**Assessing and Teaching**

 **Team Leadership**

 **Capabilities: Field Testing**

 **a Behavioral Roles**

**Approach with Business**

 **Undergraduate Students**

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**Abstract**

 Using the two-factor (task and social) model of team leadership, a course-based educational program designed to assess and improve student skills was empirically evaluated with 247 undergraduates at an urban regional campus of a Midwestern state university. Major findings revealed: (1) a statistically significant increase in mean overall team leadership scores of 20%, (2) statistically significant improvements in eight of ten specific task leadership roles and three of six social leadership roles, and (3) no substantive or practically significant differences in student improvement as a function of sex, age, race/ethnicity, or major.

**INTRODUCTION**

 The widespread utilization of workplace teams by U.S. businesses has been confirmed by several researchers (Cannon-Bowers & Bowers, 2011; Devine, Clayton, Philips, Dunford, & Melner, 1999; DiazGranados, Klein, Lyons, Salas, Bedwell, & Weaver, 2008; Martin & Bal, 2006; Sundstrom, & Halfhill, 2005; Robbins & Judge, 2014; Thompson, 2011). For example, DiazGranados et al. (2008), in a survey of human resource/training professionals in 185 organizations, found that 94% reported using work teams. Questionnaire results in a study of upper-level managers by the Center for Creative Leadership (Martin & Bal, 2006) indicated that 91% agreed with the statement: “teams are central to organizational success”. Summarizing this literature, Robbins & Judge (2014) concluded that it was rare to find a company that did not employ teams in some manner. Given this pervasive use of workplace teams, organizations have called upon higher education to place more curricular emphasis on teams and teamwork (Kalliath & Laiken, 2006). Results from a 2009 national survey of U.S. businesses conducted for the Association of American Colleges and Universities found that 71% wanted schools to increase their efforts to develop student teamwork and collaboration skills (Hart Research Associates, 2009).

 Not surprisingly, U.S. collegiate schools of business have attempted to respond to these employer needs. Typically this has been accomplished by increasing requirements for teamwork assignments throughout the curriculum (Chen, Donahue, & Klimoski, 2004; Halfhill & Nielsen, 2007; Holtham, Melville, & Sodhi, 2006; Hughes & Jones, 2011; Kalliath & Laiken, 2006; Michaelson, Knight, & Fink, 2002; Page & Donelan, 2003; Sashittal, Jassawalla, & Markulis, 2011). Although the emphasis on teams and teamwork in collegiate business schools has clearly increased in recent years, critics have identified several serious problems with how student teamwork capabilities are assessed and developed. These include: the contention that most business faculty who use teams simply form student groups and provide little or no skill assessment, educational material on teamwork, or guidance on team processes (Bacon, Stewart, & Silver, 1999; Bolton, 1999; Ettington & Camp, 2002; Hansen, 2006; Holmer, 2001; O’Conner & Yballe, 2007; Vik, 2001); a predominant institutional focus on enhancing student knowledge of teamwork, as opposed to skill development (Chen, Donahue, and Klimoski, 2004; Hess, 2007); an over-reliance on paper and pencil tests of teamwork knowledge to assess student learning (Hughes & Jones, 2011); the frequent use of flawed grading systems to evaluate student team projects, such as giving everyone the same grade regardless of contribution level (Sheppard, 1995); and a common failure to assess teamwork capabilities through direct observation of student performance, thus precluding the provision of behavioral feedback/coaching and continuing practice for skill development (Baker & Salas, 1992; Hughes & Jones, 2011).

 To this list of previously identified problems with how business schools cover teamwork, we would add the failure to rigorously and empirically address what many scholars (Cohen & Bailey, 1997; Hackman & Walton, 1986; Kozlowski, Gully, Salas, & Cannon-Bowers, 1996) have identified as critical to team success and some researchers (Sinclair, 1992; Zaccaro, Rittman, & Marks, 2001) have contended is the primary determinant of team performance—team leadership. The decidedly limited literature on teaching team leadership consists primarily of case studies describing innovative classroom approaches or exercises. Notable examples include: Costigan & Donahue, 2009; Ferrante, Green, & Forster, 2006; Hess, 2007; Holmer, 2001; O’Connor & Yballe, 2007.

 Through our librarian-assisted literature search, we failed to find any previous empirical research evaluating the effectiveness of collegiate theory-driven instructional efforts to rigorously assess and develop student team leadership capabilities. This failure is consistent with two recent, scathing critiques of research on teaching leadership in general (DeRue, Sitkin, & Podolny, 2011; Snook, Khurana & Nohria, 2012). As guest editors for a special volume of *Academy of Management Learning & Education* entitled *Teaching Leadership—Issues and Insights,* DeRue, Sitkin, and Podolny (2011, P. 369) concluded: “There is a remarkable scarcity of rigorous theoretical and empirical research on the design and delivery of leadership teaching and education…and business schools are generally ‘flying blind’ with respect to the efficacy of their leadership development courses, programs, and activities.” Similarly, in the introduction to their edited book, *The Handbook for Teaching Leadership (* 2012, xii), Snook, Nohria, and Khurana stated: “It is far too easy to enumerate flaws in the current state of leadership education: course content rarely conforms to the norms of the scientific method (Bennis & O’Toole, 2005); teachers employ casual and often self-serving empirical evidence (Ghoshal, 2005); approaches are rarely grounded in well-established theoretical traditions (Doh, 2003); there are as yet few credible communities of practice dedicated to developing and sharing best practices; and there is scant empirical evidence that any of these approaches really work (Pfeffer & Fong, 2002; Mintzberg, 2004). In short, the current state of leadership education lacks the intellectual rigor and institutional structure required to advance the field beyond its present (and precariously) nascent stage.”

**PURPOSE**

 In light of the research problems discussed above, our purpose was to conduct a theoretically and methodologically rigorous empirical evaluation of a course-based educational program to improve business student team leadership capabilities. We will identify the theoretical model chosen for use, followed by a description of the pedagogic model and assessment framework utilized.

**Team Leadership Model**

 The team leadership model used in this study derives form a long history of research, initiated by Benne and Sheats (1948) and Bales (1950; a, b). In the first paper on this topic, Benne and Sheats described the functional roles of group members as consisting of two major types: task management and interpersonal. Several specific roles were described in the task management area, including: (1) initiating — suggesting new goals or ideas, (2) information seeking— clarifying key issues, (3) opinion seeking— clarifying attitudes, values, and feelings, (4) coordinating —pulling together ideas and suggestions, (5) orienting—keeping the team headed towards its stated goals, and (6) recording — documenting team discussion and outcomes. Among the important roles in the interpersonal area were: (1) encouraging—reinforcing teammates, (2) harmonizing—mediating conflicts between teammates, (3) compromising—shifting one’s position to reduce conflict, (4) gate-keeping — encouraging participation from all teammates, and (5) standard setting — defining criteria to measure team success.

 Essentially concurrently, but from a sociological perspective, Bales (1950; a, b) also defined group interaction in terms of two fundamental categories, which he termed task and social-emotional. According to Bales, task behaviors were those directly related to accomplishing the work necessary to achieve a group’s goal (*i.e*., giving suggestions and directions, providing evaluation and analysis, and offering information and clarification). Social-emotional behaviors consisted of those that focused on the interpersonal relationships among group members; including giving help and rewards, releasing tension by joking and laughing, and showing acceptance and understanding. It is important to note that Bales recognized the potential for negative behaviors in groups. Among those that he identified were: (1) withholding help, (2) withdrawing from the conversation, (3) showing antagonism, and (4) deflating another group member’s status.

 Based upon this groundbreaking research by Benne and Sheats and Bales, university research groups at three institutions independently formulated two-factor models to explain team leader behaviors. These included: a group at Ohio State (Stogdill & Coons, 1957) with initiating structure and consideration as the two explanatory factors, one at the University of Michigan (Likert, 1961) with job-centered and employee-centered as the two factors, and finally a group at the University of Texas (Blake & Mouton, 1964), who identified concern for production and concern for people as the two primary factors. Interest in these three two-factor models served to stimulate and guide subsequent research on leadership in general and team leadership in particular (Kaiser, Hogan, & Craig, 2008). The dominance of the two-factor model was first confirmed in a review by Fleishman, Mumford, Zaccaro, Levin, Korotkin, and Hein (1991). They identified 65 different classifications within the literature on leader behavior, all of which reflected the same two fundamental factors of task-focused and people-focused. Eleven years later, Yukl, Gordon, and Tabor (2002) reviewed 50 years of leadership research and concluded that the two category model had been extensively evaluated and shown to be related to leader effectiveness.

 In a subsequent meta-analysis of the team leadership literature in 2006, Burke, Stagl, Klein, Goodwin, Salas, and Halpin found that: (1) the two-factor model had been widely and effectively used as an approach to understanding leadership in teams, (2) task-focused leader behaviors were moderately correlated with both perceived team success and team performance, and (3) people-focused leader behaviors were consistently related to perceptions of team success, team performance, and team learning. Clearly, the empirical evidence supports the utility of the two-factor model in studying leadership in teams. Hill (2013) formulated an expanded and more comprehensive theoretical model of team leadership, which maintains a central focus on what she terms task and relational leader actions, while also addressing leader decision-making and external actions. Her conceptualization of internal leader actions as consisting of task and relational behaviors corresponds directly to the two-factor model discussed above.

 Given the consistent and continuing research support for the two-factor theory, we used it as a model, with both content and criterion-related validity, for conceptualizing, measuring, and improving undergraduate student team leadership performance. The operational definitions we developed for the two factors, along with our measurement protocols and skill enhancement strategies are presented in the method section.

**Pedagogic Model and Assessment Framework**

 Anderson (1983, 1995) formulated the Adaptive Character of Thought (ACT) theory concerning the learning of complex behavioral skills, like team leadership. According to Anderson, this type of learning optimally progresses through three distinct stages. First, one acquires factual or declarative knowledge about the skill to be learned. Second, one integrates this declarative knowledge with proceduralized knowledge, concerning how to actually perform the target skill. Practice exhibiting the desired behavior is essential to success in this process. Finally, in the third stage, extensive practice of the target skill enables the behavior to become more automatic and easy to exhibit. Anderson’s ACT theory guided our efforts to teach team leadership skills to students. As described fully in the method section, we systematically provided students with opportunities to: (1) develop declarative knowledge concerning team leadership skills, (2) acquire proceduralized knowledge of how to exhibit those skills, and (3) practice the newly learned skills.

 Given the behavioral focus of our teaching efforts, for student appraisal purposes, we choose to use Wiggins’ (1998) general evaluation methodology known as “educative assessment”. This approach involves the direct observation and evaluation of student performance (ideally by the instructor), coupled with frequent behavioral feedback and additional practice opportunities. The “leaderless group discussion” (LGD) exercise, a common component in widely used managerial assessment centers for hiring, promotion, and development applications (Arthur & Day, 2011), can be readily adapted and appropriately utilized (Cannon-Bowers & Bowers, 2011) as an “educative assessment” to evaluate team leadership skills. This technique entails presenting a problem scenario to a small group of individuals (4-7) seated around a table and instructing them to formulate a solution, within a specified period of time. No one in the group is designated as the leader, hence the “leaderless” nature of the exercise. Typically, the group interaction is videotaped and then reviewed to evaluate the teamwork, team leadership, communication, and/or interactional skills of individual participants. When used for developmental purposes, as opposed to hiring/promotion, the LGD is followed by detailed performance feedback and improvement recommendations for each person.

 In addition to a long history of successful inclusion in managerial assessment centers (Arthur & Day, 2011; Thornton & Rupp, 2003, 2006), business schools have adapted the LGD and assessment center methodology as a promising approach to measuring student learning outcomes (Bartels, Bommen, & Rubin, 2000; Riggio, Mayes & Schleicher, 2003; Waldman & Korbar, 2004). Three recent studies have employed the LGD as a framework for assessing and teaching managerial skills to college students (Chen, Donahue, & Klimoski, 2004; Costigan & Donahue, 2009; Hobson, Strupeck, Griffin, Szostek, Selladurai, & Rominger, 2013). Chen *et al.* (2004) used the LGD to empirically assess and improve (through performance feedback and coaching) the teamwork skills (in five behavioral domains) of undergraduate psychology students. In the Costigan and Donahue (2009) case study, the LGD was utilized to evaluate and teach MBA students the Great Eight competencies (Bartram, 2005), which included three dimensions that are directly related to team functioning: (1) leading and deciding, (2) supporting and cooperating, and (3) interacting and presenting. The authors also provided a detailed description about implementing/utilizing the LGD methodology (to include performance feedback and coaching) and helpful advice to facilitate success. Finally, Hobson et al. (2013) reported on the results of a multi-year study to empirically examine the utility of the LGD as a framework for assessing and teaching teamwork skills with undergraduate business students, relying heavily on performance feedback and coaching.

 Given the documented utility and versatility of the LGD as a behavioral skills assessment framework, we used it to measure student team leadership skills.The procedures we followed in this process are described in the Method section.

**METHOD**

**Sample**

 Our sample consisted of 247 undergraduate students enrolled during the period of 2009-2011 in a senior level class on teamwork in an AACSB (Association to Advance Collegiate Schools of Business) accredited business school at an urban regional campus of a large midwestern state university. The total campus enrollment is approximately 6,000, while the business school has 500 students and two majors—management and accounting.

**Teamwork Course and Formation of Student Teams**

 The teamwork course we utilized in this study was required for all business majors and highly recommended for business minors. There were two course pre-requisites—introductory psychology and a junior-level business class on organizational behavior. The course syllabus indicated that videotaping of student teams would be scheduled near the beginning and end of each semester. Given the substantial time requirements, discussed below, for the team videotaping and subsequent individual student coaching sessions (a total of 10 out of 32 class periods over a 16-week semester), we limited enrollment in each class to 30. This allowed us to have six teams of five students per team.

 We formed teams during the second class meeting of the semester by asking students to “count-off by 6’s”, starting first with the females, followed by the males (to produce sexual heterogeneity on each team). We reviewed these “preliminary” teams for the presence of close friends or former teammates from previous classes. If we discovered close friends or teammates, we made appropriate substitutions with individuals from other teams. Our goal was to create a set of six new teams, in which members had minimal prior interaction. With only isolated, minor exceptions, we consistently met this goal.

 After team composition was finalized, we directed students to exchange contact information with their teammates. We then scheduled teams for their first leaderless group discussion (LGD I) videotaping during one of the two following class periods. In closing, we simply instructed students to attend their scheduled videotaping and plan to work together on a team project.

**LGD Exercise**

We conducted the LGD exercise in a specially wired classroom with video and audio recording equipment. Upon arrival, we directed students to take a seat in a semi-circle, provided instructions about the exercise, and emphasized the need for written output from the team at the end of the session. For LGD I at the beginning of the semester, we asked student teams to formulate a rank-ordered list of the top seven problems they had previously encountered while working in teams, along with at least two possible solutions for each listed problem. At the end of the semester in LGD II, we presented student teams with the following exercise—provide specific hiring and training recommendations to a company interested in implementing self-managed work teams. Once again, written output was required.

We adapted an LGD format used by Bartels et al. (2000) and structured each team session for exactly 20 minutes. At the beginning of the videotaping, we asked students to introduce themselves by providing their first and last names. Upon completion of each 20 minute LGD, we collected the team’s written output.

The instructional media department on our campus videotaped each LGD session and produced a DVD containing all six of the 20-minute sessions for a given class. They provided a split-screen image, with a close up of the individual speaking in the top half and a panoramic view of the whole team in the bottom half. We provided a copy of the class DVD to each enrolled student.

**Assessment of Team Leadership**

 Our operational definition of team leadership was based upon the considerable literature on the two-factor theory discussed in the introduction. We relied heavily on the pioneering research of Benne and Sheats (1948) and Bales (1950; a, b) in first describing task and people-oriented functional roles within teams, which would then serve as the foundation for the development of subsequent leadership (Stogdill & Coons, 1957; Likert, 1961; Blake & Mouton, 1964) and team leadership (Hill, 2013) theories. Synthesizing the various behavioral content-based team leadership role titles and definitions that have been proposed, we formulated a set of 10 specific task-related team leadership roles, six specific social-related team leadership roles, and following the recommendations of Bales (1950; a, b) and Costigan and Donahue (2009), five specific negative or dysfunctional team leadership roles. Figure 1 provides the names and definitions for individual roles within each of these categories. This conceptualization of team leadership was first proposed by Hobson, Strupeck, and Szostek (2010), as a framework for training and development within organizations.

**FIGURE 1**

**Team Leadership Roles**

|  |  |
| --- | --- |
| Task Roles  |  |
| 1. | Initiator: Proposes tasks, goals, or procedures; defines team problems; begins discussion; restarts discussion during quiet times. |
| 2. | Information Seeker: Asks for factual clarification; requests facts pertinent to the discussion; asks questions of teammates. |
| 3. | Values Seeker: Asks about the values underlying teammate statements or positions; questions values involved in alternative points of view. |
| 4. | Informer: Offers facts related to team’s task; gives expression of feelings ; gives opinions; answers teammate questions. |
| 5. | Clarifier: Interprets ideas or suggestions; defines terms; explains complex issues; clears up confusion. |
| 6. | Summarizer: Takes notes on group discussion; pulls together related ideas; restates suggestions; offers summary decisions or conclusions for the team to consider; reviews team progress. |
| 7. | Reality Tester: Conducts critical analyses of idea; tests ideas against data or experience to see if the ideas would work; shares “real world” examples to test team ideas. |
| 8. | Orienter: Keeps team on track; draws attention to departures from agreed upon directions or goals; raises questions about the direction pursued in team discussions; refocuses team when needed; keeps track of time. |
| 9. | Piggy-Backer: Builds on the ides of others; offers new, creative suggestions, based upon teammate input. |
| 10. | Follower: Allows teammates to share in actively performing leadership roles; goes along with the movement of the team; accepts the ides of others. |
| Social Roles |  |
| 1. | Harmonizer: Focuses criticism on ideas, not individuals; attempts to reconcile disagreements; reduces tension; helps smooth over minor differences; gets people to explore differences; appropriately uses humor to help keep team relaxed. |
| 2. | Gatekeeper: Helps to keep communication channels open; facilitates the participation of others; suggests procedures that permit sharing remarks; gently calls upon quiet teammates to solicit their input. |
| 3. | Consensus Taker: Asks to see whether the team is nearing a decision; “sends up trial balloons” to test possible solutions; asks if everyone agrees with a proposed decision. |
| 4. | Encourager: Is friendly, warm and responsive to others; indicates by facial expressions or remarks the acceptance of others’ contributions; listens attentively; gives positive feedback to teammates; calls teammates by first name. |
| 5. | Compromiser: Proposes solutions that demonstrate flexibility and willingness to “give in” if necessary when his or her own ideas are involved in conflicts; modifies one’s position in the interest of team cohesion and/or performance. |
| 6. | Standard Setter: Suggests standards for the team interaction and performance; applies standards in evaluating the quality of team processes and output. |
| Negative Roles |  |
| 1. | Blocker: Blindly and consistently disagrees with and opposes action; stubbornly resists team decisions and thwarts action. |
| 2. | Dominator: Aggressively attempts to force ideas on the team; interrupts others; attempts to manipulate and control team interaction; refuses to compromise; fails to allow others to talk. |
| 3. | Avoider: Withholds involvement from team interaction; fails to contribute to team efforts; refuses to confront important issues. |
| 4. | Clown: Engages in irrelevant, distracting behaviors; seeks team members’ attention; tries to show-off; inappropriately attempts to create humorous situations; starts side conversations. |
| 5. | Insulter: Attacks other team members in a destructive and personalized manner; sarcastic; pessimistic; negative. |

 To facilitate the collection of rating information concerning these team leadership roles, we developed a form for this purpose, displayed in Figure 2. It lists the ten Task Leadership roles, six Social Leadership roles, and five Negative roles, and directs raters to use a 0-4 Evaluation Scale of occurrence frequency, similar to that first proposed by Bass (1954) for use with leaderless group discussion exercises. An overall score can be calculated by adding together the ratings for task leadership and social leadership, and then subtracting the ratings for the negative roles. Using the Team Leadership Roles Evaluation Form, an individual’s overall score can vary from 64 (ratings of “4” for all of the 16 positive roles, including task and social and “0” for the five negative roles) to -20 (ratings of “0” for the 16 positive roles and “4” for the five negative roles), for a total range of 84.

**FIGURE 2**

**TEAM LEADERSHIP ROLES EVALUATION FORM**

Directions: Use the following 0-4 (Never-Always) scale to evaluate the target person on the specific behaviors listed: 0=Never, 1=Rarely, 2=Occasionally, 3=Frequently, and 4=Always.

|  |  |
| --- | --- |
| **Positive Roles** | **Negative Roles** |
| **Task Roles****0-4 Rating**\_\_\_1.\_\_\_2.\_\_\_3.\_\_\_4.\_\_\_5.\_\_\_6. \_\_\_7.\_\_\_8.\_\_\_9.\_\_\_10.**Social Roles**\_\_\_1.\_\_\_2.\_\_\_3.\_\_\_4.\_\_\_5.\_\_\_6.  | InitiatorInformation SeekerValues SeekerInformerClarifierSummarizerReality TesterOrienterPiggy-BackerFollowerHarmonizerGatekeeperConsensus TakerEncouragerCompromiserStandard Setter | **0-4 Rating**\_\_\_1.\_\_\_2.\_\_\_3.\_\_\_4.\_\_\_5. | Blocker Dominator Avoider Clown Insulter  |

 Our instructor, an industrial/organizational psychologist with extensive research, training, and consulting experience with team leadership, carefully reviewed videotapes of student team interaction in both LGD I and LGD II. He then completed a Team Leadership Roles Evaluation form for each individual student.

**LGD-Related Education and Assignments**

 In the first class meeting after completion of the LGD I videotaping, we introduced students to the Team Leadership Roles Evaluation Form (Figure 1 above). This involved discussing the 0-4 evaluation scale and each of the 10 task leadership roles, six social leadership roles, and five negative or dysfunctional roles. We used specific examples, along with team interaction scenarios, to illustrate how to complete the evaluation form and provide practice opportunities. We also introduced and discussed a set of specific behavioral coaching guidelines for giving positive performance feedback and corrective feedback/suggestions for improvement.

 We required students to complete two written projects based on each LGD—a self–assessment and a peer assessment. Requirements for the self-assessment involved reviewing the videotaped team interaction and completing the Team Leadership Roles Evaluation Form. Based on these ratings, we asked students to: (1) identify their 3-5 most prominent strengths and provide written documentation to support their choices, in the form of frequency counts and specific examples from the videotape, (2) identify their 3-5 prominent areas for improvement, along with supporting documentation, and (3) develop a detailed written action plan to address each improvement area. The second LGD-related project required students to complete the Team Leadership Roles Evaluation Form for an assigned peer from another team. We were very careful to ensure that assigned peers were not friends or teammates in previous classes. The peer-assessment involved the same three additional requirements as did the self-assessment—3-5 strengths plus documentation, 3-5 areas for improvement plus documentation, and an action plan to make recommended improvements.

 We scheduled coaching/feedback sessions starting approximately one week after students received copies of the LGD videotape. Each session included the instructor, a person being coached, and the assigned peer coach, with everyone expected to have completed the written leadership assessments described above. We scheduled sessions for 15 minutes, with more time available if needed, and followed the same 3-step format in each one. First, the individual being coached shared his/her 3-5 most prominent strengths and supporting documentation. Second, the peer coach shared his/her 3-5 identified prominent strengths and supporting evidence for the person being coached. Finally, the instructor shared his observed 3-5 strengths (plus documentation), noted areas of agreement/disagreement among the three raters, and attempted to reconcile major differences in scoring. The same 3-step process was used to discuss the target person’s 3-5 major areas for improvement. We held student coaching sessions after both LGD I and LGD II. For those sessions after LGD II, we also included a discussion of how well an individual had progressed in making planned improvements, based upon performance in LGD I.

**Teamwork Course Topics and Post-LGD I Assignments**

Upon completing LGD I and the first set of feedback/coaching sessions, we addressed the following topics in class and in a custom-developed course handout packet, with experiential exercises to demonstrate and reinforce key concepts, conducted both in the classroom and in field locations: (1) The Importance of Teams, Teamwork, and Team Leadership in Business, (2) The Process of Forming and Building Teams, (3) The Major Determinants of Team Performance, (4) The Importance of Team Norms and Sanctions, (5) The Important Role of Leaders in Teams, (6) Shared Team Leadership, (7) Team Decision Making, (8) Developing Team Work Plans, (9) Assessing Team Performance and Diagnosing/Addressing Problems, and (10) Giving and Receiving Teammate Feedback. In addition to the self and coaching assessment after each LGD, we required students to complete the following assignments: (1) Two Team Building Activities, (2) A Norms and Sanctions Exercise, (3) A Team Work Plan Development Exercise, (4) A Team Service-Learning Project with a Regional Nonprofit, (5) A Team Presentation on a Company using Self-Managed Work Teams, (6) A Team Competition Exercise with an Unexpected Obstacle, (7) A Team Review of a Film Exhibiting High Quality Teamwork, (8) A Team Interaction Critique (which included an assessment of “flexible leadership” with the team), Action Plan, and Presentation, and (9) A Teammate Feedback Exercise, which included an assessment of teammate leadership strengths and areas for improvement for each individual teammate, based upon interaction throughout the course.

**Data Collection and Analysis**

 We collected the following data in this study: (1) Team Leadership Roles Evaluation Forms completed by the instructor for each student, based upon performance in LGD I, (2) instructor-completed Team Leadership Roles Evaluation Forms for individual students after LGD II, and (3) demographic information concerning sex, age, race/ethnicity, and major for each student. At approximately halfway through the data collection period, we decided to include a self-perception student survey at the end of the course. It included six items related to team leadership, using a 5-point Likert scale from “strongly agree” to “strongly disagree.” Specifically, students were asked to respond to each item as a result of participating in the two LGD video-tapings and coaching sessions. For example, the first item was “I have improved my team leadership skills.” A complete list of the six items is provided in Table 4 in the Results section. Student survey responses were collected anonymously at the end of each course, along with required teacher evaluations.

 We conducted four major data analyses. First, we calculated basic descriptive statistics for all of the variables in the dataset, including overall student scores on the Team Leadership Roles Evaluation Form (task leadership scores plus social leadership scores, minus scores for the five negative items) from LGD I and LGD II. Second, we conducted three repeated measures ANOVA’s, comparing student performance in LGD I and LGD II on overall team leadership scores, task leadership scores, and social leadership scores. Follow-up within-subjects t-tests were then calculated for the 10 task leadership items, and six social leadership items, and five negative items.

 Our third major analysis consisted of three exploratory factorial (2 X 3 X 4 X 2, sex X age X race/ethnicity X major) ANOCOVA’s to assess potential demographic differences in student performance during LGD II, in overall team leadership, task leadership, and social leadership, with corresponding scores for LGD I functioning as covariates. Finally, our fourth analysis simply involved calculating means for the six end-of-course student self-perception items concerning team leadership.

**RESULTS**

**Sample Characteristics**

A total of 247 undergraduate students enrolled in an undergraduate business course on teamwork participated in this study. The demographic composition of the sample, in terms of sex, race/ethnicity, age, and major consisted of the following (frequencies and relative percentages are provided): (1) Sex—Female=142 (57.5%), Male=105 (42.5%), (2) Age--19-22=91 (38.7%), 23-27=81 (32.8%), 28-57=67 (28.5%), (3) Race/Ethnicity--African-American=41 (16.6%), Caucasian=159 (64.4%), Hispanic-American=32 (13.0%), Other=15 (6.0%), and (4) Major-- Management=172 (69.7%), Accounting=63 (25.5%), Double=7 (2.8%), Other= 5 (2.0%).

**Repeated Measures ANOVA’s**

*Overall Team Leadership* Results for the repeated measures ANOVA on mean overall scores (sum of the 10 task leadership and six social leadership items, minus the sum of the five negative items) for LGD I and LGD II revealed that the two means, 25.83 and 30.50 respectively, were significantly different. The computed F-value was 98.25 (degrees of freedom=1,236), with a probability of <.001 and calculated effect size (eta squared) of .29. The difference between the two mean values of 5.12 represented a 20% increase in overall team leadership scores from LGD I to LGD II. Given the statistical significance of the results for student overall team leadership scores, additional repeated measures ANOVA’s were conducted for task leadership and social leadership means separately, to evaluate improvement in each category. In view of the nonexistent or minimal frequency of occurrence for the negative roles, depicted in Table 3 below, assumptions necessary for a repeated measures ANOVA were not met and thus no further analysis was performed.

*Team Task Leadership* Repeated measures ANOVA findings for mean scores on the 10 task leadership items from LGD I (20.37) and LGD II (23.82) produced an F-value of 78.33, degress of freedom of 1 and 236, probability of <.001, and calculated eta square equal to .25. The increase in mean scores (3.45) confirmed a 17% improvement in team skills from LGD I to LGD II. Table 1 summarizes follow-up within-subjects t-tests for the 10 individual task leadership items. Means are displayed for LGD I and LGD II, along with computed t-values, degrees of freedom, significance levels, and calculated effect sizes (point biserial correlations squared), if appropriate. Results in Table 1 show that students made statically significant gains in eight of the 10 task leadership items (1, 2, 4, 5, 6, 7, 9, and 10), with no changes observed in two of the items (3 and 8). Associated effect sizes ranged from a low of .04 (item 2) to a high of .28 (item 8).

**TABLE 1**

Mean Differences on 10 Task Leadership Roles for Time 1 and Time 2 (n=235)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **10 Task Roles** | **Time 1****Mean** | **Time 2****Mean** | **t****Value** | **df** | **Sig.** | **r²pbi** |
| 1.2.3.4.5.6.7.8.9.10. | InitiatorInformation SeekerValues SeekerInformerClarifierSummarizerReality TesterOrienterPiggy-BackerFollower | 2.192.82.063.082.891.411.062.091.803.01 | 2.643.03.033.303.322.291.852.042.353.19 | 6.613.01-1.033.535.699.617.36-.516.365.20 | 234234234234234234234234234234 | <.001.003.306.001<.001<.001<.001.608<.001<.001 | .16.04—.05.12.28.19—.15.10 |

Percentage increases in the means for the eight statistically significant task leadership items were: #1 – 20%, #2 – 7%, #4 – 7%, #5 – 15%, #6 – 62%, #7 – 75%, #9 – 31%, and #10 – 6%. These increases ranged from a low of 6% to a high of 75%, with a mean value of 28%. The mean for all ten of the task leadership roles taken together (with no detected improvement for items 3 and 8) was 22.35%

 *Team Social Leadership* The repeated measures ANOVA comparing mean performance on the six social leadership items in LGD I (5.07) with that in LGD II (6.70) yielded an F-value of 62.49 with 1 and 236 degrees of freedom, a probability level of <.001, and computed eta squared of .16. The 1.63 point increase in mean scores translated into a 32% improvement in team social leadership performance during the course. Information on follow-up within-subjects t-tests for the six individual social leadership items is provided in Table 2, including means for LGD I and LGD II, t-values, degrees of freedom, and appropriate effect sizes. Results indicate the students demonstrated statistically significant increases in three of the items (1, 2, and 4), with no changes in the other three (3, 5, and 6). Associated effect sizes ranged from a low of .06 (item 1) to a high of .20 (item 2).

**TABLE 2**

Mean Differences on 6 Social Leadership Roles for Time 1 and Time 2 (n=235)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **6 Social Roles** | **Time 1****Mean** | **Time 2****Mean** | **t****Value** | **df** | **Sig.** | **r²pbi** |
| 1.2.3.4.5.6. | HarmonizerGatekeeperConsensus TakerEncouragerCompromiserStandard Setter | 1.11.45.412.27.82.03 | 1.411.18.392.74.95.09 | 3.837.63-.316.171.671.61 | 234234234234234234 | <.001<.001.755<.001.097.108 | .06.20—.14—— |

Percentage increases in the means for the three statistically significant social leadership items were: #1 – 27%, #2 – 162%, and #4 – 21%. These increases ranged from a low of 21% to a high of 162%, with a mean equal to 70%. For all six of the social leadership roles taken together (with no detected improvement for items 3, 5, and 6) the mean was 35%.

 *Negative Roles* As mentioned earlier, the results in Table 3 below for the five negative items precluded performing a repeated measures ANOVA. Mean frequencies were 0.00 for three of the items (1, 2, 5) in both LGD I and LGD II, as well as in LGD II for item 3. The other three mean values in the table are .02 (item 3, LGD I) and .03 (item 4 for both LGD’s). The data confirm that evidence of student negative roles was essentially nonexistent.

**TABLE 3**

Mean Differences on 5 Negative Roles for Time 1 and Time 2 (n=235)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **5 Negative Roles** | **Time 1****Mean** | **Time 2****Mean** | **t****Value** | **df** | **Sig.** | **r²pbi** |
| 1.2.3.4.5. | BlockerDominatorAvoiderClownInsulter | 0.000.00.02.030.00 | 0.000.000.00.030.00 | ——-1.51-.19— | ——234234— | ——.132.848— | ————— |

*Demographic Differences*

 We examined the potential impact of demographic differences on our results by conducting three exploratory 2 X 3 X 4 X 2 (sex X age X race/ethnicity X major) factorial ANOCOVA’s. For these three analyses, we excluded students with double majors (7) and other majors (5) in order to reduce the number of cells in the full-factorial with frequencies of zero and focus our analysis on potential difference between management majors and accounting majors. The three factorial ANOCOVA’s were conducted with (1) overall team leadership scores for LGD II, using overall scores for LGD I as the covariate, (2) team task leadership scores for LGD II, using task scores for LGD I as the covariate, and (3) team social leadership scores for LGD II, using social scores for LGD I as the covariate. Each of these full-factorial ANOCOVA’s produced 15 significance tests, including ones for the four main effects, the six 2-way interactions, the four 3-way interactions, and the one 4-way interaction.

Statistically significant results were obtained in only two of these 45 (3 X 15) tests: the main effect for sex in the analysis of overall team leadership and the main effect for sex in the social leadership analysis. The F-value for the main effect of sex in overall team leadership factorial ANOCOVA was 4.32 (df=1,193; p=.039; eta²=.02) An evaluation of mean overall leadership scores for males and females in LGD I and LGD II shows that females demonstrated slightly more improvement than males (5.39 v. 4.68):

|  |  |  |  |
| --- | --- | --- | --- |
|  | LGD I | LGD II | Improvement |
|  | Mean | Mean |  |
| Males | 24.89 | 29.57 | 4.68 |
| Females | 25.78 | 31.17 | 5.39 |

A similar pattern in mean scores by sex was confirmed in the factorial ANOCOVA for social leadership scores (F-value for the sex main effect + 4.09; df=1,193; p=.045; eta²=.02). Once again, females evidenced a somewhat higher level of improvement than males (3.65 v. 3.16):

|  |  |  |  |
| --- | --- | --- | --- |
|  | LGD I  | LGD II | Improvement |
|  | Mean | Mean |  |
| Males | 19.97 | 23.13 | 3.16 |
| Females | 20.67 | 24.32 | 3.65 |

In spite of the two very weak (eta²=.02) main effects for sex, the combined ANOCOVA results generally failed to find demographic differences in learning outcomes. It appears that students benefitted equally from the team leadership education, without regard to their sex, age, race/ethnicity, or major.

**Student Surveys**

A total of 86 students completed end-of-class surveys, which included six items specifically addressing team leadership skills. Table 4 provides the precise wording for these six items, along with means on the 5-point Likert scale, from strongly disagree (1) to strongly agree (5). Mean values ranged from a low of 4.41 (item 3) to a high of 4.57 (item 4), with an overall mean for the six items of 4.49. These results suggest that students perceived the LGD tapings and coaching sessions to be very useful in improving their understanding of team leadership, their team leadership skill levels, and their confidence.

**TABLE 4**

Student Survey Item Means (n=86)

|  |  |
| --- | --- |
| Items | Means |
| As a result of participating in the LGD videotaping and coaching in Z442… |  |
| 1. I have improved my team leadership skills.
 | 4.50 |
| 1. I have more confidence in my team leadership skills.
 | 4.42 |
| 1. I have become more effective in team leadership activities.
 | 4.41 |
| 1. I have a better understanding of my strengths in team leadership.
 | 4.57 |
| 1. I have a better understanding of my areas for improvement in team leadership.
 | 4.56 |
| 1. I have a better understanding of how to improve my team leadership skills.
 | 4.49 |

**DISCUSSION**

**Conclusions**

 Based upon the results of our study, we believe that the following four conclusions can be reasonably drawn. First, the findings provide empirical evidence that a theory-based educational program can be successful in teaching team leadership skills to undergraduate business students and begin to fill a significant void in the literature. The two-factor theory of team leadership and Team Leadership Roles Evaluation Form worked well to assess important student behaviors. Anderson’s ACT theory was very effective in guiding our pedagogic efforts and Wiggins’ “educative assessment” model was helpful in designing the leaderless group discussion exercise and follow-up student feedback/coaching sessions.

 It is also important to note that our educational program was formulated to be course-based and taught by an individual professor who can conduct student assessments and coaching sessions, without the need for substantial additional resources or personnel (teaching and/or research assistants). While our videotaping was conducted in a specially wired classroom, we have taped teams in other classes using only a camcorder mounted on a tripod. Thus, even small, relatively resource-challenged schools like ours can still deliver high quality team leadership education to students.

 Second, we felt that the magnitude of overall student improvement in team leadership capabilities was sizeable. The eta squared value associated with the repeated measures ANOVA on overall team leadership scores was .29, while the percentage improvement in mean scores from LGD I to LGD II was 20%. Students demonstrated statistically significant improvements in 8 of 10 task leadership roles and 3 of 6 social leadership roles, while exhibiting neglible occurrences of the five negative roles. The information concerning individual roles can be invaluable in making appropriate revisions in course content and emphasis. Based upon our results, we need to do a better job in the team task leadership roles of values seeker and orienter, and in the team social leadership roles of consensus taker, compromiser, and standard setter.

 Our third conclusion is related to the ANOCOVA’s exploring demographic factors in relation to how students responded to the team leadership education program. Although there were very weak findings (eta square=.02) for overall team leadership and task leadership suggesting that women benefitted to a slightly greater effect than men, there were no substantive, practically significant differences in student performance as a function of their sex, age, race/ethnicity, or major. Finally, we feel that it is reasonable to conclude that participating in the LGD’s and coaching sessions was viewed very favorably by students. Their mean responses to the six survey items on a 1-5 scale (“strongly disagree” to “strongly agree”) were all above 4.40. From our perspective, it is hard to overstate the value of the LGD as a learning and coaching tool. Students were able to see themselves actually participating in a team and use an objective, structured evaluation tool to assess their team leadership performance. The videotape-based coaching sessions were invaluable in confirming student self-assessment results. Perhaps most impactful, students were able to see and document their personal team leadership improvements from LGD I to LGD II. This served as a powerful reinforcement for their improvement efforts and demonstrated that they could become more effective team leaders—a very validating and satisfying experience for most of them, and something that was emphasized in the final coaching session after LGD II.

**Limitations**

 When interpreting the findings of this study, we suggest that the following five potential limitations be considered. First, while substantial gains in student team leadership capabilities were documented in our study, the research design (essentially a repetitive case study) did not allow us to rigorously assess causality. While we believe the course was responsible for student gains, we did not establish causation. Nor were we able to evaluate the relative contributions of the various course components to student improvements.

Second, consistent with the design of the leaderless group discussion exercise, no one in the student teams was appointed to be the leader. Thus, our team leadership ratings for individual students were based upon their interaction with peers. Substantially different ratings could be obtained if a formal leader had been designated in each LGD exercise. Pending comparative research on this topic, our results may be limited to peer, self-managed, or project teams without a formal leader.

Third, the characteristics of the LGD exercises used in our study may differ in important ways from work team interaction typically found in most organizations. For example: (a) the tasks we assigned to students in both LGD I and LGD II dealt with non-controversial topics, with significantly limited opportunities for conflict, (b) the LGD exercises had no long-term impact on students, beyond the course grade and thus may have reduced their interest level and motivation to participate, in contrast to work teams, (c) the time limit for each LGD was artificially constrained and set at 20 minutes, while actual workplace meetings often require considerably more time, and (d) the presence of cameras is likely to have artificially altered student conduct particularly the incidence of negative behaviors. A fourth potential limitation is our use of only one instructor to assess individual student team leadership performance. This precluded the possibility of calculating inter-rater reliability for the Team Leadership Roles Evaluation Form. Finally, the unique characteristics of our research (student sample, single instructor, educational institution, country in which study was conducted) could limit generalizability to other settings.

**Future Research**

 Our sense is that future research in the following seven areas is needed and would help advance the science of educating students about team leadership. First, we believe that additional work on the psychometric properties of the team leadership assessment tool is necessary. This should include evaluating the scale’s reliability using inter-rater, internal consistency, and test-retest measures, along with factor analysis to confirm dimensionality. While the tool’s content validity is based upon extensive previous research describing team leader functions and behaviors, construct validity and criterion-related validity (predicting post-graduation work achievement outcomes) should also be addressed.

 Second, it is imperative to begin examining the generalizability of our results by conducting similar research with other instructors, students, institutions, and countries. Third, it would be interesting to compare our findings with those obtained by utilizing formally appointed student leaders in each team, as opposed to the leaderless format. In such studies, one could also focus on differences in performance between formally appointed leaders and followers.

 Fourth, we recommend future research that varies significant elements of the task students work on in each LGD. For instance, we believe it would be fruitful to evaluate the impact of a longer time period (30-60 minutes), a more controversial topic (higher likelihood of generating conflict between team members), and a topic that is more innately interesting and ego-involving (i.e., recommended changes in grading teamwork contributions in the course) on the team leadership performance of students. We suggest a fifth area for future research that examines the extent to which improvements in student team leadership are susceptible to extinction over time. On a related issue, we would also be interested in research evaluating whether newly enhanced student team leadership capabilities transfer easily to other teams. It is possible that student performance gains are restricted to their current course-based teams and would not extend to other teams.

A seventh area we recommend would involve a large sample study with control and experimental classes (including random assignment of students to classes) in order to evaluate the main effects of major course components and their interaction on student performance. In other words, what exactly “caused” the observed gains in student team leadership performance? Was it attributable to the course instructional content, the team interaction exercises/assignments in class, the videotaped LGD’s, the self-assessment assignment, the peer coaching assignment, the instructor led feedback/coaching session, and/or some interaction among these variables?

Eighth, from an assurance of learning perspective, can the results of a study like ours be helpful in the processes of program evaluation and accreditation? Finally, we contend that the methodology we used in this study can be readily adapted for use by organizations in training their managers and employees on team leadership. Research evaluating the validity of this contention would be helpful.

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