

National Center for Women & Information Technology

PROMISING PRACTICES

How Can Companies Promote Innovation with Diverse Employees?

WHY SHOULD COMPANIES USE DIVERSE TEAMS TO PROMOTE INNOVATION?

Diverse work teams can improve innovation, problem-solving, and productivity, according to several recent studies. The London Business School found that work teams with equal numbers of men and women were more likely to experiment, be creative, share knowledge, and fulfill tasks. Similarly, an NCWIT study, revealed that mixed-gender teams produce IT patents that are more highly cited. Additional studies indicate that, under the right conditions, teams comprising diverse members consistently outperform teams comprising "highest-ability" members (Page, 2007).

WHY DO DIVERSE TEAMS OFTEN PRODUCE BETTER RESULTS?

The answer lies in the connection between "identity-group diversity" (e.g., race, gender, class) and "functional diversity." Functional diversity refers to the way individuals frame and solve problems differently. Life experience significantly influences *functional diversity*, and an individual's membership in particular identity groups influences her or his *life experiences*. Thus, teams with members from different identity groups are also likely to be rich in functional diversity. Less diverse teams use similar problem-solving methods, missing solutions that diverse teams discover.

THE CASE OF FEMALE IT PATENTING — CAUSE FOR CONCERN; INDICATIONS OF HOPE

While patenting is not the only measure of diverse innovation, it is one important measure. Between 1980 and 2005, female inventors accounted for only 4.7% of all U.S. IT patents. While these rates are quite low, they have improved over time. In 1980, women accounted for only 1.7% of patents, but they accounted for 6.1% by 2005.

Furthermore, female patenting rates vary widely across companies. Some companies have produced large increases in female patenting rates, while these rates have decreased approximately 4-6% in many other companies, with some companies showing as much as 25% fewer female or mixed-gender patents. This evidence suggests that company practices can have a substantial effect on the rates of diverse innovation.

Several studies illuminate potential reasons for the low rates of female patenting (Murray & Graham, 2007). For example, women tend to judge their accomplishments more harshly than do men, leading them to believe their work is unworthy of patenting. Furthermore, women experience discrimination in assignment of work tasks, being assigned to lower profile projects less likely to produce patentable products. Addressing these conditions is important if companies are to benefit from diverse innovation.

RESOURCES

Ashcraft, C. & Breitzman, A. (2007). *Who Invents IT? An Analysis of Women's Participation in Information Technology Patenting (NCWIT)*. Executive summary available at <http://www.ncwit.org/pdf/PatentExecSumm.pdf>

London Business School (2007). *Innovative Potential: Men and Women in Teams*. Executive summary available at http://www.london.edu/assets/documents/Word/Innovative_Potential_NOV_2007.pdf

Murray, F. & Graham, L. (2007). Buying science and selling science: Gender differences in the market for commercial science. *Industrial and Corporate Change*, (16)4, 657-689.

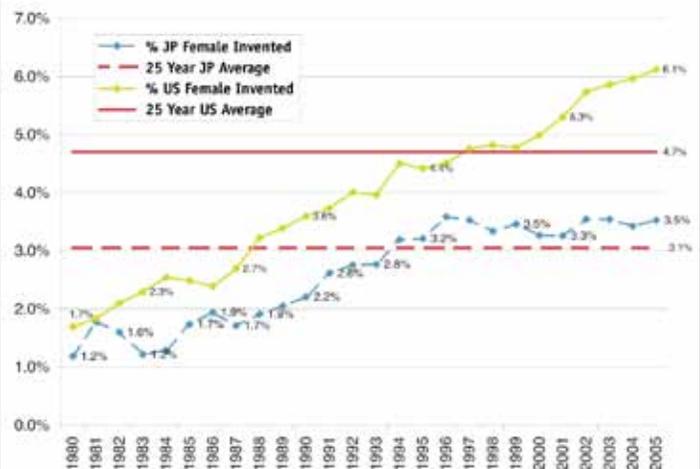
Page, S. (2007). *The difference: How the power of diversity helps create better groups, firms, schools, and societies*. New Jersey: Princeton University Press.

WHAT CAN COMPANIES DO?

An NCWIT study found that mixed gender teams produced the most highly cited patents, with citation rates 26 – 42% higher than the norm. Companies can take several important steps to help them benefit from female patenting.

- Establish a norm of assembling mixed gender/diverse project teams
- Educate employees as to the benefits diversity brings to innovation
- Demystify the process: Develop innovation communities or similar programs that teach "how to patent." Target these programs to underrepresented groups.
- Make information on innovation and the patenting process a part of mentoring programs

Change in Percentage of Female U.S. IT Patents Over Time (1980–2005)



This chart includes patenting rates for U.S. invented and Japanese invented patents because these two groups account for the overwhelming majority (80%) of U.S. IT patents.

NCWIT offers practices for increasing and benefiting from gender diversity in IT at the K-12, undergraduate, graduate, and career levels.

Visit www.ncwit.org/practices to find out more.

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PROMISING PRACTICES

Patenting Learning Communities (Case Study 1)

One Way to Promote Diverse Innovation



Career

“Whenever I went to the invention review boards, they were made up almost entirely of men, and I just didn’t see very many women patenting. I found this all rather confusing since, you know, there are a lot of women in IBM.”

– Pam Nesbitt, Technology Team Facilitator at IBM

Pam Nesbitt launched IBM’s Women Inventors Community with the goal of demystifying the patenting process and bolstering women’s involvement in innovation. The initial response was overwhelming. “I sent an email in the middle of the night to 25 people I knew who then forwarded it to people they knew,” Nesbitt recalls. “By the next day, it had been forwarded around the globe. I soon received letters from many women, saying things like ‘I always wanted to patent but wasn’t sure my ideas were good enough.’”

Founded in 2006, the Women Inventors Community now includes approximately 1000 members from a variety of technical departments worldwide. Approximately 95% of the membership is female. Members can access an international network of fellow employees who offer advice, mentorship, and support on patenting. Several locations have established local chapters that meet in person. The program also offers online workshops on a variety of relevant topics, such as information on the patenting process, patenting success stories, career improvement opportunities, and claims writing.

To increase motivation for patenting, the community also sponsors an annual “Patent Challenge.” To qualify, teams must be made up of Innovation Community members and must include at least one woman (most teams include at least 50% women). The teams submit their entries to the patent review board, which reviews them for filing eligibility. Eligible submissions are filed and a panel of judges identifies the top two entries. The first year’s winning team comprised two women, one of them a first-time patenter. This team was awarded a visit with an executive sponsor and a number of high-level executives. Additional challenges are underway in India and China.

Formal evaluation results are still pending, but initial results seem promising. As Nesbitt observes, “I have personally watched at least 10 women in the program with no previous experience in patenting who are now sitting on invention review boards, organizing their own local innovation communities, and in some cases, have been selected by their department heads to lead the department’s patenting efforts.”

AVAYA IMPLEMENTS NEW PATENTING GROUPS

Avaya recently launched a new patenting program under the direction of Sarah Kiefhaber. Thus far, the program consists of 40 employees; 22 of these are women. Participants are organized into eight teams with five members. Three of these teams include two women, four teams include three women, and one team includes four women. Most of the participants are from R & D departments but every team also has at least one representative who works more closely with the customer base.

To help guide the teams, Kiefhaber distributed an initial instruction sheet with suggestions for how to get started, what to do at meetings, and where to find patent submission forms. She also compiled a list of the different teams’ ideas so that teams could work on ideas other teams did not have time to pursue, as well as a list of employees who hold patents and were willing to assist the new teams.

Thus far, two of the groups have begun regular meetings. One of these teams has submitted five preliminary patent ideas and is currently working with patent attorneys who will help them prepare two or three formal submissions. The second team is currently exploring six specific ideas for potential patenting. Kiefhaber is currently conducting informal evaluation to determine what is working and where teams need more guidance. Stay tuned for more details as the program progresses.

SOME COMPONENTS OF SUCCESSFUL PATENTING GROUPS

While these programs have yet to be formally evaluated, the following components seem to be important for success:

- Strong program and team leadership
- Guidance by employees who have patented
- Mixed gender team composition
- Teams composed of members from diverse departments or job functions

RESOURCES

For more information, contact Pam Nesbitt at pnesbitt@us.ibm.com, or Sarah Kiefhaber at kiefhaber@avaya.com.

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NCWIT offers practices for increasing and benefiting from gender diversity in IT at the K-12, undergraduate, graduate, and career levels.

This case study describes a research-inspired practice that may need further evaluation. Try it, and let us know your results.

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