Melding Leadership Lessons with Data Collection and Analysis Lessons: Two Classroom Examples

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The purpose of this module is to illustrate examples of how courses in educational leadership programs can effectively and efficiently meld lessons on leadership with lessons on data collection and analysis. The rationale behind emphasizing this combination is very straightforward: America's schools need leaders who are adept with data-based decision making. Especially since the standardized testing mandates of the No Child Left Behind Act of 2001, educational leaders at all levels have been challenged and mandated to collect, disaggregate, analyze, and interpret data (Creighton, 2006; Holcomb, 2012; Kowalski, Lasley, & Mahoney, 2008). The ISLLC Educational Leadership Standards (Council of Chief State School Officers, 2008) call for educational leaders to "develop assessment and accountability systems to monitor student progress" (Standard 2F), "monitor and evaluate the impact of the instructional programs" (Standard 2I), "monitor and evaluate the management and operational systems" (Standard 3A), and "collect and analyze data and information pertinent to the educational environment" (Standard 4A). All of these require data collection, analysis, and interpretation skills and mindsets. Educational leaders must be prepared to: (a) ask the proper questions, (b) determine what data are necessary and available to answer these questions, (c) develop valid and reliable instruments to obtain the necessary data, (d) assess the data obtained, (e) analyze the data appropriate to answer the questions posed, (f) interpret the analyses, and (g) determine the proper actions to take based on this interpretation. However, prior to their preparation programs, few aspiring educational leaders have built these skills and a comfort level in using them.

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The Setting

The setting for these examples is a Historically Black University in the South; specifically, it is in that institution's Doctoral Program in Educational Leadership, Policy, and Law. The course in which these educational activities took place is the *Leadership Studies* course.

A Very Simple Example

Because the *Leadership Studies* course is typically offered as the initial course in the program, only rudimentary data collection, analysis, and interpretation concepts are introduced. This is done more for the goal of establishing a data-based decision making mindset than for building substantial skills; these can be built along the course of the full program. To build this mindset, the professor has used various editions of Peter Northouse's widely acclaimed text, *Leadership: Theory and Practice,* now in its fifth edition (2010). The text design is that Northouse presents a chapter on each of the major leadership theories, as well as chapters on such topics as gender and leadership and culture and leadership. The chapter's text is followed by several brief case studies, generally focused on private sector business organizations, and then by a self-scored instrument designed to assess the student's self-perceived compatibility with that theoretical model. It is these instruments that facilitate the integration of the leadership content with the data collection, analysis, and interpretation content of the course.

In the opening class of this course, the professor explained that the course will attempt to achieve a balance among theory, research (data collection, analysis, and interpretation), and practice. The discussion then focused on why theory and data-driven decision making are important to school leaders. Students were then asked about the types of data that are currently being collected and analyzed in their schools, to what uses they are put, and what types of data would ideally be collected and analyzed.

After concluding the discussion of each chapter's theoretical model, the professor directs the students to take and self-score the related survey instrument. Following a discussion of what various students "learned" about themselves vis-à-vis that theory, the class breaks into groups of three to critique the instrument, including format, validity of its content in relation to the theoretical model, use of double-barreled questions, etc. Group findings are then shared with the full class for discussion. The professor then distributes a different survey instrument on that theoretical model, downloaded from the many available on the Internet. Again, the small groups critique this instrument and compare and contrast it with the Northouse (2010) instrument. When students have sufficient insight and understanding of survey instrument design during the semester, they move from critiquing the instruments to designing instruments of their own based on the theoretical model being studied.

In addition, the professor asks students to design some Purpose of the Study statements and Research Questions that could be used in conjunction with the instrument to gain valuable insight into the study of leadership. To do this, they must identify independent or dependent variables of potential significance. This helps to prepare the prospective leaders to ask the right questions and determine what data are needed to answer those questions. Because they have not yet had any statistics classes, no attempt is made in this course to discuss data analysis schemas for the studies they are designing. The only data analysis is their self-scoring of the Northouse instruments and their interpretation of their results.

Each week, following the class discussion and activities, students are given the assignment to write a two- to three-page reflection on the theory, instruments, and their self-scored survey results. The culmination of this at the end of the course is using these reflections to help the student to determine his or her personal, theory-based philosophy of leadership. These activities have typically been evaluated very positively by students over the past decade.

A More Complex Example

This year, the course moved from its usually scheduled position at the entrance to the program to being offered after students had completed the research and statistics courses. The professor did require that students continue to complete Northouse's (2010) instruments, as he determined that the students needed to build further skills in this area. However, less time was spent developing Purposes of the Study and Research Questions, as these had been well covered in the research courses.

Recognizing that this cohort of students had a stronger background in research and statistics than previous cohorts, the professor sought a more complex research and leadership exercise. He found a recent article on leadership styles and gender (Singh, Nadim, & Ezzedeen, 2012) that complemented Northouse's (2010) chapter on that topic. This topic was deemed important because of the growing number of female educational leaders and of the growing number of females in educational leadership preparation programs. The article was assessed as being an appropriate basis for a replication exercise not only for its topic but because the statistics used for analysis were within the capability, even if not totally within the current knowledge base, of the students. Although they had not previously become familiar with Cronbach's alpha, Cohen's *d,* or factor analysis, they had previous experience with SPSS and with the other statistics used in the article.

After reading the article, working in groups of three the students were asked to develop a survey instrument (none was provided in the article) to research the topic. This helped them to learn to select the most important questions to ask to gain the insight needed and to word them appropriately to ensure reliable responses. Using a Nominal Group Technique, the class then selected what they considered to be the most essential, non-duplicated questions. The professor subsequently crafted these into a survey instrument and duplicated hundreds of copies for distribution to the students at the next class session. The students were then directed to gather responses from at least ten of their colleagues and to return to the completed survey forms to the professor at the next class session. The professor then compiled an SPSS database and loaded it onto the computers in the program's computer lab for use in the next class session. He also ran hard copy analyses of the responses using both Cronbach's alpha and factor analyses in order to teach them about these two statistical analyses.

In that class session, the professor instructed the students on the use of both analyses for determining validity and internal consistency. Using the printouts, the students learned how to interpret the results of the analyses. The professor then instructed them how to duplicate the printouts using SPSS.

Then, using a guided practice approach, the professor guided the students through the remaining analyses used in the article, descriptive statistics (mean, median, and standard deviation) and Chi-square analysis, and the interpretation of the results. He then introduced students to a web-based calculator of Cohen's *d* (using the pooled variances approach) and how to interpret the results. The professor then questioned the students how their data analysis

schema would have differed had this been a population study instead of a sample, how a more valid sample than this convenience sample could have been selected, and why this would be essential if the results were to be generalizable.

The students were then challenged to interpret their results and to compare them to the results of the original study. They were asked to speculate on why some results differed between the original study and the one conducted by their cohort. Then they were tasked with using their results to develop recommendations for practice in both educational leadership preparation programs and school districts. They were then asked what further studies they might conduct to gain even more insight into the topic and what additional variables they might investigate. Finally, they were asked to reflect verbally on what they had learned from this extended exercise.

This exercise allowed the prospective educational leaders to build further on the full set of data collection and analysis skills. In order to build their survey instrument, they had to investigate and prioritize among the key issues related to leadership and gender. Then they had to craft a valid and reliable survey instrument. They had to convince their colleagues to complete the survey instrument. They saw how an analyzable data base could be built in a brief period of time. They had to extend beyond their existing knowledge base and comfort zone in order to conduct the correct and necessary analyses of the data. Finally, they had to interpret their findings and develop recommendations for practice based on those findings.

The students generally reported that this was a valuable learning activity, although they expressed concern that they felt inadequate in calculating and interpreting statistics, exacerbated by the time lapse since their coursework in this area. However, they agreed that this experience was good preparation both for their upcoming dissertation and for their work as educational leaders.

Conclusions

Although there is considerable merit in courses specifically designed to teach data collection and analysis, melding these skills with the content areas of educational leadership preparation, as in this case, also is crucial. Doing so brings emphasis to the fact that data collection and analysis are *integral* parts of an educational leader's role, not discrete tasks. Also, doing so facilitates continued review and reinforcement of these skills, which can diminish over time if not maintained. The learning activities described are merely illustrations of how this can be done. With instructor creativity, they can be enhanced greatly.

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