

# WIKI Platforms for Collaboration: When Convenient Access and Ease of Use Are Not Enough


Renate Roske-Shelton and Lois Bangiolo

Wiki spaces for idea and knowledge work originated with the purpose of providing users with a “quick” tools interface to minimize new learning and enable easy writing contributions and file postings. Their early promise has not always been fulfilled as expected and productive collaborative user behaviors are at best evolving very slowly. This presentation will address some “macro-usability” features which appear vital for a successful and persistent WIKI project evolution.

## About the Speakers:

Renate Roske-Shelton is the Director of Usability at Quotient Inc., a small consulting company in Columbia, MD. She currently works as a contract consultant to the National Library of Medicine (NLM), Office of Communication and Computing Systems (OCCS) where she conducts usability studies as well as undertakes basic grant-funded research. She earned her Ph.D in Cognitive Psychology from New Mexico State University, Las Cruces and has worked in various National Research Laboratories on a variety of challenging applied technology issues ranging from Aircraft Cockpit Menu design at NASA Ames Research Center to Medical and Health Information Messaging issues related to the design, usability and accessibility of NLM Web sites. Renate is a member of the Human Factors and Ergonomics Society, the ACM special interest group for Human-Computer Interaction and participates in many local professional associations. Her primary interest lies in the development and application of scientifically rigorous methods and the documentation of best practices to achieve excellent design solutions for user interfaces for evolving technologies.


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## First Things First: What is a Wiki?

*In 'plain English' from CommonCraft on YouTube:*

<http://www.youtube.com/watch?v=-dnL00TdmLY>

**Adapted Wikipedia Definition**, the free online encyclopedia as of 9-20-07:

- A **wiki** is a medium which can be edited by anyone with access to it.
- Provides an easy method for linking from one page to another.
- Typically considered a collaborative web site , though there are now also single-user offline implementations.
- Ward Cunningham, developer of the first wiki WikiWikiWeb, originally described it as "the simplest online database that could possibly work".
- One of the best-known wikis is Wikipedia, the online encyclopedia

## Outline

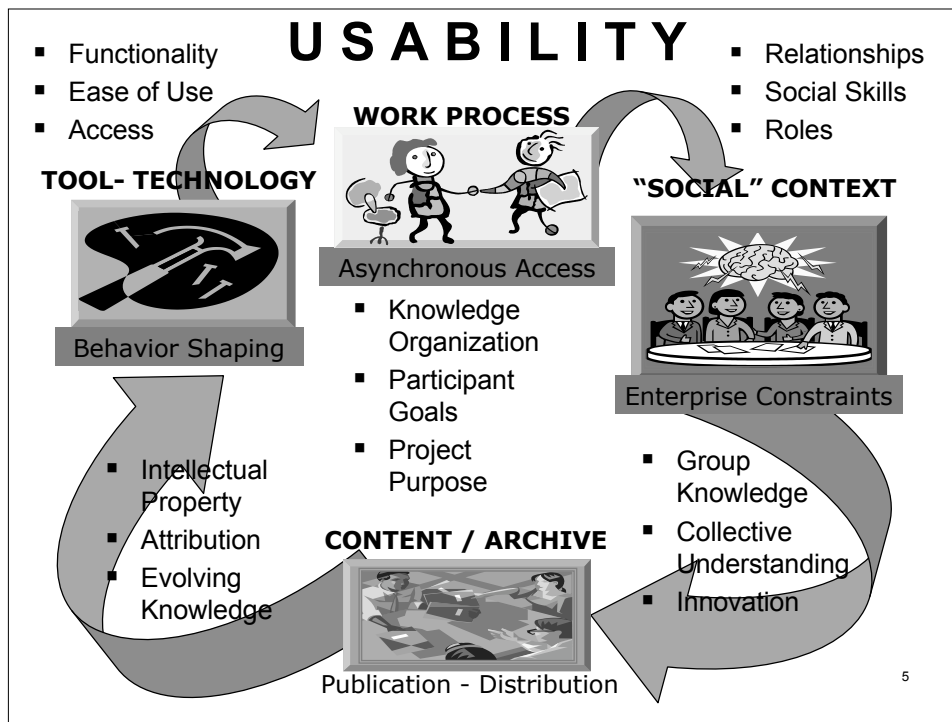
- Wiki Usability - Presumed Simplicity - Context
- Beyond Tool Usability
- Influencer Issues: Change, Culture, Collaboration
- Known Requirements (Federal Space)
- User Reports (Corporate Wikis)
- Applying Social Behavior Theories & Principles
- What's Success? Essential Competencies of Collaborative Groups
- What's Needed? How to make collaboration happen – some tips to fertilize Wiki communities

## Just another Tool/Technology?

- Known to support planning behavior
- What else can we do with it?
- Will collaborative technology make collaborators out of us?

“First we build the tools, then they build us.” Marshall McLuhan

- Wiki as a tool – features and uses? Why is this different?
  - Easy word processor (text narrative editor) –allows for quick change making What-You-Write-is-What-You-See
  - File uploads – images, text documents
  - Online 24 hr user access from anywhere (online access)
  - Browse & review what others have done (self-documenting)
  - Convey own & other's opinions – social - intellectual context
  - Shows combined contributions and knowledge work history
  - Shows group defined content structure
  - Represents both a “work-in-progress” and a “final” product for reference and sharing



- Anecdotal Expressions, Fears and Perceived Risks  
Associated with adoption of Wiki Spaces by Federal  
Organizations:
- Explosive Trends –Unpredictable Outcomes
  - Individual loss of control ('letting the genie out of the bottle')
  - Collective Excitement, Coolness - Hyped market economies – will fizzle shortly?
  - Cyber-vandalism – what then?
  - Intellectual Property theft – attribution / reference policy
  - Identity exposure – stalking risks – reputation / career risks
  - Inability to retract information (no Undo button? – on record forever)
  - Personal lack of experience or writing skill / language skill - emotionally-based fears - embarrassment - shame (perceived perfection in others)
  - Perceived as simply “more work” and “just another costly ‘software’ maintenance item”
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## Organizational Wiki Issues in the Federal Government Work Space

- Many want to determine “the rules” before allowing Wiki use
- Lot’s of ‘What if’ questions concerning image upholding, message preservation, publication control
- ‘Let’s be the first’ competitive spirit – gatekeeper attitudes: no sharing – keep projects under wraps
- ‘Let’s not be the first’ – wait-and-see reluctant adopter attitude
- Prefer to communicate via e-mail (even when planning a Wiki concerning ‘Policy of Wiki use’)

Law has not kept pace with technology development similarly, Federal work policy has not kept pace with how people actually use and want to work with technology

- Access to many “Social Network Sites” is being denied for work connections – recent directives cite potential for added security vulnerabilities
- **Work from Home** - Some users report accessing needed sites from home to continue their research work using Wiki collaborations

**Much expression of Interest exists –  
GSA’s COLAB Wiki “Explorations Seminars” Networking**

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## Results from 168 Corporate Wiki Users (Survey study from 2005)

Reported Results:

- wikis are thought to be sustainable
- wikis can help an organization by improving work processes, collaboration and knowledge reuse
- benefits to users are primarily organizational and work-related
- benefits are more likely when work tasks require novel solutions and when other wiki contributors are believed to provide credible information, also when user has a formal role as related to the wiki
- two main types of contributors are adders (add new information) and synthesizers (synthesize and integrate existing information) – both are valuable
  - adders are concerned with their impact
  - synthesizers are concerned with helping the organization and an easy work process
- Organizations who make clear the benefits of using a wiki encourage more user contributions

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## Why Wiki's are Rejected in the Corporate World

- Management does not want to share knowledge  
Compliance requirements transparency
- Changes traditional communication channels  
Wikis make coordination is easier
- Less quality control  
Wikis can be self-policing - employees can check
- Wiki vandalism  
Require mandatory log-in to edit
- No recognition of authorship  
Corporate incentives

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## The Wiki Technology Promise: Collaboration

### The many 'faces' of effective collaboration:

- **ENVIRONMENT TYPES:** Can occur in interdependent and interdisciplinary professional settings
- **GOAL: a synthesis of different perspectives**
- **OUTCOME QUALITY: Promises higher quality outcomes** by mining the perspectives of diverse stakeholders
- **ORGANIZATIONAL VALUE:** Continues to **grow in importance** as a process and an outcome in large scale and geographically dispersed complex work domains
- **PROCESS CHARACTERISTIC:** integrative process that **occurs over time**

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# Ingredients for Wiki Collaboration?

**“ Effective Collaboration is a process and an outcome where a shared interest or conflict cannot be addressed by any single individual but is addressed by key stakeholders.”**

- **Key stakeholders should be actively recruited as participants** - any party directly influenced by the action of others is needed to solve a complex problem. Need the synthesis of different perspectives to better understand complex problems
- **Participants understand that an iterative conflict and resolution cycle is a natural occurrence in collaborative work** (should possess positive group behavior skills)
- **Purpose is to develop integrative solutions** that go beyond an individual vision to a productive resolution that could not be accomplished by any single person or organization.

\*Reference: 10 Lessons of Collaboration [Online J. Issues in Nursing 2005;10(1) ©2005 Kent State University College of Nursing]

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## Concept “Dar-Wiki-nism”

-because of the openness to many users and the rapidity by which wiki pages can be edited “unfit” sentences or content are removed and replaced by successive visitors and this presumably results in a more relevant and higher quality content page

- **Reportedly only achieved via strict identity & contributor controls and many designated quality ‘monitors’**

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## Early Wiki “Successes”

- Small group of like-minded researchers sharing information and data for a specified period of time (biological data sharing)
- Emergency Coordination Wikis (Tsunami/Katrina)
- Planning a Holiday Office Party
- Creating Outreach Educational Materials
- Classroom Projects – Assignment Posting – Project Uploads
- International Educational Collaboration – Problem Solving
- Adjunct “news” sharing places for educational gaming

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## Currently Debated

- Wiki Life Spans
- Content Persistence - Cleaning
- How to measure/assess quality of content
- Content Ownership and what YOU will do with it!
- How do we best manage/control individual information uptake / exposure?
- Organizing Collection of Collections of Collectibles?

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## The Machine is the Us/er – Contributors make the Wiki!

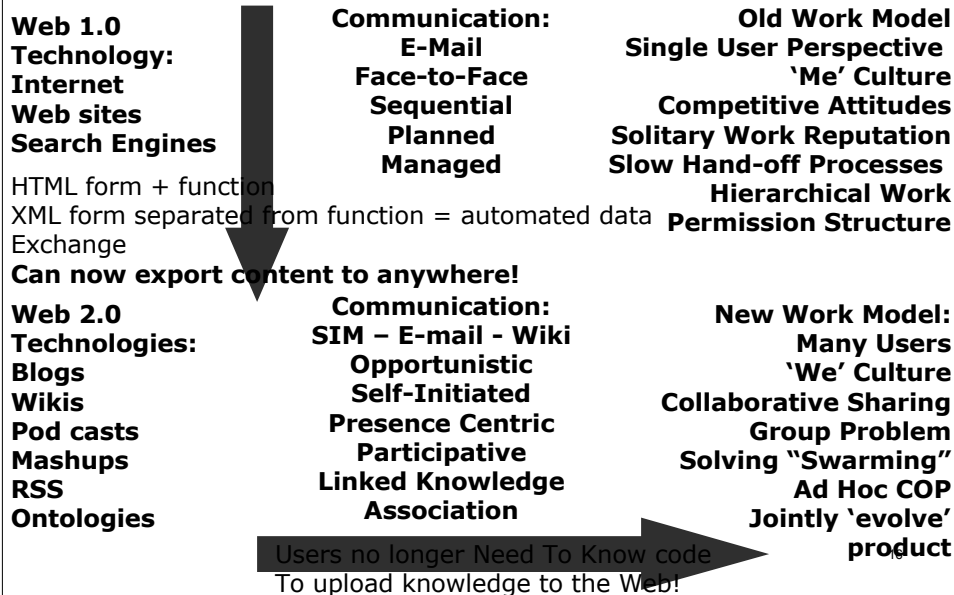
<http://www.youtube.com/watch?v=6gmP4nk0EOE>

Digital Anthropologist - M. Wesch Kansas State U.

- We need to rethink us – how we do things, **how we work** with digital text (hypertext is flexible, moveable, editable and can link virtually anywhere!)
  - Every time we make a hyperlink an idea is created and tracked by the machine
- What are the basic minimum requirements for a WIKI? Social networks - actors

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## Needed: Cultural Evolution From “Me” to “We”



## Star date Twenty-O-Seven : Buckle Up

- A new Blog is born every \_ second!
- People click on Web pages 100 billion times a day

Who will organize all this data?

We will!

You will!

Database-based WEB

When we post and tag pictures we teach the computer to give names

When we create a link we teach an idea

The digital Web connects people for  
sharing, trading and collaborating

**Issues:** Authorship, Identity, Ethics, Aesthetics, Rhetoric,  
Governance, Privacy, Commerce, Relationships, Virtual Reality

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## Generation Web 2.0 Persona

- Stacia - 28 year old Bio-geneticist and Project Manager
- A recent hire at a Federal Government Research Institute
- An active contributor to discussions and content postings
- Publishes her own BioSci-Blog on a weekly basis
- Signs on to a collaborative Work Wiki daily where she edits, posts, and contributes to Guidelines for Ethical policy issues in her agency.



- Employs Linked-In to keep in touch with people
- Reads a lot of text in her work day
- Listens to audio files whenever she can
- Text messages with her personal friends
- Employs pod-casting for her own seminar events
- Scored **'very high'** on the following four Personality Inventory Indicators which coincide with the desired profile of the Agency she works for:

**\*Harmony & Balance**

**\*Continuous Learning**

**\*Community Thinking**

**\*Future Orientation**

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## Wiki Literacy Skills

- Content creation in a digital environment
- The art of collaboration
- Consensus building
- Effectively communicating ideas to others through networked knowledge environments

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## So what's the problem?

- Many People don't like change  
Effort adverse consumer – convince by doing
- People don't know how to behave  
Must model desired behaviors
- People don't like uncertainty  
Make things more predictable – target small projects to start with
- People don't know what is expected of them  
Inform, train – set goals
- People don't yet “think” in terms of community goals  
Use Wiki as an adjunct to ‘build community’
- People are slow adopters, etc. etc.  
Be patient, reward initial or inaugural ‘good experience’

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## System – Level Problems

- We all just got here
- “I have a hammer so everything is nails to me”
- What’s the purpose of this Wiki?
- Blind faith & time required
- Management incentives seldom exist
- Disincentives are all around
- Managers focus on exclusion when the issue is recruitment motivation
- Used to the old  
develop, review then publish cycle
- Unfamiliar with the new  
publish, review then edit cycle

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## Known Wiki Tool Usability Problems

- **Link creation**  
Possible solution: link wizards
  - **Image authoring:** lack of integration between image authoring tool and browser  
Currently no solution
  - **Collaboration:** edit collision (two users try to edit the same page at the same time)  
**Soft locks:** time-limited locks that would warn the second user that someone was already editing
  - **Also:** problems with coordinating the division of labor (mostly in the early stages when there were too few pages for each of the group members), page name collision (two people want to use the same name for different purposes) and inconsistent writing styles
- Overall, Wikis are usable by non-technical users. (In a published study, fourth graders were able to create complex web-based stories with only 2 x 15 minutes of training.)

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## Emerging Wiki Tool features for Improved Usability

- **Employing Wiki Templates**  
Structured input and answer fields to focus content authors on specific topics
- **Creating Wiki Trails**  
Augmenting Wiki Structure for Collaborative, Interdisciplinary Learning: Show a linear, directed graph, whose nodes represent Wiki articles, or pages visited by a user.
  - shows what pages are most useful, and which are visited or should be visited in what order
- **WikiNavMap Visualization Tool** to create a visual map showing the pages of a wiki, while also indicating which pages are more 'relevant'
  - freshness, traffic, links all indicate 'usefulness' of page
  - freshness: color-coded
  - traffic: font-size
  - connectivity: arrows
  - links: arrows
  - also created dialogue boxes to hover over the nodes to provide an overview of the page
    - map does not work when wiki becomes too large
- **Group Support tools**  
Add-ons for group formation, group coordination, and group communication

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## Emerging Wiki Usability Features

Tag Clouds (From 'Confluence' a Commercial Wiki Application example below)

**Organizing Principle: "The Wisdom of Crowds -" see 2004 book by James Surowiecki - sampling of predictions made by diverse collections of independently-deciding individuals**

### Screenshots

Football Badminton Pictures Womens Images Gallery Photos Ugsu  
National Employment Work Entertainment Hunt Archive Gold Oxstalls Cup Festival  
Cheltenham Jobs Women's Sport 2006 Union Match Freshers Kendo Sabbatical Polo Sports  
Nottingham Jobshop Rugby Social Tv Home Job University Guide Screen Contact Gloucestershire  
Help Plasma Tennis Bar Swimming Sab Best Socials

An example of the cloud in action.

2006 Archive Badminton Bar Best Cheltenham Contact Cup Employment  
Entertainment Festival Football Freshers Gallery Gloucestershire Gold Guide Help  
Home Hunt Images Job Jobs Jobshop Kendo Match National Nottingham Oxstalls  
Photos Pictures Plasma Polo Rugby sab Sabbatical Screen Social socials Sport Sports  
Swimming Tennis Tv Ugsu Union University Women's Womens Work

The same cloud, but with alphabetical sorting turned on.

**Description** - Displays a visual representation of the tags (labels) within a content space, size representing frequency, and allows the user to click on each to access related pages.

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# Emerging Usability Feature: Reminder Statistics

Right-click here to download

## Weekly Profile Update

Professional IT Community

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**Your profile stats:**  
Your profile had less than ten page views in the last week.  
2 members in your network participated at ITtoolbox.

---

**Participation from your network**

- [Dan Morrison](#)  
1 Blog Post [View](#)
- [Tim Bryce](#)  
2 Blog Posts, [View](#)

---

[Edit your profile](#) | [Find members like you](#) | [Invite peers](#)

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[Privacy Policy](#) | [Manage Account Settings](#)

Thank you for your continued support of the ITtoolbox community. This weekly summary is being provided to you because there has been activity in your professional network at ITtoolbox. If you do not wish to receive this message, you can [unsubscribe here](#).

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## Usability and Macro-Usability

Usability Quality of Wiki technology is Very HIGH as defined by J. Nielsen's five quality components

- **Learnability:** Users can easily accomplish basic tasks the **first time they encounter a Wiki**.
- **Efficiency:** Once users have learned the design, they can **quickly edit, save and organize Wiki content**.
- **Memorability:** When users return to the Wiki after a period of not using it, they **easily can reestablish proficiency**. (Also the Wiki is self-documenting showing other's changes).
- **Errors:** How many errors do users make, how severe are these errors, and how easily can they recover from the errors? – **Can revert to previous state**.
- **Satisfaction:** How pleasant is it to use the design? **Can get instant feedback and access others as resources, poll opinions**.

### Suggested Macro-usability Topics

- **Incorporate knowledge about social human behavior**-- the unit of analysis is the **Collaborative Wiki Group**
- Behavioral and content norms are communicated via group members. Individual behavior is influenced by social networks (smoking cessation) **group norms and patterns are developed – these should be measurable**
- **Novice versus experienced Wiki contributor** – bullying – interpersonal relationship building – understanding cultural behavior – assessing group personality
- **Diffusion of Innovations Theory** (Public Health) – social phenomenon – focus on individual external factors – **strategic change – network exposure model** – percentage of those in the network that engage in contribution behavior - length of time matters a lot---(Network Analysis Work) – **spreading ideas**
- Adoption of Innovation is associated with Exposure but not necessarily so – known **behavior change models - abandonment**

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## Who are the Wiki Contributors? (International Study)

- Capability
    - Technical know-how
    - Experience working on Wiki projects
  - **Credibility**
    - trustworthiness
    - Reliability
- Hi Credibility  
Individuals convey the most knowledge
- Extent of communication
  - Culture
    - Collectivist (Thai)
    - or Individualistic (US)

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## Predictable 'User' Effects in Social Contexts from the Social / Psychological Literature

- **Bystander Effect** – distributed responsibility – are we ready to intervene in light of criminal behavior or bad content?
  - Peering, Gawking, Staging
  - Abandonment – “Mobbing”
- Intrinsic versus Extrinsic Motivation
- Gender and helping Behavior
- Is Altruism adaptive?
- Self-Actualization
- Cognitive Dissonance – Group Think

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## Tips to fertilize Wiki communities:

- Encourage **participant profile** creation – basic bio, skills and interests
- Enable **free interaction** of admitted individuals and let them influence each other (track presence and take status snapshots)
- Attend to individual **skill building with tool** - organizing content functionality
- Help organize, document and explain system level properties (**sandbox, train the trainer approaches**)
- Employ Wiki – linked ‘survey tools’ to **gauge user satisfaction** (request comments on usage as well as content quality) and employ reminders
- Assist with **member introductions** (Linked-in)
- Map out - organize content topics – **summarize, sub-divide, index** and provide overview orientations, guided tours for newcomers
- ‘Homopholy –birds of a feather phenomenon - similar people tend to flock together – tap expertise of “Community of Practice” – select “central members”
- **Recruit Diverse –Interdisciplinary Group Members** - model “inclusive” collaborative behaviors – recruit and establish mentoring relationships – emphasize uniqueness

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## Behavioral Influence and Effects?

- Influenced by others ? (Peer Influence is very powerful)
  - First or early adopters are different from others
  - Threshold models of diffusion and collective behavior– willingness to do something – like figuring it out versus coming into well-developed area (Harvard study contraception in Bolivia – media campaign).
  - Don’t have other people to turn to for advice or information – role of the Wiki in building bridges – mentoring desired
  - Network density – likeness of group members - density – adoption can have a negative association... leveraging resources and building partnership – organizational performance – not too big a group --- coalitions – interconnections – idea freshness and overall activity and energy
  - Centralization – leadership - See what others are doing before adopting an idea
  - Clustering degree – bridges that link these
- Diffusion occurs much more rapidly in a densely connected network –accelerate spread of ideas (combat substance abuse case study)

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## Individual versus Group – Network, People, Content - Analytics

- Positions (work roles, organizational responsibilities)
- Identify **Central** members
- Bridges (relationships, workgroups, history) shape growth via connections
- Group member composition – complementary skills
- “Popularity” is strongly associated with increasing susceptibility of behavior adoption (smoking) – when behavior prevalence high (social norm)
- How to speed diffusion – identify agents of change – key people – opinion leaders – convert them – use them as behavior change agents - follow groups or cliques – group approach to intervention – rewire networks
- Centrality indicators – subgroups – match or assign people to tasks that they are nominated to do by others

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## Employing Social Psychology to encourage Wiki Collaboration

Research shows that people will contribute more:

- When they feel that their contributions are **unique**
- When they see their contribution as **important** to the group
- When they are in a group made up of those with **dissimilar** views
  - richer and more interesting discussion result (unique contributions are more likely)
- When they work within the context of meeting group goals rather than individual goals

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## More Resources and References

Supplied in a Hand-out.