language for Learners and interesting in oral mathematical communication skills.
- 6-Interesting in Journal writing That belong to each student and making for every student aspecial Journal writing to write whatever he wants to express about ideas and describing what happens in maths lacture and what is Information that he gained.
- 7-Interesting in oral Communication (Listening - Speaking) and developing Listening Skills and Supporting The learners during maths lectures with agroup of Listening Texts.

- 8-The necessity of using evaluation tools for evaluate of learning maths because it is important for the teacher to evaluate the students' oral and written works partially and wholly.

Thirdly : As For the designers of Curriculums :

- 1-developing maths books of different Stages in the light of Communication skills with maths Language.
- 2-Enriching maths books with Some historical texts of maths scientists and agroup of enriching activities that help for developing Communication skills with maths language.

Suggestion for Further Research :

- 1-Presenting enriching Programs for the prep-stage students and searching in its influence on developing mathematical communication Skills.
- 2-The effectiveness of using The geometrice constructions approach on developing some other variable such as creative thin king, critical thinking, geometrical thinking and its levels in the prep – stage students.
- 3-The Study of the effectiveness of using the Geometric constructions on developing some mathematical communication skills among Secondary or the Primary – grade Students.
- 4-The Study of the effectiveness of using computer on developing some Mathematical communication skills among prep–stage students.
- 5-A Comparative study for some teaching strategies on developing some mathematical communication skills among prep-stage students.
- 6-developing math books [Primary – prep – secondary Stages] in the Light of mathematical communication criterion.
- 7-Establishing enriching programs for the excellent students for developing their mathematical communication skills.
- 8-developing mathematical communication skills for the Prep – Stage students in the light of their knowledge types (dependant – Independent) and the influence of this on the remaining of teaching trace in them.
- 9-Aneffective study for some educational activities on developing some reading and writing skills in maths among prep-stage students.
- 10-Aneffective study for children's literature in developing some writien and oral mathematical communication skills for the primary – stage students.
- 11-the effectiveness of using journal writing on developing writien mathematical communication skills for the Prep and secondary school students.

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**THE EFFECTIVENESS OF USING GEOMETRIC CONSTRUCTIONS
APPROACH ON DEVELOPING SOME MATHEMATICAL
COMMUNICATION SKILLS AMONG PREP – STAGE STUDENTS**

A Research Fulfilled of The requirements for M. A. Degree in education
(Mathematics Curricula and Teaching Methods)

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