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# Encyclopedia of Distance Learning Second Edition

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# Leadership Competency in Virtual Teams

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## INTRODUCTION

As organizations race to increase their global market share, traditional face-to-face teams are evolving into virtual teams. Aided by swift advances in communication technology, virtual teams allow organizations to pool the intellectual resources of geographically dispersed experts from multiple fields to achieve organizational goals and advance the corporate mission. Virtual teams benefit organizations by saving travel costs and time lost away from work. Although similar to traditional teams in many ways, the virtual team's dispersed nature necessitates different leadership competencies, the use of multiple communication media, and more structure and guidelines (Stone & Thach, 1999). With a growing number of organizations now relying on virtual teams to perform work, there is also increased recognition that strong leadership is critical to the successful functioning of virtual teams. However, the additional component of technology used by virtual teams is sometimes overlooked when organizations develop their core competency models.

*The leader's use of technology to manage projects and human relationships is what sets the virtual team apart from traditional teams.* Core competency of virtual team managers includes solid leadership skills, as well as an ability to integrate technology to share information and, perhaps most importantly, to manage relationships inside and outside the virtual team. In the staff development process, organizations tend to focus on generic leadership development and overlook the technology component of competency that is essential to virtual teams.

This article reviews the research literature regarding teams and virtual teams to identify the individual characteristics—such as cognitive ability, conscientiousness, tolerance for uncertainty, and skills used in technology—that facilitate leadership within teamwork. Team leaders can exercise critical success factors such as set-

ting clear goals, providing frequent feedback, building team cohesiveness, and demonstrating empathy towards staff to improve team performance. However, there are often barriers to overcome when leading a team. The article identifies important critical success factors and the significant barriers that get in the way.

## Guidelines for Establishing a Virtual Team

Eom and Lee (1999) recommended four guidelines in the establishment of virtual teams. First, the core competency of the organization should be defined. Next, the organization's operations should be integrated with those of other entities that are contributing to the virtual team's efforts. Then, the technology needed to unite and sustain virtual teams and organizations should be developed. Finally, an organizational culture that deals with resistance to the use of virtual teams needs to be shaped.

Eom and Lee's guidelines are supported by a review of the current literature. Additionally, a study by Boss (2000) indicated that leadership presence is critical to the success of teams. When a team lacks a designated leader, one will emerge, particularly when problems requiring resolution are encountered (Tagger & Hackett, 1999). In a similar study on emergent leadership in teams, Kolb (1996) reported that the ability of a team leader to manage relationships within and outside the team accounts for the team's level of success. Gould's (1997) study of leadership in virtual teams, as well as Kayworth and Leidner's (2000) study of global virtual teams, corroborate Eom and Lee's guidelines for virtual team development, particularly the need for leadership competency in communication media.

In a speech given at the Team Strategies Conference in Toronto, Kimball (1997) suggested that managing virtual teams is very similar to managing traditional teams. The underlying difference is the use of techno-

logical tools to support collaborative work. Leaders of virtual teams must be capable of using a wider array of electronic telecommunication tools for regular interaction with team members.

Eom and Lee's guidelines are further supported by related studies undertaken by Horvath and Duarte (2000) and Schlough (1997). The results of their studies suggested that goals must be aligned and integrated at the organizational, process (team), and individual levels; that virtual team members require the development of skills specific to the technologies being used to share work; and that a culture supportive of virtual teams should exist within the organization.

### Leadership Competency

While much of the focus regarding virtual teams is on the technology that allows such teams to exist, the major difference between traditional and virtual teams is in leadership competencies (Kimball, 1997). A proficient team leader manages the relationships of team members and external partners, guides the team to achieve its goals, and communicates effectively (Chase, 1999). Those leadership challenges become magnified when the team being led is a virtual one. The ability of a virtual team leader to foresee delays in a project or to resolve potential conflict is often hampered by the lack of face-to-face contact with team members (Gould, 1997). Visual cues, such as body language and facial expression, are missing from human interactions that take place over telephone lines and in cyberspace. The virtual team leader must be particularly skilled in communication (Chase, 1999) and equally adept at applying that skill using the appropriate communication technology (Geber, 1995; Kimball, 1997).

## RESEARCH ON LEADERSHIP IN TEAMS

The critical importance of leaders in the successful functioning of teams is underscored by a number of studies.

### Leaders' Presence

In a study that spanned 20 years, Boss (2000) examined the effects of leader absence during a team-building

intervention. Seven teams were invited to a six-day team-building conference away from their work settings. Initially, six of the teams were to be natural teams—that is, they were to consist of the team leader and his/her immediate subordinates. Of the six natural teams invited to the conference, only one leader showed up with his team. The seventh team was a cousin team made up of top administrators who reported to different supervisors and who did not routinely work together in a team setting. The process went forward with one natural team, five leaderless teams, and the cousin team. Data were also collected from two comparison groups that did not attend the conference.

A number of instruments were used over the 20-year course of the study to assess the effectiveness of the conference and the long-term effects of leader presence in a team-building exercise. Essentially, all of the survey results indicated that the natural team achieved a significant improvement in group functioning, the cousin group improved slightly, while the leaderless teams demonstrated little change and even a slight decline in group functioning.

Data from the various teams and groups were also collected at intervals of 18 months, 10 years, and 20 years after the conference. Scores showed that the natural team continued to show improvements in team functioning. Performance of the leaderless team diminished after six months following the first intervention and then showed some improvement a year later. The group functioning levels of the two comparison groups that did not attend the conference remained relatively unchanged.

According to Boss, the overriding reason for failure to show improvement in team functioning seemed to be the absence of the team leader. The reasons for the leaders' absences had little bearing on the teams' success or failure. In some teams, including the natural team, a staff member was missing; yet, the natural team showed improved functioning. Boss concluded that this seems to indicate that a critical factor of group effectiveness is the missing member's position and their role in the group. Furthermore, the power hierarchy between the supervisor and his/her subordinate must be resolved before team members of equal status can resolve peer-related power issues. Having the ability to work through issues with the supervisor sets the level of trust within the group.

Another indication of the importance of leader presence, according to Boss, was that even though all

teams were similar in terms of membership, training, environment, and design, only the group with dedicated leadership presence showed improvement and commitment. Boss (2000) concluded “purely cognitive training may be effective in a stranger group, a cousin group, or a leaderless family group” (p. 486), but that organizational change requires the involvement of a committed leader. Leadership presence during team building positively influences the long-term performance of a team.

## **Emergent Leadership**

While the results of Boss’s study point toward the need for leadership competency in teams, a study by Taggar and Hackett (1999) found that leaders emerge in teams when none is predetermined. Their study of emergent leadership behavior in teams explored how leadership traits emerge in the team leader and in staff members of the team, and how these traits affect the performance of teams without a predetermined leadership hierarchy. The primary focus of their study was to determine the effects of cognitive ability and personality traits of team members’ emergent leadership behavior on the performance outcomes of autonomous teams. The researchers posited that the roles of individuals within autonomous work teams would be more adaptable than those of individuals within traditional teams. For this reason, Taggar and Hackett expected that more members of autonomous work teams would exhibit emergent leader behavior. A total of 480 second-year business students from a mid-size university participated in the study.

The results of Taggar and Hackett’s (1999) study suggest that team performance is enhanced when a majority of team members exhibit leadership behavior. Many team goals are broken down into tasks and subtasks that must be achieved by individuals acting independently. Individuals who are principled and who are proficient self-managers show emergent leadership behavior. Strong team leadership ability possessed by one individual was enough to compensate for other team members’ low staff leadership abilities. A high score in either staff leadership or team leadership did not equate to successful team performance; many individuals had to exhibit leadership behavior for the team to achieve success.

The results of the study also indicated that although the teams began the study without designated leaders,

leaders emerged within the groups over the course of the 13-week study. Taggar and Hackett (1999) suggested that the performance of the team could be adversely affected by the failure of one team member to display leadership behavior, no matter how successfully other team members displayed their leadership abilities. Likewise, all team members must perform at a minimal acceptable level for team success. In short, all team members must display leadership ability for the team to succeed.

As a result of their study, Taggar and Hackett (1999) recommended that human resource training and development programs focus team-based programs on “the development of self-managing leadership behavior” (p. 15). One implication that can be construed from the results of their study is that all members of virtual teams, regardless of whether they hold leadership positions, would benefit from leadership development.

## **Leadership Style**

While Taggar and Hackett focused their study of emergent leadership behavior at the individual level, Kolb (1996) broadened the scope of this research with an examination of the differences in leadership characteristics of highly successful and average teams. Based on an analysis of the literature, she concluded that self-managing teams have leadership. Unofficial leaders emerge in teams lacking a designated leader and exhibit the same behaviors as official leaders. She referenced Seers, Petty, and Cashman (1995), who cautioned that a distinction should be made between teams that are internally led and externally led.

Kolb studied 174 professional workers in 27 organizational teams involved in applied research, technical support, and other tasks. The subjects were all college educated, and worked in manufacturing, aerospace, and health services organizations and with elected leaders. Ratings of tolerance for uncertainty, willingness to confront and resolve issues associated with inadequate performance, and being influential in getting outside constituencies to support the team’s efforts were significantly different between high- and average-performance teams. Members of high-performance teams were more likely to report their leaders as being able to garner outside support for the team, while members of average-performance teams were more likely to report that their leaders were able to confront issues of low or unacceptable performance



among staff. The researcher surmised that this observation from the average-performing teams was based on the leadership characteristics that were exhibited first. Kolb postulated that in the case of an average-performing team, the leader may have had to take care of performance issues before he or she could tackle other team effectiveness issues.

Only four of the 26 leadership behaviors studied showed significant differences between high- and average-performance teams. Kolb (1996) concluded that perhaps the questionnaires did not expose some differences; therefore, there were a small number of differences found. Another reason for the small number of differences found could be that “few differences exist” (p. 6). There might be factors other than leadership that affect a team’s performance level. Another possible reason for the small amount of difference might be that the study looked at teams from different organizations with perhaps different organizational structures, cultures, performance measures, team goals, and member characteristics (Kolb, 1996). Kolb further stated that the results might have been different if the teams studied were all from the same organization. The results of Kolb’s study imply that leadership style should match the group’s style or address the group’s performance level. As defined by Gould (1997), effective leadership stems from the right fit between the leader’s style and the followers’ style or maturity.

## RESEARCH ON LEADERSHIP IN VIRTUAL TEAMS

The studies conducted by Boss (2000), Taggar and Hackett (1999), and Kolb (1996) dealt with aspects of leadership in traditional, in-person teams. Kimball (1997) and Stone and Thach (1999) contended that the dynamics of traditional and virtual teams are very similar. Distinguishing characteristics of virtual teams are the use of technological tools to communicate and the virtual team leader’s ability to foster relationships by effective use of the tools.

Similar reasoning led Gould (1997) to conduct a qualitative study to determine patterns of leadership practices and information technologies required to lead virtual teams. He examined the effectiveness of virtual teams, their structure, and how leadership was practiced. Gould used the Delphi technique and a case study to

gather data about virtual teams and their leadership. People from organizations with virtual team experience nominated participants for the study.

Gould’s study resulted in four implications for virtual teams: (1) virtual teams are effective; (2) managers can trust that members of a virtual team to accomplish tasks without being watched; (3) while electronic mail and telephone conferencing are the most widely used communication technologies, this list will grow as newer technologies, such as electronic meeting software, are developed and integrated into the work environment; and (4) face-to-face interactions are still important to the smooth functioning of virtual teams. However, face-to-face interactions were less important to virtual teams whose members produced independent products. These implications point toward a virtual team leader competency model that includes team building and trust, and the appropriate use of technology to manage projects and human relationships.

The importance of leadership skills in managing relationships and in the use of technology tools was highlighted by the results of a quasi-experimental study by Kayworth and Leidner (2000). With the participation of graduate and undergraduate university students in Europe, Mexico, and the United States, Kayworth and Leidner formed 12 global virtual teams to carry out the experiment. They identified four challenges faced by global virtual teams as a result of their study. Then, they developed a list of critical success factors to address the challenges. In addition to leadership and technology challenges, the global virtual teams faced culture and communication challenges. Effective leadership skills included setting clear goals, providing continuous feedback, building team unity, expressing empathy towards team members, and demonstrating cultural awareness. Team members identified successful leaders as those who used multiple computer and telecommunication media effectively, trained team members to use the media appropriately, ensured that the technology infrastructure between geographic locations was compatible to the media being used, and assessed the barriers to global telecommunications.

Communication challenges involved more than just the use of technology, however. Kayworth and Leidner (2000) recommended that global virtual teams engage in team-building exercises at the beginning of the process and then periodically meet face-to-face or use technology to simulate in-person interactions.

They also suggested that the teams strive for continuous communication, develop team rules of behavior, and set meeting schedules. Time perceptions, which affect behaviors and schedules, are cultural (Hall, 1981; Kayworth & Leidner, 2000). Kayworth and Leidner suggested that cultural issues faced by global virtual teams might be addressed by developing an awareness of cultural differences and by creating teams from compatible or harmonizing cultures.

## **Organizational Factors**

While the studies by Gould (1997) and Kayworth and Leidner (2000) focused on challenges at the team level, Horvath and Duarte (1997) turned their attention to the organizational level. They conducted a qualitative study that combined the topics of virtual team performance, leadership competency, and communication technologies. The goals of the study were to determine what organizational factors affected the adoption of a global virtual team design and to examine the core competencies of success virtual teams. Three teams were chosen for study to allow for analysis within the team and among the teams. The teams were chosen because they were the first and only virtual teams in the organization, a Fortune 100 telecommunications company.

Horvath and Duarte (1997) found that successful virtual teams depend upon the organization's ability to: (1) develop the knowledge and skills of individuals; (2) provide appropriate collaboration, communication, reporting, and knowledge management tools; and (3) develop a culture that fosters an attitude among management that supports virtual teams. Five roles were identified, along with the different competencies required of people filling each role: project leader or manager, team member, resource manager, client manager, and senior project manager. Specifically, the project leader should demonstrate the ability to build trust; a tolerance for uncertainty; the ability to solve problems; communication skills, including effective listening; the ability to use technology to work collaboratively; organizational and management skills; interpersonal skills; empathy and cultural sensitivity; and facilitation skills.

Four types of tools identified as specifically needed by virtual teams for successful performance were: (1) collaboration tools (e.g., groupware, Lotus Notes) for team management and facilitation; (2) communication

tools (e.g., e-mail, telephone, and teleconferencing); (3) statusing tools that allow all team members to assess the progress of the team's efforts (e.g., corporate intranet); and (4) learning tools (e.g., a knowledge management system).

## **Factors Involved in Successful Performance**

Horvath and Duarte (1997) identified aspects of the management environment that were facilitators or barriers to successful performance at the organizational (cultural) level as well as within the mindset of management. Facilitators within the organizational culture included a change in the business environment that requires a virtual team design, a dedication to high customer satisfaction, an emphasis on professional development, a commitment to ongoing performance improvement, and a willingness to take action and solve problems. Facilitators within management attitudes included a willingness to adopt technology to facilitate communication media, support of the implementation of virtual teams to accomplish work, and a willingness to allocate adequate resources for professional development activities.

Organizational barriers included the need to "see" projects being managed, a culture based on daily face-to-face interactions among collocated individuals, not valuing diversity, and a lack of support for collaboration and information sharing. Management attitudes that served as barriers to successful performance of virtual teams included the need to see individuals to ensure they were accomplishing project tasks, the misalignment of organizational goals, not valuing diversity, not setting clear team goals or outcomes, not providing sponsorship or support to teams, and the need for control in the decision-making process.

Horvath and Duarte (1997) made recommendations at the individual, team, and organizational levels based on the analysis of the case studies. Individual-level recommendations involved using checklists and guides and forms, training, and mentoring as interventions. Team-level interventions were: 1) using technology to collaborate, communicate, assess status, and learn; and 2) using facilitators at early stages in the project lifecycle to handle the intricacies of performance and communication. An organizational-level recommendation was a program that demonstrated commitment to



virtual teams. Integrated program components include ongoing communication; the alignment of management-level goals; a project tracking system to assist in trust building; and organizational standards, processes, and procedures to boost the success rate of virtual teams.

In a related study, Schlough (1997) identified the knowledge, skills, and attitudes (KSAs) that are needed by employees who work in a computer-supported cooperative work (CSCW) environment. He hypothesized that there is a set of KSAs that can be defined and that will enable individuals to be effective in a CSCW environment. From an original list of 50 KSAs, 18 were identified as meeting the decision rule during the test of the hypothesis. The top three KSAs identified in Schlough's study were: (1) work as a team, (2) understand team principles, and (3) value team activities. Common themes that emerged among the KSAs were collaborative technologies, team building, change management, general computer concepts, and specific computer skills. Each factor or common theme contained a varying number of specific KSAs.

Schlough then developed a set of competencies for CSCW that rated at least average in importance. Identified competencies could be grouped under the broad headings of collaborative technologies, team building, change management, and general computing technology.

### Organizational, Process, and Individual Performance Levels

Organizations in today's fast-paced global market use virtual teams to respond to opportunities and to provide solutions to business problems. Virtual team members are selected for the same reasons as for membership on a traditional team—their capability to contribute toward a solution. Virtual teams save organizations money and time, and provide ready access to expertise. As organizations rely more heavily on virtual teams to perform work, they must strive to develop a culture that supports virtual teams. An examination of the organizational, process, and individual performance levels will assist organizations in identifying areas of improvement to support virtual teams.

At the organizational level, it is important to modify the pervasive attitude that virtual teams are difficult to manage. Gould (1997) observed from his research that virtual teams are effective and, perhaps more impor-

tantly, that people can be trusted to perform in a virtual environment without being watched by a manager. The organization should recognize the critical success factors of virtual teams in its core competency model.

At the process level, technology support mechanisms to handle the communications needs of virtual teams should be established. Virtual teams require technology that allows them to share written information (e.g., text and graphics), as well as oral communication. Processes that help virtual teams learn about the availability of telecommunications tools, how to access the necessary tools, and how to use them effectively should be in place.

At the individual performer level, a core competency model that leads to virtual team success should be identified. Critical success factors that make up the core competency model have been identified in the current literature. In particular, leadership is a major critical success factor for virtual teams (Kimball, 1997). Leadership presence is required for the successful functioning of a team (Boss, 2000) and, if a leader is not designated, one will emerge (Taggar & Hackett, 1999; Kolb, 1996). Also, leadership challenges become magnified when the team being led is a virtual one, but these challenges can be overcome (Gould, 1997; Horvath & Duarte, 1997; Kayworth & Leidner, 2000; Schlough, 1997).

### CONCLUSION

While much of the focus regarding virtual teams is on the technology that allows such teams to exist, a proficient team leader is needed to manage the relationships of team members and external partners, guide the team to achieve its goals, and communicate effectively (Chase, 1999). The ability of a virtual team leader to foresee delays in a project or to resolve potential conflict is often hampered by the lack of face-to-face contact with team members (Gould, 1997). Visual cues, such as body language and facial expression, are missing from human interactions that take place over telephone lines and in cyberspace. To overcome this challenge, the virtual team leader must be particularly skilled in communication and equally adept at applying that skill using the appropriate communication technology (Geber, 1995; Kimball, 1997). The environment in which the virtual team interacts is also a factor in its

success. If the virtual team is culturally diverse, the virtual team leader must be prepared to address possible additional challenges of time, language, gender, political, economic, and technology differences (Kayworth & Leidner, 2000).

The review of the current literature presented in this article indicates that leadership and communication media are critical to the successful performance of virtual teams, and that further research should be conducted in these areas. The literature has identified a number of knowledge, skills, abilities, aptitudes, and traits of virtual team members and leaders that can be developed into a competency model for virtual teams:

- **Analytic Thinking:** Gather, synthesize, and generalize data to solve problems.
- **Change Management:** Understand the lifecycle of a product or an organization. Guide others through a continuous improvement process. Anticipate and be ready for change.
- **Collaboration:** Build mutual trust and share responsibility for outcomes.
- **Collaborative Technology:** Use project management and scheduling software, as well as video- and Web-conferencing software, to share information with a group.
- **Communication:** Convey information in a clear and concise manner orally and in writing. Listen to and understand what others are communicating.
- **Computer Technology:** Use word processing and spreadsheet software packages, including messaging and presentation software. Understand the fundamentals of computer hardware technology, as well as the principles of computer networking. Search databases and generate reports.
- **Facilitation:** Lead a team through a group process while demonstrating and evaluating appropriate group behaviors.
- **Interpersonal:** Influence and partner with others.
- **Organizational:** Chunk large tasks into subtasks. Coordinate workflow, and set timelines and schedules. Motivate others to carry out the work. Manage multiple tasks at one time.
- **Project Management:** Determine the appropriate use of resources to accomplish work and to implement a work plan. Provide leadership, coaching, and feedback to project team members.
- **Relationship Building:** Manage conflicts through negotiation. Gain the support of management.
- **Strategic Thinking:** Develop goals, strategies, objectives, and tasks that lead to actions that achieve the mission of the team and the organization.
- **Team Building:** Guide a diverse group of individuals towards successful work outcomes through facilitation and leadership. Value individual differences in work styles and personality, and appreciate the contributions of others on the team.
- **Tolerance for Ambiguity:** Display confidence and comfort in unclear situations.

While additional research may lead to a revised competency model, the groundwork has been laid and the above model can be applied successfully for effective virtual teamwork.

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## KEY TERMS

**Core Competency:** Organizational capabilities or strengths—what an organization does best.

**Leadership:** The ability to organize and motivate others, overcome problems, and to initiate and accept of responsibility.

**Leadership Style:** The manner in which leaders carry out their responsibilities and the way they interact with others defines their style of leadership.

**Online Community:** A meeting place on the Internet for people who share common interests and needs. Online communities can be open to all or be by membership only, and may or may not be moderated.

**Performance-Based Instruction:** Learning activities centered more on the acquisition of skills than on the acquisition of knowledge.

**Teamwork:** Working with others interdependently to effectively achieve a goal. Teamwork involves both task and social/interpersonal communication aspects among team members.

**Virtual Teams:** Teams of people who primarily interact electronically and who may meet face to face occasionally.

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