FOCUS

TECHNICAL BRIEF NO. 21
2008

A Publication of the National Center for the Dissemination of Disability Research (NCDDR)

Why Is Knowledge Translation Important?

Grounding the Conversation

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The National Center for the Dissemination of Disability Research (NCDDR) is pleased to bring you this issue of* FOCUS *highlighting Michael Gibbons's plenary speech presented at the KT08: Forum for the Future conference in Banff, Alberta, Canada, held on June 10, 2008. Dr. Gibbons is the coauthor of* The New Production of Knowledge *and* Re-Thinking Science. *The NCDDR appreciates Dr. Gibbons's willingness to share the text from his speech with the broader NIDRR and disability community.

Preamble

It is the burden of my remarks to argue that knowledge translation (KT) describes an engagement process.

You may think that *engagement* is a somewhat unusual term to apply to KT activities, perhaps because so much of the theoretical analyses and practical applications of KT are dominated by the rather mechanical language of transfer. In knowledge transfer, the image is one of moving items of knowledge or pieces of information between different domains, whether they be those of pure and applied science, applied science and the industry, or, moving closer to home, the transfer of the knowledge being generated in the biosciences to improving human well-being at the point of delivery via a matrix of institutions comprising universities, health research institutes, health delivery systems, and policymakers.

The image of transfer is, however, deeply flawed because it operates not only subliminally but also heuristically in the construction of models concerned mainly with the efficiency or effectiveness of moving knowledge between one domain and another without noting that the knowledge will need to change in the process of being transferred. It is true that the subject of our meeting is entitled "knowledge translation." This metaphor retains the idea of transfer but acknowledges, if only tacitly, that in the translation process the relevant knowledge might need to be adapted in some way.

In what follows I will try to indicate just how that might take place. I will develop a framework that tries to go beyond the images of both transfer and translation by offering a different one that, in my view, captures more accurately the nature of what we intend by the phrase *knowledge translation*. It will be the burden of my argument to demonstrate we need to shift the metaphor from knowledge transfer and move beyond that of translation to what I shall call *knowledge exchange*. My presentation will draw upon some earlier work that colleagues and I have done on Mode 2 forms of knowledge production. I will outline briefly some of the characteristics of Mode 2 forms of knowledge production and how they differ from the more conventional Mode 1 forms.

The New Production of Knowledge

Both *The New Production of Knowledge* and *Re-Thinking Science* were written as reflective essays rather than

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empirical studies. Their purpose was as much to address the need to invent a new language of research as to offer a detailed analysis of the trends, which had already been identified by numerous authors. In the first book, *The New Production of Knowledge*, the notion of Mode 2 knowledge production was introduced and contrasted with Mode 1 research, the model that applies to knowledge production in science as conventionally practiced.

Whereas Mode 1 knowledge production is investigator-initiated and discipline-based, Mode 2 knowledge production has a number of distinguishing characteristics: the context of application, transdisciplinarity, heterogeneity, reflexivity, and modified forms of quality control.

1. Mode 2 knowledge is generated within the context of application. This is different from the conventional process of application by which *pure* science, generated in theoretical/experimental environments, is *applied*; technology is *transferred*; and knowledge is subsequently *managed*. The context of application, in contrast, describes the total environment in which scientific problems arise, methodologies are developed, outcomes are disseminated, and uses are defined.

2. Mode 2 knowledge production is transdisciplinary, which means it uses a range of theoretical perspectives and practical methodologies to solve problems. But unlike interdisciplinary or multidisciplinary knowledge production, transdisciplinary knowledge production is not necessarily derived from preexisting disciplines, nor does it always contribute to the formation of new disciplines. The creative act lies just as much in the capacity to mobilize and manage these perspectives and methodologies (their *external* orchestration so to speak) as in the development of new theories or conceptualizations or the refinement of research methods (the *internal* dynamics of scientific creativity). In other words, Mode 2 knowledge, in this transdisciplinary form, is embodied in the expertise of individual researchers and research teams as much as, or possibly more than, it is encoded in conventional research products such as journal articles or even patents.

3. In Mode 2 there is a greater diversity of the sites at which knowledge is produced and, an associated phenomenon, a growing heterogeneity in the types of knowledge production. The first phenomenon, it can be argued, is not especially new. Research communities have always been *virtual* communities that cross national (and cultural) boundaries. But their dynamics have been transformed. Once interaction within these communities was limited by constraints both physical (the ability to meet) and technical (letters and telephones); now as a result of advances in information and communication technologies interaction is unconstrained—and instantaneous. The orderly hierarchies imposed by these *old* technologies of interaction may have been eroded by this communicative free-for-all. This shift has been intensified by the second phenomenon, the fact that these research communities now have open frontiers, which has allowed many new kinds of *knowledge organization*—such as think tanks, management consultants, and activist groups—to join the research game.

4. Mode 2 knowledge is highly reflexive. The research process can no longer be characterized as an *objective* investigation of the natural (or social) world. Instead, it has become a dialogic process, an intense (and perhaps endless) *conversation* between research actors and research subjects—to such an extent that the basic vocabulary of research (who, whom, what, how) is in danger of losing its significance. As a result traditional notions of accountability as being a form of external review of mature research concepts and projects have had to be radically revised. The consequences (predictable and unintended) of new knowledge could not be regarded as being *outside* the research process because problem-solving environments

influence topic choice and research design as well as end uses.

5. Mode 2 knowledge exhibits novel forms of quality control, which are emerging for a number of reasons. First, scientific *peers* can no longer be reliably identified because there is no longer a stable taxonomy of codified disciplines from which peers can be drawn. Second, reductionist forms of quality control cannot easily be applied to much more broadly framed research questions; the research *game* is being joined by more and more players—not simply a wider and more eclectic range of *producers* but also orchestrators, brokers, disseminators, and users. Third, and most disturbing, clear and unchallengeable criteria to determine quality may no longer be available. Instead we must learn to live with multiple definitions of quality, which seriously complicates (even compromises) the processes of discrimination, prioritization, and selectivity on which policymakers and funding agencies increasingly rely.

The Emergence of a Mode 2 Society

In our second book, *Re-Thinking Science*, we returned to the idea of Mode 2 knowledge, but this time we tried to identify the major political, social, and institutional changes that had been taking place in society more generally over the past 20 years or so. Some of these changes, it seemed to us, supported the idea that Mode 2 forms of knowledge production reflected, and were reflected in, the characteristics of an emerging Mode 2 society. Let me describe briefly some of the relevant characteristics of a Mode 2 society. This will help clarify the need for a completely different approach to knowledge transfer or translation.

Beginning in the twilight of the Cold War, if not before, the relative institutional separation between societies' major institutions had begun to break down:

1. In publicly funded research, the system of government research establishments was privatized.
2. As government gradually moved its priorities to the maintenance of international competitiveness and the enhancement of the quality of life, many long-established industries were denationalized and, in many countries, firms that had been dependent on government for R&D support were forced to find these resources internally.
3. In universities, too, the massification of higher education moved universities into a market place for students, but this was accompanied by the introduction of a culture of accountability and a mounting social demand for "value for money" that soon reached into the heart of the research process.
4. The research councils themselves, created initially to support basic research in the universities, were transformed into instruments for attaining economic and social priorities through an increased use of program and project funding. These trends are observable in virtually every country in the world, though the timing and rates of change have varied with historical circumstances.
5. In virtually every country, promoting knowledge transfer between science and society became a central element of policy.

The upshot of this decades long series of changes is by now evident. The once-clear lines of demarcation between government, industry, and the universities; between science of the universities and the technology of industry; between basic research, applied research, and product development; and between careers in academe and those in industry seem no longer to apply. Instead, there is movement across established categories, greater permeability of institutional boundaries, greater blurring of professional identities, and greater diversity of career patterns. In sum, the major institutions of society have been transgressed as institutions have crossed onto one another's terrain.

In this, science has been both invading (the outcome of its familiar one-way communication

with society) and invaded by countless demands from the side of society. These changes were not primarily the result of the policies of impecunious governments, of greedy industrialists trying to take over the universities, or of a disgruntled citizenry disappointed by the performance of science, though some elements of each can be discerned in their histories. Quite the contrary, it is because institutional leaders, industrial managers, and people generally understand very well the importance of science that they respond to the growing complexity of the contemporary world by wanting to draw the research capabilities of universities into their interests and concerns. Given these pressures, it is hardly surprising that some scientists now participate in more open and complex systems of knowledge production.

In brief, society and science have both become transgressive; that is, each has invaded the other's domain, and the lines demarcating the one from the other have all but disappeared. In other words, we have to deal with both a new kind of society—a Mode 2 society—and a new kind of research—Mode 2 knowledge production—that are linked in a process of coevolution. As will become clear, this development is not without its impact on the relationship between society and its knowledge-producing institutions and, a fortiori, on the nature of knowledge exchange itself.

Transaction Spaces: The "How" of It All

Let me summarize our progress so far. In a Mode 2 society and Mode 2 forms of knowledge production, research, as we have already suggested, is increasingly carried out in the context of application. In that context, science and society are both drawn into an engagement process that is characterized by knowledge exchange rather than knowledge transfer or even knowledge translation.

We are now ready to approach the hub of the argument:

- That knowledge exchange is not an automatic process
- That it needs to be facilitated
- That this requires a degree of awareness of what is taking place within the exchange process itself
- That this awareness can only be generated through participation in the production of knowledge itself

In this, boundary objects are essential.

Boundary Objects

In the process of knowledge exchange, a way must be found to allow experts and others, each of whom may inhabit different social worlds, to interact effectively in transforming an issue or problem into a set of common activities, some of which may require more research or a shift in research direction. In this, boundary objects and their associated transaction spaces are key entities if cooperation is to be established, consensus generated, and knowledge produced.

Example 1: The notion of a boundary object is simple enough and can be elucidated using a very mundane example. Consider a man and a woman walking in Hyde Park in London on a Sunday morning. Socially, it is still very awkward for the man to approach the woman, or vice versa, with the aim of striking up a conversation. It is not impossible, but it is awkward and, because the intent of the "first move" is ambiguous, defensive mechanisms can be expected to be brought into play. However, if both parties happen to be walking their dogs, then of course a conversation might originate around the dogs while other issues remain in the background for the time being. In this example, the dogs constitute a simple boundary object—a neutral entity around which information can be exchanged and that helps create the conditions of the possibility of a dialogue on other more serious matters in due course. Boundary objects assist in the constitution of a "space" where debate can begin and relevant information exchanged.

In the case of knowledge production, boundary objects typically

- are concepts or ideas that refer to scientific objects that both inhabit several intersecting

social worlds and satisfy the informational requirements of each of them;

- are plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites;
- are "weakly structured in common use and strongly structured in individual site use; and
- have different meanings in different social worlds but have a structure common enough to more than one world to make them recognizable, a means of translation" (between one social world and another) (Star & Griesmer, 1989, p. 393).

Example 2: The importance of a boundary object can be seen in the evolution of the Human Genome Mapping Project (HGMP) analyzed by Dr. Brian Balmer (1996). The aim of HGMP was to draw up a catalog of the entire genetic makeup of the human genome. This project did not come about without controversy. Proponents of the project claimed that it would provide a valuable resource for science and medical treatments, while opponents challenged its wisdom in terms of cost, strategy, ethics, and the ultimate utility of its results.

Balmer has shown that the emergence of HGMP was not the outcome of any single factor. More specifically, the project did not follow the typical model of national research programs cobbled together in a conspiracy between bureaucrats and the scientific establishment. The fact that a mapping project emerged at all has to be understood not in terms of bureaucratic politics but as the outcome of a complex process of negotiation in which a large number of interested parties were involved. It is the case that in this instance some actors and institutions played a large part, while others were less important. The point is that no one single person, group, or organization was in control dictating the pace and direction of advance. Indeed, the United Kingdom's policies of "selectivity and concentration" and "value for money" only provided guidelines for a coordination with the agendas of the Medical

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Dr. Gibbons has an active research interest in science and technology policy generally but has additionally carried out research in the process of technological innovation in industry and the evaluation of research. He is coauthor of two major books on the nature of contemporary science, *New Modes of Knowledge Production* and *Re-thinking Science,* which have arguably set the agenda for much current science policy debate. His work has been vigorously taken up by the South African authorities, who have adopted the notion of Mode 2 research as a guiding concept during the current, and ongoing, transformation of the South African higher education system. From 2000 to 2003, he was a member of the UK Economic and Social Research Council and chair of its Research Priorities Board.

In 2004 he became a Member of the Order of the British Empire (MBE) for services to higher education and was awarded the Queen's Jubilee Medal for excellence in research by the government of Canada. In 2007, he was appointed chair of the Board of Governors of Quest University, Canada's first private, not-for-profit university. He is also a fellow in the Royal Swedish Academy of Engineering Sciences.

Dr. Gibbons has acted as a specialist advisor for the UK Parliamentary Science and Technology Committee and has been a consultant with the Organisation for Economic Co-operation and Development for many years. His own postsecondary education covers the fields of mathematics, electrical engineering, radio astronomy, and a doctorate in theoretical physics from Manchester University.

Research Council (MRC) and the gene-mapping community and their spokespeople.

As Balmer describes the process, HGMP came to act as a boundary object. The project constituted a social and a political entity that was able to align the goals and agendas of separate working groups. Alignment was achieved over a period of time as groups and their agendas were shuffled into and out of the policy arena or altogether marginalized. As a consequence, money flowed from the state to scientists, and gene mapping, under the auspices of a concerted organized program, came to be supported.

The emergence of boundary objects can thus be crucial in the generation of the social spaces that lie at the heart of the conduct of research in the context of application. Still, something is necessary to align diverse, and often divergent, interests if work is to get started, but it is not a planned process. At each stage of the development of a project, the contingency of events and the opportunism of the actors cannot not be ignored. Scientists may have had some degree of control, but the government, together with the civil servants of the Advisory Council for Science and Technology and MRC administrators, may also have been able to influence events.

In sum, the genesis of HGMP was more of an orchestration process that attempted to make use of the resources available than a planned strategic, networking exercise. Nonetheless it led to the emergence of HGMP in the United Kingdom.

Using a beautiful metaphor, Balmer said, "The process was rather like having an orchestra where all the players are vying to be the conductor, but with no one fully in control and everyone ready to improvise."

The boundary object—the genome mapping project itself—allowed some sort of melody to be heard. In this case, one can observe how the social, economic, and scientific strands were woven into the project and how important it was to have something to command the allegiance of diverse interests in order for the project to be carried forward.

These are the key elements of boundary objects: something to command the allegiance of diverse interests and willingness by participants not to compromise but to improvise.

Boundary objects are necessary because they increase the probability that a transaction space will be generated. What, then, is a transaction space?

Transaction Spaces and Trading Zones

Of course, not every boundary object will generate an effective transaction space, but when they do, these spaces provide an important framework in which still tentative, and as yet inadequately institutionalized, interactions can take place. However, these interactions are more than random encounters. To the extent that they do develop into genuine transaction spaces, they have some of the essential features that Peter Galison has described for the trading zones he came across when analyzing the history of nuclear physics in the twentieth century (Galison, 1997). My point is that if trading is important in the highly structured, hierarchical framework of physics, then, surely, it is not outrageous to suggest that it may be a typical phenomenon in all knowledge production generally and knowledge exchange more specifically.

In Galison's work, we are made to encounter within the disciplinary structure of one subfield the fascinating exchanges and intense collaborations between three subcultures of the nuclear physics community: theoreticians, experimentalists, and engineers (those who build the machines used in nuclear physics). These traditions remained intact, preserved inside the collaboration, while the coordination of exchange took place around the production of the two competing instrument cultures of "image" (taking pictures) and "logic" (counting events), which ultimately fused.

Taking his lead from anthropological theories, Galison observed how the often apparently independent exchanges between the various subcultures of physics

can be compared to the incomplete and partial relations that are established when different tribes come together for trading purposes.

Nothing in the notion of trade presupposes some universal notion of a neutral currency. Quite the opposite: much of the academic interest in the category of trade is that things can be coordinated (what goes with what, for what purposes) without reference to some external gauge. Each tribe may bring to this interaction and take away from it completely different objects as well as the meanings attached to them. An object that may have a highly symbolic or even sacred value for one tribe may represent an entirely banal or utilitarian object for another. Nevertheless, interaction and trade is possible and actually takes place—to the obvious benefit of all because, if this were not so, dialogue would have ceased.

Importantly, trading may give rise to the emergence of contact languages, not unlike the "pidgin language" that has grown up in Louisiana, as a means of local communication. These languages are inevitably incomplete and truncated, but they are developed to the degree necessary to work.

Why is trading so important? Thinking of his problem in physics, Galison stated that physicists and engineers were not engaging in translating knowledge from one subculture to another as they pieced together their microwave circuits, nor were they producing "neutral" observation sentences, as the philosophers contended they should. Rather, they were working out a powerful, locally understood language to coordinate their actions. Despite obvious limitations, some kind of understanding and exchange does occur in such situations.

For Galison, then, the crucial question was not how different scientific communities that seem to pass like ships in the night still manage to communicate. After all, specialization is not meant to inhibit any serious interdisciplinary exchange of information. The question was, rather, "how, given the extraordinary diversity of participants in this case in physics—cryogenic engineers, radio chemists, algebraic topologists, prototype tinkerers, computer wizards, quantum field theorists—they speak to one another at all. . . . And the picture . . . is one of different areas changing over time with complex border zones that sometimes vanish, coalesce, and even burgeon into quasi-autonomous regions in their own right" (Galison, 1997, p. 63).

The idea of transaction spaces, as developed here, is an extension and generalization of the concept of a trading zone beyond interaction among scientific subcultures to wider exchanges that take place across both the disciplinary and institutional boundaries that form the KT environment. The idea of "transaction" or "trading" implies, first, that all partners bring something that can be exchanged or negotiated, and second, that they also have the resources (scientific as well as material) to be able to take something from other participants. Of course, the meanings attributed to exchanged objects may differ greatly for different participants. But the success of these exchanges depends on each participant bringing something that is considered valuable by someone else—whatever that value might be. Participants usually will return to their home base with their gains, thereby reinforcing, in typical Mode 2 fashion, the links and exchanges that have already occurred by sharing with others.

As I have already indicated, Mode 2 knowledge production and Mode 2 society are linked through a process of coevolution. Coevolution in this context implies that from the side of science, new research practices are emerging in part as a response from the side of society, to new questions that society wants to be taken seriously, but also, in part, from a greater understanding on the side of society of the importance of research in delivering solutions to problems of many different kinds. The notion of a transaction space makes the evolutionary aspect of the process more specific because transaction spaces become visible as the sites where the first tenuous interactions between society and science take place. They are spaces (both symbolically and very concretely) where potential participants can decide what might be exchanged or traded and

also establish the lines of communication necessary to sustain discussion of potential to the point where constraints become visible. In summary, as Galison (1997) notes, a "trading zone is an intermediate domain in which procedures could be coordinated locally even where broader meanings clashed. . . . The work that goes into creating, contesting, and sustaining local coordination is at the core of how local knowledge becomes widely accepted."

In other words, rather than depicting the movement across boundaries as one of translation (from one theory to another, from theory to experiment, from military to civilian science, or indeed from medical research into clinical practice), it may be more useful to think in terms of work at boundaries, "where local languages grow and sometimes die in the interstices between subcultures" (Galison, 1997). As we have seen, under the prevailing view the language of knowledge translation is largely about moving knowledge across boundaries.

As may already be becoming evident, the twin notions of *transaction spaces* and *boundary objects* can be used to underpin a new notion of engagement and a new language for knowledge exchange.

The notion of a transaction space shifts the metaphor from translation across boundaries to dialogue – to exchange at boundaries. This shift underscores precisely that it is dialogue at the boundary that makes it possible to access knowledge held by others and to appropriate it by promoting the search for a common language within which to formulate a problem or issue. As Galison argued, common languages, when and if they occur, provide the evidence that some sort of common understanding has been achieved. By contrast, simply moving information packages across boundaries leaves too much unsaid and, not surprisingly, it is often the case that such translations are not successful.

In sum, the "how" of knowledge exchange, then, is about generating boundary objects and managing them in the context of transaction spaces. Developing expertise to work at the boundaries is a challenge for those who would develop KT into a flourishing research and practical activity.

Concluding Summary

What are the implications of what I have said for the development of KT as an emergent discipline? Despite the obvious complexity of KT, much progress can be made by the simple expedient of replacing the metaphor of "knowledge transfer" with that of "knowledge exchange." In knowledge transfer, the accent tends to be on establishing formal linkages between individuals or institutions. In contrast, knowledge exchange evokes engagement processes that are at the heart of Mode 2 knowledge production. By and large knowledge producers—all those who hold specialist knowledge of some kind—are individuals who believe that they possess important, perhaps the only important, knowledge pertinent to a particular issue. However, they tend to be in "send" rather than "receive" mode, to borrow a phrase from your e-mail toolbar.

As a consequence, communication tends to be one-way, the very opposite of what is required. As has been argued, reverse communication is crucially important, but I don't underestimate the difficulties of engaging experts in effective dialogue.

Many of the models set forth for our consideration in the conference document, "Speeding Up the Spread," which refers to the process of speeding up the diffusion of scientific research into the policy and the practices of the community, deal with transfer more than exchange. But these flows presume the existence of already-functioning boundary objects and trading zones without which these models will simply not work. As KT researchers, we need to take a step back and immerse ourselves in the various exchanges that take place at boundaries in order to get a feel for the conversations that must be enabled in transaction spaces. Model building can come later.

In knowledge exchange, boundary work is essential. Effective boundary work at the interfaces between research, application, delivery, and policy is a matter of developing new languages. A real challenge for KT workers is to set themselves up as facilitators of boundary work and the management of transaction spaces. This is an engagement task of a high order, and to be effective the only way is to wade in and consent to learn.

Why is KT important to the policy agenda? KT is important because policy agenda itself is moving, albeit somewhat slowly, from static, economics-based models to more dynamic, interactive, political models. Though both governments and scientists resist the notion, the real issue to be addressed today is the politics of science rather than the economic impact of scientific and technological research.

It is this shift from the economics of science to the politics of science that will underpin the growing importance of KT in the knowledge production process. In the future, the problem will be less trying to work out, or even increase, the economic impact of investments in science, than in trying to devise robust methods through which policies can be developed, improved, and implemented in ways that will help governments reach a diverse set of social goals. Energy, global warming, and an increasing array of medical treatments, for example, are going to be at the heart of government policy for the foreseeable future, and the thrust of policy development will be much more focused on the specifics of research direction than on the broader aim of economic impact.

In short, academic and policy discourses on science and technology will move away from polarized questions of "yes or no?" "how much?" or "how fast?" about research and its funding to more nuanced deliberations over "which direction?" "says who?" and "why?" The latter is the way of research in a Mode 2 society, and if I am correct in my analysis, KT and knowledge exchange will become a central activity "lying at the heart of the new, and more realistic, approach to navigating among contending directions of scientific and technological progress" (A. Stirling, private communication, 2008).

In sum, engagement is never an automatic process. Boundary work needs to be facilitated and managed, and to do this, specific knowledge and skills are required. Developing the knowledge and skills to manage exchange at the boundaries: now there's an agenda—I would say *the* agenda—for the next generation of KT.

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NCDDR Publications

The NCDDR produces resources to assist researchers, disability-related professionals, and people with disabilities and their families in better understanding and using disability research.

Knowledge Translation: Introduction to Models, Strategies, and Measures

This paper, written by Pimjai Sudsawad, ScD, presents definitions of knowledge translation (KT) and discusses several models that, together, can be used to delineate components and understand mechanisms necessary for successful KT. Strategies to measure the use of research knowledge in various dimensions are also presented.

http://www.ncddr.org/kt/products/ktintro/allinone.html

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Getting Published and Having an Impact: Turning Rehabilitation Research Results Into Gold

This *FOCUS*, authored by Drs. Marcel Dijkers, Margaret Brown, and Wayne Gordon from the Mount Sinai School of Medicine Department of Rehabilitation Medicine, suggests strategies that rehabilitation researchers can use to maximize their work—turning "research results into gold." In the disability and rehabilitation research community, it is important for researchers to be cognizant of how published results of research studies can facilitate or limit their use in answering important evidence-based questions.

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FOCUS #16
The Campbell Collaboration: Systematic Reviews and Implications for Evidence-Based Practice

This *FOCUS*, written by Drs. Herb M. Turner III and Chad Nye, highlights the work of the Campbell Collaboration and the development of systematic reviews of research evidence.

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FOCUS #15
The Role of Systematic Reviews in Evidence-Based Practice, Research, and Development

This *FOCUS*, written by Dr. Ralf W. Schlosser, provides an overview of systematic reviews in research and development. Systematic reviews can be used to inform evidence-based practice, which is increasingly shaping the disability and rehabilitation research field.

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FOCUS #14
Overview of International Literature on Knowledge Translation

This issue of *FOCUS* summarizes the knowledge translation process as described by several international authors.

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FOCUS #13
Meet the New NCDDR

This issue of *FOCUS* describes how the impetus for NCDDR's reorganization relates to NIDRR's new emphasis on knowledge translation. It also describes the services the NCDDR will offer to NIDRR grantees and, in some cases, to interested consumers.

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FOCUS: A Technical Brief From the National Center for the Dissemination of Disability Research was produced by the National Center for the Dissemination of Disability Research (NCDDR) under grant H133A060028 from the National Institute on Disability and Rehabilitation Research (NIDRR) in the U.S. Department of Education's Office of Special Education and Rehabilitative Services (OSERS). NCDDR is funded 100% by NIDRR at $750,000 per project year.

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NCDDR's scope of work focuses on developing systems for applying rigorous standards of evidence in describing, assessing, and disseminating outcomes from research and development sponsored by NIDRR. The NCDDR promotes movement of disability research results into evidence-based instruments such as systematic reviews as well as consumer-oriented information systems and applications.

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