

**TRAINED RESEARCH CONSUMERS
– A KEY TO BETTER KNOWLEDGE UTILIZATION?**

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Background

A current research problem is how dissemination of research results to different professions should be organized. Earlier studies on research information and dissemination have given a number of clues to this. However, the majority are of the sort that try to find, explain and understand factors that influence various professional groups' utilization of research results and it seems as though a common denominator is an underlying assumption that "if only we understood how different groups accept knowledge and could present it in a form that is comprehensible, we could get them to use it" (Tydén, 1993a). The perspective is still largely producer-biased, where the sender, convinced that the knowledge he/she possesses is of importance for the recipient, does everything possible to get it across.

Studies on research information and its utilization have been largely concentrated on how and why research results have been used, in one way or another. Answers provided by earlier studies show that research results can be used in many different ways, largely governed by various individual or organizational requirements. Further studies in this direction have only marginally added anything new apart from confirming earlier results.

It seems as if recipient studies of this type lead into a cul-de-sac and have had their day. By means of earlier research, I would like to display a pedagogic perspective to the study of research information and dissemination. I hope to discuss and develop methods and ideas whose purpose is, from the recipient's perspective, to improve the dissemination of research.

Research consumers

There is a considerable fund of experience in research dissemination in the agricultural sector of society, where in several countries organizations have been built up for this specific purpose. It started in the U.S.A. with the Morrill Act of 1862 which prescribed that each state should designate a largish area of public land for the purpose of agriculture, the proceeds of which should be used to finance a high school or university one of whose objectives would be to provide theoretical and practical education in agricultural matters (Rogers, 1988). In agriculture in Sweden, there has been an interest in means for the dissemination of knowledge ever since the mid-19th century. Swedish agriculture is now that sector of the economy that can boast the most diversified and comprehensive organization for the spreading of technology and methods of husbandry.

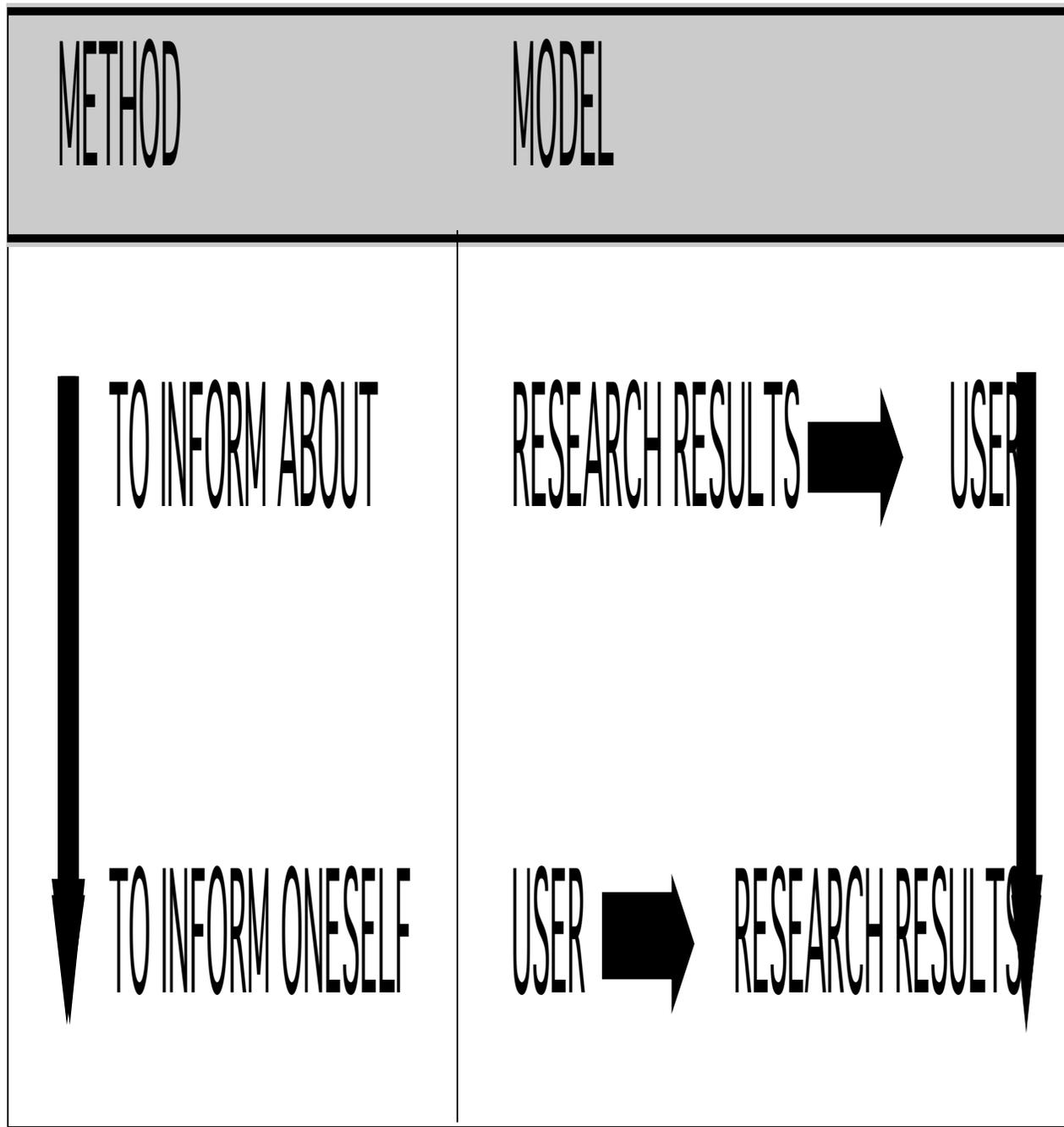
An important conclusion drawn from agricultural experience is that the transfer of knowledge benefits from continuous, long-term contacts between senders and recipients and that those who provide the knowledge are accepted by the recipients and have a good insight into the recipient's situation. One perspective that is lacking, however, is that of evaluation. What sort of knowledge is being provided? How can research results influence other aspects of the farmer's life and work? Experience in agriculture indicates that efforts to persuade farmers to use new agricultural techniques have been successful, though as regards the intensive use of chemicals that followed in the wake of this campaign, we can now see that our efforts have given rise to intractable problems, especially regarding the deleterious effects on the environment. The means for providing the information were correct, but the message was wrong (Nitsch, 1990).

Those who accept or utilize research information are in certain decisive respects overlooked and the strategy of information is instead characterized by a "top-down" approach. Nilsson & Sunesson (1988) discuss what it can mean to be exposed to knowledge. What are the consequences for those exposed? Studies on this aspect are few. Knowledge is a double-edged weapon and its acceptance is not invariably beneficial. It can lead to a narrow, even intolerant outlook, as when efforts are made to force reality to comply with techniques and tools devised and available within one's area of knowledge. Nitsch (1990) characterized the meeting

between research at the Swedish Agricultural University and practical agriculture as a cultural clash between two widely differing worlds. Researchers represent a formal rationality and the values prevailing in their own world, whereas farmers represent a broader, applied rationality characterized by the circumstances of their life and work. Nitsch sees a tendency in our society to attach too much importance to the results of research (formal rationality) in comparison with workaday knowhow and practical skills (applied rationality). This indicates that research information and dissemination ought to incorporate phases where the recipient is made the focus of attention and research can be placed in a wider context in the recipient's life and be assessed and tested on that basis.

Different occupational categories often have professional fields that span several large and often diverse areas of knowledge. One aspiration of the world of research, intermediaries and others, to provide information on research results from all areas of knowledge that may be of interest for a particular occupational category, may occasion problems for workers in that particular field. This task may prove unmanageable both physically and mentally and the flow of information may in that case prove counter-productive. The recipient gets a bad conscience when faced with the mountain of information lying unattended on his desk; he may even feel obliged to consign it to the wastepaper basket.

The circumstances described above imply that for many occupations it is important to shift the emphasis of research information and dissemination from the traditional sender perspective to that of the recipient. One conclusion is that the most important point is not how we can provide people in working life with the results of research, but rather how they themselves can seek and obtain this information. The main emphasis ought thus to be shifted from a passive "to be informed" to a more active "to inform oneself". It ought to be emphasized here that a change of course toward a more active usage does not imply that the sender, in the role of intermediary or researcher, will have a less active role. Quite the reverse; such a change of attitude toward research information and dissemination would place large but partly different demands on the sender, as will be discussed later. The purpose of discussing a shift in perspective is to focus on a neglected area. This change of perspective is described in the following table.



Instead of studying how information from the world of research reaches different occupational categories and charting obstacles to and prospects for research information and dissemination, there is a need to devise and refine methods by which professionals can themselves approach research and its results and even evaluate them critically.

One conclusion based on previous studies is that the professional is the one who is capable of posing many of the questions that currently arise in working life and who also is interested in and keen to get hold of knowledge that can help answer his questions and solve his problems. But to have the possibility “in theory” to put questions is not the same as always being able to do so in practice. One explicit problem area is just how one puts appropriate questions, how one identifies problems, how one gets one’s strategic priorities right and how one views one’s work in a wider perspective. Moreover, one’s faculties for reading, understanding and critically assessing the results of research may be limited. Stankiewicz (1979) states:

The main bottleneck in the social utilization of science today is the limitations of the adsorption capacity of many of the potential and actual users (Stankiewicz, 1979).

These obstacles cannot be surmounted either by an increased control over science or by improving the channels of communication. Investments in the entire R & D system run the risk, according to Stankiewicz, of reaching a level where the advantage will fall off rapidly if we do not take steps to improve the recipient’s capacity to avail himself of and apply the knowledge that is produced. The recipient’s ability to utilize research results is chiefly dependent on his own ability to identify and express his aims and needs. A personal analytical capacity is therefore, according to Stankiewicz, a precondition for effective utilization of external sources of knowledge.

An ability to make use of R & D results, Stankiewicz maintains, can be predicted from the extent to which a recipient shows any of the following characteristics:

1. Anticipation and acceptance of change (intellectual preparedness to analyse and seek information)

2. Appreciation of the importance of an analytical function in one's own organization
3. Development of the recipient's own research faculties
4. Willingness in employees to maintain a high intellectual standard
5. Active strategy for maintaining contact with the world of research

These characteristics emphasize the importance of learning in different occupational categories to formulate one's own problems, seek knowledge, critically scrutinize and assess research findings, analyse contexts, draw up priorities, etc. Professionals must learn to become active *research consumers* and this can be achieved by various means, e.g. research circles, further education. However, there is no universal guide to which combination of measures is the most appropriate for each occupational category; it must be arrived at by a process of dialogue with and within each individual group.

It is, however, important to point out, that intellectual capacity is only one precondition for research utilization. According to Elzinga (1993), people's interest in science is connected to their possibilities to act in their social context. Elzinga (1993) and Nilsson & Suneson (1988) state that research dissemination and utilization is a question of power. This implies that organizational factors also are of great importance but this is not discussed in this paper.

In a study of environmental and health inspectors (Tydén, 1993b) it was evident that training to become research consumers was important. This meant receiving instruction in methods and demonstrating how to identify problem areas and defining issues as well as showing possible ways to seek knowledge in that area. It was found that most of the inspectors would not within the foreseeable future devote themselves to research. One suggestion that emerged from the dialogue between the inspectors and the Institution for Environmental & Health Protection at Umeå University was that the basic training ought to embrace alternative courses in research methodology. Instead of the traditional courses, whose objectives are to teach students how to conduct a research project, one should concentrate one's efforts on teaching how to define issues and then seek solutions

by combing the relevant scientific literature. The ultimate objective is that the student, by utilizing this material, should be able to suggest various options for action. The purpose is to provide students with a guide so that in the future they can find their own way among research results and apply relevant parts.

The importance of training people to become research consumers was emphasized by the great need of support and advice currently experienced by environment and health inspectors. Those employed by the smaller kommuns, in particular, feel a pronounced need for opportunities to meet researchers in order to obtain information but sometimes chiefly to discuss matters. Teachers at the training units, civil servants at the various intermediary bodies receive pleas for help to an extent that far exceeds their ability to respond. These needs appear not to be diminishing; on the contrary, it would appear impossible to completely satisfy increasing needs by recruiting more personnel to these units. A more promising approach would appear to be to train the health inspectors themselves to search for and deal with research results.

Trained researchers at workplaces

In the discussion on dissemination of research results, the theory of two worlds has been presented. This originated in C.P. Snow's lecture "The two cultures" in 1959 (Snow, 1964). Snow, who was both a researcher in the natural sciences and an author, found remarkable similarities between these occupations as regards social status and background, financial standing, intellectual pursuits, etc. Moreover, he found that on the individual plane they did not differ in any material way. However, he did observe considerable differences in group level regarding psychological and intellectual environment and moral outlook. Both categories had markedly prejudiced attitudes toward one another and, consequently, difficulty in communicating with each other. Several researchers have preferred to attribute failure to use research results to the two separate worlds in which senders and recipients live and work, where completely different norms, time perspectives and systems of rewards prevail (Dunn, 1980; Stankiewicz, 1979; Rich, 1977; Caplan et al., 1975). To a certain degree this has been confirmed by empirical studies (Tydén 1991, 1993b) where, chiefly in the groups studied, a negative attitude to researchers initially could be discerned. Criticism was directed first and foremost against

researchers' ivory tower isolation, their preoccupation with abstruse matters and ignorance of the real world outside, as reflected in the aims of their research. Furthermore, researchers were supposed by the others to be incapable of speaking or writing in a comprehensible way.

The criticism can perhaps be explained by the two worlds theory, though it can also be elucidated by psychological theory. I had a feeling that criticisms went deeper than expressed words and I could trace a degree of lack of self-confidence and a sense of inferiority vis-à-vis the researchers. In view of this, the criticisms can perhaps be explained as a defence mechanism and/or a perceived need to assert one's authority. Irrespective of which theory is best suited to explain the negative attitudes to the world of researchers, one can appreciate that they hamper the dissemination of research information. Increased direct contacts between different occupational groups and researchers, and education of research consumers can be antidotes to this unsatisfactory state of affairs.

From a pedagogical perspective, a good research informer is a person who inspires confidence, who speaks the same language as the recipient, is familiar with the environment in which the recipient lives and works and who himself lives and works near the recipient. It is furthermore crucial that the recipient trust the informer. It is evidently difficult to find informants, who have all these qualities and, at the same time the qualifications required of an informant. These include an ability to find one's way around in the academic world, to be accustomed to reading, critically appraising and taking a stand regarding research reports; qualifications for which it is difficult to find an adequate training. In fact, there is no formal training for the post of research informant.

On the other hand, these qualifications are to some extent fulfilled by the training of researchers. Here one is taught to read and scrutinize various theories and methods and in this way gradually become acquainted with the academic world and that of research. Those who have studied to become researchers or undertaken other higher academic studies have at the same time gained a valuable qualification – that of research informant, as is underlined in a state publication from the Ministry of Education, on the role of research in society:

The most important way to nourish the exchange of ideas and knowledge between research and the rest of society is a basic academic education of quality and adequate breadth and extent. The results of research, its methods and attitudes must be conveyed to those who in their future work will contribute to industry and public affairs (Utbildningsdepartementet, 1992).

Such education must not be allowed to become too distant, however, as it is vital to keep one's contact network reasonably intact. The alternative is to maintain contacts with the university and the world of research by means of one's own research or similar activities.

This illustrates the advantage for both businesses and public authorities of endeavouring to obtain qualified staff by, whenever justifiable, employing people trained as researchers or having some other academic qualification. This conclusion is supported by the results of a study concerning the way research results are utilized by local authorities (Naustalslid & Reitan, 1992). The authors state that written reporting and direct information by personal contact between researchers and recipients are the two most frequently used channels and that employees, to a far greater extent than politicians, provide themselves with the results of research via these channels. But they also state that politicians nevertheless do obtain some research information:

Analyses show that especially employees with a reasonably appropriate background and interest in research serve as bridge builders between researchers and politicians (Naustalslid & Reitan, 1992).

Civil servants trained as researchers or interested in research played an important role as links between researchers and politicians in the local authorities investigated. An alternative or complementary approach is for businesses/public administrations to encourage their own personnel to have further education. If the firm or authority has a generous attitude to further education, the necessary competence can be created and research informants trained internally. Organizations must do this in such a way that the competence so gained can be put to practical use. They must be sufficiently flexible to permit staff to attend further education courses, etc. In this way, what has been termed "a learning organization" can be built up (Senge, 1990).

Another important aspect is the link between increased education and democratic development. Socrates was convinced that “he who recognizes good does good works”. According to Socrates, malicious intent does not exist; and if it were to arise, it must be due to ignorance. Socrates stated that, as a teacher, one must ensure that the pupils are imbued with an understanding that makes them good citizens; such an understanding emanates from teaching and improved standards of knowledge. Socrates’ ideas on education and improved knowledge as the most potent agent for democracy and antidote to oppression are today a fundamental concept of the Swedish educational system.

Research consumer – an asset for adaptation and change

Research is making rapid advances in many areas. Yesterday’s truths may be misleading or erroneous today. Today’s truths may be tomorrow’s lies. There is a pressing need to learn how to procure up-to-date knowledge, to keep abreast of research developments and how to assess them. Pure learning of the traditional, pedagogic kind can be a sheer waste of time and effort. It is more important to know how to put questions, “know-why”, than to pile up mountains of knowledge, “know-how”, that may be obsolete tomorrow. In this connection, the issue of education becomes crucial.

An advantage of having research consumers at a place of work is that they can increase one’s capacity for adaptation and change. It is not the substance of knowledge that is of primary importance, but the ability to critically assess, re-examine and adapt knowledge to one’s own reality. According to Rogers (1976), a method of teaching that strengthens one’s ability to adapt and change is the best for our changeable, Western society. Rogers was highly critical of traditional education, especially that form associated with the word “pedagogy”, i.e. instruction, guidance. “Teaching in my estimation is a vastly overrated function” (ibid.). Rogers feels that this kind of “teaching by purveyance” can serve the purpose of equipping a society that is characteristically stable and static, such as Aboriginal society in Australia, which has survived for thousands of years by tradition-bearing, i.e. conveying knowledge from one generation to the next. But in our modern Western society, there is constant change and what is more, it is accelerating. Conditions may change, new techniques and methods be devised, etc.

The knowledge that the teacher has assimilated for the purpose of conveying information to his pupils may already be obsolescent. That is why all teaching should serve the purpose of survival, in which case it must be adapted to the society we live in.

Just because of the rapid change that our Western world is undergoing, factual knowledge will become less valuable; the ability to critically evaluate knowledge, to select those parts one can make use of and see what needs to be developed, will instead become increasingly important. As individuals, we must develop an ability to assimilate and utilize in our own best interests all the information and knowledge with which we are deluged.

It may be appropriate here to emphasize once more that the results of research and development constitute only one of many parts of the puzzle when a problem is to be solved. When I discuss the concept of “research consumer”, it is important to keep this perspective in mind. The extent to which research results can contribute to the solving of problems varies from case to case. It is influenced, for example, by the precision with which the issue is defined, its complexity, and the degree to which the problem is general or specific in character. For people at work, the crux of the matter is to solve a particular task – to get the right thing done. This requires coordination of several factors, such as the practical know-how available, the formal planning within one’s organization, contextual factors, and scientific/subject knowledge. In the present paper I have chosen to discuss in greater depth the professional’s relationship to one of these factors – scientific knowledge – but I am at the same time aware of the importance of the other factors.

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