

Social Contagion Theory and Information Literacy Dissemination: A Theoretical Model

Daisy Benson and Keith Gresham

Academic librarians are constantly working to find the most effective ways to reach out to students and teach them how to locate, evaluate, and assimilate information in support of their curricular research needs. First- and second-year students, in particular, tend to be major targets of these efforts on college and university campuses around the country. As a consequence, numerous content delivery models have been employed by academic libraries in order to increase the likelihood that these beginning students develop the basic information literacy competencies required for academic and personal success. Some of these delivery models focus on direct librarian-to-student contact, others rely on technology-based delivery solutions, and still others employ hybrid models that combine both approaches. Regardless of the approach, most of these models tend to be extremely resource-intensive, and issues related to scalability and affordability often limit overall impact and success.¹ At larger institutions in particular, this desire to reach out to and connect with all undergraduate students remains an elusive, if not impossible, goal.

Perhaps this goal is itself unnecessary, however. Current research supports the idea that contemporary un-

dergraduate students prefer to learn not from librarians or other authority figures on campus, but from one another, their peers. If academic librarians could employ a model of transmitting information literacy concepts and skills to lower-division undergraduates using pre-existing peer-networks, perhaps both students and librarians alike would benefit. Students would learn the basic information literacy skills they need to succeed in their early college careers, and librarians would be able to devote more time to working with those students who have more complex, discipline specific research needs.

How might such a model work? Building upon the ideas popularized by Malcolm Gladwell in his bestselling book, *The Tipping Point*, this paper will present a theoretical model on the use of student social networks as a mechanism for the delivery of information literacy skills and will present empirical data related to our initial efforts at implementing this model at the University of Vermont, a Carnegie RU/H (high research activity) institution.

Collective Behavior and Social Contagion Theory
Collective behavior in sociology and social psychology

Daisy Benson is Library Assistant Professor and Coordinator of Instruction, University of Vermont, email: daisy.benson@uvm.edu; Keith Gresham is Library Professor and Director of Information and Instruction Services, University of Vermont, email: keith.gresham@uvm.edu

refers in part to the ways in which individuals gather and behave in groups. Instances of widely studied collective behaviors throughout the last century include mob panics and violence, organization of social movements, rumor dissemination, fashion choices, and the emergence of fads.² *Social influence* as an aspect of collective behavior has likewise assumed a historically central position in the modern study of social psychology.³ Within this context, social influence can be defined as the ability of another person or group to effect cognitive or behavioral change within an individual.⁴

As a specific form of social influence, the phenomenon of *social contagion* received attention from social science researchers from as far back as the mid-19th century. Early investigations include *cultural diffusion* research performed by English anthropologist Edward Burnett Tylor, examinations of *innovation adoption* conducted by French sociologist and social psychologist Gabriel Tarde, and explorations of the *collective mind* dynamic by French social psychologist Gustave Le Bon.⁵ Le Bon in particular helped popularize the idea of social contagion in his seminal study of crowd-induced panics.⁶ In this work, Le Bon analyzed the specific unconscious process by which information or beliefs are spread throughout a social group, taking on the form of mass contagion. Researchers in the 20th century, including British psychologist William McDougall and American sociologists Herbert Blumer, Robert Park, Ralph Turner, and Neil Smelser subsequently provided more substantive ways of examining and conceptualizing aspects of social contagion.⁷

Critics of social contagion theory point to long-standing confusion and contradiction over terminology, conceptualization, and underlying explanatory processes.⁸ Consequently, alternative theories of collective behavior have been developed during the past half-century. *Convergence theory* suggests that in reaction to a given contextual situation, individuals possessing similar beliefs or tendencies will seek out one another in order to make a collective behavioral response.⁹ *Emergent-norm theory* recognizes that individuals within groups possess a wide variety of attitudes and beliefs, but when faced with ambiguous situations, individuals make decisions based on the behavioral cues of those around them (i.e., the emerging group norm).¹⁰

Adding to our understanding have been the development of *diffusion of innovation* models—largely the work of sociologist and communications scholar Everett Rogers¹¹—which have served to better explain the role of social networks, peer influence, and imi-

tation behaviors on the adoption and spread of new ideas.¹²

More recently, the emerging—and still controversial—theory of *memetics* advances the idea that units of cultural information (*memes*) survive through replication and transfer from one person to another via behaviors, much in the same way as genes pass on information through biological reproduction.¹³ As applied to the phenomenon of social contagion, the memetic position suggests that humans have a biological predisposition to engage in social learning (i.e., imitate the behaviors of others) and thus provide a mechanism for the transmission of information through social groups. Proponents of memetics state that this conceptualization provides an otherwise missing theoretical framework for the study of social contagion phenomena.¹⁴

Gladwell's Characteristics of Social Epidemics

Earlier this decade, author and award-winning *New Yorker* staff writer Malcolm Gladwell helped popularize and illustrate certain aspects of social contagion theory in his best-selling book, *The Tipping Point*.¹⁵ In his book, Gladwell synthesizes various theories from the fields of sociology, psychology, epidemiology, and business to show that ideas and messages working their way through the public consciousness behave in much the same way as diseases spreading during epidemics. These so-called *social epidemics*, Gladwell argues, germinate, emerge, and grow by specific mechanisms and for specific reasons, ultimately reaching a *tipping point*, the pivotal threshold in which ideas and behaviors spread uncontrollably throughout larger society.

According to Gladwell, social epidemics are governed by three main principles: who the messenger is matters (the *Law of the Few*), what the content of the message is matters (the *Stickiness Factor*), and the specific nature of the social environment matters (the *Power of Context*).¹⁶ For the purposes of this paper, it is the *Law of the Few* that deserves greater elaboration. This principle states that the spread of ideas, beliefs, or behaviors among members of a defined social group (first-year students, for example) is brought about through the efforts of a relatively small number of members of the group who function in three pivotal roles: those who provide the message (*Mavens*), those who spread the message (*Connectors*), and those who persuade others to act on the message (*Salesmen*).¹⁷ Individuals in these three roles facilitate the successful and rapid spread of information (and by extension, knowledge) throughout and among social networks.

In Gladwell's world, Mavens are the repositories of knowledge, those individuals within a community who both collect knowledge and information and through a desire to be helpful, want to pass it on to others.¹⁸ While Mavens are socially motivated individuals, and possess social skills to start an epidemic, they lack easy social access to large numbers of individuals within a group. This is where Connectors play a role. Connectors are those individuals in a community who have that special ability to make friends with a very large number of people.¹⁹ They seemingly know *everyone*. When Mavens come into contact with Connectors, opportunities arise for new knowledge to spread widely throughout the community. Not all new ideas meet immediate acceptance, however, and thus Salesmen of a social group help others in the community transform new knowledge into action by counteracting skepticism through persuasion.²⁰

In summary, Gladwell's basic lesson in regards to the *Law of the Few* is that "there are exceptional people out there who are capable of starting [social] epidemics. All you have to do is find them."²¹

New Model for Information Literacy Dissemination

When it comes to teaching students the concepts and skills that will make them information literate, we emphasize librarian driven and formal methods of delivery—classroom instruction, library-produced tutorials, point-of-need instruction at the reference desk, and individual meetings between librarians and students. And yet, the desire on the part of contemporary college students to seek assistance from their peers rather than from librarians or instructors has been documented in many studies.²² A recent market research study conducted by the OCLC Online Computer Library Center examined worldwide English-speaking library users' perceptions of libraries and of information resources.²³ College students who participated in the study were asked to select from a list all the various ways they learn about electronic information sources. Approximately two-thirds (67%) of the surveyed students indicated they learn from their friends. Only one-third (33%) indicated that they learn from a librarian.²⁴

Some libraries have undertaken to capitalize on students' preference for seeking assistance from their friends by training students to be part of the formal instruction continuum. Most of these programs are reference desk-based, but some have utilized peer tutors or teaching assistants as part of established information literacy programs. One such program is at the Univer-

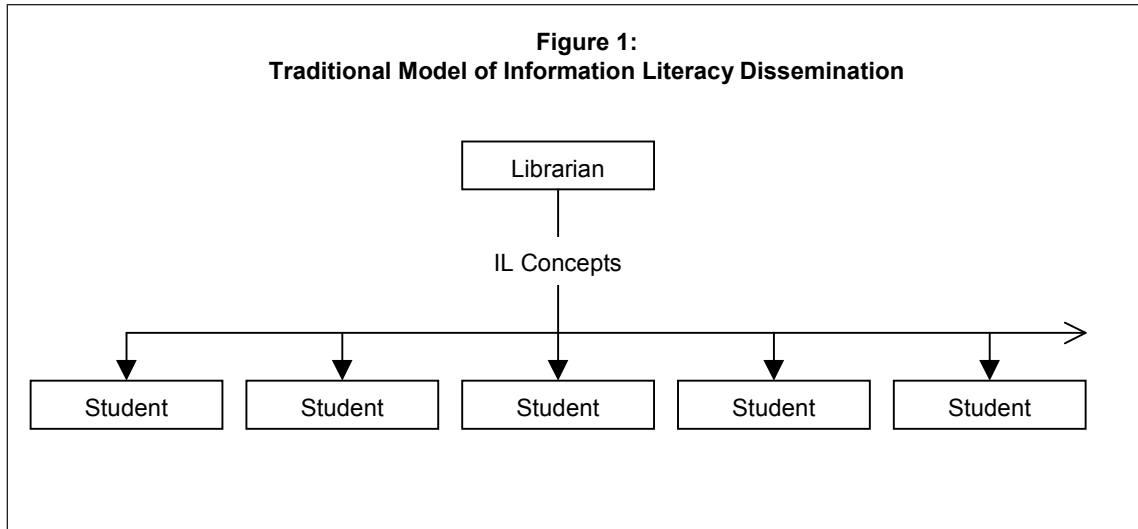
sity of Florida, where undergraduates in the anthropology department have been trained to work alongside librarians in the classroom and to subsequently serve as peer tutors for other students in anthropology.²⁵ But, is it possible to take advantage of students' implied preference for seeking informal assistance from friends and still transmit the information literacy concepts that they need to master?

In his book, *The Tipping Point*, Gladwell discusses several mechanisms that contribute to the spread of information through social networks in much the same way that viruses spread through populations. Gladwell argues that information passes in fairly predictable ways through social networks and that this passage is facilitated by individuals within a given network who transmit this information and by others who facilitate the jump from one small social network to another. Marketers have taken advantage of this phenomenon, and there has been an increase in the past few years in marketing campaigns, including those by libraries, which rely at least in part upon word-of-mouth transmission of their message. But what if we take this idea a bit further: rather than using social networks to promote library services, what if we use them to transmit selected information literacy concepts and skills from one student to another? Is it possible to provide instruction to a small number of strategically selected students and then have those students pass that same information on to their friends when asked for advice? And if so, what implication does this have for the planning and delivery of instructional services?

Given many students' preference for learning from friends and the effectiveness of social networks for passing information by word-of-mouth, we are proposing a model for information literacy programs that, in addition to employing formal means of instruction, uses pre-existing student social networks to pass information and knowledge informally among students (see figure 1).

Traditional models of information literacy instruction depend upon a librarian to disseminate information directly to students without an intermediary. The librarian is responsible for delivering information to students either in groups or individually. The students receive the information from the librarian and, hopefully, use it to aid their research, but there is no expectation that the knowledge passed from the librarian to the students involved will travel any further.

According to Gladwell, social epidemics start when ideas pass from a Maven to a Connector. That is, one

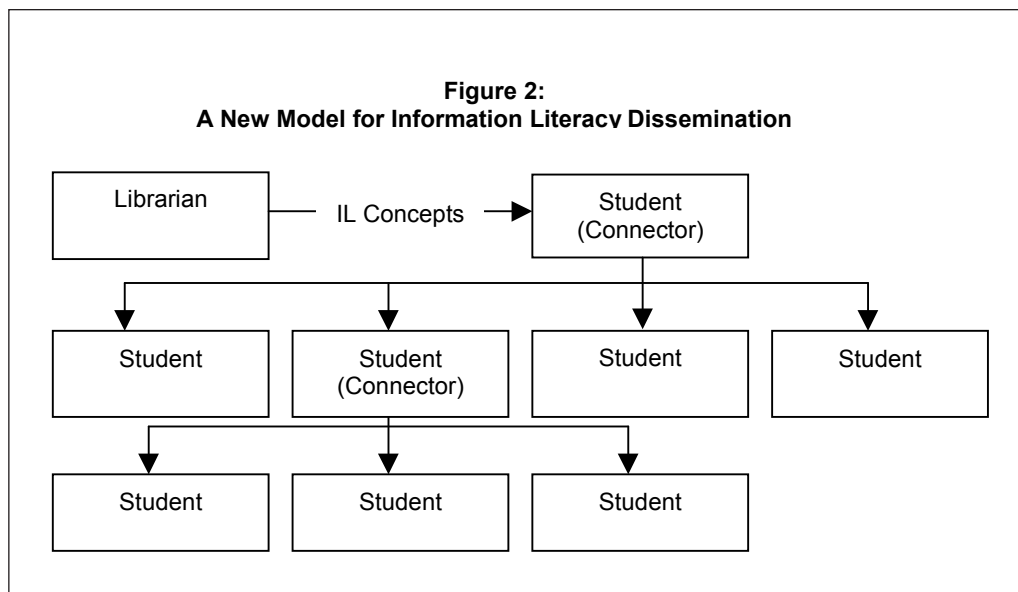


person who collects knowledge (the Maven) transmits a piece of information to a friend with a large social network, that person then passes the same information to others in his or her much larger social network, and these individuals in turn pass the information on to yet more people. As we have already discussed, marketers have already exploited this phenomenon to promote products and services through what is referred to as viral, word-of-mouth, or connected marketing.²⁶ They do this by feeding information to people who will talk about their product or service to others.

A model of information literacy that emphasizes peer-to-peer instruction through informal social networks potentially has much greater reach than traditional models (see figure 2).

We propose to initiate a social epidemic (or a knowledge epidemic) and then assess how widely the epidemic spreads. Initially, librarians serve in the role of information literacy Mavens. Librarians will identify appropriate information literacy concepts and communicate them clearly to students who have been identified as having large social networks and who can therefore serve as Connectors.

By targeting instruction to those students who are the most likely to pass what they learn on to others, we hope to initiate an epidemic of ideas and knowledge rather than one centered upon a product. But, as with marketing campaigns that are product based, our message must be clearly defined and demonstrate some easily understood use to the people to



whom we communicate it. First- and second-year students have less specialized research needs, and therefore we recommend targeting our message to them in particular. The emphasis of the information passed to the Connectors should be broad and widely applicable to students in any area of study. Topics such as how to use a library catalog to locate books; how to use interdisciplinary databases to locate journal articles; how to distinguish between popular and scholarly journals; and how to avoid plagiarizing could all potentially be crafted into messages that are vital enough to a large number of students so as to pass from one student to another. Involving first and second year students in the process of crafting our message will ensure that the information we select is of interest to them.

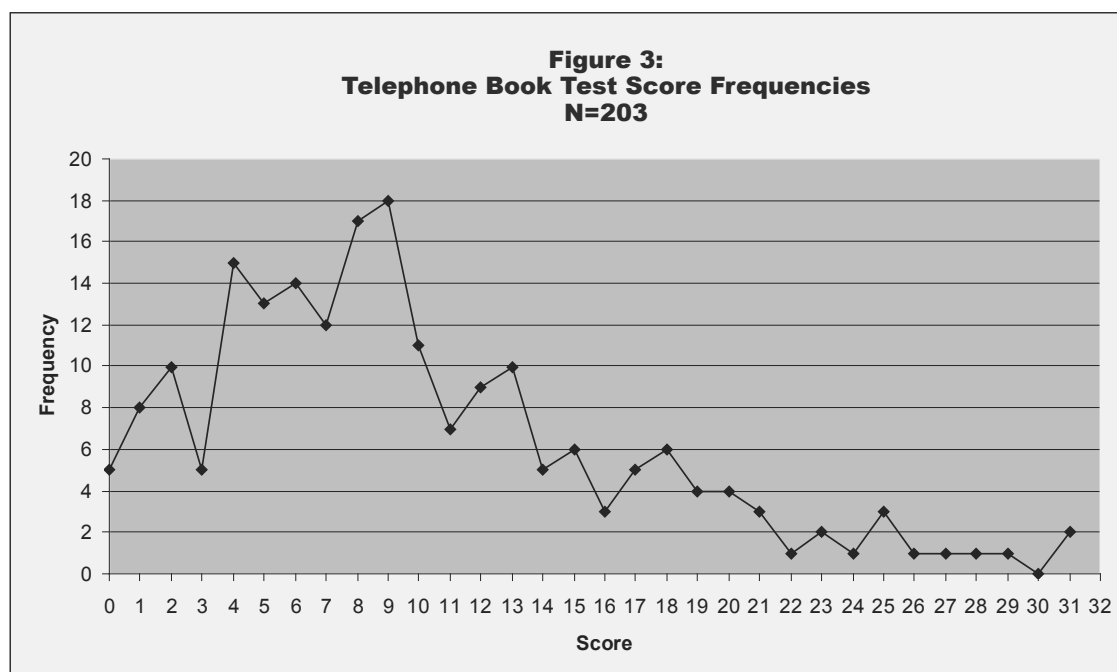
Methodology

One of our initial goals with this project was to develop a means for quickly and accurately identifying students who could be classified as Connectors. In *The Tipping Point*, Gladwell describes a very simple instrument that he has used for identifying these very socially oriented individuals. Using the New York City telephone book he generated a list of around 250 last names. He then asked respondents to read the list of names and give themselves a point for each time they know a person who has that last name. He broadly defined *know* and uses the following example to illustrate: “if you sat down

next to that person on a train, you would know their name and ...they would know your name.”²⁷

In addition to developing an instrument for identifying Connectors, we also wanted to see if any correlations could be established between the size of a student’s social network and other demographic factors. In order to do this we created a two part survey. Part one was a modified version of Gladwell’s telephone book test. Names for test instrument were randomly selected from the student section of the University of Vermont (UVM) telephone directory with the aid of a random number generator. Fifty names were selected, and after eliminating duplicates, there were forty-three names on the list. While Gladwell uses surnames in his instrument, we used first names on the grounds that many students know their classmates only on a first name basis. Following Gladwell’s lead, we proceeded under the assumption that a higher score on the telephone book test indicated a larger social network.

The second part of the survey consisted of a series of demographic questions dealing with among other things: age, year in school, place of residence (on- or off-campus), and participation in a variety of student activities (see Appendix A for the complete survey). Student activities were grouped into broad categories, and students were asked to indicate whether or not they participated in a selection of specific organizations that fell in that particular category. Respondents had the option of specifying that they participated in other groups



within each category or in groups that did not appear to fall into any category.

Prior to collecting data we sought and received approval from our institution’s institutional review board. E-mail invitations to take the survey were sent to five hundred randomly selected UVM students (excluding students enrolled in the university’s medical school), and the survey was administered electronically using an online survey tool. As an incentive, students completing the survey were given the opportunity to enter a drawing to win an iPod.

Results and Analysis

Two hundred and three surveys were completed, a response rate of 40.6 percent. This provided us with a sufficient number of responses to run statistically valid correlations. Data analysis was performed using SPSS to determine frequency distributions, averages and or medians where appropriate, and correlations between the telephone book test scores and selected demographic data. Prior to analyzing the data, the results were checked for standardization, and some adjustments were made to the categorization of student groups added as “other.”

Scores on the telephone book test ranged from zero to a high of thirty-one, with a median score of nine. This means that respondents with a score of ten are in the above average range (see figure 3).

Gladwell writes that in any group there are individuals who score higher than others on this test, and our results certainly bear this out. But he also argues that the people who make the best Connectors are those who cultivate casual friendships and who are able to move between numerous social groups. So, what else do we know about the people who scored highly on our telephone book test?

Many of the demographic variables we asked about did not demonstrate any significant correlation to the size of one’s social network. For example, men and women did not demonstrate significantly different scores on the telephone book test, nor was there a significant difference for students who work and for those who do not.

One of the most significant correlations we found was between size of social network and age (and, by implication, class status). Whereas Gladwell found that older respondents had larger social networks, we found the opposite to be true. We found a negative Pearson correlation (-.145) between high scores on the telephone book test and age. That is, older respondents correlated to lower scores on the test. We think that this

may be due to the particular circumstances of a university population, and several factors may be contributing to this trend: among them, younger students may participant in a wide variety of activities as part of the process of finding their place at college; younger students tend to take a wider variety of classes and would therefore interact with a wider variety of people; and younger students tend to live on campus in group residences, widening their potential social contacts. As students progress through college they become more specialized academically and may establish firmer, less fluid social ties.

While our research interest is not in the use of social networking software, we were curious to know if there would be a correlation between students’ social network size and the number of “friends” they reported having in Facebook. Among the one hundred and thirty-nine students who responded *yes* to the questions, “Do you use Facebook?” and “If yes, how many ‘friends’ do you have in Facebook?”, we found that there is a correlation between high scores on the telephone book test and having a large number of friends in Facebook. This could mean that students’ virtual social networks follow the same patterns as their other social networks.

Table 1: Pearson Correlations of Telephone Book Test Score and Student Activities (by category)

Student Activity Category	Pearson Correlation Value	Correlation Level
Academic and Educational Groups	.087	none
Arts Groups	.079	none
Campus Spirit Groups	.146	0.05
Cultural and Religious Groups	.151	0.05
Environmental Groups	.063	none
Intramural Sports	-.223	0.01
Media and Literary Groups	.198	0.01
Political Groups	.150	0.05
Service Groups	.365	0.01
Sports & Recreation Groups	.318	0.01
Student Government	-.017	none

Two variables that we were particularly curious about were whether or not a correlation exists between size of social network and participation in certain types of student activities and whether students who participated in a variety of activities had larger social networks. We found the strongest positive correlations between high test scores and participation in 1) media and literary groups such as the student newspaper, 2) service groups such as mentoring programs and alternative breaks, and 3) sports and recreation groups or club sports. We also found strong correlations between the high test scores and participation in campus spirit groups, cultural and religious groups, and political groups (see table 1).

A very strong negative correlation was found between participation in intramural sports and high scores on the test. This is in striking contrast to the very positive correlation for participation in sports and recreation groups. We attribute this to the difference in how the two types of programs are organized. Sports and recreation groups are either open to all comers or may require tryouts. Alternatively, intramural teams are often comprised of pre-existing groups of friends and thus do not expand a student's social circle. No correlation was found between the size of one's social network and participation in academic, arts, or environmental groups.

Participation in multiple groups of any one type and across group categories both correlated positively to the telephone test. Scores for the total number of group categories ranged from zero to six, and these scores had a Pearson correlation value of .380 at the 0.01 level, making it one of the strongest correlations that we found. This corresponds to Gladwell's assertion that individuals who move in multiple worlds rather than isolating themselves to one world tend to have larger social networks.

The results of our preliminary research suggest that students with large social networks can be quickly identified—both by their scores on the telephone book test and by their participation in particular types of extra-curricular activities and by their participation in multiple types of student activities. Students scoring ten or higher on the telephone book test are in the upper third of frequency distribution. Likewise, students who participate in four or more student activities are in the top third of frequency distribution in that area. Lastly, students with a large number of “friends” in Facebook also appear to have large social networks (both on and off-line). If that is the case, then using Facebook (or other social networking software) to identify Connectors may work, at least until students move their online

community elsewhere; however, we must be careful not to assume that a student's actual social network is as large as the number of “friends” they have amassed in Facebook.

Conclusion

In this paper, we have reviewed the development of the study of social contagion and have sought to introduce a model of information literacy dissemination that is based upon the principles of social contagion. On the assumption that the social contagion model suggested by Gladwell's work is correct, we carried out a correlation study to determine if librarians could easily identify the type of individuals who would be effective in transmitting information to other students. Our results lead us to think that our study did succeed in this regard. Of course, identifying potential Connectors among the student population is only a first step, and clearly much further study is warranted.

Our next steps in this work are to learn more about the criteria used by students to determine which of their friends to ask for help with research; to work with students to develop core information literacy messages that will be of interest to our target audience; to transmit our message to our potential Connectors; and to develop a method for assessing both how far our message is disseminated and its effectiveness.

Notes

1. Trudi E. Jacobson, “Meeting Information Literacy Needs in a Research Setting,” chap. 5 in *Integrating Information Literacy into the Higher Education Curriculum: Practical Models for Transformation*, ed. Ilene F. Rockman and Associates (San Francisco: Jossey-Bass, 2004), 134–37.

2. Craig Calhoun, ed., *Dictionary of the Social Sciences* (New York: Oxford University Press, 2002), 77.

3. David A. Levy and Paul R. Nail, “Contagion: A Theoretical and Empirical Review and Reconceptualization,” *Genetic, Social, and General Psychology Monographs* 119, no. 2 (1993): 235.

4. J.R.P. French and Bertram H. Raven, “The Bases of Social Power,” in *Studies in Social Power*, ed. Dorwin Cartwright (Ann Arbor, Mich.: Institute for Social Research, 1959), 150–67.

5. Ronald W. Perry, “Diffusion Theories,” in *Encyclopedia of Sociology*, 2nd ed., ed. Edgar F. Borgatta (New York: Macmillan Reference USA, 2000), 1: 679.

6. Gustave Le Bon, *The Crowd: A Study of the Popular Mind* (New York: Viking Press, 1960). Originally published as *Psychologie des foules* (Paris, 1895).

7. Levy, "Contagion", 239–45; Calhoun, *Dictionary*, 77–78.
8. Levy, "Contagion", 236.
9. Ralph H. Turner and Lewis M. Killian, *Collective Behavior*, 3rd ed. (Englewood Cliffs, N.J.: Prentice-Hall, 1987).
10. Ralph H. Turner, "Collective Behavior," in *Handbook of Modern Sociology*, ed. Robert E. L. Faris (Chicago: Rand McNally, 1964), 389–90.
11. Everett M Rogers, *Diffusion of Innovation* (New York: Free Press, 1962).
12. Perry, "Diffusion Theories", 678–79.
13. Richard Dawkins, *The Selfish Gene*, new ed. (New York: Oxford University Press, 1989).
14. Paul Marsden, "Memetics and Social Contagion: Two Sides of the Same Coin?," *Journal of Memetics* 2, no. 2 (1998): 80.
15. Malcolm Gladwell, *The Tipping Point: How Little Things Can Make a Big Difference* (Boston: Little Brown and Co., 2000).
16. *Ibid.*, 22, 25, 29.
17. *Ibid.*, 34.
18. *Ibid.*, 59–69.
19. *Ibid.*, 38–41.
20. *Ibid.*, 69–70.
21. *Ibid.*, 132.
22. Carole A. Barone, "The Changing Landscape and the New Academy," *EDUCAUSE Review* 38, no. 5 (2003): 41–47; Susan Gardner and Susanna Eng, "What Students Want: Generation Y and the Changing Function of the Academic Library," *portal: Libraries and the Academy* 5, no. 3 (2005): 405–20; Peter Wei He, and Trudi E. Jacobson, "What Are They Doing with the Internet? A Study of User Information Seeking Behaviors," *Internet Reference Services Quarterly* 1, no. 1 (1996): 31–51; Kate Manuel, "Teaching Information Literacy to Generation Y," *Journal of Library Administration* 36, no. 1/2 (2002): 195–217; Diana Oblinger, "Boomers, Gen-Xers & Millennials: Understanding the New Students," *EDUCAUSE Review* 38, no. 4 (2003): 37–47.
23. Cathy De Rosa et al., "Perceptions of Libraries and Information Resources: A Report to the OCLC Membership" (Dublin, Oh.: OCLC Online Computer Library Center, 2005).
24. *Ibid.*, chap. 1:20.
25. Jana Ronan and Mimi Pappas, "Library Instruction is a Two-Way Street: Students Receiving Course Credit for Peer Teaching," *Education Libraries* 25 (2001): 19–24.
26. Paul Marsden, "Introduction and Summary," in *Connected Marketing: The Viral, Buzz, and Word of Mouth Revolution*, ed. Justin Kirby and Paul Marsden. (Oxford: Butterworth-Heinemann, 2006) xvii–xviii.
27. Gladwell, *Tipping Point*, 39.

Bibliography

- Barone, Carole A. "The Changing Landscape and the New Academy." *EDUCAUSE Review* 38, no. 5 (2003): 41–47.
- Calhoun, Craig, ed. *Dictionary of the Social Sciences*. New York: Oxford University Press, 2002.
- Dawkins, Richard. *The Selfish Gene*. (New ed.) New York: Oxford University Press, 1989.
- De Rosa, Cathy, et al. *Perceptions of Libraries and Information Resources: A Report to the OCLC Membership*. Dublin, Oh.: OCLC Online Computer Library Center, 2005.
- Duggan, Ashley, Brian Hess, Deanna Morgan, Sooyeon Kim, and Katherine Wilson. (2001). "Measuring Students' Attitudes Toward Educational Use of the Internet." *Journal of Educational Computing Research* 25, no. 3 (2001): 267–81.
- French, J.R.P., and Bertram H. Raven. "The Bases of Social Power." In *Studies in Social Power*, edited by Dorwin Cartwright, 150–67. Ann Arbor, Mich.: Institute for Social Research, 1959.
- Gardner, Susan, and Susanna Eng. "What Students Want: Generation Y and the Changing Function of the Academic Library." *portal: Libraries and the Academy* 5, no. 3 (2005): 405–20.
- Gladwell, Malcolm. *The Tipping Point: How Little Things Can Make a Big Difference*. Boston: Little, Brown and Co., 2000.
- He, Peter Wei, and Trudi E. Jacobson. "What Are They Doing with the Internet? A Study of User Information Seeking Behaviors." *Internet Reference Services Quarterly* 1, no. 1 (1996): 31–51.
- Jacobson, Trudi E. "Meeting Information Literacy Needs in a Research Setting." Chap. 5 in *Integrating Information Literacy into the Higher Education Curriculum: Practical Models for Transformation*, edited by Ilene F. Rockman and Associates, 133–64. San Francisco: Jossey-Bass, 2004.
- Le Bon, Gustave. *The Crowd: A Study of the Popular Mind*. New York: Viking Press, 1960. Originally published as *Psychologie des foules* (Paris, 1895).
- Levy, David A., and Paul R. Nail. "Contagion: A Theoretical and Empirical Review and Reconceptualization." *Genetic, Social, and General Psychology Monographs* 119, no. 2 (1993): 235–84.
- Manuel, Kate. "Teaching Information Literacy to Generation Y." *Journal of Library Administration* 36, no. 1/2 (2002): 195–217.
- Marsden, Paul. "Memetics and Social Contagion: Two Sides of the Same Coin?" *Journal of Memetics* 2, no. 2 (1998): 68–86.
- Marsden, Paul. "Introduction and Summary." in *Connected Marketing: The Viral, Buzz, and Word of Mouth Revolution*,

- edited by Justin Kirby and Paul Mardsen, xv–xxxv. Oxford: Butterworth-Heinemann, 2006.
- Oblinger, Diana. “Boomers, Gen-Xers & Millennials: Understanding the New Students.” *EDUCAUSE Review* 38, no. 4 (2003): 37–47.
- Perry, Ronald W. “Diffusion Theories.” In *Encyclopedia of Sociology*, 2nd ed., edited by Edgar F. Borgatta, 1: 674–81. New York: Macmillan Reference USA, 2000.
- Rogers, Everett M. *Diffusion of Innovation*. New York: Free Press, 1962.
- Ronan, Jana, and Mimi Pappas. “Library Instruction is a Two-Way Street: Students Receiving Course Credit for Peer Teaching.” *Education Libraries* 25, no. 1 (2001): 19–24.
- Turner, Ralph H., and Lewis M. Killian. *Collective Behavior*, 3rd ed. Englewood Cliffs, N.J.: Prentice-Hall, 1987.
- Turner, Ralph H. “Collective Behavior.” In *Handbook of Modern Sociology*, edited by Robert E. L. Faris, 382–425. Chicago: Rand McNally, 1964.

Appendix A

Survey of Student Engagement and Social Networks

1. The following first names were randomly selected from the UVM phonebook. Please place a check beside all names which meet all of the following criteria:
 - a. You know someone with this first name in your current school, work, or living environment.
 - b. You know each other well enough to stop and talk if you meet on the street.
 - c. They know your first name as well.

Adam, Alisa, Allison, Amanda, Amy, Anthony, Ashley, Biyu, Britain, Carol, Chelsea, Christopher, Courtney, Craig, Daniel, Danielle, David, Devin, Dorothy, Emily, Guy, Heather, Hillary, Jeanne, Jennifer, John, Jona, Jonathan, Judyann, Katelyn, Katharine, Melissa, Mina, Nichole, Phaichit, Rebecca, Scott, Sonah, Susan, Tracey, Tucker, Tyler, Young Soo – I know no one who fits the required criteria.
2. Do you use Facebook?
 - Yes No

If yes, how many “friends” do you have in Facebook?
3. What is your age?
4. What is your gender identity?
 - Female
 - Male
 - Transgender
 - Other
5. What is your UVM status?
 - First Year
 - Sophomore
 - Junior
 - Senior
 - Graduate Student
 - Non-degree Student
6. What is your academic major?
7. What is your overall UVM GPA?
 - 2.0 or below
 - 2.1 to 2.5
 - 2.6 to 3.0
8. Are you currently employed?
 - Yes No
9. If you are employed, how many hours per week do you work?
 - 1-5
 - 6-10
 - 11-15
 - 16-20
 - 21 or more
10. If you are employed, where do you work?
 - On-campus
 - Off-campus
11. Where do you live?
 - On-campus
 - Off-campus
12. Are you a member of a UVM residential living community?
 - Yes No

If yes, please specify which one.
13. Where do you most frequently study?
 - Home
 - Bailey/Howe Library
 - Dana Medical Library
 - Other, please specify
14. Are you an elected officer or a committee member of the Student Government Association?
 - Yes No
15. Do you participate in intramural sports?
 - Yes No

If yes, which ones?
16. Are you a member of a UVM varsity sports team?
 - Yes No

If yes, please indicate which team.

The next several questions ask you to indicate which UVM clubs and activities you are engaged in (or have been engaged in) at UVM. The groups have been subdivided into categories.

17. Academic and Educational Groups (Mark all in which you have been a participant)
- American Society of Engineers
 - Anthropology Club
 - Athletic Medicine
 - Chem Cats Club
 - Collegiate 4-H Club
 - Dairy Club
 - Economics Club
 - History Forum
 - International Business Club
 - Investment Club
 - Lawrence Debate Union
 - Marketing Club
 - Music Educators
 - Pre-Vet Club
 - Society of American Foresters
 - Speech and Hearing Club
 - Student Nurse Association
 - Other Academic Groups, please specify
18. Arts (Mark all in which you have been a participant)
- Cat's Meow
 - Choral Union
 - Concert Band
 - Concert Choir
 - Hit Paws
 - Jazz Ensemble
 - Photography Co-op
 - TopCats
 - SA Concerts
 - University Symphony Orchestra
 - University Players
 - Other Arts Groups, please specify
19. Campus Spirit Groups (Mark all in which you have been a participant)
- Senior Class Council
 - Homecoming Committee
 - Charlie-Kitty Club
 - Other campus Spirit Groups, please specify
20. Cultural and Religious Groups (Mark all in which you have been a participant)
- Alianza Latina
 - Asian American Student Union
 - Black Student Union
 - Catholic Student Association
 - Chabad Jewish Student Organization
 - Chinese Student Association
 - Free to Be
 - Hillel
 - Inter-Varsity Christian Fellowship
 - Muslim Student Association
 - Other Cultural and religious Groups, please specify
20. Environmental Groups (Mark all in which you have been a participant)
- Consortium for Ecological Living
 - Horticulture Club
 - Slade Hall Gardening Club
 - Student Environmental Educators Doing Something
 - Vermont Student Environmental Program
 - Wildlife Society
 - Other Environmental Groups, please specify
21. Media and Literary Groups (Mark all in which you have been a participant)
- UVM Cynic
 - UVM TV – Channel 12
 - WRUV-FM
 - Other Media and Literary Groups, please specify
22. Political Groups (Mark all in which you have been a participant)
- Citizen Awareness for Students
 - Coalition for Responsible Investment
 - College Democrats
 - College Republicans
 - International Socialist Organization
 - Students for Global Peace and Justice
 - Students Political Awareness and Responsibility Collective
 - Other Political Groups, please specify

23. Service Groups (Mark all in which you have been a participant)

- Alpha Phi Omega
- Alternative Breaks
- Big Buddies
- Food Salvage
- Generations
- Habitat for Humanity
- HIV/AIDS Task Force
- Lund Center Program
- Rescue Squad
- Student Legal Service
- Students Organizing Against Racism
- Volunteers in Action
- Women Helping Battered Women
- Other Service Groups, please specify

- Equestrian Team
- Field Hockey Club
- Figure Skating Club
- Gymnastics Club
- Ice Hockey Club
- Karate Club
- Lacrosse Club
- Outing Club
- Rugby Club
- Sailing Club
- Ski Club
- Snowboard Club
- Soccer Club
- Ultimate Frisbee
- Volleyball Club
- Water Polo Club
- Other Sports and Recreation Groups, please specify

24. Sports and Recreation Groups

- Aikido Club
- Chess Forum
- Crew Club
- Cycling Club

25. Are there other student groups or organization with which you are involved?

Yes No

If yes, please specify what groups(s).