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READING AND WRITING SKILLS IN PRIMARY EDUCATION

A REPORT OF THE EDUCATIONAL RESEARCH WORKSHOP HELD IN TILBURG (THE NETHERLANDS) 9-12 DECEMBER 1986

EDITED BY
MAY YOUNG, MARIE THOMAS AND PAMELA MUNN
OF THE SCOTTISH COUNCIL FOR RESEARCH IN EDUCATION
IN CO-OPERATION WITH
PROF. DR. L.F.W. DE KLERK, TILBURG UNIVERSITY

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PREFACE

The Tilburg Workshop was one of a series of educational research meetings which have become an inportant element in the programme of the Council for Cultural Co-operation of the Council of Europe since 1975. European co-operation in educational research aims at providing Ministries of Education with research findings so as to enable them to prepare their policy decisions. Co-operation should also lead to a joint European evaluation of certain educational reforms. The educational research meetings bring together researchers from the 24 countries taking part in the work of the Council for Cultural Co-operation. The purpose is to compare research findings on a particular topic of current interest; to identify areas of research so far neglected and to discuss possibilities for joint research projects. The reports, as well as a selection of the papers of these meetings, are usually published as a book so that Ministries and research workers, as well as a wider public (teachers, parents, press) are kept informed of the present state of research at European level.

The meeting in Tilburg goes back to a suggestion made by the Project Group, "Innovation in primary education," subsequently taken up by the CDCC. The Institute for Educational Research in the Netherlands (het Instituut voor Onderzoek van het Onderwijs, SVO) kindly agreed to organise the Workshop, in co-operation with the CDCC, and the University of Tilburg offered to host it.

The theme "Writing and reading skills in primary education" was chosen because of the growing functional illiteracy among school leavers in Europe. Although schools alone may not be able to cope with this problem, it was felt that a new approach to reading and writing in primary education might help to predict reading difficulties and prevent illiteracy through special support for poor readers.

The Workshop took place in the Senate Room of the University. Seven commissioned papers (covering Belgium, Denmark, France, the Federal Republic of Germany, the Netherlands, Sweden and the United Kingdom) were presented in plenary session and then discussed in three working groups. National and individual reports from a number of countries, as well as lists of research projects and bibliographines, were tabled as background material. On the final day the Rapporteur General, Professor Dr. L.F.W. de Klerk from Tilburg University, summed up the situation and the conclusions as he interpreted them.

The following countries were represented: Austria, Belgium, Cyprus, Finland, France, the Federal Republic of Germany, Ireland, Malta, the Netherlands, Portugal, Spain, Sweden, Switzerland and the United Kingdom. There were also observers from Hungary, Yugoslavia and WCOTP. The list of participants is given at the end of this book.

The Council of Europe is particularly grateful to the Institute for Educational Research in the Netherlands (Dr. J.G.L.C. Lodewijks and Drs. C.M.R. Verkoeijen), as well as to the local organisers in Tilburg (Dr. R.J. Simons and Ms I.van Dijk) for their excellent work in preparing and organising the Workshop. The Council of Europe would also like to express its thanks to the Rapporteur General (Professor Dr. L.F.W. de Klerk), the lecturers, and to the group chairmen and rapporteurs. The editing was done by Ms May Young, Ms Marie Thomas and Ms Pamela Munn, from the Scottish Council for Research in Education. They, too, deserve a warm word of thanks.

Michael VORBECK
Head of the Section for Educational
Research and Documentation

Strasbourg, 5 February 1987

PART 1:
REPORTS AND COMMISSIONED PAPERS

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1.1 READING AND WRITING: A (META) COGNITIVE VIEW

by

Prof. Dr. Len F.W. de KLERK, Rapporteur General

1.1.1 INTRODUCTION

Writing can be considered as the most important invention in the history of mankind. Without a written language, a highly civilized culture is unimaginable. Reading and writing are vital skills which are necessary for adequate functioning in every civilized country in the world.

It is generally accepted that the development of literacy in the native language is a very important objective of elementary education. However, there is a serious debate as to what must be the ultimate goals of the teaching of reading and writing. Some schools seem to stress the learning of basic skills (such as decoding and spelling). Other schools pay more attention to the functional and communicative aspects of reading and writing.

One of the main reasons for such a debate, which sometimes is quite feverish, is that the topic of reading and writing has attracted considerable interest from scientists of different disciplines. Besides policy makers, we find, among others, linguists, sociologists, and psychologists. Even within a particular discipline there may be several specializations. Among the supporters of the linguistic approach, for example, there are educational, socio-, psycho-, and anthropological linguists, each of them having his own ideas about how and what to teach with regard to reading and writing.

In this general report of the workshop on reading and writing, the (meta) cognitive view has been stressed.

1.1.2 TECHNICAL READING:

1.1.2.1 Decoding and recoding

School reading is a broad curriculum area, involving many instructional objectives. With respect to these objectives, a distinction can be made between —

what is referred to as — technical reading and reading comprehension. The main purpose of the teaching of technical reading is to promote learning to translate or decode written symbols into the oral language the child already speaks. This decoding process stands at the core of reading.

In order to be able to learn to decode printed words, the child's oral language skills must be relatively well developed.

Each language has a restricted number of phonemes. By using rules for combining these phonemes it is possible to produce a great many words. Similarly, rules for combining words make it possible to produce a virtually unlimited number of sentences.

Within the context of speaking and listening the child must have sufficient knowledge about these rules. He must know what sounds or combination of sounds belong to the oral language (phonology); he must know how words are put together in sentences (syntax), and what words stand for (semantics). The learning of the various letter-sound correspondences is dependent on certain pre-reading skills. Not only must the spoken word be available to the beginning reader, he must also be able to identify letters and letter configurations. Although there is a tendency to see an object's shape as unchanging regardless of the visual orientation we see it in, the child must learn, however, that a "b" is not a "d", nor a "p" a "q". When a set of objects is rearranged, it still remains the same set of objects. Yet, the combination "au" is not the same as "ua". Pre-reading skills such as discrimination and identification of letters, left-right processing of information, and the associations of symbols with sounds, must be sufficiently mastered before formal teaching of technical reading.

1.1.2.2 Comprehension

Technical reading focuses on the identification of the meanings of individual words. It is assumed that the meanings of words are stored in that part of the long term memory that is called the mental lexicon. The entries in this lexicon are not arranged alphabetically. There are essentially two mechanisms by which an entry can be accessed. One is to use the visual pattern of a word as a code, and the other mechanism is to sound out the words. Here it is through vocalization that the meaning becomes activated.

In skilled reading, the visual code is faster and will be first to reach the lexicon. However, when a word is not immediately recognized or difficult, then the sound code might be more adequate. In both cases, lexical access will lead to the activation of literal comprehension of words.

Literal comprehension is one of the objectives of the teaching of reading. This is sufficient for reading tasks such as looking up departure times in a railroad time schedule or telephone numbers in a telephone book. The ultimate goal of reading is, however, comprehension in the sense of understanding utterances or drawing inferences from them. Thus, comprehension may even involve going beyond the

information literally or explicitly stated.

1.1.2.3 Reading as an interactive process

According to Weiss (1986), learning to read is a developmental process, whereby a number of stages can be distinguished. In the first stage, the child discovers that there must be some relationship between the oral language and what is presented in the form of prints. Gradually he learns to recognize the shapes of letters and the sounds they represent. In the second stage, the child starts reading by identifying the meaning of each word in a text, one at a time. Later on, as his vocabulary increases, the reader often uses only part of the visual information. He guesses the meaning of the words on the basis of his knowledge of the writing system as well as of the spoken language. The extent to which phonetical codes may guide his reading in this stage depends on the particular language.

In the third stage the surrounding context of the sentences comes to play an important role. The reading process probably begins as a bottom-up process, starting with the identification of letters and ending with the understanding of the meaning of whole passages. According to Weiss (1986) the reader will be guided more and more by his expectations about the text. In fact, reading becomes an interactive process (rather than a pure top-down process). In understanding a sentence, for instance, sometimes after getting just a few words, the reader may jump to what he thinks the entire sentence means. The few words may activate a whole scheme that is stored in his memory and that is used to help sentence understanding. Such schema guidance is very common, which means that language and memory are closely related in understanding both written and oral language (see also Schank, 1982).

1.1.2.4 Reading and problem solving

Failure to achieve the standards of performance for each of the various stages of the reading process is generally recognized as being a major problem in most primary schools in Europe. The information processing model of reading — as previously outlined — suggests that problems can occur in one or more component reading skills. There is evidence suggesting that skilled and poor readers may differ on each of these skills. This may be inferred from the experiments that have been discussed by Dehn (1986). This author has conceived of reading as a matter of problem solving. According to this view, trying to identify the meaning of a single word is a problem, as is trying to understand what a writer is communicating.

Good and poor readers do not appear to differ so much in the number or type of errors they make, but rather in the way they correct them. The good readers seem to be more flexible and accurate in correcting their errors.

From Dehn's (1986) review, it can be concluded that proficiency in decoding and recoding is needed in order to carry out higher order "meta operations". She did not find, however, that poor readers' decoding and recoding skills are not as

accurate as skilled readers. Rather it appeared that both bypes of readers differ in the way they use strategies to attack their problems. Good readers are better able to develop and use heuristics — selective searches that look at those aspects of the problem that are most likely to produce a solution. This is in line with the classical work of Duncker, who found that problems often are reformulated into smaller subgoals. From this work it also appeared that hints may be very helpful in finding the correct solution. Dehn (1986) found that good readers make better use of such hints than poor readers do.

For the more advanced level of formal reading instruction, it should be taken into account that reading may be done for many reasons. To ensure that the goals of reading are met optimally, the meta-operations are of great importance. These refer to the reader's cognitive processes such as goal setting, strategy selection, evaluation, and remediation (see also Gagne, 1985).

A skilled reader sets a goal and selects a reading strategy. When the goal is, for example, getting an overview of a newspaper article, then skimming the text might be an adequate strategy. When directions for use must be understood in order properly to perform a series of operations, then the task requires literal comprehension for which reading word by word might be an adequate strategy.

A skilled reader will check from time to time whether his goals are being met. If not, then he must use some strategy to remediate the problem, such as re-reading or asking for help. This means that the reader must be able to recognize his problems and that he must know how to deal with them. The research, discussed by Dehn (1986), suggests that the heuristic approach that has been recommended, may help the reader to plan and to monitor his cognitive activities (such as planning, strategy selection, evaluation, and remediation) while he is performing the reading task. This is important, because skilled readers appear to be better at monitoring and controlling their meta-operations than less skilled readers (see also Palincsar & Brown, 1984).

1.1.3 COGNITIVE LEARNER CHARACTERISTICS

1.1.3.1 General

Generally speaking, it can be said that a teaching learning situation has to be designed in such a way that it will maximize the performance of the learner along prescribed dimensions and on specific criteria. The question is, however, to what extent and in what way a teacher must take account of the fact that individuals differ from each other in their abilities to read. Usually, difficulties occur when the child has been undergoing formal reading instruction for some time. It would be better, of course, if such difficulties can be predicted. The question is what the relevant initial conditions for reading instruction are. Which pre-reading skills, prior experiences, interests, beliefs, expectations and attitudes are the learners supposed to bring to the reading task? On which basis should instruction be built?

One way to get an answer to this question is to conduct fundamental research. An instance of this approach has been provided by Mommers (1986). The central question underlying his research project is which skills the reader must bring to each stage of the reading process. The emphasis in this study was on the relationship between spelling, decoding, and reading comprehension.

Mommers (1986) has administered a number of tests. Analyses of the test results showed that three different factors could be distinguished: a general ability factor and two more specific factors (i.e. a non verbal IQ factor and an auditory factor).

The general ability factor appeared to be a rather good predictor of reading comprehension achievement after some months of formal reading instruction. Later on, however, the influence of the general factor on reading comprehension decreased.

The auditory factor was positively correlated with both decoding and spelling. As formal instruction proceeded the influence of speed of decoding on reading comprehension increased, reaching the level of significance at the period of transition from beginning to skilled reading.

In general, the results are in accordance with the view that reading is a complex developmental process, involving different component skills. During formal instruction, the relationships between these component skills may change. This means that the impact of each component on skilled reading performance may be different at different points in time.

The importance of Mommers' (1986) approach is that it may provide useful information for the construction of diagnostic instruments. With the aid of these instruments it is possible to predict reading difficulties at various stages of the reading process. Prediction of reading difficulties is a *conditio sine qua non* for prevention. When a teacher knows which prerequisite skills are underdeveloped or are showing deficiencies, then training programs can be used to remediate the particular problems. The key to the success of reading instruction is that the readers can be motivated and helped to correct their difficulties at the appropriate points in the learning process. This requires early diagnosis and the availability of adequate training programs. Fundamental research may — in the end — provide the materials to make such a key.

1.1.3.2 Learner characteristics and reading materials

The fact that the reading process occurs according to certain stages has also been emphasized by Jansen (1986). Three stages are distinguished by this author, which run parallel with what we have referred to as decoding, literal comprehension and inferential comprehension, respectively. In fact, these labels can be seen as general indications of instructional goals. In planning for teaching, they provide a guide for choosing subject matter content and for sequencing topics. According to Jansen (1986), the content is only one aspect of the reading material.

Two other aspects should be taken into account as well: the language that is used (e.g. concepts and words) and the visual appearance of the materials (e.g. pictures, colours, letter types, etc.). These three aspects, together with the three developmental stages that have been distinguished, constitute a 3x3 matrix. This matrix can guide the selection of materials to be employed in the actual teaching process. It is a device to adapt instruction to the changing state of the learner: to his level of reading performance, his cognitive abilities, and his interests and motivation, at any particular point in time.

1.1.3.3 The reader's (pre) conceptions

In general, it can be said that a teaching/learning situation is designed to advance the learner from one level of achievement or competency to another. This means that the teacher always assumes that the learners possess some entry skills or readiness. These skills are usually defined in terms of developmental (cognitive) abilities and/or motivation. However, Olsson and Dahlgren (1986) have focused attention on another personal variable: the child's conceptions of the learning task. By using qualitative methods of investigation, these investigators were able to collect information about the children's (pre) conceptions of reading. On the basis of their conceptions it was possible to divide a number of pre-school children into two groups. The criterion was the "awareness of written language". Children who were aware of both the function of reading and the reading process itself were referred to as "being aware of written language". Children who were unaware of either one of the two aspects or both were labelled as "being unaware of written language".

These conceptions were "measured" just before formal instruction. After one year of reading instruction, information about the children's reading performance was collected. The results of this study showed that there is a rather high correlation between children's (pre)conceptions of the reading task and their reading performance. Obviously, the children's (pre)conceptions form another factor besides their basic cognitive skills which affect their degree of success at reading. Unfortunately, the sample was too small to know whether the predictions are sufficiently accurate to be useful. But this line of investigation is very promising, the more so because the authors have also indicated how the (pre)conceptions can be improved. They propose to use what they refer to as "metacognitive conversations". The teacher (or adult) should actively participate in such discussions, trying to make the children aware of why they should learn to read, and how reading will lead to success. These are assumed to be the key elements in obtaining good results.

1.1.3.4 Differentiation and aptitude treatment interaction

In the above, attention was focused on the (initial) conditions of reading instruction. It can be concluded that there are many factors that may influence reading performance. These factors include, besides the child's cognitive abilities (or disabilities), his pre-conceptions, prior experiences, attitudes, needs, etc.

These are personal variables, which are the result of a continuous interaction with the environment. Although it is often difficult to assess these variables, instruction would be largely wasted if it should not take them into account.

Usually, all children receive the same instruction. However, it is also possible that a child needs a special instructional treatment because he has some cognitive deficiences. In that case the teacher should take account of the fact that children with different abilities must be treated differently.

This approach has been advocated by Janssens and De Corte (1986). In Belgium, a package has been developed for (Flemish) language instruction in the primary school. For each topic, three different texts were constructed; a basic text for normal classroom instruction, a simpler version for the poor readers and an enriched programme for the proficient readers. This variety of text versions made it possible to accommodate to individual differences, but also to increase the motivation of the readers.

Every new topic began by focusing on common relevant experiences. By discussing these experiences, the teacher attempts to provide the learner with what Mayer (1975) termed a broad receptive set. After the oral discussion, written information is presented that is related to the particular topic. The receptive set and the continuous interaction between oral and written language are supposed to promote both reading competence and motivation.

After a few lessons, tests were administered to determine the children's progress. The poor readers were assigned to the simpler version of the text, whereas the skilled readers got the enriched version. Because the children were helped when and where they had difficulties in reading, this method of differentiation proved to be very successful. The children seemed to achieve better reading results, and they showed a high motivation for reading. Although this was also true for the relatively poor readers, the results indicated that, as time went by, the differences between the poor and skilled readers increased. This means that the skilled readers attained very high standards of reading performance.

For many teachers it appeared to be hard to manage the method of differentiation. Via in-service training and by providing the teachers with a good manual, containing many useful tips, the developers of the differentiation programme have tried to solve this problem.

According to this approach — which can be referred to as compensatory teaching — all children start with the same instructional method irrespective of possible cognitive deficiencies. For some children the particular method may be adequate, but for other children it may not be. With one general method for the whole class, these latter children may show difficulties. Often they even become labelled as retarded children. To remediate their difficulties it will be best to use a method of instruction that is adequately suited to their cognitive abilities. The same holds true for the more proficient readers. For them a general method might cause boredom, carelessness, or de-motivation, resulting in a reduced achievement.

The method of compensatory teaching can be further improved when it is based on research that is designed and carried out according to the "aptitude treatment interaction" (ATI) paradigm. The rationale for this type of research is that no one instructional method can be optimal for all pupils. Instead, one instructional method may be optimal for one group of pupils and an alternate method may be ideal for another group. ATI-research may reveal the relevant cognitive skills and abilities that must be taken into account when the method of compensatory teaching is used. Moreover, the effectiveness of each mode of instruction can be investigated in relation to the cognitive characteristics of the pupils. In planning ATI-research it might be profitable to follow Tobias (1982) advice not merely to "vary different instructional methods and monitor achievement or other outcomes. In addition, the types of cognitive processing activities that occur while students are working on instructional material should be studied". This appraoch will even be more powerful when it also includes metacognitive skills such as predicting, planning, checking and monitoring. In our opinion the time is ripe for combining ATI and the metacognitive psychology of information processing. Especially the development of training programmes that are needed for compensatory teaching will benefit from this combination.

1.1.4 WRITING

1.1.4.1 General

School writing has received relatively little attention. In some ways it is the opposite of reading. Reading is the understanding of ideas which are presented in printed form, whereas writing is the production of ideas in the form of prints.

Both reading and writing can be conceived of as complex developmental processes. The most basic component of writing is the motor skill of holding a pencil and producing letters. In the first, cognitive stage of the motor learning process, writing requires a great deal of attention and practice. Here, the process can be stimulated by teaching the learner how to analyze the structure of each letter (Pantina, 1957) and by providing feedback. Several studies suggest that skilled writing is largely guided by an abstract representation, or motor programme, that is stored in the writer's long term memory. For each letter, the characteristic pattern of up- and down strokes seem to be the relevant information that is contained in the motor programme. Other parameters, such as accuracy and speed, will be specified during the execution of the writing movement (Thomassen, Van Galen & de Klerk, 1985).

In a latter stage of the writing process, the writer pays more attention to spelling, grammar and punctuation while he is writing. In the end, writing becomes a complex process of generating text. This process starts with a mental representation of the topic and the goal, and ends with the production of a written composition. The essence of this ability is to generate and to translate ideas. This, however, is not a straightforward process. It is more likely to assume that it is an iterative process, starting with the generalization of ideas, followed by a writing

phase which may also include evaluation and revision. The various component skills, such as generating, planning, and organizing ideas, translating these ideas, and reviewing and revising the text as it is produced by the writer, may occur either before, during or after writing, in any order. In fact, it requires a person to have a goal and to search for means to reach that goal. Once the goal has been set, there are many strategies that writers can use to reach it. However, the problem that is to be solved by the writer can be conceived of as an ill-defined problem. It is always very difficult to formulate good criteria that can be used to judge whether a solution is correct. It is also difficult to give adequate directions as to how to solve the problem. Strategies for solving such problems should include breaking the problem into several sub-problems and (re)organizing the whole situation.

Studies comparing good and poor writers reveal that they differ in the quality of the representation of the writing problem, and also in the organization of their knowledge with respect to the problem. These two aspects may affect the solution of the problem. We agree with Gagne (1985), who states that much research is needed to understand the problems of the poor writers. "We do not know, for example, the mechanisms by which problem representation and knowledge organization operate during problem solving. The coming years should give us a better understanding of problem solving and how it can be improved during the school years".

A problem solving approach to writing avails itself to large scale treatment within a European context, because its methods need not be bounded by the frontiers of specific languages. Far from being diverse, such a large scale approach may be disciplined by means of agreements between the research groups that are now already in existence, but not connected with each other through joint programmes. The Council of Europe seems to be the most likely candidate to initiate and coordinate such a large scale European research project.

1.1.5 CONCLUSIONS

From the above, a number of conclusions can be drawn which are worth noting. First of all, it can be said that a number of investigators have stated that reading is to be conceived of as a developmental process. Often, three different stages are distinguished. In the first stage, emphasis is on decoding. The second stage is a transient stage to the third, where the focus is on either literal understanding or inferential comprehension. However, there is no agreement whether formal reading instruction must follow these stages (bottom up) or that one has to start with the functional and communicative aspects of reading (top down).

Secondly, it appears that there exist large individual differences with regard to the sort of knowledge and experiences the child brings to the teaching/learning situation. The relevant personal variables are not limited to cognitive abilities (or disabilities) only. Variables such as attitudes, beliefs, motivation, experiences and preconceptions should also be taken into account. These types of variables are no stable personality traits, but rather a result of continuous interaction with the direct environment of the child. To encourage positive attitudes, beliefs and

motivation, and to build instruction on existing experiences and (pre)conceptions should be major objectives for teachers. Only if reading and writing have relevance and purpose for the learner, may teaching then be optional.

Third, the child must learn to read for a variety of purposes. This requires the learner to set goals, to plan, and to see if the goals are being reached. These skills are studies within the context of metacognition and refer to the child's awareness and control of his own cognitive processes. Reading instructors should be more concerned with teaching and training of these metacognitive skills in addition to direct content instruction, which is usually their main concern. Children must be encouraged to become active participants in the process of learning to read. This is especially true when objectives such as comprehension and thinking (in the sense of drawing inferences) are included. In such cases, the learner should be encouraged frequently to ask himself questions such as: "Do I understand it?"; "Can I give a good example of it?"; "What else do I need to know?"; "Is this strategy working for me?". Emphasis on such metacognitive activities will lead to an improvement of reading performance.

Fourth, reading appears to be an interactive process. In fact, as a word (or sentence) is read, a mental representation of its meaning is formed in the short term memory. This is a temporary storage device which serves to mediate between long term memory and the execution of reading processes. Two key assumptions seem to be valid: (1) that reading is an interactive process, largely guided by the expectancies the reader has about the meaning of a word or a sentence (or even a whole passage) on the basis of what is stored in his long term memory, and (2) that this memory can be reached either directly, through a visual path, or indirectly through a sound path. Direct access will be promoted best by the whole word method, whereas indirect access is supposed to be emphasized by a more phonetical method. Nowadays, the so-called dual access hypothesis is becoming increasingly popular. According to this hypothesis, comprehension can be either direct or indirect, depending on the proficiency level of the reader and on the nature and difficulty of the reading materials. A combined approach, which is also in accordance with the interactive view of the reading process, seems to offer the best prospects for the teaching of reading comprehension.

A fifth conclusion is that it is not quite clear to what extent functional illiteracy, as it has been called, is recognized as being a social problem in every country of Europe. Though the concept is not clearly defined, it appears that the percentage of functional illiterates differs somewhat from country to country within Europe. But stating the problem does not guarantee a solution, nor will direct attack be the best way of arriving at it. What is needed is a solid and reliable knowledge base. This knowledge can be obtained from all available sources, e.g. fundamental research, theoretical formulations, and certainly also everyday observations. This information must be put together to form the ground for programmes, aiming at either prevention or remediation of reading difficulties. But equally important would be the need for a continuous process of testing these programmes in response to new evidence and, of course, feedback from the field. As a result of such an interaction between theory and practice, programmes will be so well

developed in the near future that literacy problems will occur far less frequently than they appear to occur today.

Research on reading and writing has made significant but limited progress in the solution and prevention of difficulties. Analysis of the current status of this research in Europe suggests a need for co- ordination of our research efforts. We need to abandon a piecemeal approach. This can be stimulated, for example, by organizing European workshops on reading and writing, say bi-annually. Such workshops offer the possibility for researchers and policy makers to meet each other and to discuss the problem of (functional) illiteracy, which probably is a serious problem in most countries of Europe.

An important aspect of the whole issue is how to deal effectively with large individual differences in reading and writing capabilities. This is not a new problem, but a problem that has taken on new urgency. In order to be effective, research requires coordinated efforts on a vigorous European scale. Although the problems entailed in conducting such international large scale research programs cannot be over-estimated, both the practical and theoretical benefits that would accrue warrant the expenditure of these efforts. Let us hope that this will be challenging enough for the Council of Europe to take further initiatives.

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