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ABSTRACT

In this newsletter, a description of the "Study Methods in Mathematics Project" is given. Name, place, project leader, time schedule, objective, personnel, subjects, research methods, research data, and the purpose of the project are all briefly described. A short annotated bibliography of publications related to the project is included. (DT)

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PROJECT SIMAT: STUDY METHODS IN MATHEMATICS PROJECT
NEWSLETTER NO. 1: MAY 1975
PROJECT LEADER: STEN C. POULSEN, CAND. PSYCH.

THE IDEA BEHIND THE NEWSLETTER:

The traditional form for communication between the researcher and the consumer is by means of books, articles in periodicals and duplicated reports. Common for these three media forms is their character of being one-way communication: Information is sent from the researcher to the consumer, though seldom in the opposite direction.

Two-way communication is easier to achieve by means of meetings and conferences, and here the consumer - in this case teachers, students, pupils, parents, administrators, etc. - can also voice his/her opinion.

Travelling and meetings, though, take a great deal of time; and along with a certain, but limited, number of meetings, there is thus need for a quicker channel for two-way communication.

The universal exchange of letters is, to a certain degree, the traditionel solution to this problem. But, informal correspondence of this nature is partially characterized by containing much irrelevant material and, what is worse in this connection by including private and personal data, which results in difficulties in sharing important professional viewpoints in their original form with others.

Therefore, I suggest a special format for a correspondence system: The professional and public "Newsletter". It has long been the common practice that authorities and institutions publish newsletters about current projects and publications (ie., The Swedish 'School research newsletter' and the newsletter from the Finnish Educational Institute at the University of Jyväskylä). Unfortunately, they have only been used as one-way communications.

The "Newsletters" about the SIMAT-Project, on the other hand, will hopefully acquire the character of being two-way communication; in that all readers are invited to submit opinions and information, which they feel are relevant to the project. Ideally, each "Newsletter" will therefore include two major sections:

The first with information to the consumer from the project's leader; and the second, a section for open letters, where the consumers can initiate dialogues with the project leader and/or with other letter writters on matters relevant to the project.

The "Newsletter" will be issued as needed, ie. when there is material to it; although at least bi-monthly. The extent of the "Newsletter" will vary in a similar way. They will also be translated to English and sent to a number of relevant persons in countries outside of Scandinavia.

The Presentation of the Project

In this, the first "Newsletter", it is only reasonable to concisely describe the project. This description will soon be developed into an independent mimeo-report.

NAME:	PROJECT SIMAT: STUDY METHODS IN MATHEMATICS PROJECT
PLACE:	The department for educational methodology The Danish Institute for Educational Research 28 Hermodsgade DK-2200 Copenhagen N
PROJECT LEADER:	Amanuensis, Sten C. Poulsen, Cand. Psych.
INIATATION:	Fall 1974
DURATION:	The first major phase to be completed in the Spring 1976
OBJECTIVE:	The development of study methods for use in the independent learning of mathematics for adults (homework).

PERSONNEL: Project leader (half-time); Assistant (half time); Occasional assistence by the ITV--laboratory assistent; Adviser time from high-school and a gymnasium teacher of mathematics and physics.

INVESTIGATION PARTICIPANTS: Gymnasium Teachers for adults with untraditional backgrounds. Adult students in this course from 35 to 55 years of age.

RESEARCH METHODS: Intensive registration of learning processes for the individual by means of thinking aloud while doing homework in the ITV laboratory. Data collection methods are ITV recordings (observation) and interviews.

RESEARCH DATA: Attitude toward learning mathematics (eg., "math aversion"). Behavior, thoughts and feelings in the actual learning situation. Prior experiences of importance in regards to the learning of mathematics, school memories etc.

STATUS APRIL 1975: The ITV situation functions satisfactorily. The desired information is capable of being registered. The teacher and student participants show great interest in the work. Scattered, international literature on research has been found.

UTILITY: Firstly, a proposal on better study methods sent to the implicated student participants. Next, a proposal for better advising on homework to the teachers and schools participating. At the same time, feed-back to educational researchers in the form of criticism of concepts and evaluation of theories.

KEY WORDS: Study technique, study methods, mathematics instruction, adult education, self-directed learning, action research, ITV as a research tool, technical educations, university education in the natural sciences.

PUBLICATIONS:

Poulsen, S.C. Study skills and mathematics achievement. Copenhagen: The Danish Institute for Educational Research, 1970. 29 pp.

First year university mathematics students were interviewed twice during the spring to determine relationships between study-methods, amount of study-time and examination results. A rather clear-cut pattern emerged and is described in this report. The original danish book numbered 171 pages and was issued in 1968 with the danish title: Oplevelse af egen studieadfærd.

Poulsen, S.C. The scientific basis of our knowledge about study methods. Copenhagen: The Danish Institute for Educational Research, 1973. 17 pp.

Our present knowledge of study-methods rests on a very shaky foundation. Renewed research must use better research methods. These methods are outlined.

This report is a direct translation of an article with the danish title "Studiemetoder" which appeared in the danish magazine "Uddannelse", 1969, volume 2, 354-364.

Poulsen, S.C. Follow-up on university students of mathematics three years after admittance: Summary of a research report. Copenhagen: The Danish Institute for Educational Research, 1974. 1 p.

Questionnaire follow-up on the study described in "study skills and mathematics achievement". 45 of 46 forms were returned. Half of the students had dropped out, but did generally well in other subjects at the university and educations elsewhere. Widespread dissatisfaction was found concerning the counseling at the point of leaving the gymnasium and entering the university. Danish title: Efterundersøgelse af 46 matematiklinjestuderende, 1970. 56 pp.

Poulsen, S.C. How-to-study guide. Mathematics I. Copenhagen: The Danish Institute for Educational Research, 1974. 24 pp.

The guide was based on the results from the investigations described in: "Study skills and mathematics achievement" and "Follow-up on students of mathematics three years after admittance". It covers the first year on the university with suggestions on study-skills, amount of study, emotional crisis and related litterature. The danish title is: "Studievejledning. Matematik I". It was issued in 1969 and distributed to mathematics students and to students in technical and engineering colleges.

Poulsen, S.C. How-to-study methods? - Where did they go? Copenhagen: The Danish Institute for Educational Research, 1974. 15 pp.

In the 60's initial interest among teachers for the introduction of "study-methods" in secondary and advanced levels gradually gave way to disappointment and lack of interest. The factors behind this development are described, and a different perspective on the value and role of study-methods is suggested. The report is a direct translation of an article with the danish title "Studieteknik: Hvad blev der af den?", which appeared in the danish magazine "Dansk pædagogisk tidsskrift", 1974, volume 22, 89-95 pp.

Poulsen, S.C. The study-methods in mathematics (SIMAT) project I: Background, assumptions and perspectives. Copenhagen: The Danish Institute for Educational Research, 1975. 31 pp.

First of three reports presenting the SIMAT project. Open discussion of motives, impulses and values behind the study. The primary objective is to develop practical study methods to be used by educationally underprivileged adults in the learning of mathematics. The concepts of collective learning and reciprocal teaching are outlined. Danish title: Projekt studiemetoder i matematik I: Forudsætninger, antagelser og perspektiver. 1975.

The mimeographed reports from the Institute can be sent to those interested as long as they are available.

WORK JOURNAL

The recordings were begun with the first participant of the actual investigation:

Female, 40-49; Senior high-school class; background as a housewife and of part-time work; desires to become a primary school teacher.

As to the experiment itself, all were surprised that the somewhats artificial learning situation seems to encourage the psychological climate rather than impede it. One could imagine that the cameras, lighting, microphones, cables etc. would give a cold and technical atmosphere, but the present conclusion is that when the technical apparatus functions well, when it becomes the subordinate means to an end, as it should be, it is forgotten quickly by both the participant and the leader of the experiment. They can almost totally concentrate themselves on the actual work at hand: registration, analysis and change of a learning process, that is transfered from the participant's reality into the laboratory.

There have been made seven (7) recordings of the first experimental participant. We now are prepared to analyse the material, which at present is found only on the video-tapes. For use in a more exact process description, it is most likely that a detailed transcription will be necessary; but as a start, the project's leader and the mathematics advisor will observe the recorded material as a means to clarify the relationships between the mathematical and the pedagogical; between the mathematical argumentation the person practices and the learning that simultaneously takes place; between the mathematical methods and the study methods.

SIMAT Report No. II (an exact, argumented description of objectives and definitions of special terms) is half-way finished in manuscript form.

The analysis of study methods is therefore not so developed that participant No. 1 can gain advantage of it. To ensure that her participation will still be of value to her, we will trans-

form a few of the recorded ITV situations to examination simulations, as the examination is quite near.

It is the thought that the mathematical adviser will pose as the teacher. This 'side-line' can illustrate something about the relationships between the adults, 1) studying to examinations, 2) utilization the 20 minute preparation time, and 3) presentation of the mathematics subject in a realistic "exam situation". In the preparation period, the students are allowed to use textbooks, outlines of the material, etc. It is obviously the realistic study-methods that will be illustrated here; more precisely, in what degree and in which form the adult student develops and makes use of written outlines in connection with their work with the text.

LATEST NEWS

The 'Exam' situation was recorded on the 9th of May with the desired result: It was clear how the organization of the outlines of the material affected the exam presentation. The preliminary conclusion is that the student should at home work up (study methods) a **clearly** defined introduction and a priorities list of the more important segments of the material for each subject or section of the text (formulas, definitions, examples, and procfs). In other words, not only go through the material for oneself, but also have developed and tested a plan for the **oral** presentation of the material.

AND REMEMBER

Once more: The reader is urgently requested to reply and write to the projects leader about the project, these "Newsletters", etc., also informally. Hopefully also from the adult students themselves.

Already the first experimental participant has voiced a very constructive and relevant proposal: To investigate how much the broadly written textbooks - which are meant to be readable by the student independently of the teacher - are formulated in such a way that their purpose is, in fact, fulfilled. This could be tested for example by letting 2 or 3 students attempt

to make out the meaning of an unknown textbook chapter and record the sequence in the ITV lab. The proposal can be realized with the confines of the project's boundaries and will be included in next year's research plans.

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LATEST NEWS AUGUST 1976

The project has been suspended for a year because of economic and technical difficulties in establishing new and larger laboratory facilities.

It has now been taken up again and the planned research programme will be continued.

LETZTES NEUES AUGUST 1976

Seit einem Jahr ist das Projekt wegen wirtschaftlichen und technischen Schwierigkeiten in Verbindung mit der Einrichtung von neuen und grösseren Laboratorien unterbrochen.

Es wird jetzt wiederaufgenommen und das geplante Forschungsprogramm wird fortgesetzt.

DERNIERES NOUVELLES AOUT 1976

Le projet a été suspendu depuis un an a cause des embarras financiers et des difficultés techniques en installant des autres laboratoires plus grands.

Le projet est maintenant repris et le programme de recherche fixé est continu.

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The Institute's Department for Research in Educational Methodolgy has in 1974 started a research project in study methods in learning mathematics (the SIMAT project). The purpose is to develop study methods for adults with low education wanting to learn mathematics for a re-entering in the educational system or for a re-training. We expect the results to be of use also for high schools, technical schools and universities. Please see the enclosed newsletter with presentation of the project.

The aim of this letter is to get into touch with interested teachers, mathematicians, and psychologists as well as to get the following information:

1) Names and addresses on persons who have been working - or are working - with similar problems, also associations and institutions.

2) Research literature and educational literature on

   a) description of realistic learning processes.

   b) methods to develop study methods suited for the study of mathematics.

   c) suggestions - tested or untested - for the students' own work with the (independent) study of mathematics (his homework).

3) Valuable bibliographies and relevant keywords for further search of literature.

Reports etc. sent to us will only be quoted with clear indication of the author. Reports in English from The Danish Institute for Educational Research on the SIMAT project can be sent free of charge as long as they are available.

Finally we ask you to forward this letter - or photo copies of it - to persons, institutions or associations who might be interested in the SIMAT project.

Yours sincerely,

Sten C. Poulsen
Research Director

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