

UNVEILING THE LEADERSHIP AND PROBLEM-SOLVING ABILITIES OF STUDENTS IN INDIA

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Abstract

Leaders are often adept problem solvers, indicating that an individual's problem-solving capacity is essential for successful leadership. This study aimed to investigate the relationship between leadership effectiveness and problem-solving ability among students. A descriptive cross-sectional study was conducted with a sample of 112 students in India. The researchers used a simple random technique to select the participants. The researchers employed various statistical analyses, including the independent t-test, product-moment correlation, f-test, post hoc analysis, correlation, and regression, to examine the significant differences, relationships, and influences between variables. IBM SPSS version 26 performed the data analysis. The findings revealed a positive correlation between leadership and problem-solving ability, with problem-solving ability being a predictor of leadership. Additionally, the study identified significant differences in demographic factors.

Keywords: Adolescents; Leadership; Problem-Solving; Students; Youth Development.

INTRODUCTION

Many recent surveys by prominent corporate media, such as Forbes and Wall Street, report the existence of a real crisis in leadership and problem-solving skills among employees of multinational corporations (MNCs). Nearly 77% of the companies have observed severe gaps in their leadership capacities. In contrast, less than 10% of the companies have effective leadership development and transition training programs that influence the company's market value. Forbes Wall Street says multinational corporate employees lack leadership and problem-solving skills. Poor leadership costs many organizations over 550 billion dollars in losses. (Hougaard, 2018; Gibson, 2021; Segal, 2021). Similarly, more than 80% of the organizations in a survey by Mercer Mettl in India revealed that they were experiencing a shortage of leadership talent, primarily because the current leaders are retiring. The younger generation does not seem to have the capacity to hold jobs for a very long time (Desk, 2019). These observations emphasize a significant absence of leadership at the corporate level, especially among young graduates, and can be assumed to reflect the current state of the education system prevailing in and outside the country.

Leadership inspires people to follow one's ideas and values. It's innate and learned as well (Steers et al., 1996; Oyinlade, 2006). People believe formal training can improve leadership (Posner, 1992). Focusing on improvement tasks helps us become leaders (Mitra, 2005). According to positive youth development theory, adolescence is a vital time for acquiring leadership abilities that allow youngsters to control their lives (Ozgen et al., 2013). Some studies explain that teachers' leadership also influences students' academic grades. Most studies support this statement and refute it, contradicting the conversation (Al-Safran et al., 2014; Bell et al., 2003; Feyisa, 2016; Okolo, 2001; and Iordanoglou, 2007). Teen leadership development must be based on meaningful experiences that respect "finding one's destiny" (Starratt, 2007).

Problem-solving is a vital aspect of daily life, involving the mental and cognitive processes of a high level of awareness, the identification of effective solutions, the selection of the most likely or appropriate solution, and the final inference of effective decisions about finding solutions to achieve desired outcomes (Deng et al., 2023). Challenges arise when individuals lack the necessary knowledge and guidance to navigate the path toward success. According to Sternberg (2003), problem-solving requires cognitive processes like thinking, decision-making, reasoning, language comprehension, and memory recall. Problem-solving can be seen as a skill, tool, or process, with tools useful for immediate challenges and skills developed through experience and practice.

The problem comes when someone is dealing with a problem for which there is no proper solution (Dewey, 1910; Newell, 1972; Mayer, 2000; Nurdyansyah & Bachtiar, 2017). The problem's difficulty depends on the solver's wisdom and experience. One person's problem may not be another's (Gok, 2010; Gok & Sylay, 2010; Garrett, 1986; Ogilvie, 2009). Education's greatest achievement is helping pupils solve problems (McDermott, 1991; Heller et al., 1992). This skill provides various problem-solving options. The process involves identifying problems, analysing them, discovering multiple solutions, and selecting the best one (Muir et al., 2008; Anderson, 2014; Pretz et al., 2003; Kirn & Benson, 2018). Problem-solving is linked to teenage leadership. Gestalt theory emphasizes two problem-solving methods. First, humans use past experiences to solve a current reproductive problem, sometimes in a creative way without a theoretical foundation. Three aspects are skill-domain-specific information related to the problem-solving task (Ellis & Petersen, 2011). These forms of input are badly absent in the existing education system, which should foster problem-solving skills in students.

Problem-solving can be divided into well-defined problems, which have a single answer, and ill-defined problems, which involve multiple objectives and various solutions. A careful procedure is needed to conceptualize and organize these problems before creating, evaluating, and selecting ideas for implementation. Initially, an individual recognizes, understands, evaluates, and frames a problem during the problem-solving process. Then, they construct a novel strategy to solve the problem, allowing for the creative aspect of problem-solving ideas. This generation of creative ideas is possible only when an individual develops a new approach to solving a problem (Reiter-Palmon & Illies, 2004; Raz et al., 2023).

The current educational system is lacking innovation, adaptability, and relevance. It is burdened by excessive regulations and fails to adequately prepare students for the challenges they will face in the future or provide them with the necessary skills for the evolving workforce (Sandhiya & Bhuvaneshwari, 2023). Several studies conclude that a shift to a new and "good practice" structure in the secondary and post-secondary education curriculum would lead to better leadership in fresh university graduates (Rosch, 2018). In this digital age, all young adults need to sharpen their leadership and problem-solving skills because they will become entrepreneurs or managers in industry or other workplaces in the future. This skill helps them deal with many problems effectively. Since there is a strong link between excellent leadership and beneficial social outcomes (Cooper et al., 2008), So, here we attempt to determine the leadership and problem-solving skills among various disciplines of college students.

H₁: There is a significant difference in leadership effectiveness and problem-solving ability among gender and demographic variables such as geographical area and various disciplines.

H₂: Leadership effectiveness and problem-solving have a significant relationship.

H₃: Problem-solving ability predicts leadership effectiveness.

METHODOLOGY

Participant's Information

A descriptive cross-sectional survey was conducted to collect data from 112 college students aged 17 to 25. The sample group consisted of 38.4% males and 61.6% females, who were selected randomly from the population. The data was gathered from Madurai, Vellore, and Coimbatore in Tamil Nadu, India, using a lottery-based method. A significant majority of participants (57.1%) were within the age range of 17–21 (N = 64), with the remaining 48% falling within the age range of 22–25 (N = 48). Furthermore, 57.1% of participants indicated residing in rural regions, while 42.9% of participants were in urban areas. 13.4% of students came from low-income families, 40.2% from below-average-income families, 16% from middle-income families, and 5.4% from high-income families. And 32.1% of students finished their schooling in the state board Tamil medium, 62.5% in the state board English medium, 5% in CBSE, and 1% in ICSE. 36.6% of the students resided in hostels. 63.4% of students resided in their homes. The birth order of students was 13.4% for single-born students, 41.1% for first-born students, 41.1% for second-born students, 3.6% for third-born students, and 0.9% for fourth-born students. 20.5% of students were from the arts, while 58.9% and 20.5% were from science and engineering disciplines. 40% of students came from an agricultural background; 30.4% have parents with diverse occupations; 30.4% are from small-scale entrepreneurial families; and 2% are from large-scale entrepreneurial and unemployed families.

Measures

The Leadership Effectiveness Scale (LES) and Problem-Solving Inventory (PSI) are used for this research. In addition, demographic factors were also included. The Leadership Effectiveness Scale was developed by Haseen Taj (2010). It is a 5-point scale (Always to Never) containing 79 statements, for example (*1. appreciates the good work; 2. is easily moved by the situations*), and it has six dimensions: interpersonal relations, intellectual operation, behavioral and emotional stability, ethical and moral strength, adequacy of communication, and operation as a citizen. The reliability and validity values are 0.78 and 0.80, respectively.

Problem-solving inventory developed by Heppner & Petersen (1982). It is a 6-point scale (strongly agree to disagree strongly). And it contains 35 statements, for example, *1. When a solution to a problem is unsuccessful, I do not examine why it didn't work. 2. I generally go with the first good idea that comes to mind.* And it has three dimensions: problem-solving confidence, approach and avoidance style, and personal control. The reliability and validity values were 0.83 and 0.89, respectively.

Statistical analysis

Statistical analyses such as the independent t-test, product-moment correlation, F-test, post hoc, and regression were employed to assess the significance, relationships, and influences between variables using Excel and SPSS 26.

RESULTS

Table 1: The mean differences in gender and age on leadership effectiveness and problem-solving ability (PSA).

Variables	Categories	M	SD	t	p	df	Mean difference	d	
Problem-solving ability	Gender	Male	125.9	22.78	-2.405	.018	110	-8.687	0.447
		Female	134.6	15.43					
Leadership effectiveness	Gender	Male	307.2	40.73	1.406	.163	110	-11.53	-0.273
		Female	318.7	43.12					
Problem-solving ability	Age	17-21	134.8	14.48	2.333	0.32	110	8.292	0.445
		22-25	126.5	23.02					
Leadership effectiveness	Age	17-21	312.1	46.00	-.627	.532	110	-5.094	-0.120
		22-25	317.2	37.38					

An independent sample t-test result shows that there was a significant difference between the genders, male ($M = 125.9$, $SD = 22.78$), and female ($M = 134.6$, $SD = 15.43$). ($t(112) = -2.405$, $p < 0.05$, $d = -0.467$) in problem-solving ability. And there was no significant difference between male ($M = 307.26$, $SD = 40.73$) and female ($M = 318.7$, $SD = 43.12$) ($t(112) = 1.406$, $p > 0.05$, $d = -0.273$) in leadership effectiveness. There was a significant difference between ages 17–21 ($M = 134.8$, $SD = 14.48$) and 22–25 ($M = 126.5$, $SD = 23.02$) ($t(112) = 2.333$, $p > 0.05$, $d = 0.445$) in problem-solving ability. 17–21-year-old students had a higher problem-solving ability than 22–25-year-old students. And there is no significant difference in age between 17–21 ($M = 312.1$, $SD = 46.0$) and 22–25 ($M = 317.2$, $SD = 37.38$) ($t(112) = -0.627$, $p < 0.05$) in the leadership of college students.

Table 2: Multiple comparisons in family income and various disciplines on leadership effectiveness and problem-solving ability.

	Economic level	Family annual income	M	SD	Mean difference	Std. Error	Sig
		Low	307.40	44.48	58.933*	13.49	0.003
		Below Average	306.69	40.62	59.644*	9.312	
		Average	312.19	40.40	54.146*	12.232	0.003
		Above Average	320.03	42.66	46.300	10.522	0.003
Problem-solving	Arts	Science	119.22	22.629	-16.510*	5.042	0.008
		Engineering			-11.261	6.561	0.251
	Science	Arts	135.73	14.44	16.510*	5.042	0.008
		Engineering			5.249	4.894	0.637
	Engineering	Arts	130.48	21.865	11.261	6.561	0.251
		Science			-5.249	4.894	0.637

* $p < 0.05$ (level of significance)

Based on the multiple comparisons from Table 2, it can be inferred that there was a significant difference in leadership effectiveness based on the high-level income students and the average and low-level income college students ($F = 0.003$, $p = <$

0.05, $M = 46.30$, $SD = 10.52$) at the level of a 95% confidence interval. In addition, there was a significant difference in problem-solving ability among arts and science college students than engineering students ($F = 0.01$, $p = < 0.05$, $M = 16.51$, $SD = 5.04$) at the level of a 95% confidence interval.

Table 3: Mean, standard deviation, and correlation of leadership effectiveness and problem-solving ability among college students

Study variables	<i>M</i>	<i>SD</i>	1	2
1. Leadership effectiveness	314.34	42.41	1	.209*
2. Problem-solving ability	131.26	18.98	---	1

* $p < 0.05$ (level of significance)

Based on the results presented in Table 3, it is observed that a strong positive correlation was found between problem-solving and leadership effectiveness among college students ($r = 0.209$, $p < 0.05$) at the 95% confidence level (2-tailed).

Table 4: Regression analysis of leadership effectiveness on problem-solving ability among college students

Variables	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% C.I.
constant	101.88	13.23	7.69	.000	[75.647, 128.112]
Leadership effectiveness	.093	.042	2.24	0.027	[.011, .176]

Table 4 presents the results of a study that examined the impact of leadership effectiveness on problem-solving ability among college students. The study found that the predictors explained 4% of the variance in the outcome variable, with an F-value of $1,110=5.02$ and a p-value of less than 005. Specifically, the results indicated that leadership effectiveness was a significant predictor of problem-solving ability ($\beta = 0.44$, $p < 0.05$) in college students.

DISCUSSION

The study's findings indicate that there was a significant difference between female and male problem-solving abilities. Especially females scored higher in problem-solving ability than males, with a nearly medium effect size (0.46). Research has shown that disparities in problem-solving ability between males and females can be attributed to social and cultural influences (Borgonovi et al., 2023). According to Awofala (2007), even though men and women are equal, their biological and brain structures are fundamentally different. This difference can be seen in the way men and women approach problem-solving. Boys and females often have similar problem-solving abilities during childhood, but these disparities become more noticeable around adolescence (Lubienski et al., 2013). In contrast, some studies found that there were no differences in gender (Miller & Crouch, 1991). Furthermore, in meta-cognition and problem-solving, male students outperformed females (Steif et al., 2010). Tasgin (2011) found that females are better at problem-solving than boys; gender differences play a role. This study found that male students are more avoidant than female students. It is an active quest for alternate answers and an examination of previous problem-solving efforts. Gender, education level, and school type all had an impact on secondary students' problem-solving and decision-making (Gucray, 2003). Moreover, students aged 17–21 are high in problem-solving ability compared to 22–24-year-olds with a small effect size (0.45). According to D'Zurilla et al. (1998), social problem-solving capacity develops from young adulthood (17–20 years) is higher in middle age

(45–55 years), and declines with age (60–80 years). And there were no significant gender differences found in leadership. Paustian-Underdahl et al. (2014) conducted a meta-analysis (n = 95 studies), which supports these results. Even though females were slightly higher in ethical and moral strength and adequacy of communication than males, Communication is important in leadership because a lack of sufficient information can lead to delays and unnecessary confusion. Border and commuter students did not affect problem-solving or leadership capacity. Other demographic variables, such as schooling, birth order, family background, and geographical area, have no significant differences among students' problem-solving ability and leadership effectiveness. High-income family students had slightly higher leadership effectiveness than other family-income families. But income doesn't play any role in problem-solving ability. However problem-solving ability has a significant difference in various disciplines like the arts, science, and engineering, especially for arts and science college students. Science students had a higher problem-solving ability than arts students. There were no significant differences among engineering students. Some studies claimed that science, mathematics, and arts undergraduate students performed equally well in problem-solving (Borg Preca et al., 2023). Based on these results, Hypothesis 1 was partially accepted. Several studies explained that engineering students were poor in their leadership skills (Karatas & Baki, 2013; Farr & Brazil, 2009; Dudman et al., 2003; Goleman, 1999; Farr et al., 1997). Engineering students selected for managerial positions exhibited poor performance (Foulsham, 1984). Another study found that students were technically capable but lacked leadership (Krug, 1996).

Based on the correlation results, there is a significant relationship between leadership and problem-solving ability. (Puncochar, 2013; Carmeli et al., 2014). Effective leadership requires a strong focus on problem-solving. Having a strong understanding and ability to analyze complex situations, challenges, and issues is crucial for leaders and policymakers (Kerns, 2016). Hypothesis 2 has been confirmed.

Problem-solving ability has an effect (low level, 4%) on leadership effectiveness in various disciplines among college students. Problem-solving capacity increases leadership effectiveness. Leaders need problem-solving skills, and it helps transformational leaders enhance creative problem-solving skills (Chan, 2000). So, our hypothesis 3 has been accepted.

Education institutions play a major role in developing leadership and problem-solving abilities among college students. Unfortunately, numerous university courses fail to sufficiently incorporate the skills of leadership and problem-solving ability (Chan, 2000). Enhancing the standard of education in India is an ongoing and intricate process that involves various stakeholders, including government initiatives, educational institutions, industrial partnerships, and student organizations. Universities are making concerted efforts to enhance their curriculum, facilities, and learning environment. Several Indian states have also implemented policies aimed at enhancing the standard of education (National Academy of Engineering, 2004). However, the current educational system often fails to recognize important skills like effective communication, design thinking, critical thinking, leadership, and problem-solving ability. (Kazerounian & Foley, 2007). Therefore, it is essential to grasp the disparity between the acquired and necessary skillsets. Occasionally, there is a discrepancy between the competencies acquired at higher education institutions and the proficiencies demanded by the corporate sector, resulting in the underutilization

and joblessness of recent graduates. Training programs motivate students to approach challenges from different viewpoints and generate innovative ideas for problem-solving. Individuals also take the initiative to develop their skills through soft skills. A wide range of soft skills courses can greatly benefit students and graduates. These courses focus on important skills like communication, problem-solving, teamwork, and adaptability. Individuals must possess these skills along with their expertise. That can greatly enhance their employability and professional achievements.

CONCLUSION

The study found a correlation between problem-solving ability and leadership effectiveness. 17–21-year-old students have a significant difference in problem-solving ability compared to 22–25-year-old students. Science college students have higher-level problem-solving abilities than arts and engineering students. Moreover, females are better at problem-solving than males. There is no significant difference in leadership effectiveness among demographic factors except family economic status. Here we find that education institutions play a significant role. So, all institutions focus on students' life skills. Future studies will analyze how much influence this variable has in a combination of the educational and family environments. Leadership and problem-solving are life skills that we have to make sure all students have regular opportunities to participate and hone their skills. Education institutions must motivate every student through training programs and regular practices. This is a study that takes a cross-sectional approach. Moreover, a limited number of samples were chosen for this particular investigation. The information was gathered from a relatively small geographical area. Therefore, we will concentrate on many samples in future research.

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