

Empirical Test of the Know, See, Plan, Do Model for Curriculum Design in Leadership Education

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Abstract

This research assesses the Know, See, Plan, portions of the Know, See, Plan, Do (KSPD) model for curriculum design in leadership education. There were 3 graduate student groups, each taught using 1 of 3 different curriculum designs (KSPD and 2 control groups). Based on a pre-test, post-test design, students' performance was measured to assess their knowledge, and application skills of the course material. Results indicated MBA students taught based on a KSPD curriculum (Group 1) performed significantly better than students in the two control groups on 3 post-test dependent measures designed to capture the effectiveness of the Know, See, Plan curriculum design model, (basic leadership information (K1), recognition of leadership concepts in practice (S1), and developing a plan of action (P1)). Group 1 also performed significantly better on all 3 post-test measures than they performed on the 3 pre-test measures. The non-MBA control group (Group 2) improved significantly from pre-test to post test on P1 but not on S1 or K1. The MBA control group (Group 3) had no significant changes in performance from pre-test to post-test on any of the three dependent measures. These findings are discussed in terms of their support for the KSPD model and in regard to limitations of this study.

Introduction

Leadership education is an interdisciplinary area of study and practice which has experienced an inconsistent approach to its scholarship. The lack of empirically validated models of leadership development (Hannah & Avolio, 2010; Day, Harrison & Halpin, 2009; Sowcik & Allen, 2013) is well documented, resulting in difficulty determining the effectiveness of the existing models in practice. Beyond offering theoretical significance, a review of the models that currently exist (e.g., Avolio, 1999; Avolio 2005) suggests that higher education instructors will have difficulty utilizing these models in designing effective leadership curriculum.

Allen, Miguel, and Martin (2014) proposed the Know, See, Plan, Do (KSPD) model of curriculum design for leadership education. The purpose of the current research is to begin an empirical assessment of the effectiveness of the KSPD design model (Allen et al., 2014). In addition, this study is designed to address some of the concerns highlighted in Research Priority 1 (Teaching, Learning & Curriculum Development) of the National Research Leadership Agenda

(Andenoro et al., 2013). We begin with an overview of the KSPD model followed by an empirical test of the first three components of the model's effectiveness.

Know, See, Plan, Do (KSPD). In response to the needs addressed above, the KSPD model was developed to provide guidance for creating a curriculum for develop leadership (Allen et al., 2014). To curb the challenge of “where to begin” we identified about 160 core concepts that align with the *process* of leading others. Entrenched in the expertise literature, the KSPD model proposes that learning and development occur as learners: 1) acquire declarative knowledge about leadership, 2) use the knowledge to see or diagnose dynamics in the group or environment (primarily procedural knowledge), 3) use knowledge and their diagnosis to plan a course of action (primarily procedural knowledge), and 4) skillfully intervene (primarily conditional knowledge or fluid intelligence) to carry out their plan (Allen et al., 2014).

Recognizing the need for a multi-dimensional approach to leadership education, the KSPD model emphasizes several key approaches to learning (e.g., cognitivism, behaviorism, humanism, experiential) and the use of a variety of instructional strategies and opportunities for reflection and sensemaking (Schwandt, 2005). In addition, the model emphasizes the need for deliberate practice (Ericsson, Krampe, & Tesch-Römer, 1993), which has four primary elements. First, students engaged in deliberate practice are working on skills outside of their current ability level. Second, they engage in repetition and have an opportunity to re-visit tasks until they can display mastery. Third, the requisite time exists for mastery to occur. Finally, participants benefit from real-time coaching and feedback.

Know. The first component in the model is Know, which assures that a learner has basic skills such as retrieval and comprehension of a large body of knowledge related to leadership (Sternberg, 2003). Experts have better short/long term memories (Glaser & Chi, 1988) and will have domain specific knowledge (in this case, leadership) that far exceeds the novice (Bransford, Brown, Cocking, 2000; Sternberg, 1995) which leads to greater speed (Day et al., 2009) and the “cognitive structures involving perceptual categories, cognitive maps, mental models, schemas and scripts” for leadership skills (Lord & Hall, 2005, p. 601). Knowledge is considered a strong predictor of success in completing a given task (Marzano & Kendall, 2007). As such, knowledge is the starting point for the KSPD model and assumes that declarative knowledge precedes procedural or conditional knowledge (Kraiger, Ford, & Salas, 1993).

As it relates to leadership, learners should be well versed on a core body of knowledge and theory (Sternberg, 2003). Topics such as influence and power, decision-making/creative problem solving, conflict management, emotional intelligence, stress management, building teams, the process of leading, and managing change are all potential candidates for this component (e.g., Whetten & Cameron, 2010). Likewise, there are several contemporary and historical theories of leadership (e.g., trait, transformational, adaptive) that will be crucial for a student to know. This content is often delivered via instructional strategies such as readings, lecture, and small group discussion.

See. The second component is See, and requires the learner to integrate new information from the environment into existing mental models. A leader needs to use real time data in his or her environment to evaluate and analyze a situation, thus creating new mental models. For

students this includes the ability to see and explain leadership styles and approaches that they see happening in movie clips, vignettes, or actual life experiences (see *translation*, Bloom, 1956; *symbolizing* in Marzano & Kendall, 2007). From the expertise literature, we know that experts, more so than novices, see patterns (Bransford, Brown, Cocking, 2000; Day, Harrison & Halpin, 2009; Mumford, Friedrich, Caughron, Antes, 2009).

In the classroom, the See component is considered to be “active” from an information processing standpoint. It is practiced by using instructional strategies such as: teambuilding activities, skill-building modules, analysis of film/video (Billsberry, 2013), problem-based learning (Peterson, 2004), case analysis (Palocsay, White, & Zimmerman, 2004), simulations (Doh, 2004), live CEO cases (Rashford, & de Figueiredo, 2011) or daily journal/blog entries. The key is that students have content and mental models to make sense of the experiential activities during and after the activities.

Plan. The third component is Plan which focuses on the participant’s skill at using knowledge and his/her understanding of the situation (Know/See) to Plan a skillful intervention (Meissen, 2010). By doing so, the individual can more intentionally *choose* a course of action prior to intervening. Helping learners engage in scenario planning, described as “specifying” by Marzano & Kendall (2007), teaches participants to use environmental data to scenario plan and more intentionally choose a course of action. Because a primary activity of leadership is navigating a series of unique and ill-defined problems (Voss & Post, 1988), the Plan component of KSPD is important when teaching students to better address problems.

Do. The fourth component is Do, which implies knowledge utilization (e.g., motor skills) and requires learners to apply and transfer what has been learned (Blume, Ford, Baldwin, & Huang, 2010; Gagne, 1977; Marzano & Kendall, 2007). For instance, a leader may cognitively identify a need for a certain negotiation tactic, but this does not mean that he or she can successfully employ this style with expertise. We would assert that declarative, procedural, and conditional knowledge are synthesized by engaging in deliberate practice (Day et al., 2009; Ericsson et al., 1993).

The Do component of KSPD could be accomplished via virtual/interactive learning exercises where feedback is immediate. In addition, students should be given multiple opportunities to discuss and revise their plans of action. As with each of the preceding components, the need for repetition is critical and the expectation is that students will require extensive time, feedback, and opportunities for reflection to fully understand the implications of their various strategies. Following is a case study that exemplifies how the KSPD model was applied in a single leadership & management skills graduate course.

A Case Study of KSPD Used in Graduate Education. To better illustrate the KSPD model, the following section provides a narrative of how the model has been operationalized for a single-semester graduate leadership and management skills course. The following is a description of the major components for each of the four components – Know, See, Plan, Do. In addition, we provide a description of the instructional strategies, examination techniques, resources and activities in the context of the course.

Know. The course textbook (Whetten & Cameron, 2010) is the major source of content. The course initially focuses on approximately 160 concepts from leadership including, emotional intelligence, stress, creativity/problem solving, supportive communication, managing conflict and sources of power. It also incorporates three assessments including the Myers Briggs Type Indicator, StrengthsFinder, and the Thomas Kilmann Conflict Mode Instrument. The first quarter of the course focuses on students acquiring the declarative knowledge needed to explore See, Plan and Do at greater depths. From a pedagogical standpoint, the first four class periods include lecture, interactive discussion, teambuilding exercises to reinforce concepts, and video. The first exam challenges student to know and recall the terms and definitions of 130 of the 160 concepts. This first exam is used to assess whether the students have the requisite knowledge base needed to continue through the model. Students consistently score above a 90% on this exam.

See. After about four weeks, the intentional emphasis on Know concludes, and the focus changes as students are challenged to move from declarative knowledge to “seeing” or diagnosing what is happening. Instructional strategies in this phase of the course include teambuilding activities, film/video, small group discussion, coaching, and observation/reflection assignments. For instance, students begin with “observations” which are blogs that incorporate 10 of the concepts discussed. Observations are completed every day for the rest of the semester and offer students an opportunity to practice Seeing the concepts in their daily lives, at work, in their family, or on campus. This consistent and ongoing practice moves the content into a student’s long-term memory. In addition to the daily observations, we begin using film to diagnose group dynamics based on the course terms. In class, students practice seeing the concepts by watching excerpts from films. Initially students struggle to See the concepts but after deliberate practice (e.g., time, repetition, coaching), they become proficient in diagnosing what’s happening.

Along with the daily observations and ongoing coaching in class, students engage in several teambuilding activities with the intentional purpose of *deliberately practicing* the concepts. Not only will students better understand the challenge of seeing the concepts in real time, they begin to notice strengths and weaknesses within themselves.

The second exam is a 120-minute film (e.g., *Cry Freedom*, *Glory*, *To Kill a Mockingbird*) in which students must watch and diagnose what is happening. Students must identify 130 concepts and communicate them in paragraph form within the context of the film. Leading up to the exam, there is a focus on deliberate practice and students consistently score above 90% on this exam.

Plan. One way we emphasize the Plan component, is by engaging in “consulting conversations” where participants explore a personal challenge or failure. Students compose a two-page “case” that highlights a difficult leadership challenge and then connect in groups of four or five to discuss their case in a safe environment. Developed by Elmore et al. (1989), consulting conversations afford students an opportunity to explore their case with other, independent participants who provide feedback, explore alternatives, and help the individual reflect and potentially re-frame the experience. In addition, the activity affords students with an opportunity to apply course content to their life in a powerful way.

Do. The Do phase of the class is heavily influenced by problem-based learning (Peterson, 2004) and case-in-point teaching methodology (Daloz-Parks, 2005). The “case” is a Guinness World Record attempt. Since the first week of the course, the students have been charged with breaking a world record. Students have been given 45 minutes at the end of each class to work on the problem of actually accomplishing a certified Guinness World Record. Later in the semester, students are given more and more time to meet during class to Plan and navigate the details of the record attempt. The purpose of these meetings is to create a space for deliberate practice to occur in the context of the classroom.

In this highly intensive phase of the course (e.g., conflict, time stressors, external approval from Guinness, anticipatory stress) the Guinness activity challenges students to both accomplish the tasks but also to observe themselves and dynamics within the group. Fifteen percent of their final grade is contingent upon successful completion of the world record (each class in the 8 semesters we have completed this activity have successfully completed their attempts). Naturally, this simulates a number of the real world stressors that naturally accompany the practice of leadership. Following the Guinness attempt, there is a period of reflection so students have an opportunity to capture and make sense of the experience (Kolb, 1984).

The Study

In the following study, we designed a quasi-experiment that allowed us to assess the effectiveness of the pedagogy of the Know, See, and Plan portions of the model. Our work on developing an assessment method for Do continues and as such, is not part of the current study. The research design allows us to compare performance on both pre and post measures of Know (K1), See (S1), and Plan (P1) for a group of MBA graduate students in a leadership course taught using the KSPD model that uses the Whetten and Cameron (2010) textbook (Group 1) to those same pre and post measure scores for two control groups: A group of non-business Art & Sciences graduate students taking non-business related courses (Group 2), and also a group of MBA students using the same textbook but not being taught using the KSPD model (Group 3). We expected that all students would score on the pre-test at a fairly similar level, but that the students being taught with the KSPD model would outperform the other two groups on all 3 post-test measures.

Our specific hypotheses follow below.

H1: Pre-test measure of K1 vs. Post-test measure of K1:

- a. Mean post-test scores on K1 for Group 1 should be significantly higher than their mean pre-test scores on K1.
- b. Mean post-test scores on K1 for Group 2 should not differ significantly from their mean pre-test scores on K1.
- c. Mean post-test scores on K1 for Group 3 should not differ significantly from their mean pre-test scores on K1.

H2: Pre-test of S1 vs. Post-test measure of S1:

- a. Mean post-test scores on S1 for Group 1 should be significantly higher than their mean pre-test scores of S1.
- b. Mean post-test scores on S1 for Group 2 should not differ significantly from their mean pre-test scores on S1.

- c. Mean post-test scores on S1 for Group 3 should not differ significantly from their mean pre-test scores on S1.

H3: Pre-test measure of P1 vs. Post-test measure of P1:

- a. Mean post-test scores on P1 for Group 1 should be significantly higher than their mean pre-test scores on P1.
- b. Mean post-test scores on P1 for Group 2 should not differ significantly from their mean pre-test scores on P1.
- c. Mean post-test scores on P1 for Group 3 should not differ significantly from their mean pre-test scores on P1.

H4: Post-Test between Groups measures of K1, S1, P1:

Students in Group 1 should perform significantly higher on post-test measures: requiring identification of leadership concepts and ideas (K1), requiring identification of leadership concepts and ideas (S1), and requiring planning a course of action (P1) than students in Group 2 or Group 3.

Method

Participants. Eighty-four students (46% male; 53% female) from two separate Universities completed both the pre-test and the post-test. Ninety-one percent of the students were under age 30 and 68% were age 26 or younger. All participants were treated in accordance with the ethical standards of the American Psychological Association, and this research was given IRB approval.

Procedures. Group 1 (University A) was graduate students enrolled in an MBA Leadership & Management Skills class that was conducted based on the KSPD approach. Group 2 (University A - Control group) consisted of graduate students in Arts and Science graduate programs (e.g., English, Counseling, Non-Profit Management) with no formal leadership courses, and Group 3 (University B - Control group) was graduate students enrolled in an MBA Leadership class, using the same textbook as Group 1 (Whetten & Cameron, 2010); however, this class was not taught based on the KSPD approach.

Measures. All students were assessed once during the first 2 weeks of the term (pre-test) and once during the final 2 weeks of the term (post-test) using an online questionnaire, developed by the authors, comprised of 3 parts (47 total objective items). The 3 measures (K1, S1, P1) were developed based on items from the bolded terms and concepts in the Whetten and Cameron (2010) textbook that was used in both Groups 1 and 3. Twenty multiple-choice definitional questions comprised the K1 section of the questionnaire and were designed to assess the Know component of the model. The second section of the online instrument labeled S1 was developed to measure the See component of the model. It consisted of 4 short video clips embedded in the questionnaire, each followed by 4-5 True/False items that asked students to identify which leadership terms and concepts were present (that they could see) in the clip. The third section of the online assessment labeled P1, designed to assess the Plan component of the model, required students to view one movie clip and answer 10 multiple-choice questions focused on planning.

Results

A mixed design (within, between) repeated measures analysis of variance was completed. There were 2 within factors: Pre-test/Post-test (2 levels of time) and Dependent Measures of K1, S1, and P1 nested within the pre-test and the post-test. There was one between factor: Groups (3 levels; MBA using KSPD, Arts & Science graduate students, MBA non-KSPD). The repeated measure results indicated a significant 3-way interaction for Time (pre-post) X Measures (K1, S1, P1) X Groups (MBA with KSPD, A&S, MBA without KSPD), $F(4, 164) = 8.78, p < .001, \eta^2 = .176$. The between subjects effect was significant, $F(2, 82) = 31.29, p < .001, \eta^2 = .433$. Because the three-way interaction was significant, tests of the within factors for each group were done to test hypotheses 1, 2, and 3. The following are results for the tests of the hypotheses based on the F tests for marginal means adjusted for multiple comparisons using Bonferroni comparisons.

Hypotheses 1, 2, and 3 focus on the pre-test, post-test differences **within** each of the participant groups. It was expected that the Experimental group (Group 1) would have significantly higher scores on all three post-test measures (K1, S1, P1) than they had on the pre-test measures. It was predicted that for the two control groups, none of the 3 dependent measures (K1, S1, P1) would differ significantly from pre to post. Hypotheses 1, 2 and 3 (a, b, c) were analyzed using a mixed design repeated measures analysis of variance for pre-test and post-test scores (within variable), for each of the three university groups (between variable) for the K1, S1, and P1 dependent measures. As predicted in hypotheses 1a, 2a, and 3a, mean post-test scores for students in Group 1 (MBA Leadership course using KSPD model) were significantly higher than their mean pre-test scores for measures of K1, S1, and P1 ($F(1, 82) = 140.92, p < .001, \eta^2 = .631$; $F(1, 82) = 19.18, p < .001, \eta^2 = .190$; $F(1, 82) = 28.94, p < .001, \eta^2 = .261$, respectively). For Hypotheses 1b, 2b, and 3b, it was expected that there would be no significant differences for Group 2 (Arts and Science students control group) between the mean pre-test and post-test scores for K1, S1, or P1. As expected, there was no significant difference for the K1 or S1 measures ($F(1, 82) = 1.38, p = .24$; $F(1, 82) = .216, p = .643$, respectively). However, for P1 there was a significant difference between the pre-test and post-test means ($F(1, 82) = 4.87, p < .03, \eta^2 = .06$). See Means and Standard Deviations for Pretest and Posttest Measures results in Table 1.

Table 1.
Means and Standard Deviations for Pretest and Posttest Measures

Variable		<u>Group 1</u>		<u>Group 2</u>		<u>Group 3</u>	
		M	SD	M	SD	M	SD
K1	Pre	9.73	3.11	8.63	2.14	6.92	3.09
	Post	15.85	1.88	9.31	2.33	7.92	3.68
S1	Pre	11.15	1.82	11.09	1.82	8.67	2.77
	Post	12.71	2.04	11.28	2.36	8.42	2.19
P1	Pre	4.61	2.02	4.16	1.78	3.67	2.61
	Post	6.56	2.11	5.06	1.79	4.83	2.59

For Hypotheses 1c, 2c, and 3c, it was expected that the scores from pre to post would not change significantly for Group 3 (same-text MBA control group) for K1, S1, or P1. As predicted, there were no significant differences for K1, S1 or P1 measures ($F(1, 82) = 1.09, p = .299$; $F(1, 82) = .144, p = .705$; $F(1, 82) = 3.03, p = .09$, respectively).

Hypothesis 4 focused on the relationship between the 3 groups. It was predicted that on the post-test, Group 1 (the group taught using the KSPD model) would significantly outperform the other two groups on all three measures (K1, S1, P1). This hypothesis was fully supported. The repeated measures ANOVA for post-test differences between groups was significant for K1 ($F(2, 82) = 92.37, p < .001$); S1 ($F(2, 82) = 18.31, p < .001$); P1 ($F(2, 82) = .608, p = .003$). Post Hoc tests (Bonferroni, $\alpha = .05$) showed a significant difference between Group 1 and Group 2 and between Group 1 and Group 3 for all three measures (K1, S1, P1), indicating that the group taught using the KSPD model did outperform the other 2 groups at the end of the semester.

Discussion

Our results indicate there is preliminary support for the, Know, See and Plan dimensions of the KSPD model. In all cases, mean post-test scores on K1, S1, and P1 for students enrolled in a course using the KSPD model (Group 1) were significantly higher than the mean pre-test scores for measures of K1, S1, and P1. Likewise, results showed a significant difference between Group 1 (MBA KSPD) and Group 2 (Arts & Science group), and also between Group 1 (MBA KSPD) and Group 3 (MBA standard format) for all three measures (K1, S1, P1) which indicates that the group taught using the KSPD model outperformed both control groups at the end of the semester.

Contributions to Theory & Practice. We suggest three concrete contributions to theory and practice of leadership education. First, the KSPD teaching model begins to address the concerns of researchers regarding the paucity of validated models of leadership and management development (Day et al, 2009; Dragoni, Tesluk, Russell, & Oh, 2009; Hannah & Avolio, 2010). There is a paucity of empirical research on models of leadership education and learning. Our

goal was to put forward a model (Allen et al., 2014) and then begin to empirically test our assumptions.

A second contribution is that when applying the KSPD model to a single course, it helps to frame the course in a way that requires students to learn the material at the levels of knowing, seeing, and planning. The first three components, (Know, See, Plan) are primarily internal to the learner and closely associated with information processing and sensemaking. As a result, learners have an opportunity to engage with the content at multiple levels. Not only do they learn the content, they “live” the content, and in some ways, become a case study that reflects the content.

A third contribution is that the intentional use of deliberate practice as an instructional strategy shows preliminary support. To our knowledge, this is the first work that intentionally applies core concepts from the expertise literature (e.g., Ericsson et al., 1993) to leadership education and learning. Our efforts integrate two bodies of literature and there is a great deal of opportunity to further explore their relationship. For instance, how might individual difference variables (e.g., self-efficacy, motivation to lead) impact deliberate practice? Or, which sources of learning (Allen & Hartman, 2009) or instructional strategies will yield the largest return on investment in terms of student leadership development. Depending on the phase of development (Know, See, Plan, Do), it is likely that different sources of learning will best serve the student growth. For instance, which sources of learning (e.g., service learning, problem based learning, case-in-point, outdoor education, internships) best facilitate the Do component?

Limitations. While the results are encouraging, our study has limitations. Given the quasi-experimental design, there is an inherent lack of control for environmental variables. Also, the investigators only focused on Know, See, and Plan. Future research must evaluate Do. Because the instrument was developed by the authors there is an on-going need to test the instrument as we test the theory. The reliability of the individual measures K1, S1, P1 were all below the acceptable standard for alpha (alpha = .47, .23, .44 respectively). Our measures were a preliminary attempt to capture the essence of know, see, and plan using a textbook set of questions. Because each measure (e.g., K1) is actually assessing several separate concepts we felt that it was not an unexpected result. However, going forward, in order to rectify this issue our plan is to identify specific learning topics (e.g., problem solving) and to create 5-6 questions around each one. By doing so, we can assess reliability separately for each topic and better measure cognitive change. The instrument is available by request from the authors.

In addition to environmental variables, learner differences may have influenced the results. Groups should be matched if possible across demographics. Finally, while instructors in Group 3 had reviewed the questionnaire, the research was designed and delivered by one of the authors.

Conclusion

This study assesses the KSP portion of the KSPD model of curriculum design as a teaching model for leadership education. The KSPD model addresses several of the limitations discussed in the literature review. For example, the KSPD model necessitates the development of a clear set of concepts and a starting point for leadership education. The model also takes into account the nature of the work, which is often a process of leading others through ill-structured

and ill-defined problems. Additionally, the KSPD model highlights the necessity of a practice field and an opportunity to engage learners in deliberate practice. Finally, KSPD was designed as a curriculum model that is both actionable and measurable.

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