

Planning for Program Diffusion: What Health Educators Need to Know

Karen Denard Goldman

Health Education and Social Marketing Consultant

Abstract

Many programs shown effective in single trials are never adopted or successfully implemented in other sites. While the health education literature does include descriptions of efforts to diffuse research, programs, curricula, and workplace policies and examples of instruments for measuring aspects of the diffusion process, it does not include an overview of program diffusion principles and practices. The purpose of this article is to provide program planners with research and practice based insights into the program diffusion process. After identifying and defining key program diffusion terms, discussing diffusion's theoretical bases, and arguing for more pro-active program replication among health educators, the author discusses program diffusion options (dissemination and/or replication), presents existing criteria for identifying model programs, puts forward typical reasons why program replication fails, and suggests specific strategies for increasing the likelihood of successful program replication. The paper ends with a call to plan programs with replication in mind.

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Introduction

Research has shown that many health and social service programs demonstrated to be effective in single trials have not been adopted or successfully implemented in other sites (Fairweather, Tornatzky, Fergus & Avellar, 1982; Furano, Jucovy, Racine & Smith, 1995; Racine, 1998; Rogers, 1995). The failure of organizations to implement new programs could be mitigated by integrating future program expansion issues into initial program planning efforts (Bauman, Stein & Ireys, 1991). However, the health education literature, including textbooks, does not offer information about how to plan for and implement program diffusion. The health education literature includes articles describing efforts to disseminate programs, research, curricula and policies (Brink, Levenson-Gingiss, & Gottlieb, 1991; Dearing, Larson, Randall & Pope, 1998; Goodman, Smith, Dawson & Steckler, 1991; Goodman, Tenney, Smith, & Steckler, 1992; Murray, 1984; Parcel, de Vries, and Dijkstra, 1993; Simmons, Salisbury, Kane-Williams, Kauffman, & Quaintance, 1989; Mathias, Turcotte, Warren, & Dafoe, 1996), articles

describing instruments used to measure aspects of the diffusion process (Goodman, McLeroy, Steckler, & Hoyle, 1993; Steckler, Goodman, McLeroy, Davis, & Koch, 1992), and replication manuals (Coogole & Finley, 1994; Goldman, 1989). This article was written to begin to address this gap in the literature and to promote planning for replication.

The paper begins with a glossary of related terms, a rationale for program replication, and a brief discussion of the contribution of three theories to understanding, facilitating, and managing program diffusion. Next, the author presents a program diffusion activity continuum, examples of existing federal criteria for identifying model programs, typical reasons why program replication fails, and specific strategies for increasing the likelihood of successful program replication. The paper ends with a call to plan programs with replication in mind.

Terms and Definitions

The language for identifying programs worthy of publicity and/or expansion to new sites is varied, misleading, and sometimes misused.

Depending upon its academic base (e.g., education, communication, medicine, social work, agricultural technology, development, sociology, marketing, health education) the literature refers to the process of expanding a program from a single site to one or more new sites as either: knowledge transfer, technology transfer, program transport, program replication, program dissemination, program diffusion, diffusion of innovation, transformation, technology transformation, and going-to-scale. Original programs are called demonstration projects, pilot projects, programs of promise,

exemplary programs, programs that work, or model programs - terms that have no or different meanings, depending upon the discipline. The program introduced into a new site may be referred to as the new technology, the innovation, the new program, or the replication. The content of the new activity is then described in terms of its degree of program fidelity, re-invention, variations, localization, or adaptation. To facilitate this discussion, the following definitions are used. Table 1 summarizes the definitions used throughout this article.

Table 1
Program Diffusion Terms and Definitions

Concept	Definition
Diffusion	The process by which an innovation is communicated through certain channels over time among the members of a social system (Rogers, 1995); an umbrella term that includes both dissemination and replication.
Dissemination	The calculated and active efforts to influence the diffusion process, or actions taken to facilitate the diffusion of an innovation from one site to another (Steckler, Goodman, McLeroy, Davis, & Koch, 1992); usually means providing information and materials about effective social programs (US Department of Education, 1989).
Replication	The process of moving a tested prototype program to additional sites in keeping with the hard (invariable) and soft (variable) aspects of that particular program's components while remaining sensitive to the local context of each additional site (The Conservation Company and Public/Private Ventures, 1994). Program replication is considered part of an integrated intervention to address a particular problem. An integrated intervention may also include: advocating for better public policies and improved organizational and environmental conditions; strengthening the education and development of social sector practitioners; and enhancing the managerial capabilities of leaders within organizations (Racine, 1998).
Innovation	Any idea, practice, or material artifact perceived to be new by the relevant unit of adoption (potential adopters), in this case a social service program (Rogers, 1995).
Change Agents	People who introduce innovations (Rogers, 1995).
Adoption	The decision to make full use of an innovation as the best course of action available
Implementation	The actual attempt to begin a new activity (Hage & Aiken, 1970).
Discontinuance	A decision to reject an innovation that has already been adopted (Rogers, 1995).
Institutionalization	The attainment of long-term viability and integration of innovations within organizations” - the last phase of the diffusion of innovation process, during which time the innovation becomes integrated into the organization (Steckler, et al., 1992); not the same as fitting a program into its setting (embedding); means incorporating a program so deeply into a new setting as the way to address a specific problem or need that the continuation of that program can be taken for granted (Racine, 1988).
Linking Agent	An independent or a sponsor affiliated person or agency who facilitates the adoption innovations by making interpersonal contacts, transmitting information, and actively advocating target innovations to service delivery agencies (Monahan & Scheirer, 1988).
Resource System	The group or individual who is promoting the program (Orlandi, 1990).
User System	The potential users of the program (Orlandi, 1990).
Fidelity	The degree of faithful correspondence to the original program by a user in a new site (Rogers, 1995).

Concept	Definition
Re-invention	The degree to which the innovation is changed or modified by a user in the process of its adoption and implementation (Rogers, 1995). Recently, the study of replication and dissemination has begun to attract the attention of program planners, evaluators and funders in the social sector.

Rationale for Program Diffusion

There are compelling economic, social, ethical, and development reasons for investing in model program diffusion, particularly replication (Oudenhoven & Wazir, 1998). Health education, social marketing, and communication specialists (Manoff, 1985; Rogers, 1995) have long argued that the process of program development should routinely include communicating to others about that program. The active dissemination of social service program information, materials, and resources is critical. But is sharing ideas and materials with the objective of stimulating the development of new programs enough?

Forceful arguments have been made that program replication has the potential to be faster, less costly, and more humane than new program development. Program specialists have documented that: 1) program planning skills are not evenly distributed among nations, within a country, state, or local community (Racine, 1998); 2) some organizations do not wish to design all their own initiatives (Racine, 1998); 3) replication is cost-effective in that it's a wise use of scarce/limited resources (Oudenhoven & Wazir, 1998); 4) replication provides an opportunity for mutual learning and sharing of experience which leads to the formation of networks which leads to coalition formation, which can lead to a stronger platform for advocating for larger allocation (Oudenhoven & Wazir, 1998); and 5) replication initiatives also can evolve into institutional vehicles for internal problem-solving (Oudenhoven & Wazir, 1998). Given increasing social distress and decreasing amount of public funds available to address social problems, the case for increased program replication is compelling (Furano, Jucovy, Racine, & Smith, 1995).

Today, both the public and private sectors are involved in fostering program replication.

Though resources wax and wane with political and economic exigencies, federal agencies such as the Department of Education, the Center for Substance Abuse Prevention within Substance Abuse and Mental Health Services Administration, and the Department of Justice are involved in locally diffusing nationally recognized programs. As government has become "smaller" in the past few years, the private sector has had to take on more program diffusion responsibilities (Racine, 1998). The Robert Wood Johnson Foundation (RWJF), the Mott Foundation (Mott), the Pinkerton Foundation, the Pew Charitable Trusts (Pew), and the Robin Hood Foundation (RHF) now fund program diffusion studies and initiatives. Nonprofit organizations such as Replication and Program Strategies, Inc. now exist to support the wider adoption of effective social programs through technical assistance, analysis, and education. RPS is now supported primarily from fees it earns providing services to replication efforts.

Theoretical Framework for the Study of Program Replication and Dissemination

The primary theoretical basis of the study of program dissemination and replication is Diffusion of Innovation Theory (DOIT). DOIT provides an interdisciplinary framework for understanding the rate and speed with which innovations are adopted in a social system such as an organization (Rogers, 1995).

DOIT research has identified a diffusion paradigm composed of a resource system (the source of the innovation), a user system (the site to which the innovation is being expanded), and a linkage system (a change agent who may be from the resource system or an independent agent) (Orlandi, Landers, Weston, & Haley, 1990). Diffusion research also has identified five key factors influencing whether or not and at what rate an innovation diffuses: 1) individual

characteristics of the prospective adopter; 2) the environmental context into which the innovation is introduced; 3) the amount of contact the change agent has with the adopting organization; 4) the quantity and quality of information and communication about the innovation; and (5) the characteristics of the innovation itself. It has produced such concepts such as the bell-curve of five adopter categories, the S-curve rate of adoption, innovation discontinuation, and innovation re-invention, and a specific five step innovation-decision process through which decision-makers pass: 1) knowledge; 2) attitude formation; 3) innovation adoption or rejection; 4) innovation implementation; and 5) decision confirmation or rejection. Research findings offer insights on the role of organizational factors such as economic incentives, the number and types of resources available, prior commitments, the role of interest groups, the presence or absence of internal “champions” of the innovation, the organization’s decision making process, and the presence or absence of personal face-to-face interactions (Scheirer, 1990). Finally, recent research suggests that diffusion within organizations can be accelerated by matching sociometrically identified opinion leaders charged with educating or training a contact about an innovation with those individuals who nominated them as organization opinion leaders (Valente & Davis, 1999).

Organizational development theories, specifically, stage theories, also provide important insights into how to increase the successful introduction, adoption, implementation, and institutionalization of innovations within organizations (Goodman, Steckler, and Kegler, 1997; Stripling, 1996). They offer a well-tested series of steps and recommended strategies for helping organizations recognize when change is needed, and facilitate the introduction, adoption, implementation, and institutionalization of new programs, policies, and/or procedures within organizations. Organizational development research has revealed different types of innovations: routine or radical; programmed or nonprogrammed; instrumental or ultimate; central or peripheral; and technical or

nontechnical (Nord and Tucker, 1987) that influence the diffusion process.

A third framework that contributes to successful program dissemination and replication is the Transtheoretical Model, commonly known as Stages of Change Theory. The Transtheoretical Model provides a theoretical basis for understanding staff level of readiness to adopt a new program and suggests stage-matched interventions for facilitating the implementation of new programs (Prochaska, Redding, & Evers, 1997).

The Continuum of Program Diffusion

Diffusion initiatives appear to lie on a “commitment continuum” ranging from minimalist program dissemination to intensive, high fidelity program replication. Between these two poles lie activities of increasing temporal, financial, personnel and resource commitment, and risk taking (see Appendix A). At one extreme is basic program promotion - creating awareness of the existence of the resource system’s program among specific target audiences such as funders, potential clients, professional organizations, and potential imitators/competitors. Little if any program evaluation is called for and is often limited to intuition-based guessing (Orlandi, 1996). The focus of resource system activities is on information sharing. Resource commitment is limited to the production of publicity-oriented handouts and the spontaneous, intermittent time commitment of available volunteers or staff. Interaction with interested agency representatives is minimal, and the lack of similarities between the resource and user systems (homophily) in terms of mission, priorities, values, structure, etc. is inconsequential.

As the objective of program diffusion evolves from: 1) creating awareness of the program practices and policies to 2) cultivating a preference for a new program over current or other options to the point of achieving a decision to adopt the program within the organization, to 3) assuring the implementation of the program, to 4) encouraging the institutionalization of the program (Steckler et al., 1992), so,

concomitantly, does resource commitment. At the first two levels, dissemination options usually include production and distributing brochures, booklets, monographs, manuals, resource lists, articles in the popular and scientific press, video tapes, slide shows, PowerPoint presentations, participating in discussions at meetings, making formal poster or oral presentations at professional conferences, and web site and electronic mailing list postings. These dissemination activities can trigger new perspectives, new activities, and new breakthroughs

However, reproduction of the effects of the original program is unlikely unless an intense commitment is made to program replication. Not surprisingly, high fidelity program replication (compared to program adaptation or reinvention) requires the most commitment -- before, during, and even after replication. Evaluation of the resource system, the program (its components, its implementation, its impact, and its long term consequences on the target audience and staff) is routine, thorough, and published in peer reviewed literature. Both the resource and the user organizations commit personnel, equipment, financial, and other resources on a large scale. The resource organization provides supplies, staff training, on-going technical assistance, administrative support if necessary, and continuous follow-through.

Program Fidelity versus Reinvention

Over the years, the study of diffusion of innovation has led to the evolution of two major program replication "camps" based, essentially, on experts' attitudes toward program fidelity models (versus program re-invention or adaptation).

The Contextual Model: At one extreme, replication is interpreted as program adoption followed by program adaptation (Furano, Jucovy, Racine, & Smith, 1995; Oudenhoven & Wazir, 1998). Proponents of a contextual approach honor the uniqueness of each particular setting. They address local needs, adapt to local environments, and acknowledge the validity of local knowledge. They

emphasize local practice, local initiative and control, experimentation and spontaneity, mutual learning, and problem-solving. They are demand-driven. Resource and user organizations are equals; the relationship is non-hierarchical. Each exchange is seen as a potential opportunity for mutual learning.

An example of the contextual approach is the World Organization of the Scout Movement/World Scout Foundation with over 32 million members. The groups differ from country to country, within countries, and from place to place. Because there is no absolute framework or blueprint, their activities differ, and their policies and procedures differ (Chambers, 1993; Oudenhoven & Wazir, 1998).

Under the umbrella of contextual approaches are two types of replication: concept replication and spontaneous or endogenous replication. In concept replication the focus is on identifying and transporting the original program's general components and principles to other sites. Success is measured in terms of the program's adaptation and sensitivity to each unique local context. The user organization is not accountable for how components of the program are transferred and used at new expansion sites. In spontaneous or endogenous replication demand for innovation comes from "below." The program is need-based and characterized by spontaneous and informative contacts between like-minded individuals. Communication is a two-way process of convergence, where participants create and share information.

The Universalist Model: From the universalist perspective, program replication is a unilinear unfolding of a series of discrete activities rather than overlapping, simultaneous events. The focus is on program activities rather than the people involved in providing or using the new program. Dependent on highly-trained experts, it is a top down approach that draws on research for innovation, and doesn't tolerate adaptation.

Under the umbrella of universal approaches are three types of program replication: mandated, staged, and franchise. Mandated replication occurs when a parent body wants to disseminate

a prototype program through the organizations under its jurisdiction. It is always top-down, and there is no element of choice involved. Staged replication is the most structured approach and usually includes three phases: a pilot phase in which the viability of the program concept is tested; a demonstration phase in which the program is implemented in a variety of sites (and is closely monitored and rigorously evaluated); and a replication phase in which the replicating agency independently reproduces the original program. These program usually reflect franchise replication principles: the use of the “cookie cutter” approach that assumes that program components are inviolable. A central agency usually provides technical assistance, marketing, training, and other support services.

In the universalist/contextual replication debate, the universal approach seems have greater appeal (Replication and Program Strategies, 1994). Replication specialists refer to the increase call for adherence to standards and principles, the call to protect the identity of the program being replicated, and a demand for specific inclusion criteria for expansion sites as well as the expansion site selection process.

Criteria for Successful Program Replication

Different agencies and organizations have different criteria for identifying programs worthy of replication. There appears to be little, if any, coordination of or similarity in these criteria. This may be due to appropriate difference in standards befitting different types of innovations (e.g., education curricula as opposed to social service programs) (Rogers, 1995).

The DOE National Diffusion Network Program Effectiveness Panel has three criteria for determining the effectiveness of educational programs for a total of 100 points (US Department of Education, 1989): 1) evaluation design (up to 40 points); 2) meaningful results (up to 50 points with a minimum of 40); and 3) transportability (up to 10 points). A credible evaluation design assures that the results have been obtained in a manner appropriate for the program and that the effects are clearly produced by the program. The results of a program are considered meaningful when the impact is strong and the goals are important. Finally, the program must have replication potential and be able to be transported to other sites for reasonable costs - in dollars and effort - with the expectation of similar results.

SAMHSA’s CSAP and the Department of Justice (DOJ) have similar ordinal scale criteria for identifying model programs. Programs are rated along specific dimensions, and the results averaged (Table 2). CSAP criteria include meeting certain standards in regard to theory, fidelity of interventions, sampling strategy and implementation, measures, data collection, analysis, plausible threats to validity, integrity, and utility. To this list, the Department of Justice adds attrition, missing data, replications, dissemination capability, and cultural and age appropriateness. Each agency defines five levels of performance for each dimension on which they are rated on a 0 to 5 scale. Depending upon a program’s average score, the agency labels it clearly worthy of replication, a good candidate for replication, and of interest but needing further study (the language - exemplary, model, and promising - may vary).

Table 2
Department of Justice Criteria for Identifying Model Programs

1.	Theory	The degree to which the project findings are based on a clear and well-articulated theory, clearly stated hypotheses, and clear operational relevance. 1. No information about theory or hypotheses specified 2. Very little information about theory and hypotheses specified 3. Adequate information about theory and hypotheses specified 4. Nearly complete information about theory and hypotheses specified 5. Full and complete information about theory and hypotheses specified
2.	Fidelity of interventions	The degree to which there is clear evidence of high-fidelity implementation, which may include dosage data.

3.	Sampling strategy and implementation	The quality of sampling design and implementation.
4.	Attrition	Evidence of sample quality based on information about attrition.
5.	Measures	The operational relevance and psychometric quality of measures used in the evaluation, and the quality of supporting evidence.
6.	Missing Data	The quality of implementation of data collection (i.e., amount of missing data).
7.	Data Collection	Way data collected in terms of bias or demand characteristics and haphazard manner.
8.	Analysis	The appropriateness and technical adequacy of techniques of analysis, primarily statistical.
9.	Other Plausible Threats to Validity	The degree to which the evaluation design and implementation addresses and eliminates plausible alternative hypotheses concerning program effects. The degree to which the study design and implementation warrants strong causal attributions concerning program effects.
10.	Replications	The exact or conceptual reproduction of both the intervention implementation and evaluation.
11.	Dissemination Capability	Program materials developed including training in program implementation, technical assistance, standardized curriculum and evaluation materials, manuals, fidelity instrumentation, videos, recruitment forms, etc.
12.	Cultural and Age Appropriateness	
13.	Integrity	The overall level of confidence that the reviewer can place in project findings based on research design and implementation.
14.	Utility	<p>The overall usefulness of project findings for informing prevention theory and practice. This rating is anchored according to the following categories, and combines the strength of findings and the strength of evaluation.</p> <ul style="list-style-type: none"> ❖ The evaluation produced clear findings of full or negative effects for a program with well-articulated theory and program design; the study provides support for rejecting the program as a replication model. ❖ The evaluation produced findings that were predominantly null or negative, though not uniform or definitive. ❖ The evaluation produced ambiguous findings because of inconsistency in result or methods weaknesses that do not provide a strong basis for programmatic or theoretical contributions. ❖ The evaluation produced positive findings that demonstrate the efficacy of the program in some areas, or support the efficacy of some components of the program. ❖ The evaluation produced clear findings supporting the efficacy of well-articulated theory and program design; the study provides support for the program as a replication model.

Strategies for Successful Program Replication

“No matter what approach is used, accumulated experience - in research, policy, and practice - shows that replication is a complicated, costly and time-consuming process. There are no easy solutions to it and no short cuts.” (Oudenhoven & Wazir, 1998). Though there is no conclusive evidence supporting one program replication approach over the other, research does identify concepts and characteristics essential to program

replication success. These concepts related to the program itself, the resource system, the user system, the linkage system and the context or environment in which the program is to be introduced. The order in which they are mentioned here do not infer any particular valuing of the factors. Given the many replication efforts integrate aspects of contextual and universalist approaches, strategies related to both are included.

1. Know the organizations involved very well, particularly the adopting organization. In an article reviewing current knowledge about planned organizational change, Stripling identifies five categories of change related variables. To successfully identify and work with adopting organizations, health educators acting as change agents or as part of a linkage system need to be aware of the organizations' external environment, internal culture and climate, management roles, participant needs, and re-stabilization (or anchoring) capability. External factors such as market forces customer demands, or the introduction of new technologies reveal the need for change. Other external factors such as collective bargaining agreements, regulatory requirements, and lack of support from stakeholders impede change. Internal factors such as distributed power, open and decentralized communication systems, participatory decision making, and acceptance of conflict facilitate change. Internal factors such as unsatisfying organizational politics, poor management, or the arrival of a new leader can predispose an organization toward change. Managers must be committed to their roles of creating and communicating a vision of a desired end state and recognize and reward those who support change efforts. Internal factors that lead to employee resistance to change include: perception that a change will interfere with future promotions; reasons for change are not clear to those expected to change the most; perception that the change is not important to continued success; change decreases or eliminates rewarding aspects of jobs; change is not compatible with prevailing values; people feel coerced to adopt the change; a hostile working climate exists in the organization; resistance to change is not being handled constructively, functional or territorial boundaries prevent collaboration and sponsors of the planned change lack agreement on key goals. Finally, hard-won successful change can be undermined by the limitations of the adopting organization's internal systems. Information management systems as well as employee support, evaluation, and reward systems need to be developed, adjusted and promoted to accommodate new polices, practices, and procedures. And even after attention is paid to all of the above, the entire effort will collapse if either organization or the linkage system stops paying attention to the change too soon.
2. Focus attention on the people involved in the user and resource systems. Oudenhoven and Wazir (1998) report that programs work when users are empowered, when cultural diversity and local needs are recognized, when holistic development is promoted, and significant others are involved.
3. Remember that no new program or new knowledge (no matter what the issue) is not objective or value-free and will trigger varying reactions and responses among potential adopters. Oudenhoven and Wazir's advice includes: don't treat new users as empty receptacles with no mechanisms for their own knowledge creation; give validity to current procedures or programs; don't impose your knowledge as an outsider, but organize your approach so that the new knowledge or program can be owned or internalized by its future users; foster two-way information sharing; present users with a range of program and policy options rather than promote one particular prototype; and support multi-level intra- and inter-organizational networking and voluntary participation and learning about the new program.
4. Carefully define and monitor the role and activities of the linking agent (Orlandi, 1990; Monahan & Scheirer, 1988). The Centers for Disease Control and Prevention Division of Adolescent and School Health (DASH) has a curriculum dissemination (their term) process that relies heavily on linking agents. The DASH "Programs That Work" dissemination process involves

- partnerships among the resource organization (the program or curriculum developer) and three linking agents: ETR Associates (ETR), the Education Development Center (EDC), and the Academy for Educational Development (AED). After a "Program That Works" curriculum is identified, using criteria determined by DASH, DASH personnel, the curriculum/program developer, ETR and/or EDC, and the AED perform clearly defined dissemination roles (US Dept. of H&HS, 1999).
5. Don't try to legislate change. Replication and Program Strategies, Inc. finds that the most successful replication does not happen as a result of deliberate policy, but as the result of a private entrepreneurial effort, very similar to starting a new business.
 6. Identify a "champion" or "program entrepreneur" with the charisma and leadership ability to design program strategies, promote the program's achievements, and secure long-term funding. This could be someone within the adopting agency or from an outside agency as long as that individual is committed to the new program, is internally motivated, can push and move things, and has the skills, endurance, and personality to carry on and to convince others to follow). An "outsider" usually brings to the table, in exchange for the personal qualities of the "insider" expertise, professional interest, and external incentives.
 7. Plan. Front end planning - planning the initial program with an eye toward its eventual replication - saves time, energy, and money in the long run (The Conservation Company/Public Private Venture, 1994). Failing pre-planning, an important organizational step prior to investing in any diffusion effort is an accurate assessment of the existing model's "replication readiness." (Figure 1).
 8. Develop new programs with an eye toward replicating it in the future. When program implementation, impact, and outcome evaluations are done, rarely are they conducted with program replication in mind (Furano, Jucovy, Racine & Smith, 1995).
 9. Study potential adopters' perceptions of the attributes of a proposed new program. Based on new research (Goldman, 1992; Goldman, 1994) program planners now have the instruments with which to study how proposed innovations are perceived and if it has the five categories of attributes identified by Rogers (1995): Is the innovation perceived by the potential adopter as superior to the current behavior or inactivity (relative advantage), Is the new behavior perceived by the client as compatible with client needs, values and experiences (compatibility)? Is the new behavior perceived by the client as easy to do (complexity)? Is the new behavior perceived by the client as divisible - able to be implemented one step at a time (trialability)? and Is the new behavior perceived by the client as producing immediately observable results (observability)? Additional important concepts include the adoption curve, the idea of adoption curve thresholds, and the innovation-decision process.
 10. Use theories. DOIT, organizational development stage and strategy theories, and the Transtheoretical Model provide effective and reinforcing frameworks for anticipating pitfalls. Rogers identifies five key factors that influence whether or not and at what speed an innovation is adopted: 1) the individual characteristics of the prospective adopter that identify the person as an "innovator," "early adopter," "early majority," "late majority," or "laggard on an innovativeness continuum of decreasing degrees of innovativeness;" 2) the environmental context into which the innovation is being introduced; 3) the credibility, trustworthiness, respectability, and like-ability of the change agent who is promoting the innovation and the change agent's organizational sponsor; 4) the quantity and quality of information and communication about the innovation available to the adopters; and 5) the characteristics of the innovation itself.

Organizational development offers stage theories that recommend a specific series of steps (such as identify unsatisfied demands on the system; search for possible responses, evaluate alternatives, decide to adopt a course of action, initiate action within the system, implement the change, institutionalize the change) to increase the likelihood of successful organization-based change. Strategy theories offer stage-matched techniques (surveys, cultural gap inventories, two step planning process, T-groups, management building, structural redesign, process consultation, group development, and measurements of planned change) for moving through the change implementation stages. The Trans-theoretical Model will suggest a similar process of individual behavior change and matching behavior change strategies.

Incomplete and poorly thought out evaluations are why program replication efforts fail to get started or to be successfully implemented. Rarely can a program be submitted for review at the federal level without a well crafted evaluation of the implementation as well as the impact and long-term outcomes of the demonstration or pilot program. The resource organization does not know what works or why, and the potential adopting organization can not anticipate the program's implementation and outcome potential or pitfalls.

Oudenhoven and Wazir (1998) also point out that most reviews of successful programs are mainly descriptive rather than evaluative in nature, offering little actual evidence that the project has a positive effect on the target group and therefore should be supported or emulated. They recommend that evaluations include: the program's effect on the participants; numbers reached; spread of project sites over the country; volume of services extended; the impact on the total target population (monitor their needs, what programs are offered for them, how many participate, and who and how many are left out or require special attention); and the relationship between "donor" or resource system and the "recipient" or user system.

Typical Reasons Why Program Replication Fails

The other side of the successful strategies coin is preventable pitfalls. Program replication can fail at any stage along the diffusion of innovation decision-making process. Failure is related to the resource system; the linkage system; the user system; and/or the replication context. Table 3 provides a summary of predictable pitfalls.

Table 3
Typical Reasons for Replication Failure

Program	Resource System	Linkage System	User System	Replication Context
Lack of evaluation data	Organizational instability	Inexperienced or uninspired change agent	Lack of staff commitment or sense of ownership for academic, moral or social reasons	Political climate
1 st and new site evaluation not done with replication in mind	No preplanning for replication	Infrequent and/or incomplete communication with user and resource systems	Lack of staff capability	Funding or funder climate

Program	Resource System	Linkage System	User System	Replication Context
Not seen as compatible with site culture	Potential traps not identified	Scope of replication activities not made clear	Outcomes not valued by staff	Societal value climate
Not seen as divisible-trialable	Lack of personnel and other resources for replication activities	Fidelity expectations not made clear	Low staff self efficacy	Environmental changes
Outcomes not seen as observable	Lack of staff or volunteer commitment to replication	Institutionalization vs. embedding needs not clarified	Low staff locus of control	Policy changes
Seen as too complex	Lack of rigorous random assignment research about the program		Organizational development planned change principles ignored	Competition with similar programs
Not seen as better than current program or activities			Organizational instability	Economic changes
			No or inadequate guidelines	

Replications also will fail if they are not monitored carefully. While it is important to study a program's effectiveness, efficacy, and efficiency, program planners and funders also would benefit from knowing the impact of a program on its sponsoring organization and its stakeholders, the difference between an organization's sense of readiness to replicate one of its programs and its actual capacity and competence to do so, the impact of different degrees of program fidelity (program "cloning" to free adaptation or re-invention) on program success, and effect of the type of organization into which a new program is being introduced on its outcomes.

Another potential problem is a failure to define the scope of what is to be replicated identified and implemented by the new site. Sometimes, when considering a program for replication, the decision-maker(s) in the new sites into which a model program is being expanded will choose to focus on a singular component of a program or a

guiding principle or concept rather than the complete program as presented by its originator.

A program will be considered a failure if the resource, linkage, and user systems use different definitions of "replication." Some may expect "program cloning" while others support free adaptation in response to local needs.

Finally, financial support is necessary, but not sufficient to guarantee success. Even well funded programs fail to be replicated. For example, each year, ten organizations that are identified as innovative, addressing significant concerns, having proven benefits, and showing promise for being successfully replication by The Ford Foundation Innovations in State and Local Government Awards are each given \$100,000 to strengthen the program locally and encourage its replication in other states and communities. Nonetheless, of 26 winners studied, six did not replicate at all and nine were replicated in only one-to-five sites. Barriers to replication cited by staff included time, funding

or lack of expertise (Public/Private Ventures, 1994).

Conclusions

A review of program diffusion literature reveals that: (1) there is a compelling need to invest in model program replication; (2) there is public and private sectors financial support for studying or doing program replication; (3) diffusion of innovation theory is the primary framework for explaining and managing program dissemination and replication; (4) a continuum of models of program diffusion exists ranging from dissemination to replication; (5) program replication efforts are characterized by the degree of program fidelity or reinvention; (6) disciplines and agencies have their own criteria for identifying programs worthy of replication; (7) there are specific strategies that increase the likelihood of successful program replication; and (8) potential pitfalls of program

dissemination and replication can be anticipated and minimized.

Throughout the profession, activities may begin to facilitate the diffusion of worthy health education programs. Professional preparation programs can integrate principles of program diffusion into program planning and evaluation courses. Current practitioners can request and seek out continuing education courses on program diffusion, conduct program replication-readiness self-assessments of existing programs, be on the lookout for programs worthy of replication, and incorporate process, impact, and long-term evaluation projects into new programs. Even the profession may wish to consider integrating program diffusion sub-competencies into the seven areas of responsibility and competencies of certified health education specialists.

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Author Information

Karen Denard Goldman, PhD, CHES
Health Education and Social Marketing Consultant
Adjunct Associate Professor, New York University
184 Columbia Heights
Brooklyn, NY 11201
E-mail: RLGKDG@flash.net

Appendix A
Replication Readiness Assessment

Adapted from Replication and Program Strategies, Inc. (1995). Replication: Self-assessment tool. Philadelphia: Replication and Program Strategies, Inc.

Defining the Innovation

Make sure all of the innovation's key personnel concur!

1. What is the innovation's purpose?
2. Which elements of the innovation are critical to its success? (meaning unique and indispensable) Which elements are desirable or variable but not necessarily critical? (meaning useful and complementary)
3. Which elements are options? (meaning open to choice by new sites)
4. What management, operations, and support personnel are needed for the innovation to operate at any given site?
5. What are the location and space needs for the innovation to operate at any given site?
6. What start-up capital and operating funds are needed for the innovation to operate at any given site? What is the annual budget once the innovation is fully operational?
7. What is the innovation's day-to-day operating process and structure?
8. How are managers and other personnel held accountable for performance and use of resources?
9. How are managers and other personnel held accountable for use of resources?

Evidence of Impact or Outcomes

How can you demonstrate that the innovation makes a difference?

11. How do you know that the innovation has an impact?
12. What is that impact?
13. Are there independent evaluations or reviews for the innovation? Do they demonstrate that the innovation fulfills its purpose? If so, how?
14. Briefly and clearly, why is this innovation worth replicating?

Suitability for Replication

How easily could the innovation operate in other locations? Make sure all of the innovation's key personnel concur!

15. What is special or unique about the innovation that is likely to be critical to its viability in other locations?
16. Can the critical elements of the innovation be implemented in other locations and sustained over time?
17. Can the critical elements of the innovation be sustained over time?
18. Would implementation in other locations require the originator's (your) involvement? If so, how much involvement?
19. Could the innovation operate in different places and settings without significant adaptation?
20. What external support (e.g., training, technical assistance) would be *essential* to the adoption of the innovation in new locations?

Market Position and State/local Capability

Is there a reason to believe that other states and localities would be interested in adopting the innovation? Make sure all of the innovation's key personnel concur!

21. Have you surveyed the field of innovations that serve a similar purpose?
22. If yes, what innovations exist that are similar?
23. How does your innovation differ from those, if any, that are similar?
24. Have other states and localities expressed an interest in replicating your innovation?
25. What efforts have already been made to solicit and establish market interest?

Appendix A Continued

26. Have you assessed the capability of interested states and localities to implement and operate the innovation successfully?
27. In places where interest exists, do similar innovations now operate?

Funding

Can resources be secured to support adoption of the innovation in other places? Make sure all of the innovation's key personnel concur!

28. What role will you play, if any, in helping to secure funding for the implementation of the innovation in new locations?
29. What responsibility will new locations have for funding their own costs and any centralized costs that you would incur?

Capacity to plan and manage

What are the likely effects of a decision to pursue replication, either as the responsible agent of expansion or as a disseminator of knowledge and experience regarding the innovation?

30. What effects will a replication effort have on the original setting of the innovation (your agency or office)?
31. What scale of expansion is envisioned? Why?
32. Do you as the originator currently have the capacity and resources to manage replication? 33. What steps would have to be taken to develop the needed capacity?
34. More specifically, do you have or have access to the operating systems, training, time, and other materials to support expansion? What is required to adapt them for purposes of replication? What is required to obtain them?
35. Do you as the originator have the resolve and capacity to assure, as much as possible, adherence to the innovation's basic elements, standards, and principles in the other places where it is implemented?
36. Are you as the originator, positioned to deal effectively with the support, guidance, and adaptation of the "network" of adopters that will emerge over time and with the inevitable changes in state and local conditions?
37. Are you as the originator, positioned to deal effectively with the inevitable changes in state and local conditions?

Evidence of interest in undertaking replication

38. Is there an interest in expanding the innovation to other locations? What motivates this interest?
39. Is the originator or sponsor of the innovation (you) interested in undertaking the responsibility for extending the innovation to new places and providing the support needed to gain its effective adoption there? Or, is your interest limited to sharing knowledge about the innovation with others?
40. If you are not interested in assuming the responsibility for replication, could this responsibility be effectively lodged somewhere else? Should it be?