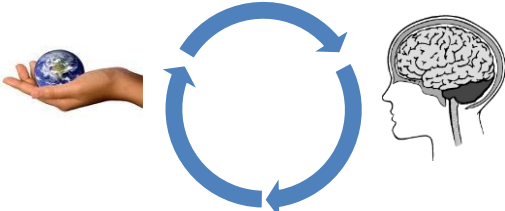


Diffusion of Innovations

Health Promotion Strategies 5803H
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The Knowledge-Practice Gap

It usually takes too long for proven concepts and programs to become part of practice.

1601: citrus juice prevents scurvy

↓

1795: citrus introduced into British navy diets



Challenges for Public Health:

- It is often difficult to conduct research-based interventions in community settings; difficult to meet practitioner's needs.
- Decision-makers are often reluctant to adopt proven (but setting-specific) interventions.
- Research emphasis is generally more towards matters of internal validity, as opposed to matters of external validity .

Good News: Things are changing → the **Diffusion of Innovations** model!

Diffusion of Innovations

Everett Rogers: *Diffusion of Innovations* (2003)

- contextual definition of "diffusion"
- categories of adopters: innovators, early adopters, early majority, late majority, laggards
- majority of publications on diffusion are comprised of narrow analysis per specific applications
- 9 major diffusion research traditions, with 4 accounting for ~% of all diffusion publications: rural sociology, marketing and management, communication, and PUBLIC HEALTH

More recent research:

- builds on earlier approaches to develop best practices
- shifts emphasis toward understanding behavior of organizations and broader systems

Popularization:


- Malcolm Gladwell's *The Tipping Point: How Little Things Can Make a Big Difference* (2000)
- *Diffusion Simulation Game* (Indiana University): <https://www.indiana.edu/~simed/istdemo/index.htm>

Diffusion & Dissemination

Diffusion: process by which innovation is communicated through certain channels over time and among members of a social system

Dissemination: planned, systematic efforts to make an innovation more widely available to a target audience or members of a social system

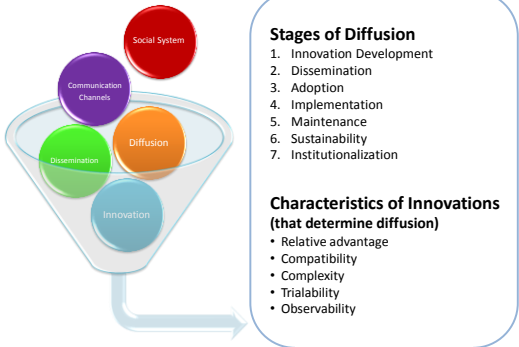
The Diffusion Continuum



spread is unplanned, informal, largely mediated by peers and social networks

spread is planned, formal, centralized, likely to occur through vertical hierarchies

Foundational Concepts



Stages of Diffusion

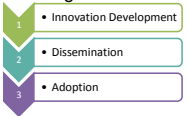
1. Innovation Development
2. Dissemination
3. Adoption
4. Implementation
5. Maintenance
6. Sustainability
7. Institutionalization

Characteristics of Innovations (that determine diffusion)

- Relative advantage
- Compatibility
- Complexity
- Trialability
- Observability

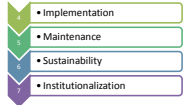
Stages of Diffusion

- 1. Innovation Development**
 - a. Includes decisions and activities that occur from the early stage of an idea to development and production
- 2. Dissemination**
- 3. Adoption**
 - a. Target audience uptakes innovation
 - b. Influenced by three types of knowledge
 - i. Awareness knowledge
 - ii. Procedural knowledge
 - iii. Principles knowledge



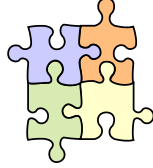
Stages of Diffusion

- 4. **Implementation**
- 5. **Maintenance**
 - a. Ongoing use of innovation over time
- 6. **Sustainability**
 - a. The degree to which an innovation continues after initial resources are exhausted
- 7. **Institutionalization**
 - a. Institutionalization into organizations, communities and other settings



Factors in Diffusion Process

- **Characteristics of the Innovation**
 - Relative advantage
 - Compatibility
 - Complexity
 - Trialability
 - Observability



- **Characteristics of Individuals**
 - Innovators
 - Early adopters
 - Early majority adopters
 - Late majority adopters
 - Laggards

Factors in Diffusion Process

- **Features of the setting**
 - Geographical
 - Societal culture
 - Political conditions
 - Globalization and culture



Pool Cool Skin Cancer Prevention Program

Target audience: children 5- 10 , parents, lifeguards and swimming instructors

Program Components

- Staff Training
- Sun safety education
- Interactive learning activities
- Sunscreen provisions
- Shade Signs, Promotion of Sun-Safe Environments

The results of an efficacy Study (Unit of study- individual pools) showed significant increase in

- Use of shade and sunscreen
- Sun protection habits in general
- Number of sunburns
- Hat use
- Sun Protection Policies and Supportive Environments

Diffusion Trial

Unit of Study: Clusters of Pools assigned to Field Coordinators (Linkage Agents)

Looked at:

- Implementation, maintenance and sustainability
- Improvements in organizational and environmental supports for sun protection at swimming pools
- Protection Habits among kids (efficacy indicator)
- Organizational predictors of the above outcomes

½ the clusters got a basic package, ½ got an enhanced package.

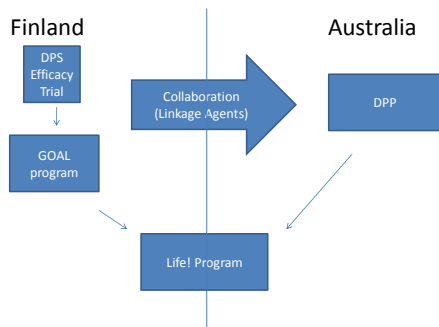
Results

*"Very Good" implementation and maintenance at 1 and 2 years
However, few differences were found between the basic and enhanced groups (Implications for diffusion of innovation)*

Implications

- *Criteria and methods for measuring efficacy are not necessarily the same as those for measuring diffusion. (Think also of DARE vs. NEP's)*
- *Diffusion trials measure not only whether a program is having the desired impact, but the role of linkage agents in translating theory and research into practice.*
- *Hence, identifying the roles of Linkage agents (in this case, the field coordinators) is crucial in defining the units of analysis, and central to the concept of diffusion.*
- *If a program is already well implemented and diffused, then incorporating novel elements aimed at improving these factors may not result in better implementation or diffusion (at least in the short term).*

Spread of Diabetes Prevention Programs from Finland to Australia (and back)



LIMITATIONS OF THE MODEL & CHALLENGES FOR THE FUTURE

CRITICISMS OF DIFFUSION RESEARCH:

* Criticized for its *pro-innovation bias* (implicit assumption that a given innovation will be diffused and adopted by all members of a target group and will not be reinvented or rejected).

* Diffusion research perpetuates the *individual blame bias* (the tendency to hold individuals responsible for their problems, rather than the system the individual is a part of).

- need to seek alternatives to using individuals as the sole unit of analysis
- should consider causes of social problems

CHALLENGES:

* Balancing complexity, specificity and feasibility to the productive application of diffusion theory, research and practice.

* Well organized large-scale community programs with multiple strategies & methods for dissemination need to be established to improve population health outcomes.

* A system-wide approaches to diffusion increases, it is more important to understand workings of complex organizations.

FUTURE CONSIDERATIONS

Three specific areas of diffusion research that need attention:

- 1) More research into complex interplay of variables associated with the diffusion of innovations and the weight of these variables.
 - 2) Considering the "gating function of variables influencing adoption"- authority structures and leaders decision processes may determine adoption regardless of the characteristics of the innovation.
 - 3) Further conceptual & empirical development of the determinants of success or failure in relations to implementation, maintenance and susceptibility.
- Disseminating programs across regions requires more collaborative and coordinated approaches that compare and contrast methods & approaches across settings, regions and countries.
 - Due to the global burden of disease in low to middle-income countries, international research needs more attention.
 - Measurement issues require more systematic attention, important to use common definitions, measures, tools to enable comparisons across studies (need to consider economic measurements).
 - New information & communication technologies provide new & better opportunities for program dissemination & sharing of research tools.

The Most Important Practical Lesson of Diffusion Research:

The Importance of achieving a good fit between:

- A) The attributes of an innovation
- B) The adopting individual of organization
- C) And, the environment or context where the process takes place.