Harnessing the Promise of Social Networks Using Instructional Theory

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ABSTRACT

The potential of social networking and the advent of new technologies designed to facilitate collaboration and the sharing of information has the training industry excited. Designers, developers, and executives are searching for ways to incorporate the wild success of social networking sites like Facebook and My Space into learning products. Incorporating social networking into blended learning solutions promises new levels of learning and performance success. Blended learning solutions incorporating social networking are greatly influenced by cognitive and constructivist theories, specifically social learning theory and informal learning. However, social networks are user-built from the bottom up and blended learning solutions are built by instructional designers from the top down. How then do we marry the theory and practice of building effective blended learning solutions with the promise of social networking's ability to facilitate collaboration and information sharing as a learning tool?

This paper describes the judicious use of instructional theory to harness the potential of social networks, assisted, but not controlled by technology, to meet the educational and organizational goals of the Air Force Functional Area Manager (FAM) community. Because FAMs ensure the appropriate placement of personnel and equipment to fulfill military missions, effective FAM training and knowledge transfer can mean the difference between life and death for Air Force personnel. This paper presents a case study that demonstrates lessons learned and a practical approach to creating a full spectrum of learning, performance, and knowledge management strategies in a blended learning solution. The case study also demonstrates the effectiveness of the design approach using empirical data such as usage fluctuations, member activities, and surveys. Using an online CoP as the centralized gateway for learning, job support, and organizational knowledge, FAMs were able to quickly receive training and establish personal networks for gathering information and obtaining quick answers to common questions.

ABOUT THE AUTHORS

Danielle Mozzetta has worked a trainer and instructional designer for more than 10 years. Her background includes training delivery, program analysis, instructional systems design, performance support system design, interface design, and usability testing. Ms. Mozzetta's specialty is performance improvement and blended learning solutions. She has recommended and designed unique, workable solutions that achieve maximum performance and learning while remaining cost-effective for military organizations, government agencies, universities, and financial institutions. She is employed as an instructional systems specialist with the Department of Homeland Security, Immigrations and Customs Enforcement, Office of Training and Development.

Ellen Epstein has over 15 years of eLearning design experience. She began her career with US Environmental Protection Agency, where she created award-winning computer-based training for hazardous waste inspectors. She also managed one of the Agency's early learning management systems. Ms. Epstein later moved to a private consulting firm where she produced web-based training and virtual classroom training for Fortune 500 companies such as Avon and Office Depot. Ms. Epstein currently works for the government consulting firm SI International,

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Mary Jo Borden is retired from the Air Force with over 21 years experience in intelligence analysis, deployment management, human resource management, and functional area management. She developed numerous integrated training plans for complex tasks. Ms. Borden works for SI International as the Subject Matter Expert for the Functional Area Manager blended learning solution and is responsible for maintenance of the Community of Practice and the Web-based courseware.

Glen Littlefield is retired from the Air Force with over 20 years experience in Logistics and Operations planning functional area management, and systems development and testing. Mr. Littlefield is also an accomplished Systems engineer and requirements manager. Mr. Littlefield is currently a Department of the Air Force employee responsible for the Joint and AF planning and execution system that deploys AF assets Worldwide. He has developed and conducted AF Functional Manager training for over 14 years. While he is the current owner of the FAM CoP, he is also an active member of multiple CoPs that provide the AF communities with tools and products to support a collaborative knowledge-sharing environment.

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INTRODUCTION

Large organizations often face the issue of how to ensure continuity of knowledge and skills as people move in and out of jobs. They must also foster collaboration and information sharing between individuals who may be scattered across the country or even the globe. Social networking and new technologies designed to facilitate collaboration and the sharing of information could be key in addressing these issues. Designers, developers, and executives are searching for ways to incorporate the success of social networking sites like Facebook and My Space into learning products. Incorporating social networking into blended learning solutions promises new levels of learning and performance success. These blended learning solutions are greatly influenced by cognitive and constructivist theories, specifically connectivism and informal learning. However, social networks are user-built by users from the bottom up and blended learning solutions are built by instructional designers from the top down. How then do we marry the theory and practice of building effective blended learning solutions with the promise of social networking's ability to facilitate collaboration and information sharing as a learning tool?

USAF FAM Community

The United States Air Force (USAF) Functional Area Manager (FAM) community is one example of an organization reaping the benefits of incorporating social networking technologies into learning solutions. More than 1,200 FAMs dispersed throughout the world must interact with other USAF personnel and personnel associated with joint operations to effectively place personnel and equipment around the world. Knowledge and timely and accurate performance are critical to the FAM function.

The FAM role is usually a part time duty assigned to senior ranking military members outside the scope of their normal mission area. This duty leaves very little time for ramping up into the job because it requires daily action by the FAM. Most FAMs have to perform like an expert on the first day, completing highly specific tasks that require data interpretation, decision-making, coordination of multiple levels of personnel, and data entry using multiple computer systems. Because FAM tasks are complex and the associated procedures continually change, FAMs seek out human and computer-based resources to answer questions and establish points of contact required for information flow. In previous years, initial instructor-led training provided an overview of duties, systems, tools, and processes, but most FAMs could not attend the training in time for it to benefit the first months on the job. It was also difficult to keep the course up-to-date because only one person was providing input to it and did not have the expertise to cover all the knowledge areas in which FAMs can become involved. Furthermore, the instructor-led training was unable to provide the expert-level knowledge FAMS obtain by interacting with other members of the FAMs network.

After completing a detailed needs analysis, the USAF and SI International determined that a web-based training (WBT) could be used to provide baseline knowledge to both new and experienced FAMs. A Community of Practice (CoP) using Air Force Knowledge Now (AFKN), the USAF's knowledge management and CoP portal technology, was also recommended because FAM related information and personnel change rapidly, and FAMs need access to information provided by other personnel within the FAM network. The CoP portal provides FAMs with access to job support materials and policy changes without having to retake the WBT, and it provides contact information for other FAMs, personnel with whom FAMs must interact to complete job tasks, and personnel with expertise in FAM related areas.

As of June 2008, the FAMs CoP portal had more than 1,200 members representing FAMs and personnel with whom FAMs interact on a regular basis. The success of the FAM CoP portal was demonstrated within nine months of its launch when it competed with almost 13,000 other AFKN CoP portals to win the AFKN's

2008 2nd Quarter CoP Winner in the Enhancing Force Wellness and Development Category. Contest judges stated that the FAM CoP portal demonstrates the ability to accomplish objectives, save time and resources, and uses innovative, out of the box thinking to exceed USAF expectations. The combination of formal training, performance support, and social networking tools within the FAM CoP portal allows FAMs to quickly receive updated training and performance support, establish personal networks for gathering information, and receive feedback on all training and performance resources while obtaining quick answers to common questions.

This paper provides an overview of some of the theory behind successful social networks and CoP portals. It also describes some of the challenges organizations face when leveraging social networks and creating blended learning solutions that include social networking tools on CoP portals, using lessons learned during the development of the FAMs CoP portal.

COMMUNITIES OF PRACTICE, SOCIAL NETWORKS, AND BLENDED LEARNING

Communities of Practice

Wenger (1998) characterized CoPs as groups of people who share an interest in a specific domain and a minimum level of knowledge in that domain, engage in joint activities such as meetings or discussions, and establish "best-practices" or knowledge bases for their domain.

CoPs form to share what members know and so that members can learn from one another. CoPs exist in most organizations and may be self-organized or sponsored. Members can meet face-to-face or virtually and generally share some common characteristics.

Social Networks

For the purpose of this paper, a social network is defined as a social structure made of individuals who are connected by one or more affinities or similarities. These affinities include values, religion, friendship, or any other shared characteristics (Assimakopoulos, D. & Yan, J., 2006, Grey, 2004, Maloney & Preece, 2005, White, 2007 and Wegner, 1998). Social networks build on the relationships between individuals and are often represented as a map of nodes and ties. CoPs, by their nature, are social networks, although not all social networks are necessarily CoPs (Assimakopoulos, D. & Yan, J., 2006).

Face-to-face and virtual CoPs often rely on social networking services and web 2.0 technologies to foster relationships and encourage collaboration. Web 2.0 refers to the concept that the internet can be used as a tool to encourage information sharing and collaboration rather than being a mechanism for broadcasting information (O'Reilly, 2005). Web 2.0 technologies and services allow CoP members to complete some of the following tasks:

- Problem solve and brainstorm
- Research information
- Seek expert advice
- Share and reuse assets
- Find opportunities for coordination and synergy
- Review, revise, and approve documents
- Get news updates and discuss their impact
- Document processes
- Schedule events
- Map knowledge and identify gaps

According to O'Reilly (2005), Web 2.0 social networking services provide community members with the ability to find other members, communicate with them, collaborate on projects, identify useful web resources, and interact with each other in virtual worlds. It is difficult to determine the exact number of social networking services available because new ones are constantly being developed. Wikipedia currently lists over one hundred social networking services. The most familiar services include Facebook and MySpace, but other services cater to business professionals (LinkedIn), photographers (Flickr), and travelers (Couchsurfing). Some social network services allow members to tag favorite web sites (Del.icio.us, Simpy, Furl, Stumbleupon, Digg, reddit, etc.). Tags are logical keywords that convey meaning about the content of a website (Schrum, L. & Solomon, G., 2007). Tags are frequently combined into concept maps or tag clouds that show how the terms relate. Other social networking tools on sites such as Yahoo Groups or Google Groups offer collaboration, while Microsoft Office Live and Google Docs provide the ability to create and collaborate on documents. Knowledge management portals such as Microsoft SharePoint and CoP portals collect information and experiences in a single electronic environment. Finally, virtual worlds like SecondLife provide a rich social experience with visual interfaces and real-time interactions.

These categories of social networking services encourage interaction and collaboration by providing tools that allow members to interact with each other. Table 1 describes tools used in social networks and

organizes them as they are implemented along the spectrum of community development ranging from new, adolescent communities to mature, established communities. Collaboration increases along the spectrum and does not usually exist until the phase that includes document management and discussion groups. The maturity of the community along with the culture and domain of the CoP members (iCohere, Waters, 2004, White, 2007) dictate the use of social networking tools. As a community matures, it uses additional and more interactive social networking tools.

Implementation of social networking tools within a CoP portal occurs along the spectrum identified in table 1. Krieger's (2006) description of community lifecycle supports this spectrum of community maturity using three distinct phases: an anonymous, adolescent community, two-way communication, and the active, mature community. Members of an anonymous community are curious about each other, might know some members through contact outside the CoP, and might seek contact with each other without using the CoP portal. In a more mature CoP portal, two-way communication begins as community members share knowledge with one another through a filter, such as a site administrator. Two-way communication builds the community and individuals' acquisition of knowledge. Community members within an, active community freely communicate with one another using social networking tools available on the CoP portal. Members communicate job challenges and request job task support, demonstrating a comfort level within the community. The FAM CoP portal is currently in phase two of the social networking lifecycle, offering all of the social networking tools, but blogs and wikis. The most mature social networking tool being regularly used is the document management feature.

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Table 1: Tools Used in Social Networks

Tool	Description	Use to:
Blogs	Provide community with news and information on a regular basis	Transfer knowledge from a community leader to rest of community
Surveys	Take the pulse of the community	Encourage the community to provide feedback that community leaders can use to make decisions
Shared calendars	Provide information on upcoming events of interest to the community	Transfer knowledge from a community leader to rest of community
Document management/shared workspace	Collaborate on documents and manage the workflow of the community	Encourage collaboration and track which community members have reviewed, revised, and approved key documents
Discussion groups	Members of the community post and respond to questions and issues	Transfer knowledge – Often from community leader to other members, but sometimes from member to member
Social bookmarking/ favorite links	Members of the community share useful Websites	Transfer knowledge
Instant messaging	Quickly contact a particular member of the community	Improve communication between individual community members
Chat rooms	Live discussion with a small subgroup of the community	Improve communication between individual community members and encourage team collaboration
Wikis	Members of the community post information that can be revised and updated by any other community member	Tap into collective knowledge

Blended Learning

Tools used in social networks are a media option for blended learning solutions. Blended learning solutions are defined as those learning products that incorporate synchronous and asynchronous delivery of instruction using two or more media types (Bielawski & Metcalf, 2005). The USAF FAM Training is a blended learning solution that incorporates WBT, brief tutorials, performance support tools, and a CoP portal. The CoP portal hosts the tutorials and tools, and it links to the WBT on USAF's learning management system (LMS). The portal also addresses its members' need to interact with one another to advance the knowledge and performance of the entire group through the interactions and support of learning individuals.

SOCIAL NETWORKS FOR WORKPLACE LEARNING AND PERFORMANCE

As learning and knowledge acquisition change, workers need the knowledge and abilities required to complete job duties immediately. A social networking website provides a vehicle for storing and revising knowledge and procedures accepted and promoted by the community. A grass-roots foundation, where community members supply the knowledge and accepted procedures provides an environment in which informal learning occurs (Assimakopoulos, D. & Yan, J., 2006).

Informal learning occurs when individual functions become enculturated into the community's practices and behaviors (Grey, 2004). CoP portals with social networking tools that provide community requested and supplied information in an intuitive, well-organized manner also provide the tools a worker needs to improve job performance because they offer easy-to-find synchronous or asynchronous task support at the moment of need. Use of these resources in the completion of job tasks increases time on task and results in improved learning (Sleight, 1997). In addition to facilitating informal learning and workplace performance, CoP portals also preserve the tacit aspects of knowledge supplied by members that formal systems cannot capture (Wenger, 1998).

Characteristics of Successful CoP Portals

While offering great promise, social networking tools and CoP portals are not appropriate for all audiences. Just as instructional designers use instructional systems design to select instructional strategies and media (Merrill, 2000); they must also determine when social networking tools are appropriate (Boetcher, Duggan, & White, 2002). In implementing the FAM CoP portal, the design team discovered several characteristics required for CoP portal success.

First, there must be an existing community or group with similar characteristics that is willing to share information (White, 2007). The group must be aware of members' competencies, strengths, shortcomings and contributions, and they must be located in different physical spaces. Additional group characteristics that are not required, but lend themselves to a CoP portal and social networking include a shared language, a designated flow of information between and among members, and a willingness to use personal knowledge and skills to enhance organizational knowledge and skills. The community also requires strong, involved, and supportive leadership. Fortunately, FAMs, management strongly encourages information sharing and demonstrates an ongoing commitment to the development of tools and resources required for community members to succeed in the workplace.

In addition to group characteristics required for social networking, the information to be shared or learned must also be appropriate for social networking. The job task analysis for FAMs revealed that the information required for FAM work tasks was well suited for sharing and discussion and needed to be quickly diffused. The analysis also revealed common tools, methods, techniques, and artifacts used by many FAMs to complete job tasks.

Beyond group and content characteristics, a CoP portal also requires a set of environmental characteristics. Community members must have adequate computer equipment, software, and internet access. The job and learning tasks must require the use of technology and interaction with others.

The FAM community, information, and training content exhibited many of the characteristics required for a successful social networking, but support at the highest level of the organization dictated the change for updating the way FAMs are trained. General William Looney (On Learning: The Future of Air Force Education and Training , 2008) of the USAF Air Education and Training command expects the USAF to implement technologies similar to Web 2.0 as Air Force 2.0 in order to, "...develop an enterprise-wide infrastructure that fosters learning and captures their (Airmen) most critical assets – knowledge." (p. 2)

USAF FAMs represent an existing community that wants to share and learn from one another using technology. The community is geographically

dispersed, and most of the job tasks completed by FAMs require interaction with others and the use of multiple computer systems. FAMs are also familiar with CoP portals. The USAF owns the AFKN knowledge management application that supports more than 13,000 active USAF CoP portals. AFKN provides administrative support, a standard and familiar layout that can house custom content, and meets USAF security specifications.

The challenge of implementing the FAM CoP portal on AFKN lay in the need to provide a CoP portal based on sound instructional design and performance enhancing practices. The success of the FAM CoP portal has been a result of involved, supportive USAF administration and management, and a design and maintenance plan based on learning theory.

SOCIAL NETWORKING AND LEARNING THEORY

Social networking and CoP portals are founded in many learning theories. The theories most applicable to social networking and CoPs are cognitivism, constructivism, connectivism, and informal learning. Using these theories, the design team formed a top-down (administrative) and bottom-up (community members) design and maintenance plan to build and sustain a successful CoP portal.

Cognitivism

Cognitivism includes concepts such as information processing models, chunking material into meaningful parts, improving retention with rehearsal, and using schemas to compare new information to existing knowledge structures (Mergel, 1998). The appropriate application of cognitivism to a CoP portal requires designers to determine the appropriate framework for information sharing. Therefore, the FAMs design team focused on categorizing FAM tasks into large chunks for structuring the portal categories.

Constructivism

Constructivists rely on the existence of prior knowledge as the foundation for building new knowledge using strategies such as scaffolding and informal learning (Brown & Ferrara, 1985). Well-known constructivist Vygotsky proposed that learners need scaffolding, or varied levels of support, to increasingly complete more complex tasks with the least amount of assistance possible (Maccarelli, 2006). The CoP portal supplies the FAM community with constructivist opportunities for learning by doing by providing foundational information and various levels of support (scaffolding) through performance support tools, job aids, tutorials, a WBT, and access to current policy, experts, and FAM-related systems and personnel.

Vygotsky (1978) also theorized that learning occurs through social discourse and interactions as learners construct their own knowledge based on culturally dependent and existing schema and interaction with others. The idea that knowledge is socially constructed builds on the constructivist theory that knowledge is constructed, but it adds information related to connectivism and informal learning.

Connectivism and Informal Learning

Part of George Siemen's (2004) theory of connectivism states that learning and knowledge require a diversity of opinions obtained in the process of connecting information sources and that continual learning requires the nurturing and maintaining of connections. He also believes that informal learning comprises more of our learning experience than formal learning because it occurs in a variety of ways. Participation in personal and social networks and completing work-related tasks is a significant aspect of our learning experience (Schrum, L. & Solomon, G., 2007).

According to Callahan, Marsick, Volpe, and Watkins (2006), informal learning stems from, "a social contract among people who work together to achieve higher-order collective goals, ranging from immediate work groups to complex, even boundary spanning, work organizations." (p. 795).

Learning Theory and the FAMs CoP Portal Design

A CoP portal designed for a specific community using constructivism, cognitivism, and connectivism creates a place where formal and informal learning can take place wherever and whenever community members have the need, motivation, or opportunity. To create this environment, the FAMs design team analyzed all the available information to determine the support provided to FAMs at the administrative level (top-down) and the kind of information or support FAMs require from within their community (bottom-up).

The top-down design supports formal learning using a WBT, tutorials, and an intuitive hyperlinked process map. It also supports informal learning using the cognitive strategy of chunking to organize information and resources in an intuitive, logical, and contextual

framework. Informal learning is supported from the top down with performance support tools, tutorials, internet resources, and access to experts and other members of the FAM community.

The most significant design activity integrated top-down and bottom-up design as part of the comprehensive job task analysis. Representatives of organizational leadership and subject matter experts (SMEs) worked with the design team to provide accurate and detailed descriptions of more than 250 FAM tasks and subtasks. The job task analysis started the design processes from a user-centered or bottom-up perspective and provided the opportunity for CoP-required grass roots development (Wenger, 1998). Including SMEs and management stakeholders in the task analysis promoted buy in at the highest levels and ensured that the organizational goals were addressed.

To determine major processes and categories, all of the task descriptions, key steps, criticalities, frequencies, complexities, and resources were analyzed. This activity resulted in the three task categories seen in Figure 1; learn, connect, and do. These three categories provide the user-centric framework for organizing content on the FAM CoP portal and ensure that the social networking tools available can be fully leveraged by the community to gain quick access to accurate and consistent information. This organization also provides community members with the structure and flexibility to add information to logical categories.

The FAM CoP portal provides the contextual organization for learning and performance support features. It also serves as a vehicle for social networking by including social networking tools such as surveys, shared calendars, document management, and discussion groups.

The required WBT introduces FAMs to the FAM CoP portal. After completion of the course, FAMs are required to register on the FAM CoP portal. Registration provides instant membership to a career-based social network. As with other social networking sites, FAMs are encouraged to build a profile that incorporates everything from their picture to their resume and includes areas of expertise, geographical location, and specific FAM duties. Registered FAMs receive information pushed out by site administrators using automated portal email notifications. FAMs receive notification of policy updates, new or revised job aids, surveys, area specific forums, and live meeting and training invitations. FAMs can view other members' areas of expertise and contact them. FAMs also have access to additional social networks and communities as organizations with FAM related tasks post information on the site. This results a hierarchical structure of sub communities and information that fits well into the overall layout of the FAM CoP portal.

Figure 1: FAM CoP Portal Entry Page

The bottom-up design strategy, allowing for the input and changing needs of the FAM community, has contributed to the FAM CoP portal's high-level of use within the USAF and its recent AFKN award. Regular FAM Maintenance Committee meetings include a review of metrics to determine strengths, weaknesses, and appropriate changes. Administrative monitoring of site usage and metrics also provides data that shows measurable results.

MEASURED RESULTS

The FAM CoP demonstrates high levels of activity and has more than 1,200 members. The number of members displayed in tables 2 and 3 illustrate the depth and range of personnel involved in FAM-related tasks as of June 2008. FAM CoP members include a cross section of officers, enlisted, civilians, and DOD contractor personnel. This broad spectrum including narrow categories indicates potential sub communities forming within the larger FAM community.

Table 2. FAM CoP Portal Metrics

Activity	Number
New Visitors	3,137
Returning Visitors	8,740
Total Visitors	11,877
Documents Added	742
Documents Viewed	9,316
Pages Viewed	122,119

Table 3. FAM CoP Members

Title	Number of Members
Colonel	16
Lieutenant Colonel	74
Major	127
Captain	60
Lieutenant	95
CMSgts	130
SMSgts	128
MSgts	249
TSgts	87
SSgt	36
SrA	4
A1C	5
Civilians	110
Contractors	81

The FAM CoP portal's high activity levels place it in the top two percent of highly active AFKN CoPs. Community members and site administrators attribute the high level of activity to the logical and intuitive display of information and the information's relevance to FAM job tasks.

Surveys and Polls

FAM CoP portal survey and poll results indicate that the combination of training, performance support, and the availability of social networking tools have greatly reduced the time required for a new FAM to perform efficiently. FAMs also report high levels of satisfaction with the CoP portal's flexibility, adaptability, and up-to-date information. Regular updates and revisions continue to provide intuitive access to information because content revisions occur within the three major categories of information.

OFAMOs responsible for providing most of the assistance required by FAMs report that the FAM CoP portal has reduced the time spent supporting FAMs because it provides consistent, up-to-date information frequently requested by FAMs. This has resulted in less phone support, saving countless hours for FAMs and OFAMOs. The Air Force Special Operations Command Manpower OFAMOs report that their specific CoP portal reduces the time they spend helping FAMs by six hours each week. As the site continues to mature, additional data will be collected to determine transfer of learning and performance into the workplace and cost benefit analysis.

Popular Features

The most frequently used feature of the CoP Portal is the document management feature. This feature allows members and administrators to post and track documents and provides version control. The folder structure is familiar to FAMs and fosters the use of standardized documents used by FAMs and the personnel with whom they interact. This feature also allows FAMs to store large amounts of shared information in a central location using a familiar method of document organization. Embedded version control and document approval promotes standard documentation and processes.

The broadcast feature is the most used administrative feature. It allows the administrator to push information to community members regarding document revisions, document additions, meeting dates, training sessions, and best practices.

Other frequently used features include performance support tools and reference links. The ability to find FAM subjects experts was recently added to the portal and its use is growing. FAMs requested this feature and use it to obtain contact information for a community member that has expertise in a specific area. Using contact information FAMs can call, e-mail, or instant message an expert for advice.

The discussion board has yet to show significant use among the FAM community. However, SMEs have contributed some starter topics so that when the community members gain the confidence and comfort necessary for participation, there will be a place to start. Use of this features is expected to grow as the site matures and community members and leaders become more familiar with the FAM CoP portal and all of its available features.

One of the newest features added to the FAM CoP portal is live training. This feature is popular for its grass-roots origination and timeliness. Administrators gather input from community members and site usage trends to determine activities community members find most difficult. Using Microsoft Live Meeting, administrators work with SMEs to schedule live

training sessions. To meet community member needs, several sessions of each training session are advertised and offered.

CONCLUSIONS AND LESSONS LEARNED

Developing CoPs and fostering social networks within communities is an iterative process. Surveys and polls indicate that the FAM CoP portal is reducing the amount of time it takes to find information and to become proficient in FAM duties, and it ensures that information provided to FAMs is up-to-date and accurate. Although the FAM CoP portal demonstrates high activity levels, much of the communication is radial (one expert providing information to many FAMs) rather than networked communications between individual community members.

Social networking sites and CoPs mature over an unspecified time dependent on community members and the characteristics of the content (Krieger, 2006). The FAM CoP portal is moving through the expected lifecycle exhibiting progress and hitting barriers. The FAMs design team anticipated barriers and recommended strategies to overcome them. To prevent CoP portal stagnation and barriers to participation, a FAMs Maintenance committee ensures that the portal content remains current implements strategies to overcome anticipated and unanticipated barriers. These barriers include reliance on top-down information models, technical constraints on available social networking tools, lack of awareness of the FAMs CoP portal, and the availability of experts and champions. Strategies for overcoming these barriers to social networking include emphasizing grass roots development, identifying technical constraints, making champions available, guiding people to the CoP portal, and setting realistic expectations.

Emphasizing Grass Roots Development

One of the barriers to social networking on the FAM CoP portal is that the portal was not developed by the community as recommended by CoP expert Etienne Wenger (2001). To overcome the issue, the design team recommended a FAM Maintenance Committee consisting of FAM leadership, FAM training specialists, and SMEs. This committee acknowledges CoP members and ensures the timely and appropriate response to them. FAMs Maintenance Committee duties include researching and posting accurate responses to all posted information, monitoring and participating in threaded discussions, coordinating content issues with the Office of FAM Oversight (OFAMO), and monitoring CoP portal usage and USAF policy and procedure to recommend changes. One member of the FAM Maintenance Committee also serves as the primary site administrator and the point of contact in all matters related to the implementation of FAM training products and the CoP portal.

The FAM Maintenance Committee facilitates grass roots development by limiting administrator provided information while encouraging community members to supply most of the portal's content or at least provides the most input. Stakeholders and administrators only provided the top five pieces of information a FAM requires, effectively supplying the initial portal content for references, tools, tutorials, systems, and Frequently Asked Questions (FAQs).

To ensure that community members are represented in portal development, administrators use site metrics to update, add, and remove information. For example, if a member adds a link to another CoP that is never accessed, administrators remove it. On the other hand, the site administrators might feature a training session for tools that was accessed numerous times in a month.

In addition to updating content, the FAM CoP portal has begun promoting community activities. Live training sessions (webinars) encourage discussion of relevant issues and the use of performance support tools. A FAM-of-the-Month feature allows community members to nominate a FAM to be featured on the portal, and it provides a way for FAMs to learn more about each other and their jobs.

Identifying Technical Constraints

Frustration with non-functioning or inadequate social networking technologies can reduce participation in a CoP. It is critical to have a working product with the opportunity for growth. The technology available on the FAMs CoP was limited to what AFKN provides. The advantage of this was that the technology was proven and already in use. The disadvantage was that some of the features of AFKN did not meet the needs of the FAMs CoP. By identifying these issues and working closely with the AFKN team, the FAMs design team was able to work around limitations such as AFKN portals not being housed on secure servers. The FAM CoP portal contains only unclassified information with links provided to secure information that can only be accessed from secure systems. It was also necessary to work with AFKN to expand some technical features. For example, the FAM Maintenance Committee identified social networking tools (yellow pages, My Profile) that did not meet the needs of the USAF's ever–changing database of experts. AFKN's

tools did not allow users to update their own social networking information and were not restrictive enough in collecting data. The My Profile feature of AFKN is now being enhanced, with FAM Maintenance Committee input, to adapt to each CoP's unique requirements and further increase the validity of the network.

Making Champions Available

The core team participates in regular meetings to review community member participation and content updates, including training content. To make expert help available the team identified several experts willing to monitor the FAM CoP portal and respond to community members' questions.

In the early stage of implementation, it became apparent that the site needed a full-time administrator to handle all of the training updates, all of the content updates, implement policy changes, and ensure consistency among all the products as changes were made. As a result, the USAF funded a site administrator to manage content changes and serve as a community mentor and site champion.

Howell (2005) identified characteristics of successful site champions as having extensive social networks in place and the ability to challenge to the organization and those charged with entrepreneurship to transform the social networks into a community of innovation. The site administrator acts as a site champion by promoting CoP portal use and encouraging the development of other site champions. The efforts and communication skills of the site administrator have increased site traffic. As a former FAM with an extensive social network, the site administrator sees the "big picture" and how one change affects numerous pieces of information, tools, and training. Furthermore, the site administrator had an established presence within the community, bringing credibility to the FAM CoP portal.

Guiding People to the CoP Portal

To encourage its use, the FAM CoP portal was heavily advertised in the days leading up to its launch and in the subsequent months. The site administrator sent emails to potential community members, including those in non-FAM roles that might be interested the content. Some of the first community members were administrators of other CoPs who wanted to share and consolidate information. These initial members spread the word to others.

The new FAM WBT, mandated for all existing and newly appointed FAMs, frequently references the FAM CoP portal and contextually integrates the site's tutorials and performance support tools. Most FAMs repeatedly return to CoP portal following training to access these resources. The FAM Maintenance Committee also conducts quarterly meetings with the FAM community to discuss the status and use of the FAM WBT and CoP portal.

The initial task analysis revealed that FAMs go to OFAMOs when they need help. This individual assistance to FAMs uses valuable time and can result in inconsistent advice. Therefore, the design and maintenance plans included instructions that OFAMOs provide a list of FAQs and answers and direct questioning FAMs to the appropriate section of the FAM CoP portal to find answers to their questions. Although progress has been slow, OFAMOs are reporting reduced levels of FAM assistance.

The AFKN search engine is another method for guiding people to the portal. It searches for keywords within any document on AFKN, leading to multiple "hits" for the FAM CoP portal. Portal generated emails also generate "word-of-mouth" site traffic. Thousands of emails regarding the site have been sent this year. The relevant content and organization of the site facilitates repeated use among FAMs and use by USAF personnel outside of FAMS. Another reason for the site's success is the setting of realistic expectations.

Setting Realistic Expectations

The design document, maintenance plan, and FAM Maintenance Committee meetings include descriptions of expected activity levels based on the CoP maturity spectrum. Community members need time to transition their comfort level from existing methods of communication and obtaining information to using a social network to learn, communicate, and obtain information. Realistic expectations allow the social network to evolve and mature according to community needs, and they ensure the availability of resources needed for a social network in its infancy (such as the increased need for experts or development time for expansion of social networking tools).

Conclusions

The FAMs CoP project demonstrates a social networking product that has not fully matured. Tools used for social networking are available, but are not being fully used. Metrics and site monitoring reveal that the FAMs CoP portal provides up-to-date relevant

information and that existing communication is primarily top-down. The site administrator and FAM Maintenance Committee continue to encourage the use of available social networking tools and grass roots communication. They recognize anticipated and unanticipated barriers and continually incorporate strategies to overcome them. With ongoing commitment and continued improvements, the FAM CoP portal and its members will continue to mature and realize the benefits of social networking in a learning environment.

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