Diffusion of Innovations: Changing the Focus from Adoption to Adaptation with Implications for e-learning

Anthony E. Kelly
George Mason University
Innovations in e-Learning
Symposium 2005
Defining Diffusion and Innovation

- **Innovation**: An idea, practice, or object that is perceived as new by an individual or other unit of adoption.

- **Diffusion**: The process by which an innovation is communicated through certain channels over time among the members of a social system.

Stages of Adoption

- **Awareness**: extent to which a target population is conscious of an innovation.

- **Interest**: personal intrigue on the innovation.

- **Trial**: experimenting with the innovation.

- **Decision**: adopter decides to continue, quit, or re-create the innovation.

- **Adoption**: continuation or integration of the innovation into lifestyle.
Categories of Adopters

- **Innovators**: venturesome, cosmopolite, risk-taking, information seeking, with a higher financial status.

- **Early Adopters**: greatest degree of opinion leadership, respected by other members of social group. Strategies with a motivational emphasis may be most effective at getting them involved in the diffusion process.

- **Early Majority**: deliberate, adopt new ideas just before the average member of a system.

- **Late Majority**: skeptical, adopt new ideas just after the average member of a system. The pressure of peers is necessary to motivate adoption. Intervention strategies that help them to overcome barriers are needed to get them to take up the innovation.

- **Laggards**: traditional, last in a social system to adopt an innovation, pays little attention to the opinions of others.

For whom are you designing?
S-Shaped Curve for Adoption of Innovations
Nondeterministic Factors

- **Communication**: The process in which participants create and share information with one another in order to reach a mutual understanding.

- **Uncertainty**: The degree to which a number of alternatives are perceived with respect to the occurrence of an event and the relative probability of these alternatives. Implies a lack of predictability or structure.

- **Social Change**: The process by which alteration occurs in the structure and function of a social system.
Characteristics of an Innovation or Change

- **Relative Advantage**: The degree to which an innovation is perceived as better than the idea it supersedes.

- **Compatibility**: The degree to which an innovation is perceived as being consistent with existing values, past experiences, and needs of potential adopters.

- **Complexity**: The degree to which an innovation is perceived as difficult to understand and use.

- **Trialability**: The degree to which an innovation may be experimented with on a limited basis.

- **Observability**: The degree to which the results of an innovation are visible to others.
Source: Rogers, 1995
Rogers points to two under-researched areas:

- **Failed innovations** (due to a bias to study successes)
- **Reinvention** by users/customers due to:
  - Local pride and superficial changes (contravening “not invented here”)
  - Simplification of complex innovations
  - Lack of knowledge (awareness/how-to/principles)
  - The capacity of abstract ideas/processes to be re-invented
  - Application by users to unexpected problems or areas
A Call for Active Adaptation Studies

• 1. Web-enabled proto-diffusion (Bannan-Ritland, 2003) - permitting and monitoring end-users during development cycles via the web or other broadcast networks

• 2. Diffusion within a design-research frame
Diffusion as Part of Design Research

Rather than waiting for innovations to diffuse successfully or be rejected, the goal is to formulate and actively test theories that support ongoing diffusion activity by:

- Documenting and characterizing user changes/adaptations by adopter categories
- Understanding receptivity to adopt, adapt and change innovations
- Purposefully feeding back user adaptations into ongoing (or revitalized) design processes
Measurement Instruments

- Sensitive to adaptations not merely adoption
- Characterize changes in users’ goals and purposes (new application areas, new audiences)
- Characterize changes that respond to local contexts/requirements that may be generalizable
- That help develop and test theories of how users adapt innovations, in order to modify prior theories of innovation design by the (original) development team
Keeping Open the Circle of Innovation

- Innovations do not end with initial development. For malleable innovations (e.g., digital media, learning), the circle of innovation extends into the future beyond the developer.
- Keeping the circle of innovation open means tracking adaptations and learning from them (e.g., Skype, viruses, open source, hand-help devices, cell phones, the internet).

Bannan-Ritland, 2003
Implications for e-learning design

• By Rogers’ definition, any new information is an “innovation” for a student, particularly “principles knowledge”

• Much information (beyond skill learning) may be complex, especially as social and cultural factors are considered.

• Determination of “complexity” must be left to the learner and not unreflectively assumed by the developer.
Implications for e-learning design

- Ignoring misunderstandings, etc. can lead to e-not-learning
- Yet, characterizing the mis-learnings (failures) may lead to improved theories of teaching, learning and design, and more durable (later) diffusion
- Studying the positive adaptations of instructional materials may significantly inform new design cycles of the original concepts
Suggested Readings


