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ABSTRACT

A key assumption of the Concerns Based Adoption Model (CBAM) is that change is a process, rather than an event. The Procedures for Adopting Educational Innovations Project is working to identify and verify diagnostic dimensions of CBAM, and to develop tools to measure the developmental status of users and non-users: these concepts will help change agents in deciding what interventions should be made. Another research effort which has tested the dimensions of the CBAM is Emrick et. al's. evaluation of the National Diffusion Network (NDN). This evaluation has identified successful change strategies at the various stages of the dissemination and implementation process. These stages correspond to Hall et. al's Levels of Use of the Innovation, one dimension described in CBAM. Other CBAM dimensions include Stages of Concern about the Innovation and Innovation Configurations. A review and comparison of these two studies results in these conclusions: (1) both studies describe logical relationships and processes: (2) both studies identified three similar pre-use phases: (3) further study is needed of levels of use by larger (non-individual) institutions: (4) clearer guidelines are needed concerning the timing of intervention by change agents: and (5) effective change agent activities with respect to client diagnosis were identified. (GDC)

# IMPLICATIONS FOR PLANNED DISSEMINATION, IMPLEMENTATION AND EVALUATION REVEALED IN THE SRI/NDN EVALUATION AND LEVELS OF USE OF THE INNOVATION STUDIES

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# IMPLICATIONS FOR PLANNED DISSEMINATION, IMPLEMENTATION AND EVALUATION REVEALED IN THE SRI/NIN EVALUATION AND LEVELS OF USE OF THE INNOVATION STUDIES[1,2]

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Linkage agents, staff developers, change facilitators, disseminators and administrators are constantly confronted with the problem of "what to do" in a given situation. They are constantly having to make on-the-spot decisions about which interventions to use in facilitating dissemination, implementation and institutionalization of educational innovations. Though much research has been done at the conceptual level to develop increased understanding of the change and dissemination process, there remains a great lack of knowledge that is of direct assistance to the practicing change facilitator.

Research underway at the Research and Development Center for Teacher Education is attempting to develop concrete answers that will be of immediate use to change facilitating practitioners. The research focuses on the implementation of innovations and uses the Concerns-Based Adoption Model (CBAM) as its conceptual basis. A key assumption underlying the research is that change is a "process," not an event. Further, it is assumed that change facilitators can work in a diagnostic/prescriptive mode--assuming that they have diagnostic

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[2]The research described herein was conducted under contract with the National Institute of Education. The opinions expressed are those of the author and do not necessarily reflect the position or policy of the National Institute of Education, and no endorsement by the National Institute of Education should be inferred.

tools to use. To provide these tools, the focus of the past three years of research activities of the Procedures for Adopting Educational Innovations Project of UTR&D has been verifying diagnostic dimensions of the CBAM and developing tools to determine exactly where the nonusers and users of an educational innovation are located along a set of developmental dimensions.

At this point PAEI/CBAM research has developed two key diagnostic dimensions for assessing where the individual is in the change process, and another variable which assesses the state of the innovation in the change process. The concepts have been refined and initially verified. Up to this time, these diagnostic dimensions have been used with ones best clinical judgement to make the best guesses about what interventions should be made when and where. These hypotheses have yet to be put to the "empirical test."

As is so often the case, complimentary research, development, and evaluation activities have been going on, but only recently linked. Evaluation of the National Diffusion Network by Emrick, Peterson and Agarwala-Rogers (1977 a&b) has provided an independent test of application of the CBAM dimensions. From the point of view of change facilitation and research on change, one of the key outcomes of the NDN evaluation study has been the identification of activities taken by NDN Developers and NDN Facilitators that are related to successful adoptions. In the report, Emrick and his colleagues developed a series of stages and sub-stages to the dissemination and implementation process. For each stage, successful practice of the many NDN change agents was identified.

The activities identified to be most effective in the Emrick et. al. study, and the number and sequence of the stages, clearly correspond with the actions that are hypothesized to be appropriate at each of the Levels of Use of the Innovation (Hall, Loucks, Rutherford & Newlove, 1975) dimension described in the Concerns-Based Adoption Model. In this paper, the findings from the PAEI/ CBAM research on diagnosis will be contrasted with the NDN evaluation study of

effective change agent practice. The diagnostic marker of Levels of Use of the Innovation as developed in the PAEI/CBAM research will be related to NDN change agent actions and characteristics of these actions.

In the next section a brief overview of the NDN Evaluation Study will be presented, and the PAEI/CBAM research activities and the diagnostic Levels of Use of the Innovation will be briefly described. The following section will cross relate interventions, as identified in the NDN Evaluation Study, with the developmental progression of an individual from nonuse to use as described in the Levels of Use dimension. The paper will conclude with a brief discussion of some implications of the two sets of studies for change facilitators and linkage agents who are attempting to work on a day-to-day basis with dissemination and implementation problems. Implications will also be raised with regard to future evaluation studies as well as policy issues.

## Overview of the Two Studies

For each study, a few selected key references will be presented. The emphasis of the description will be identifying those aspects of each project that directly relate to the topic of this paper--identifying research validated change facilitator actions and relating these to a research validated diagnostic dimension.

### Evaluation of the National Diffusion Network

The National Diffusion Network is an initiative established by the U.S. Office of Education in 1974. The National Diffussion Network (NDN) is a strategy designed to bring together staff involved with development of educational products and personnel involved with dissemination in federal, state and local education agencies. The thrust of the NDN is to identify and facilitate the dissemination and adoption of "validated" educational practices.

Identified "programs" are judged as validated after a proposal is submitted and a review is made by a special committee named the OE/NIE Joint Dissemination Review Panel (JDRP).

The primary goal of the NDN is to affect wide-spread adoptions of innovations validated by the JDRP. For accomplishing this goal the primary strategy is the use of two types of change facilitators. The first are the program Developers and, the second are regionally based change Facilitators. The Developer is the technical expert with regard to a specific program or innovation that is being disseminated and implemented. The Facilitator's role is to provide the link between the Developer, the local education agency, and the local schools which are the ultimate users of the program. The role of the Facilitator is to provide process assistance and coordination of the activities of potential users and current users. The Facilitators develop, design, and conduct various kinds of arousal activities, such as mailed brochures, and also bring in the Developers at key times to do presentations and to assist "adopters" of the program.

One of the key emphases of the NDN, in contrast to past dissemination activities, is the shift from an emphasis upon pure dissemination through information spreading activities to an interpersonal approach which emphasizes moving persons toward the adoption decision, assisting with the pre-implementation activities, and following through with the clients in initial implementation.

Evaluation of the NDN activity was initiated in June of 1975 by the Office of Planning, Budgeting, and Evaluation of the U.S. Office of Education. The evaluation study was to "conduct a comprehensive nationwide in-depth evaluation of the NDN organization processes and outcomes during the 1975-76 school year for the purpose of better understanding the relative effectiveness of this approach to program dissemination" (p. 3) (Emrick, et. al., 1977a). The outcomes of this evaluation are reported in two volumes. The first volume

(Emrick, et. al., 1977a) reports on findings and recommendations. The second volume (Emrick, Peterson & Agarwala-Rogers, 1977b) is a technical supplement that provides more information about the evaluation design and quantitative analyses.

The evaluation stud was comprehensive in design and included extensive review of OE documents, a mailed survey to developers, facilitators, and local education representatives (N > 1,000), observation of key conferences, (both national, regional and local), site visits involving facilitators, developers/ demonstrators and adopters, review and observation of technical assistance, and a second mailed survey to facilitators, developers and local education agency personnel with return again in excess of a 1,000. In addition, an in-depth interview survey of a sub-sample of principals', teachers' and central office administrators' was done. The evaluation study also included review of 360 references and documents from the relevant literature on educational innovation, dissemination, and change.

## Research on Levels of Use of the Innovation

The thrust of the Procedures for Adopting Educational Innovations Project (PAEI) has been conducting research on innovation implementation as viewed from the perspective of the teacher or college professor who is the front-line user of the innovation. The focus has been on the individual and attempting to develop research-based verification of key concepts and procedures which will lead to a clearer understanding of the change process.

The conceptual basis for this research has been the Concerns-Based Adoption Model (CBAM) (Hall, Wallace & Dossett, 1973). Underlying assumptions of the CBAM include: viewing change as a process, not an event; focusing on the individual user/nonuser; and, that there are developmental stages and levels which individuals experience as their skill and sophistication in using a change

or innovation increases. The CBAM also proposes that change facilitators should work in a highly adaptive and systemic way to facilitate the change process. The change agent should work in a diagnostic/prescriptive mode, constantly assessing the present state of the individual users, as well as the user system, and adapting the design and carrying out of "interventions" according to the diagnostic data.

During the last four years, the research of the PAEI Project has focused on initial verification of three key diagnostic dimensions hypothesized in the Concerns-Based Adoption Model. These three dimensions are: (1) Stages of Concern about the Innovation (Hall, George & Rutherford, 1977), (2) Levels of Use of the Innovation (Hall, Loucks, Rutherford & Newlove, 1975) and (3) Innovation Configurations (Hall & Loucks, 1978). Research in the project is now shifting toward an attempt to identify interventions that would be appropriate for individuals with different diagnostic profiles. Part of this research has centered on a series of in-depth longitudinal ethnographic studies of interventions that are made based upon data collected in relation to CBAM diagnostic dimensions. Another research thrust is development of a Taxonomy of Interventions. Also, future research is proposed which would focus on developing a concerns-based theory of prescription. The proposed theory would provide change facilitators with a way of identifying interventions that would be most effective for individuals with different diagnostic profiles.

The dimension of Levels of Use of the Innovation (LoU) focuses on describing, in operational terms, the behaviors that innovation nonusers and users demonstrate relative to the innovation. Eight Levels of Use have been identified and operationally defin d (LoU Chart, 1975). The overall operational definition for each Level of Use is presented in Figure 1. Each Level of Use has sub-points that are identified through a set of "categories." These

Figure 1.

Levels of Use of the Innovation

| LEVELS OF USE | DEFINITION OF USE |
|---|---|
| 0 NONUSE | State in which the user has little or no knowledge of the innovation, no involvement with the innovation, and is doing nothing toward becoming involved. |
| Decision Point A | Takes action to learn more detailed information about the innovation. |
| I ORIENTATION | State in which the user has recently acquired or is acquiring information about the innovation and/or has recently explored or is exploring its value orientation and its demands upon user and user system. |
| Decision Point B | Makes a decision to use the innovation by establishing a time to begin. |
| II PREPARATION | State in which the user is preparing for first use of the innovation. |
| Decision Point C | Changes, if any, and use are dominated by user needs. |
| III MECHANICAL USE | State in which the user focuses most effort on the short-term, day-to-day use of the innovation with little time for reflection. Changes in use are made more to meet user needs than client needs. The user is primarily engaged in a stepwise attempt to master the tasks required to use the innovation, often resulting in disjointed and superficial use. |
| Decision Point D-1 | A routine pattern of use is established. |
| IVA ROUTINE | Use of the innovation is stabilized. Few, if any, changes are being made in ongoing use. Little preparation or thought is being given to improving innovation use or its consequences. |
| Decision Point D-2 | Changes use of the innovation based on formal or informal evaluation in order to increase client outcomes. |
| IVB REFINEMENT | State in which the user varies the use of the innovation to increase the impact on clients within the immediate sphere of influence. Variations are based on knowledge of both short- and long-term consequences for clients. |
| Decision Point E | Initiates changes in use of innovation based on input of and in coordination with what colleagues are doing. |
| V INTEGRATION | State in which the user is combining own efforts to use the innovation with related activities of colleagues to achieve a collective impact on clients within their common sphere of influence. |
| Decision Point F | Begins exploring alternatives to or major modifications of the innovation presently in use. |
| VI RENEWAL | State in which the user reevaluates the quality of use of the innovation, seeks major modifications of or alternatives to present innovation to achieve increased impact on clients, examines new developments in the field, and explores new goals for self and the system. |

From the LoU Chart. Austin: Research and Development Center for Teacher Education, The University of Texas at Austin, 1975.

categories refer in more detail to the individual's behavior. The LoU categories are: Knowledge, Acquiring Information, Sharing, Assessing, Planning, Status Reporting and Performing. Each category is operationally described for each Level of Use. Research has demonstrated that each of these Levels of Use do exist (Hall & Loucks, 1977 and Loucks, 1977). Further, it appears that the Levels of Use dimension is somewhat developmental in that individuals move through these levels in progression from nonuse to a Level of Use (LoU) IVA routine use. The movement in Levels of Use above LoU IVA is not so clearly understood at this time (Hall, 1978).

In Figure 1, the Decision Points that distinguish each level are also included. In measuring and determining the Level of Use of an individual, the Decision Point is one of the key data pieces to be collected. The Decision Points make a fairly clear demarcation between each level. Each of the Levels of Use, as well as the Decision Points, will be referred to in the comparison of the NDN evaluation study and the discussion sections which follows.

## Comparison of NDN Judged Effective Interventions With the Diagnostic Dimension of Levels of Use of the Innovation

### Comparison of Study Findings

For the purposes of this paper, the data reported in chapters 3 and 4 of Volume 1 (Emrick, et. al., 1977a) are of primary importance. As is true with the PAEI/CBAM research, one of the first key premises identified in the NDN evaluation study was that adoption is complex and multi-dimensional. Further, as demonstrated in the recent Rand Studies (1977) (and is an assumption of the Concerns-Based Adoption Model) change through the adoption of innovations is a "process," not an event. In the NDN evaluation, three more or less definable stages of that process were proposed: initiation, implementation and assimilation.

> Initiation refers to the arousal and interest development aspects of the process. Implementation refers to the changes (cognitive, behavioral, affective) represented in the "putting into practice" aspects of the process. Assimilation refers to the modification and cooperation stabilization of the adopted practice within the adopting unit (p. 51).

The NDN primarily focuses on the initiation and implementation stages. Within the initiation stage, three categories of activities that make up the diffusion process were identified from the data. The categories of activities are: initial awareness, secondary awareness, and training sessions and workshops. At the implementation stage, which begins when the local adopters actually implement the innovation, two categories of adopter assistance were identified: (1) Implementation assistance, which includes on and off site training provided by NDN change agents and materials that were supplied to support actual implementation by the adopters. (2) Follow-up assistance which involves equal levels of activity by Facilitators and Developers. A key feature of the NDN approach is the added emphasis the implementation stage with a provision of on-site assistance during and following the time when adopters begin to implement the innovation (p. 99).

Within each one of these implementation stages the NDN evaluation study identified key activities, on the part of the NDN Facilitators nad Developers, that were related to successful adoption of JDRP approved programs. The identification of the stages and categories within the stages, as well as the Facilitator activities identified by the NDN evaluation closely correspond with what would be hypothesized based upon the concepts, theories and research completed around the Concerns-Based Adoption Model.

Selected Findings from the NDN study are compared with the LoU dimension in Figures 2 and 3. The complimentarity of the two studies is striking. There is much confirmation of what practitioners believe, and a clear map for policy-makers and researchers considering future actions in dissemination and imple-

## Figure 2

Comparison of Levels of Use of the Innovation With Identified Effective NDN Change Agent Practice During the INITIATION STAGE

| Levels of Use of the Innovation | Categories of NDN Activities | Description |
|---|---|---|
| **Level 0 Nonuse**<br>State in which the user has little or no knowledge of the innovation, no involvement with the innovation, and is doing nothing toward becoming involved. | **Initial Awareness**<br>School system personnel are informed of the NDN and the program and services it has to offer. | 1) broad outreach designed to reveal (surface) potential adopters example: blanket mailings of brief (2-3 page) fold out brochures to everyone on address list.<br><br>2) focused outreach activities designed to develop interest and commitment among potential adopters example: in person follow-up, more intensive, colorful, personalized and expensive than those in the initial awareness stage. Strong emphasis on conferencing provided to more select audiences of potential adopters: those whom the NDN change agents perceive may become actual adopters. |
| **Decision Point A**<br>Takes action to learn more detailed information about the innovation. | | |
| **Level I Orientation**<br>State in which the user has acquired or is acquiring information about the innovation and/or has explored or is exploring its value orientation and its demands upon user and user system. | **Secondary Awareness**<br>Information conveyed to potential adopters becomes increasingly innovation-specific. | Characteristics: includes demonstrations by Developers, review of project materials and reports, workshops, conferences and the like. |
| **Decision Point B**<br>Makes a decision to use the innovation by establishing a time to begin. | | |

Figure 2 (continued)

| | | |
|---|---|---|
| Level II Preparation | Pre Start-up Training Sessions and Workshops | |
| State in which the user is preparing for first use of the innovation. | NDN agents prepare adopting staff to undertake implementation of the innovation in their school.<br><br>Provided on an in-person basis and therefore is relatively expensive and is limited to the availability of training staff. | The dominant theme is moral/ idealogical/psychological suasion. Successful training leaves the staff enthusaistic and highly motivated to implement the innovation, which they conceptually understand and endorse, but which they only partly gain procedurally.<br><br>- The emphasis is on goals and philosophy embodied in the particular innovation.<br>- The second most heavily emphasized content area pertains to the use of materials provided by Developers and procedures for initiating and implementing the project.<br>- A third and somewhat less heavily emphasized content area pertains to implementation problem areas and methods by which adopters can formatively evaluate the innovation.<br>- More effective when it is distributed over multiple sessions.<br>- Developers with particuiarly complex programs tend to focus during pre start-up sessions on those aspects necessary to <u>begin</u> implementation, they follow-up later with additional elements and refinements. |

Figure 3

Comparison of Levels of Use of the Innovation with Identified Effective NDN Change Agent Practice During the IMPLEMENTATION STAGE

| Levels of Use of the Innovation | Categories of NDN Activities | Description |
|---|---|---|
| Decision Point C | | |
| Level III Mechanical<br>State in which the user focuses most effort on the short-term, day-to-day use of the innovation with little time for reflection. Changes in use are made more to meet user needs than client needs. The user is primarily engaged in a stepwise attempt to master the tasks required to use the innovation, often resulting in disjointed and superficial use. | Implementation Assistance<br>Includes on- and off-site training and materials supplied to assist and support actual implementation by the adopters. | The more successful implementations are for those innovations for which fairly complete and comprehensive material packages are provided. These materials consist of both management and curriculum components. An exemplary management component will contain guidelines for scheduling, logistics, requirements, evaluation, and public relations. These guidelines are often prepared in extraordinary yet practical detail. The curriculum component materials are articulated in great detail, often at the level of step-by-step daily lesson plans. |
| | Follow-up Assistance<br>Of all the activities and elements of the NDN strategy studied in this evaluation, none related more strongly and consistently to all aspects of adoption success than the follow-up or post-implementation contact by the NDN change agents. Moral support and encouragement is the most frequent purpose.<br>*If the adopter does not receive some form of NDN post-implementation contact, the adoption falters!* | Most often involved the Developer staff and nearly always it was provided in person within the first implementation year.<br>Developers focus primarily on materials, issues and provide further in-service training.<br>Facilitators concentrate on process issues, such as financial or logistical (e.g., release time) assistance, conflict resolution, evaluation, and resource allocation. |

Figure 3 (continued)

Decision Point D-1

Assimilation Stage

A routine pattern of use is established.

Level IVA Routine

Use of the innovation is stabilized. Few if any changes are being made in ongoing use. Little preparation or thought is being given to improving innovation use or its consequences.

Decision Point D-2

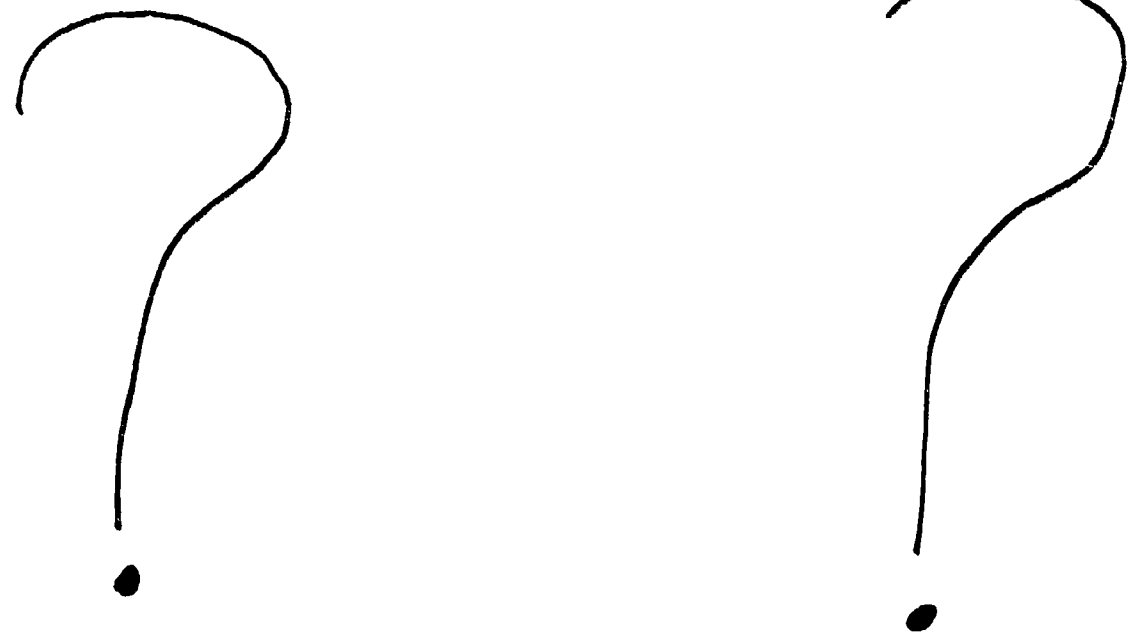
Level IVB Refinement

Decision Point E

Level V Integration

Decision Point F

Level VI Renewal



mentation. The NDN evaluation study has provided an independent test of the validity of the diagnostic dimension, Levels of Use of the Innovation, as well as initial grounded verification of interventions that would be appropriate at each Level of Use.

## Discussion

The close correspondence between the LoU diagnostic and the effective NDN change agent practices is exciting. Clearly, change is a process. Further, there appears to be some consensus findings about the characteristics of the process at the Initiation and initial Implementation Stages. There are some especially clear findings about the role of the change agent in relation to the performance of the adopter. The following are a few points of comparison, and some implications and questions that follow from the findings.

1) There are logical relationships in the findings of the two studies.

Once the two studies are compared, there is a "commonsense" relationship between them. The LoU dimension describes what the individual is doing. The LoU Decision Point describes the degree of involvement with the innovation. The NDN change agent activities are targeted toward where the individual is, and there is a close fit between interventions and client activity.

So if it is logical, why don't more change attempts include these components? Why don't more developers have resources that change facilitators can use at all of these Levels of Use? At least two answers are possible: (1) There are equally effective alternative approaches to dissemination and implementation that have not been as well studied, or (2) These findings represent the most we systematically know right now about the change *process*. If so these findings can be used to ask new questions as well as serve as a basis for redesigning practice.

2) In the Initiation Stage, both studies have identified the same number of steps. Both research efforts have proposed three pre-use phases. Further, the same "Decision Points" are used to distinguish each stage. The fact that two independent projects, using large samples and multiple data collection and analysis techniques independently, identified the same number of units in the initiation process provides a strong basis for future decision-makers, change agents, and researchers to work from. Perhaps funding allocations, roles of dissemination agencies and linking agents and research studies should be targeted toward one or more of these levels.

3) What happens at the higher Levels of Use? The NDN evaluation study and the NDN strategy do not address institutionalization and refinement issues (LoU IVB-VI). To date, PAEI/CBAM research on concerns-based implementation efforts at higher LoU's is quite limited. Based on the research that has been done, it is now hypothesized that the "game plan" for interventions for refinement LoU's has to be quite different than the game plan that facilitates the person in moving from Nonuse (LoU 0) to Routine Use (LoU IVA). For example, it appears that the "unit of intervention" needs to shift from the individual to the school building. Across-school workshops can be effective for the move from nonuse to use; however, the occurrence of higher LoU's appears, in general, to be related to building norms and the role of the unit manager. Also, it appears that use must be stable before refinement activities begin.

4) When should the innovation Developer have a role in facilitating higher LoU activity? At different LoU's the individual is *changing* the innovation in different ways. Only at LoU IVA Routine is the innovation not undergoing change. When should refinement (LoU IVB-VI) changes in the innovation be encouraged? When should the Developer assist or resist the actions? Who should facilitate these changes? PAEI/CBAM research shows that in practice, individuals

at LoU IVB-VI are very rare. When and should more LoU IVB-VI behavior be encouraged? What actions will facilitate or inhibit this happening?

5) Effective activities of change agents in relation to client diagnosis have been identified. With identification of one set of activities that have been demonstrated effective, it is possible to focus change agent training. The division of responsibilities across agencies and agents according to "natural" breaks in the process would also be possible. These steps could help reduce the trauma and increase the economy and efficiency of dissemination and initial implementation.

Many other questions and issues may be raised by comparing the two research efforts described here. The practitioner, in many ways, has, for the first time, research verification for what he/she as an effective change agent was already doing. The diagnostic tool of Levels of Use of the Innovation and corresponding effective interventions of the NDN change agents provide the rudimentary beginnings of a diagnostic prescriptive model for change facilitation. Making that model concerns-based by adding the personal dimension and the adaptive and systemic components will require further research and analysis.

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