PERCEIVED GROWTH VERSUS ACTUAL GROWTH IN EXECUTIVE LEADERSHIP COMPETENCIES: AN APPLICATION OF THE STAIR-STEP BEHAVIORALLY ANCHORED EVALUATION APPROACH

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Abstract

The purpose of this study was to describe student learning in executive leadership core competencies after being engaged in a two-semester leadership education sequence. The researchers used evaluative research techniques to compare perceived and actual growth in learning of executive leadership competencies. Data collection consisted of a post-then (or Before-After) self-assessment instrument and an evaluation rubric that was designed to score the final exam. The results were reported as average learning scores based upon (Before-After) measures, narrative verifications, and comparisons of perceived versus actual growth. Students varied in their perception of their competencies using only the behavioral anchors. Based on the findings of this study, new competency-based behavioral benchmarks were developed, at the near novice, proficiency, and near expert levels of competence. Recommendations to insure the fidelity of students' self-assessment and appropriateness of the behavioral benchmarks were provided.

Introduction

A recent survey conducted by the industry publication, *Training*, found that among training professionals leadership development is now their number one concern (Hall, 2005). Leadership education, likewise, is a high priority for colleges and universities given students' interest in enhancing their leadership capabilities and employers' demand for graduates with these skills (Carry, 2003; Coplin, 2003; Levine, 2005; Mangan, 2002). Over 900 leadership programs now operate in higher education settings, and, furthermore, they vary in complexity from simple workshops to doctoral programs (Mangan). In a recent keynote speech, Acker (2005) noted that the number one thing agricultural and extension educators can do to make a difference in the world is to "invest in student leadership" (p. 12).

The challenge of providing productive leadership development activities for college students has been taken up by a growing corps of leadership educators. Many are in agricultural education departments (Fritz & Brown, 1998). A vital part of creating a successful leadership education process is the evaluation component. As Townsend (2002) observed: "Leadership educators may be in the perfect position to evaluate programs as well as create them. Seeking accountability in organizational leadership [development] efforts is critical to sustaining the efforts of leadership education programs" (p. 3).

For a variety of reasons, however, leadership program evaluation (like most training programs) receives far less attention. One reason for this is practical. The training community is rewarded primarily for designing and implementing human resource development activities, not measuring their outcomes. A second factor is the difficulty involved in accurately assessing changes in individuals' attitudes, beliefs and behaviors. Such undertakings are usually labor-intensive and time-consuming. Thus, ease of use becomes an important consideration (Rohs, 2002). Without reliable and valid program evaluation, however,

leadership learning will continue to occur mainly in "an unplanned and serendipitous way" (Boyd & Murphrey, 2002, p. 36). Therefore, a need exists for an easy-to-implement but reliable and valid evaluation methodology for measuring leadership education results.

For departments of agricultural education (broadly defined), the assessment and evaluation of both student and program success is particularly relevant. In their study of traditional departments of agricultural education, Fritz and Brown (1998) found that nearly 70% were offering leadership and human resource development classes. They further determined that these courses were generating a substantial portion of departments' credit hour production. For instance, in 28% of the departments, leadership courses accounted for more than half of all contact hours generated. In recognition, some departments have changed their names to include "leadership" as one of their content areas. Leadership training and development has become a very large part of what current agricultural education departments are doing. It follows, therefore, that creating good assessment methods for evaluating leadership development among undergraduate students is essential for the continued success of agricultural education departments.

Conceptual Framework

The conceptual framework for this study combines the behaviorally anchored self-assessment methodology introduced by Dooley and Lindner (2002) with a competency model of executive leadership developed by Cummins (2005).

Stair-Step Assessment Method

Dooley and Lindner (2002) developed a self-assessment protocol to document growth (learning) in distance education core competencies in a graduate course. In developing their assessment tool, Dooley and Lindner used content analysis to identify six core competencies areas for distance education professionals. Then they developed behavioral anchors for each core competency. Behavioral anchors were defined as "characteristics of core competencies associated with the mastery of content" (Dooley & Lindner, p. 25). A self-assessment instrument was created based upon the core competencies and behavioral anchors. The instrument used a stair-step figure to visually represent progression from novice (0) to expert (7). The behavioral anchors were presented to the students as a self-reflective guide for them to base their before-and after-training evaluations of their competencies.

Open-ended narratives were analyzed to describe a change in learning and to develop competency-based behavioral anchors to serve as authentication tools. Competency-based behavioral anchors were defined as "performance capabilities needed to demonstrate knowledge, skill, and ability (competency) acquisition" (Dooley & Lindner, 2002, p. 25). Competency-based behavioral anchors were created for competency levels 2, 4, and 6.

Executive Leadership Competency Model

In a study on the need for leadership training for students in a land-grant college of agriculture, Schumacher and Swan (1993) offered a number of recommendations. Two key recommendations from Schumacher and Swan were a need for the "development and adoption of required leadership development programs for their students" (p. 9) and a need for research "designed to identify how the Agricultural Education profession can best facilitate the leadership skill development of students..." (p. 9). These authors noted, further, that Departments of Agricultural Education (broadly defined) are uniquely qualified to lead larger efforts to provide for student leadership development and training. Others have also expressed this view. For example, Birkenholz and Schumacher (1994) noted that:

> The demand for future agriculture leaders is great... Changes in agriculture will undoubtedly create an environment in need of strong leadership. Educators in agriculture must recognize that need and implement strategies to develop leaders who are able to effectively guide and direct the industry in the future (p. 8).

However, before a successful leadership

development process can be put in place, a reasonably valid leadership competency model is needed. Having such a model enables the leadership educator to design and deliver effective leadership development activities as well as specify evaluation criteria.

To address the need identified by Schumacher and Swan (1993), Cummins (2005) conducted a content analysis of the literature on executive leadership (similar to what Dooley and Lindner did in their study of distance education core competencies) as well as accounts of historical events and biographies of historically significant leaders. He identified six salient competency clusters associated with effective executive leadership. The method Cummins used was similar to the technique identified by Pernick (2001) as one of the ways in which organizations determine critical leadership competencies; that is, use generic leadership competencies found in theory and the leadership literature. They were: (1) Stay Focused on Purpose, (2) Communicate Purpose and Vision, (3) Establish and Maintain Environment, (4) Develop Others, (5) Lead Teams, and (6) Make Decisions in a Complex Environment (Ambrose, 1970; Barnard, 1968; Bossidy, Charan, & Burck, 2002; Hanson, 1999; Janis, 1983; Keegan, 1988; Kouzes & Posner, 1988; Lansing, 1999; Pressfield, 1998; Watkins, 2003). Table 1 provides operational definitions of each executive competency.

Table 1
Core Executive Leadership Competency Operational Definitions

Executive Leadership Core Competency	Operational Definition of Construct
Stay Focused on Purpose	Ability to sort through incomplete, inaccurate, and sometimes conflicting data and determine what should be done
Communicate Purpose & Vision	Skill to express to others what the intended outcome will look like if we get it right
Establish & Maintain Environment	Competence to put into place the behaviors, standards or performance, training and feedback essential to attain the goals of the organization
Develop Others	Expertise to increase the knowledge and skills of others in order to enhance their capacity to perform and to utilize their leadership ability for the organization
Lead Teams	Capability to direct the work of others in the pursuit of a common goal acceptable to all
Make Decisions in a Complex Environment	Proficiency to take into account both the known and the unknown and make informed and thoughtful decisions

It is noteworthy that the six executive competencies identified by Cummins (2005) match reasonably well with the executive competencies identified by Moore and Rudd (2004) for extension directors and administrators if one re-classifies the 80 specific competencies into the six competency cluster proposed by Cummins.

For example, the competency "Demonstrate Respect for Others (p. 27)" identified by Moore and Rudd (2004) can be encompassed in the "Establish and Maintain the Environment" competency from the Cummins (2005) executive competency model. Another example is "Think Strategically (p. 27)", which fits well within the "Make Decisions in a Complex Environment" competency in the Cummins model. As previously noted, having a competency model enables the leadership educator to design and deliver effective leadership development activities as well as specify evaluation learning criteria.

Purpose

The purpose of this study was two-fold. First was to measure perceived growth of executive leadership competencies among a select group of undergraduate students after they had completed a two-semester executive leadership course. Second was to compare perceived to actual learning based upon final exam scores.

Research Questions

The following research questions guided this study:

1. What were the class average scores for each of the executive leadership core competencies based upon the Before-After self-assessment measures?
2. How did the individual's perceived growth ("After"-score) compare with the individual's actual growth (expert-authenticated final exam score)?
3. Was the stair-step behaviorally anchored self-assessment instrument used in this study a reasonably accurate measure of student learning?

Methods

This study used evaluative research techniques to compare perceived and actual growth in learning of executive leadership competencies among undergraduate students taking a leadership education sequence. Data collection consisted of a Before-After self-assessment instrument. A scoring rubric was employed to grade students' final exams to assure grading consistency and control for instructor bias, since the instructor was one of the researchers. Also, while the first author may have been the instructor, the data was analyzed and interpreted by the second and third authors, which is a recommended technique for controlling experimenter's bias (Borg & Gall, 1989). In addition, the instructor had consistent opportunities for observation and interaction with the learners (prolonged engagement).

Based on the set of competencies identified by Cummins (2005), a curriculum for a two-semester course on executive leadership was developed. The curriculum was reviewed and approved by the dean and associate dean of student affairs and the university curriculum committee. Furthermore, the course content was evaluated by a panel of university leadership educators from across the United States. The panel agreed that the identified competencies represented capabilities central to the executive leadership function. Dooley and Lindner's (2002) stair-step assessment protocol using a Before-After questionnaire based on the six executive leadership competencies was developed and administered to all students in the executive leadership course at the conclusion of the two-semester course.

The natural setting for this investigation was a two-semester executive leadership course conducted at Texas A&M University. The students were part of a cohort that was required to take this course. The cohort was composed of 44 college seniors participating in a structured leadership development program, and all the students participated in the study. Thus, the sample selected was essentially a convenience sample. All were members of a student organization that has as its purpose the development of the leadership capabilities of its members. Respondents were coded with a number to ensure confidentiality. Students attended 28, one-hour weekly meetings, half in a fall semester and half in a spring semester. Classes included lectures with handouts,

case studies, class discussions, and analysis of film clips. This study was approved by the Institutional Review Board for Human Subjects.

As mentioned previously, the researchers used a before-after self-assessment instrument along with researcher/instructor authenticated assessment (that is, the final exam) to document learning. The final exam was a reflective paper based upon the movie "Remember the Titans." Students were asked to identify, describe, and discuss how the main character employed at least five of the six executive leadership functions. An expert-authenticated assessment rubric was used by the instructor and research team to substantiate the final exam and control for bias.

The self-assessment instrument for this study was modified from an instrument that has been shown to be a consistent measure of competence for distance education professionals (Dooley & Lindner, 2002). Reliability for this instrument was estimated by calculating a Guttman split-half coefficient on pretest or "Before" (r = .79) and posttest or "After" (r = .70). The researchers used the stair-step approach (rather than a continuum or summated scale) to visually represent progression from *novice* (0) to *expert* (7). Since the students came into the course sequence as novices regarding executive leadership competencies, the researchers determined that a *4* on the step-stair model indicated *proficiency* in a core competency area. The numbered stair-steps were intended to serve as a reflection tool for the students to measure their learning rather than test for statistical significance. Averages were calculated to show trends in the data. Students were provided the operational definitions from which to base their Before-After assessment (Figure 1).

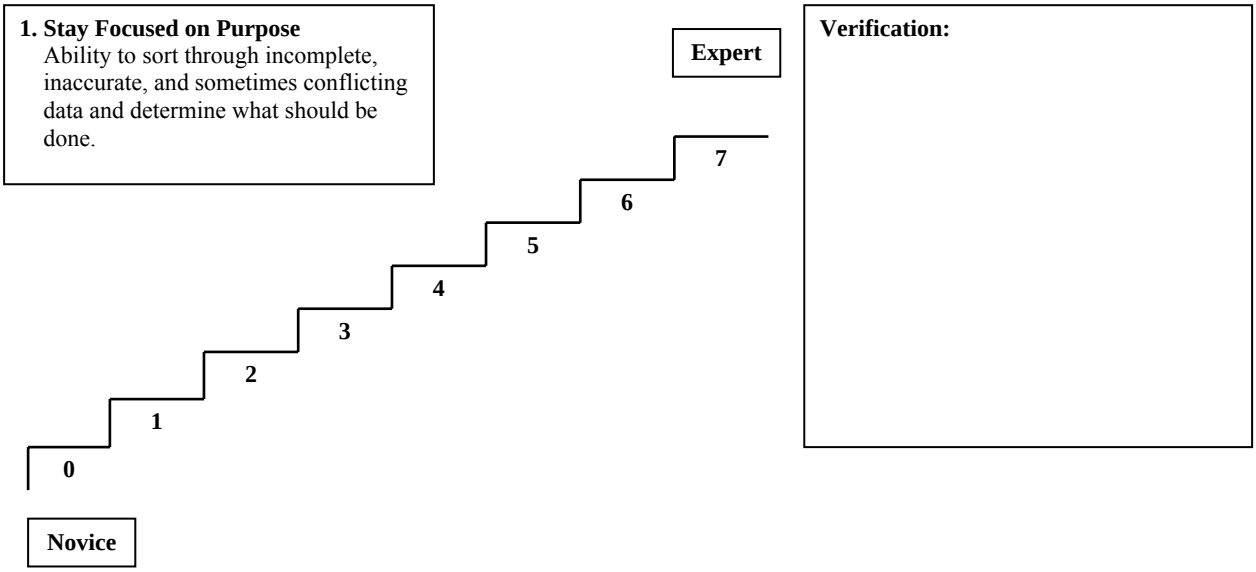

Figure 1. Example of "stay focused on purpose" core competency and self-assessment format.

The open-ended narrative (the box with the heading "verification") was used to verify the level of executive leadership competence perceived by the students for each of the six competencies. To authenticate individual learning scores, the average of the perceived executive leadership competencies was calculated by totaling the self-assessment scores provided by each student (their "After" scores) and dividing by six, because there were six competencies. A projected exam score was

calculated by dividing the average perceived score by seven, which was the highest possible score for the stair-step method and multiplying by 100. The projected exam score was compared to the students' actual final exam score to determine the accuracy of their projected final scores (based on their self-assessment) to actual scores (Final Exam scores) using the following scale: Accurate = within a ten point range; over/under estimated = 11 to 20 point range; and extremely over/under estimated = greater than 20 point difference between projected final exam score and actual final exam score.

Results

The results of this study are reported in three areas: (1) the average learning scores of executive leadership core competencies based upon the Before-After measures, (2) narrative verifications used to illustrate competence in executive leadership, and (3) the comparison of individual's perceived (self-assessment) versus actual growth (final exam) of executive leadership competencies. In Table 2, the average growth is indicated for each of the six core executive leadership competencies.

For *Staying Focused on Purpose*, students reflected that their "Before" competence range was 0-6. By the end of the executive leadership course sequence, students' "After" competence range was 2-7. With 4 as the *proficiency* level, 33 of the 44 students (or 75%) were below in their "Before" scores. In their "After" scores, only 3 were below proficiency. The growth ranged from 2.4 to 5.0 with an average growth of 2.6, or 2 stair-steps on the self-assessment instrument (Table 2).

Table 2
Average Growth in Executive Leadership Competency Clusters (N = 44)

	Class Average		
Core-Competency	Before	After	Growth
1. Stay Focused on Purpose	2.4	5.0	2.6
2. Communicate Purpose & Vision	2.5	5.2	2.7
3. Establish & Maintain Environment	2.7	5.2	2.5
4. Develop Others	3.1	5.4	2.3
5. Lead Teams	3.0	5.3	2.3
6. Make Decisions in a Complex Environment	3.0	5.3	2.3

For the *Staying Focused on Purpose* competency, one respondent, who rated himself as a "6" at the end of the course ("After") for that capability noted:

> Before this year, I knew what I wanted, but sometimes I got distracted and deviated from my path to my purpose. Now, when I decide what I want, I am much more able to stay on task until it's done (3).

For *Communicate Purpose and Vision*, students rated their "Before" competence from 0-5 and "After" competence from 3-7. The average growth was 2.5 to 5.2 with an incremental change of 2.7. The majority of the learners (32) were below the proficiency level in their "Before" competency scores, which was 73% of the students. However, only three learners were still below proficiency in their "After" scores. One respondent who perceived himself to be below proficiency stated this: "I usually have a hard time communicating purpose and vision to what I'm doing. I find myself just trying to do it myself. I think I have found more reasons to stop doing this" (24).

For the third core competency, students assessed their ability to *Establish and Maintain Environment,* ranging from 0-5 "Before" and 4-7 "After." There were 32 learners (73%) who were below the proficiency level in their "Before" scores, but no one reported being below proficiency in the "After" assessment. The average "Before" score for this construct was a 2.7, with students assessing their competence at 5.2 by the end of the course sequence, a change of 2.5.

A student who perceived growth from a 3 to a 4 on the *Establish and Maintain the Environment* competency had this to say: "This function is hard to ensure during the experience as a senior, since we are not totally active with the training atmosphere. My awareness of its necessity has increased, but maybe not my personal skills at doing it" (22).

Develop Others is an important dimension of leadership education. Student self-assessments for the "Before" scores ranged from 0-6 with "After" scores at 1-7. Twenty-five students reported a below proficiency score in their "then" assessment (57%) and only four after the course sequence. The average competence changed from a 3.1 "Before" to a 5.4 at the end of the course sequence ("After") with a change of 2.3. The "After" score for *Develop Others* was the highest competence area.

One student who only rated himself as a 4 at the end of the course sequence offered these bullets in his verification narrative:

- Can develop others in many ways…technical skills, leadership skills, relationship skills, personal improvement, etc…
- The quality of an organization is resultant upon the quality of the individuals (9).

For the core competency of *Lead Teams*, students rated themselves between 0-6 "Before" and 2-7 "After." Twenty-six students (59%) rated themselves below the proficiency level when reflecting back. Only four students reported lacking proficiency after the course sequence. The average competence was 3.0 before participating in the course sequence and 5.3 at the end, with an increase of 2.3.

A student who perceived his competence in this area to be proficient when he started and now felt he was at a level 6 indicated: "I see this as my most resourceful function this year. Most of the time I felt as a team leader getting others to jump on board and follow" (27).

The final core competency was *Make Decisions in a Complex Environment*. Students expressed beginning competence ("Before") ranges of 0-6 and ending competence ("After") ranges of 2-7. Twenty-eight students (64%) lacked proficiency as indicated by their "Before" scores. Four students, however, still lacked proficiency in their "After" self-assessment. The average level was a 3.0 "Before" and 5.3 at the end of the course sequence ("After").

One student who reported a level 6 competence in this area stated, "Many times in difficult situations leaders are the ones everyone looks to in order to make complex decisions. It's important to make your

decisions quickly but with sound judgment. Then support your decision" (38).

Although the average class change in perceived competence is interesting to measure, the real challenge for educational researchers is measuring actual growth or learning as a result of an educational program. In order to address this concern, the researchers recoded each student's average competence into a projected final exam score by dividing their self-assessment score by the highest possible score (expert) of a 7 and multiplying by 100. This number was then compared to their actual expert authenticated final exam score (Table 3). Using the decision model described in the methods section above, estimates for student perceived competence versus actual competence was determined. Based on student self-assessments, 22 of the 44 students accurately estimated their competence. The remaining 22 students underestimated their learning.

Table 3
Comparison of Perceived and Actual Learning of Executive Leadership Competencies

Respondent	Average Self-Assessment Score[a]	Projected Final Exam[b]	Actual Final Exam Score[c] (%)	Discrepancy
1	6.17	88	79	Accurate
2	6.67	95	91	Accurate
3	4.67	67	85	Extremely Under Estimated
4	4.67	67	74	Accurate
5	4.83	69	82	Under Estimated
6	5.50	79	91	Under Estimated
7	5.70	81	93	Under Estimated
8	5.50	79	81	Accurate
9	4.33	62	99	Extremely Under Estimated
10	5.50	79	72	Accurate
11	3.50	50	82	Extremely Under Estimated
12	3.83	55	84	Extremely Under Estimated
13	4.83	69	90	Extremely Under Estimated
14	4.83	69	75	Accurate
15	4.33	62	91	Extremely Under Estimated
16	4.67	67	78	Under Estimated
17	5.50	79	83	Accurate
18	5.33	76	85	Accurate
19	5.67	81	89	Accurate
20	5.17	74	87	Under Estimated
21	4.67	67	78	Under Estimated
22	4.17	59	92	Extremely Under Estimated
23	5.00	71	78	Accurate

Respondent	Average Self-Assessment Score[a]	Projected Final Exam[b]	Actual Final Exam Score[c] (%)	Discrepancy
24	4.83	69	74	Accurate
25	5.83	83	76	Accurate
26	6.00	86	81	Accurate
27	5.67	81	95	Under Estimated
28	6.00	86	81	Accurate
29	4.50	64	79	Under Estimated
30	4.83	69	84	Under Estimated
31	5.17	74	94	Under Estimated
32	5.17	74	65	Accurate
33	5.83	83	77	Accurate
34	6.17	88	91	Accurate
35	4.83	69	73	Accurate
36	6.17	88	75	Over Estimated
37	5.83	83	81	Accurate
38	5.33	76	90	Under Estimated
39	6.50	93	84	Accurate
40	5.50	79	80	Accurate
41	5.50	79	83	Accurate
42	5.17	74	90	Under Estimated
43	4.50	64	91	Extremely Under Estimated
44	4.00	57	80	Extremely Under Estimated

[a]Self-assessment score at the end of the course; [b]Projected Final Exam = average self-assessment score/7 x 100; [c]Graded final exam score on a 100 point scale

Conclusions and Implications

Three conclusions emerged from of this study. The first was the positive growth trends in students' perceived average growth in each of the executive leadership competency areas. The second was the implication of the discrepancy between perceived learning and actual learning displayed by some of the students. And third was the need to create behaviorally anchored benchmarks at levels 2, 4, and 6 in order for learners to better gauge their actual competence.

As Table 2 revealed, for each of the six executive competency areas there was a positive change trend. Students tended to improve at least two steps in each of the core competency functions. This finding is consistent with the findings in the Dooley and Lindner (2002) study. Confidence that the self-reported changes were genuine was supported by the data displayed in Table 3. Comparisons of students' final exam scores with their projected final exam scores showed that half of them were accurate in their personal assessments of what they knew and could do. Furthermore, with only one exception, the remaining students under-estimated the amount of learning they had experienced. This suggests that students were conservative in their self-estimates of

their improvement on each of the executive competencies. By the end of the course they had actually learned more than they thought they had. The two-semester class, therefore, appears to have contributed positively to students' mastery of the six executive leadership competencies.

Accurate self-assessment of personal and professional capabilities is essential for success in leadership (Cummins, 2005). One-half the students estimated their competence with reasonable accuracy and about half of the students underestimated their growth in the leadership competencies. Only one student overestimated his or her competence. Thus, the stair-step behaviorally anchored evaluation approach appeared to capture reasonably well students' growth in executive leadership competencies, especially given that only one student overestimated his/her capabilities. However, since respondents were provided with only the operational definitions of each executive competency, an implication is that students' inability to accurately anchor their self-assessment to actual performance may have resulted from a lack of specificity in the executive leadership definitions.

Given that possibility, the authors have created competency-based behavioral anchors for stair-steps 2 (near novice), 4 (proficiency), and 6 (near expert) for each of the six executive competencies. They are presented in Table 4. Bloom's (1956) taxonomy was used to guide the development of each behavioral anchor. For instance, a step 2 level of competency reflected that a student had achieved the knowledge and comprehension level in Bloom's taxonomy for a given executive competency. A step 4 level required students to apply leadership competencies in new settings and analyze the leadership situation. Finally, a step 6 level indicated a student had developed an ability to synthesize and evaluate how different leadership competencies could be used for making decisions and solving problems.

In summary, this executive leadership course did improve students' perceived growth in their leadership competencies. Growth trends were positive across all six competencies. Furthermore, students' self-assessments of what they had actually learned were essentially conservative; that is, most either accurately estimated their growth or underestimated it. This implies that the stair-step self-evaluation method provides at least a conservative measure of student learning, which is noteworthy. However, future research is needed to test whether adding specificity to the competency-based behavior anchors enhances the accuracy of students' perceptions of their executive competencies.

Table 4
Revised Competency-Based Behavioral Anchors

Core Competency	Level	Competency-Based Behavioral Anchors
Stay Focused on Purpose	2	▪ Explain to someone else what staying focused on purpose means.
	4	▪ Develop measures of performance that can be used to determine whether a work group is accomplishing its purpose.
	6	▪ Based on performance information, formulate strategies for helping a group perform more effectively.
Communicate Purpose & Vision	2	▪ Distinguish purpose from vision if asked to.
	4	▪ Show someone how to develop a simple personal vision statement.
	6	▪ Devise multiple ways for communicating purpose and vision to a group.
Establish and Maintain the Environment	2	▪ Identify a movie clip that illustrates establishing and maintaining the environment.
	4	▪ Devise and put in place a simple performance feedback system.
	6	▪ Establish standards of performance, measurable goals and a timeline for accomplishing the goals.
Develop others	2	▪ Summarize what is involved in the process of developing others.
	4	▪ Prepare a step-by-step training plan for training group members to perform a task.
	6	▪ Possess a variety of tools, techniques and strategies for enhancing others' capacities to perform at a high level.
Lead Teams	2	▪ Describe the activities involved in providing leadership to a group.
	4	▪ Conduct a successful team building activity.
	6	▪ Direct, motivate, and coordinate the actions of others to accomplish a common goal.
Make Decisions in a Complex Environment	2	▪ Identify a movie clip that demonstrates making decisions in a complex environment.
	4	▪ Formulate and ask questions that identify relevant and reliable information.
	6	▪ Assess and integrate available information, and then make an informed choice.

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