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ABSTRACT

A study was conducted to compare the self-directed learning readiness of National Fire Academy (NFA) fire executive development students to the theoretical norm and to other public managers. Procedures included testing 30 NFA fire executive development students with the Self-Directed Learning Readiness Scale (SDLRS). The distribution of fire executives' SDLRS scores were compared to the theoretical norm and to a group of 76 public managers. This comparison was made statistically with the chi-square goodness of fit calculation. The findings indicated that the fire executives' distribution of SDLRS scores was statistically higher than the theoretical norm and public managers. Although the fire executives scored higher than the public managers, 30 percent of the fire executives had only average scores on the SDLRS, which was judged to be unacceptable. This judgment was made because the literature indicated that professionals need a high degree of self-directed learning to be successful. Recommendations included the identification, implementation, and evaluation of a learning contract instructional methodology to be incorporated into the existing fire executive development course. (Includes 16 references and the SDLRS.) (Author/KC)

COMPARISON OF THE SELF-DIRECTED LEARNING READINESS OF FIRE EXECUTIVES TO THE NORM AND PUBLIC MANAGERS

History, Philosophy, and Practices of Adult Education

by

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ABSTRACT

The problem was that the self-directed learning readiness of National Fire Academy (NFA) fire executive development students was not known. The purpose of this practicum was to compare the self-directed learning readiness of fire executives to the theoretical norm and other public managers.

Procedures included testing 30 NFA Fire Executive Development students with the Self-Directed Learning Readiness Scale (SDLRS) instrument. The distribution of fire executive SDLRS scores were compared to the theoretical norm and other public managers. This comparison was made statistically with the chi-square goodness of fit calculation.

The findings indicated that the fire executive's distribution of SDLRS scores was statistically higher than the theoretical norm and public managers. The level of significance for both comparisons was $P \leq .001$. Despite the fact that the fire executives scored higher then the public managers, 30% of the fire executives only scored average on the SDLRS; which was judged to be unacceptable. This judgment was made because the literature indicated that professionals need a high degree of self-directed learning to be successful.

Recommendations included the identification, implementation, and evaluation of a learning contract instructional methodology into the existing Fire Executive Development course.

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INTRODUCTION

The National Fire Academy (NFA) curriculum does not contain any self-directed learning methodology. NFA faculty do not know if the students that attend the executive development program are ready to use a self-directed learning methodology. The purpose of this practicum was to compare the self-directed learning readiness of NFA fire executive development students to the national norm and other public managers.

This study included the following investigation methods. First, a class of NFA fire executives were tested to determine their Self-Directed Learning Readiness Scale (SDLRS) scores. Next, the fire executive data was compared to the theoretical norm and a group of public managers. The chi-square goodness of fit calculation was used to compare the distribution of SDLRS scores between the three groups.

BACKGROUND AND SIGNIFICANCE

Significance

This practicum was important to the NFA for the following three reasons. First, the inclusion of self-directed learning into the curriculum is being considered. The amount of student preparation that will be needed is not known. The results of this study will give an indication as to the amount of student preparation that will be required. Second, by comparing NFA students to other populations in

terms of their readiness, the results will give some indication as to the utility of self-directed methodologies that have already been developed. Finally, this was the first study which compares NFA students to normative data and other public managers. By conducting this comparison the relative standing, in terms of the Self-directed Learning Readiness Scale, of NFA students was identified. NFA management can use this data as part of the overall needs assessment decision-making process.

Literature Review

The illiterate of the year 2000 will be the person who cannot learn, unlearn, and relearn (Toffler, 1970), "Particularly in industries, undergoing rapid change, the need to sort, add, discard, and ultimately integrate new knowledge and skills with that which was learned yesterday is a challenging task" (Sonnenfeld and Ingols, 1986: 63). The need for life long learning is a reality and self-directed learning is an important part of the process.

There is a need for self-directed learning among all adults but professionals need a higher degree to maintain their competence throughout their careers (Oddi, 1986). This need also applies to professional managers. Byrd's (1987) review of the research on executives, identified that effective leaders have a primary characteristic of self-learning and development, and have an ability to recognize their strengths and weaknesses. In addition, Preziosi (1986) identified the ability to assess training needs as one of the

twenty-five competencies that managers need to be successful. Assessing learning needs is the first step in the self-directed learning process.

What is self-directed learning? "Self-directed learning is defined as deliberate learning in which the person's primary intention is to gain certain definite knowledge or skills" (Cross, 1981: 186). The self-directed learner identifies their own learning needs, selects the learning resources and strategies, and evaluates the learning outcome; with or without the assistance of others (Caffarella and Caffarella, 1986; and Knowles, 1975). Self-directed learning is not new, it has always been a paramount means of learning (Caffarella and O'Donnell, 1987). What is new, is the ability to identify the self-directed learning readiness of individuals.

The Self-Directed Learning Readiness Scale (SDLRS) was developed in 1977. Since its development it has been utilized in many studies "...which have made important contributions to self-directed learning research..." (Brockett, 1985: 15). The SDLRS national normative data is based on over 15,000 people. An individual's score on the instrument is a measure of their current level of self-directed learning readiness; which is reported as low, below average, average, above average, or high (Guglielmino, 1988). Individuals with high scores prefer a self-directed methodology, persons with an average score are not fully comfortable with a self-directed approach, and lower level scores indicate that a person prefers structured learning; low and average scores can be improved with practice (Ibid).

The SDLRS has been used with many populations. A study by Johnson, Sample, and Jones (1987) identified the self-directed learning readiness of public managers. The subjects were public sector professionals seeking advanced education, N=76. The results showed that 66% of the respondents were concentrated in the upper levels of the SDLRS range, but 33% were lower than expected. "This finding is somewhat disturbing since the need for self-directedness in one's own professional development beyond the classroom is becoming more evident" (Ibid: 68). The implication of this result is that the primary task of professional development is to create "...opportunities which foster self-directedness in learning" (Ibid: 69). One method to accomplish this is through the use of a learning contract methodology, which has been shown to increase self-directed learning competencies (Ibid).

To summarize the literature, self-directed learning is needed to help prevent human obsolence. To be effective, leaders need a higher degree of self-directed learning then the general population. Finally, the SDLRS instrument is a tool that can be used with various populations as part of a self-directed learning needs assessment process.

This practicum is related to the History, Philosophy, and Practices of Adult Education seminar. A major portion of this seminar addressed the knowledge and theory dimensions of adult education that are based on various andragogical concepts. The specific concepts related to this study are the psychological need of

adults to be self-directing and the need of adult educators and institutions to help "...adult learners make a transition from dependent to self-directed learners" (Cook and Aker, 1986: 90).

PROCEDURES

Population

The participants were students attending the NFA fire executive development course. The students were chief fire executives from around the country. They were males between the ages of 35 and 55. Students voluntarily applied for the course and were selected by the NFA admissions office. There were approximately 30 students in the class.

Permission was granted from NFA management to include one fire executive development class as part of this study. Any testing of students beyond this requires Office of Management and Budget approval which takes 12 months and was beyond the timeline of this study.

The study population, NFA students, was compared to two other groups. First, the population on which the theoretical norm is based, approximately 1,000 people, which consisted of college undergraduates, adults involved in noncredit continuing education, and high school seniors (Guglielmino, 1989: interview). Second, the public manager population used in the Johnson, Sample, and Jones

(1987) study. This group consisted of 76 public sector professionals seeking advanced degrees. The NFA students can be compared to this group because chief fire executives are public managers.

Instrumentation

The instrument used in this study is the Self-Directed Learning Readiness Scale (SDLRS) which was developed in 1977 (Appendix A). This instrument has been used in over 20 doctoral dissertations. In addition, 100 organizations around the world have used the SDLRS with 15,000 adults. "At least 17 studies have been conducted specifically to examine the validity of the SDLRS, and a recent meta-analysis of 29 studies using the scale provides further evidence of its validity revealing positive association with self-directed learning activity (.27), autonomy (.22), and growth orientation (.22) and a negative relationship with dependence (-.12) (Guglielmino, 1989: 238). The latest Pearson split-half reliability (N=3151) is .94 and another study (N=244) had a .89 reliability estimate based on Cronbach's alpha (Ibid).

This instrument was selected because of its widespread utilization, validity and reliability, and the comparative data, norm and public managers, that is available.

Collection of Data

The SDLRS was administered to the students on the first day of class before any instruction began. There was no explanation given to the students on the purpose of the instrument, to avoid influencing their answers. The students marked their answers on the scannable answer sheet (Appendix B). The answer sheets were sent to the instrument publisher for computer scoring. At the end of the course students were given their individual results and an explanation of their score.

The fire executive data was compared to two sets of information. First, the national normative data which has a standard distribution low score 58-176 (7%), below average score 177-201 (24%), average score 202-226 (38%), above average score 227-251 (24%), high score 252-290 (7%) (Guglielmino, 1988). Second, public manager data which has a distribution of 0% low, 10.5% below average, 22.4% average, 34.2% above average, and 32.9% high (Johnson, Sample, and Jones, 1987: 68).

Statistical Analysis

The fire executive data, expressed as the distribution by percentage of students which fall into the SDLRS ranges (low, below average, average, above average, high), was compared to the theoretical norm and the public manager data. A chi-square goodness of fit calculation, at a .05 level of significance, was conducted for each comparison.

This statistical method was chosen because it is appropriate for comparing observed frequencies to theoretical frequencies and to reduce the chance of committing a type I error (Smith, 1970). There were two null hypotheses tested.

A. Null hypothesis: There will be no statistically significant difference in the distribution of the SDLRS ranges between fire executives and the theoretical norm.

B. Null hypothesis: There will be no statistically significant difference in the distribution of the SDLRS ranges between fire executives and public managers.

Assumptions and Limitations

It is assumed that the NFA students responded to the SDLRS honestly. The NFA faculty member administering the instrument informed the class that the survey is not connected with the course and that they are being asked to voluntarily fill out the survey. The next assumption is that the one class, consisting of 30 chief fire executives, selected for this study is representative of the total population. Finally, it is assumed that the public manager data can be used in the comparison, despite the limited number of cases the data is based on.

The limitation that effects this study is the fact that the SDLRS is an indication of the students self-directed readiness not their knowledge, skill, or ability to conduct self-directed learning. Determining the knowledge, skill, and ability of NFA students in terms of self-directed learning was beyond the scope of this study.

Definition of Terms

The National Fire Academy is part of the Federal Emergency Management Agency which is under the Executive Branch of the federal government.

Fire Executive Development Course - This is a two week, 80 hour course designed for chief fire executives from around the country. It is accredited by the American Council on Education for 3 graduate level credits.

Theoretical Norm - The distribution of scores by percentage using a normal bell curve.

RESULTS

One class of fire executives was tested using the SDLRS instrument. The total number of students was 30. The mean score was 236.133 with a high score of 276 and a low score of 208. The standard deviation was 15.576 and the standard error of measure was 2.844 (Table 1).

TABLE 1

FIRE EXECUTIVES SELF-DIRECTED LEARNING READINESS SCALE RESULTS

Group	N	$\bar{X}$	Standard Deviation	Score Low	Score High	Standard Error of Measure
Fire Executives	30	236.133	15.576	208	276	2.844

The majority (70%) of the fire executive's SDLRS scores were distributed in the upper end of the scale 16.7% high, 53.3% above average, and the remaining 30% had average scores. The fire executives were compared to the theoretical norm using a chi-square goodness of fit calculation $x^2=81.896$ which is statistically significant at $P\leq.001$. The fire executives were also compared to the public managers $x^2=31.722$, $P\leq.001$. Null hypothesis A and B are both rejected. The fire executives scored significantly higher on the SDLRS then the theoretical norm and the public managers (Table 2).

TABLE 2

DISTRIBUTION OF SDLRS SCORES BETWEEN GROUPS BY PERCENTAGE

Group	Low	Below Average	Average	Above Average	High
Fire Executives[a,b]	0	0	30	53.3	16.7
Theoretical Norm	7	24	38	24	7
Public Managers	0	10.5	22.4	34.2	32.9

Note: The distribution of scores between fire executives and theoretical norm (a) and public managers (b) were compared using a chi-square goodness of fit calculation.

a $x^2=81.896$, df=4, $P\leq.001$

b $x^2=31.722$, df=3, $P\leq.001$

DISCUSSION

The fire executives scored higher, on the SDLRS, then the norm or public managers at a statistically significant level $P \leq .001$. In addition, 70% of the fire executives scored in the above average or high category. This result can be discussed in three ways.

First, Oddi (1986), Byrd (1987), and Preziosi (1986) all agree that professional managers need a high degree of self-directed learning to be successful leaders. But, the authors do not give an operational definition of what is meant by "high degree" so it is not possible to determine if fire executives meet the high degree of self-directness that Oddi (1986), Byrd (1987), and Preziosi (1986) deem as necessary.

Second, the study by Johnson, Sample, and Jones (1987) does help in interpreting the results. The Johnson, Sample, and Jones (1987) study concluded that 33% of the public managers scored lower than expected 22.4 average and 10.5 below average. This can be construed to mean that a score of average or below is unacceptable. The fire executives results show that 30% scored within the average range, which is not acceptable based on the Johnson, Sample, and Jones (1987) study.

Finally, Guglielmino's (1988) description of the characteristics of individuals at various levels of the SDLRS indicates that 70% of the fire executives prefer to determine their own learning needs and conduct their own learning. The remaining 30% "...are not fully comfortable with handling the entire process of identifying their

learning needs and planning and implementing the learning" (Ibid: 2). This indicates that the majority of fire executive students are ready to undertake self-directed learning but some will need guidance.

In conclusion, fire executives scored higher on the SDLRS then the norm and public managers. But like other public managers, their SDLRS needs to be increased if they are to be successful professionals; competing in the ever changing environment.

IMPLICATIONS AND RECOMMENDATIONS

Because the fire executives and public managers have similar SDLRS scores, the implications and recommendations presented by Johnson, Sample, and Jones (1987) are very applicable to the NFA. The primary task of professional development "...is one of creating educational and development opportunities which foster self-directedness in learning" (Ibid: 69). One way this can be accomplished is through the use of learning contracts, which have been shown to increase students self-directed learning competencies (Ibid).

The following recommendations are made. Conduct a literature review to identify learning contract methodologies which have been used with public managers. Collect samples of various learning contract methodologies and identify one that would be appropriate to be used with fire executives. Incorporate a learning contract methodology into the existing Fire Executive Development course and develop an evaluation strategy. The evaluation strategy should include the SDLRS instrument to measure changes.

By implementing these recommendations the NFA will be following its mission of increasing the professionalism of the nations fire service. These changes will help NFA students enhance their self-directed learning thereby helping them to be effective professional managers.

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APPENDICIES

APPENDIX A

SELF-DIRECTED LEARNING READINESS SCALE (SDLRS)

Name _____ Sex _____ Birthdate _____

Date of Testing _____ Location of Testing _____

QUESTIONNAIRE

INSTRUCTIONS: This is a questionnaire designed to gather data on learning preferences and attitudes towards learning. After reading each item, please indicate the degree to which you feel that statement is true of you. Please read each choice carefully and circle the number of the response which best expresses your feeling.

There is no time limit for the questionnaire. Try not to spend too much time on any one item, however. Your first reaction to the question will usually be the most accurate.

ITEMS:	RESPONSES				
	Almost never true of me; I hardly ever feel this way.	Not often true of me; I feel this way less than half the time.	Sometimes true of me; I feel this way about half the time.	Usually true of me; I feel this way more than half the time.	Almost always true of me; there are very few times when I don't feel this way.
1. I'm looking forward to learning as long as I'm living.	1	2	3	4	5
2. I know what I want to learn.	1	2	3	4	5
3. When I see something that I don't understand, I stay away from it.	1	2	3	4	5
4. If there is something I want to learn, I can figure out a way to learn it.	1	2	3	4	5
5. I love to learn.	1	2	3	4	5
6. It takes me a while to get started on new projects.	1	2	3	4	5
7. In a classroom, I expect the teacher to tell all class members exactly what to do at all times.	1	2	3	4	5
8. I believe that thinking about who you are, where you are, and where you are going should be a major part of every person's education.	1	2	3	4	5
9. I don't work very well on my own.	1	2	3	4	5

	Almost never true of me; I hardly ever feel this way.	Not often true of me; I feel this way less than half the time.	Sometimes true of me; I feel this way about half the time.	Usually true of me; I feel this way more than half the time.	Almost always true of me; there are very few times when I don't feel this way
10. If I discover a need for information that I don't have, I know where to go to get it.	1	2	3	4	5
11. I can learn things on my own better than most people.	1	2	3	4	5
12. Even if I have a great idea, I can't seem to develop a plan for making it work.	1	2	3	4	5
13. In a learning experience, I prefer to take part in deciding what will be learned and how.	1	2	3	4	5
14. Difficult study doesn't bother me if I'm interested in something.	1	2	3	4	5
15. No one but me is truly responsible for what I learn.	1	2	3	4	5
16. I can tell whether I'm learning something well or not.	1	2	3	4	5
17. There are so many things I want to learn that I wish that there were more hours in a day.	1	2	3	4	5
18. If there is something I have decided to learn, I can find time for it, no matter how busy I am.	1	2	3	4	5
19. Understanding what I read is a problem for me.	1	2	3	4	5
20. If I don't learn, it's not my fault.	1	2	3	4	5
21. I know when I need to learn more about something.	1	2	3	4	5
22. If I can understand something well enough to get a good grade on a test, it doesn't bother me if I still have questions about it.	1	2	3	4	5
23. I think libraries are boring places.	1	2	3	4	5
24. The people I admire most are always learning new things.	1	2	3	4	5

	Almost never true of me; I hardly ever feel this way.	Not often true of me; I feel this way less than half the time.	Sometimes true of me; I feel this way about half the time.	Usualy true of me; I feel this way more than half the time.	Almost always true of me; there are very few times when I don't feel this way
25. I can think of many different ways to learn about a new topic.	1	2	3	4	5
26. I try to relate what I am learning to my long-term goals.	1	2	3	4	5
27. I am capable of learning for myself almost anything I might need to know.	1	2	3	4	5
28. I really enjoy tracking down the answer to a question.	1	2	3	4	5
29. I don't like dealing with questions where there is not one right answer.	1	2	3	4	5
30. I have a lot of curiosity about things.	1	2	3	4	5
31. I'll be glad when I'm finished learning.	1	2	3	4	5
32. I'm not as interested in learning as some other people seem to be.	1	2	3	4	5
33. I don't have any problem with basic study skills.	1	2	3	4	5
34. I like to try new things, even if I'm not sure how they will turn out.	1	2	3	4	5
35. I don't like it when people who really know what they're doing point out mistakes that I am making.	1	2	3	4	5
36. I'm good at thinking of unusual ways to do things.	1	2	3	4	5
37. I like to think about the future.	1	2	3	4	5
38. I'm better than most people are at trying to find out the things I need to know.	1	2	3	4	5
39. I think of problems as challenges, not stopsigns.	1	2	3	4	5
40. I can make myself do what I think I should.	1	2	3	4	5

	Almost never true of me; I hardly ever feel this way.	Not often true of me; I feel this way less than half the time.	Sometimes true of me; I feel this way about half the time.	Usually true of me; I feel this way more than half the time.	Almost always true of me; there are very few times when I don't feel this way.
41. I'm happy with the way I investigate problems.	1	2	3	4	5
42. I become a leader in group learning situations.	1	2	3	4	5
43. I enjoy discussing ideas.	1	2	3	4	5
44. I don't like challenging learning situations.	1	2	3	4	5
45. I have a strong desire to learn new things.	1	2	3	4	5
46. The more I learn, the more exciting the world becomes.	1	2	3	4	5
47. Learning is fun.	1	2	3	4	5
48. It's better to stick with the learning methods that we know will work instead of always trying new ones.	1	2	3	4	5
49. I want to learn more so that I can keep growing as a person.	1	2	3	4	5
50. I am responsible for my learning — no one else is.	1	2	3	4	5
51. Learning how to learn is important to me.	1	2	3	4	5
52. I will never be too old to learn new things.	1	2	3	4	5
53. Constant learning is a bore.	1	2	3	4	5
54. Learning is a tool for life.	1	2	3	4	5
55. I learn several new things on my own each year.	1	2	3	4	5
56. Learning doesn't make any difference in my life.	1	2	3	4	5
57. I am an effective learner in the classroom and on my own.	1	2	3	4	5
58. Learners are leaders.	1	2	3	4	5