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Developing Leadership Skills in Secondary Students

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Abstract

The need for developing leadership skills among students have been felt for a long time. The objective of the study was to develop and implement a Student Leadership Programme (SLP) and study its effectiveness for developing the leadership skills of Empathy and Communication among secondary school students. The research design was quasi-experimental in nature and a convenient sampling technique was used. The sample included two secondary schools of Vadodara city, one serving as the experimental and the other being the control group. The SLP was developed and implemented. The data were collected using the Leadership Knowledge Test and Intended Behavioural Scale. Mean, SD, and Mann-Whitney U-test were used for data analysis. The results showed that the Student Leadership Programme (SLP) was effective as the students of the experimental group had significantly higher conceptual knowledge and intended behaviour in the skills of empathy and communication.

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Introduction

India is known as the world's largest democracy. In any democracy effective leaders are essential for all sectors of economy. Today's students are tomorrow's workers and must be ready for jobs where leadership plays a critical role. Leadership skills learning is not only related to jobs in schools, universities, organisations or other skilled work situations, it is important in day to day functioning of students and helps manage their life's critical situations. Due to all these vital requirements of today's civilisation, the development of leadership skills among students has been high on education-related policy agenda. There is a requirement of optimum age and mental readiness for the inculcation of leadership skills. The acquisition of leadership skills among students, imparted at the school level, will help in the enhancement of their academic as well as social performance in their everyday life.

Leadership Skills at Secondary School Level: Their Importance

Shrivastav and Jatav (2017) have stated that the existing skill development policy in India needs an urgent treatment. Learning leadership skills does not mean that the person is a speaker in front of thousands or holds a political position. This learning becomes important because it is required by all for their effective functioning as individuals and in relation with their respective social environments. The students of today will join the workforce of tomorrow and they must be job-ready where leadership skills, besides technical skills, will play an important part. The research of Schmidt and Sheri (1996) revealed that the development of leadership skill is needed for all individuals in any field and it is imperative that students get the required exposure for development of skills such as delegation, motivating others and self, and other interpersonal skills. This emphasises that the students in an educational setting need to be equipped with various skills for a successful future as only subject knowledge will not help in dealing with life situations. NCERT (2000) discussed that there are certain core skills such as problem-solving, critical thinking, communication, self-awareness, coping with stress, decision making, and empathy amongst others essential for the growth of an individual, and that, ideally, education must prepare students to face the challenges of life.

In school, student representative councils and school parliaments provide excellent opportunities for students to apply their learning in making decisions, managing conflicts, teamwork, and self-motivated cooperative conduct. If a student can acquire leadership skills in school by participating in various activities that are conducted in assembly, if the students participate in various co-curricular activities like debate competition, quiz competition, poem or *shloka* recitation competition, skit/drama competition, fun fair/exhibition, and even in various sports competitions, there is no doubt that they will become good leaders in the future as they can lead under any form of circumstances. For example, to be a good public speaker, it is essential to present the ideas to all. It may ne achieved by involving the students in club activities such as debating clubs to help them gain the confidence to speak in public without fear.

The development of student leadership skills involves opportunities which encourage students to act with responsibility. Eccles (1999) emphasised that "school can be a vital environment for children of teenage, where growth takes place and future is sculpted." The secondary school phase is where significant growth and development of a

student is observed. According to Moss (2012), "Adolescents should begin learning leadership concepts as early as possible so that they can sharpen their leadership skills and develop their minds to think critically about various situations." This is an appropriate phase where students understand the importance of skill development for self and to meet the demands of the society. The secondary school provides an excellent platform for students to involve themselves in student councils, as student heads and in other leadership roles, and to demonstrate leadership skills.

The skills of communication and empathy are important interpersonal skills as students must deal with the teachers, peer groups, family members, relatives, people at the future workplaces and with the society at large. If these skills are developed, it would help students to express themselves and enhance their interpersonal relationships. We need to understand that the conceptual knowledge of leadership skills helps the learners acquire knowledge and understanding of the skills while their intended behaviour reveals their perception towards these skills. The presence of these interpersonal skills would help the students in confronting various future challenges, understanding others, expressing themselves and, finally, in developing self-confidence. Communication and empathy skills can be developed by implementing a programme for student leadership wherein skills can be inculcated through practice.

Communication Skills

Communication skill is an ability to listen, understand and speak clearly; it is an essential and core skill. The main purpose of communication is to transport the ideas, thoughts, and beliefs to another person in a way that it creates understanding. According to Verma (2013), "the leaders also need finely-tuned communication skills." Communication skills are essential for the successful future career of a student. Venkatraman's (2011) study on student leadership skills to explain the comparative account between traditional schools and alternative schools, found that communication skills were one of the dimensions, and an ability-oriented curriculum is best for their growth. Students with strong communication skills are more likely to contribute to classroom discussions become active participants of group and pair and share activities and eventually gain more learning experiences. Eriguç & Kose (2013) established that emotional intelligence was closely linked to communication skills. One of the premises on which emotional intelligence rests is empathy.

Empathy Skills

Empathy skill is an ability to sense other people's emotions, coupled with the ability to imagine what someone else might be thinking or feeling. It contributes to an understanding of others, their perceptions and their concerns. Leaders with empathy can relate to the situations in real life and sense them very easily. Empathy is a construct that is fundamental to leadership. For the students, empathy serves as a focal point for socio-emotional development, as it focuses on their deep understanding of themselves and their various perspectives. As the students learn to master and manage their own emotions and learn to understand the perspectives of others, they will also be able to develop at the same time. This would lead to better self-control and effective intrinsic motivation.

Leadership skill development in students can be done in different ways and one way is the development and implementation of a programme for student leadership.

Student Leadership Programme

Kolzow (2014) is of the opinion that leadership development training/programme has a vital place of great importance in today's world as leaders are now viewed as evolved rather than innate/born. It has been observed that the learning of the students from the school marks a phenomenal impact on their understanding; it could be either in terms of academic, co-curricular or even in the form of training or any programme. The literature affirms that "student leadership learning is improved by enhancing quality, effective activities and practices that are utilised in the classroom" (Siamoo, 2013). Bass (1990) stated that one of the basic goals of leadership training programmes is to increase the human relationship knowledge, skills, and abilities, to solve interaction and communicative problems. We need to realise that such a programme exists within a context or area of focus where students may develop and practise leadership skills. The school's Student Leadership Programme will be more sustainable if it is supported by students, parents, teachers, the school and local community (Hughes, 2015).

Student leadership programme for secondary students with the aim to develop leadership skills of communication and empathy has been effective. Mbele and Msomi (2006) found that an improvement of leadership skills programme can bring about a significant progress in communication skills. The intervention performed by Baghcheghi *et al* (2011) also directed towards the significant increase of the communication scores of the students who had gone through an intervention. It has been observed that training courses have a positive impact on skill development. The longitudinal study of Cunico *et al* (2012) revealed that unique training courses can develop empathy skills in students effectively. The secondary school students are adolescents and a systematic leadership programme in empathy skills would help them in enhancing their coping mechanisms. This is consistent with Srikala and Kishore's (2010) investigation about adolescents where the findings reflected that the adolescents in the developmental programme had significantly better self-esteem, is better in coping and adjustment specifically with teachers in school and in pro-social behaviour. The results of the effects of social-emotional learning programming claimed that empathy programme is highly successful in improving emotional intelligence (Cain and Carnellor, 2008). The Student Leadership Programme may go a long way in ascertaining the skill development. It may show that the programme has scope for students to work together in leadership situations, learn from each other and accomplish leadership development goals.

The current study aims to develop and implement a student leadership programme (SLP) for development of leadership skills of communication and empathy in secondary school students. Its further studies the effectiveness of the Student Leadership Programme in terms of conceptual knowledge and intended behaviour of students in the above skills.

Null hypotheses were formulated and tested at the 0.01 level of significance. We therefore hypothesised that there will be no significant difference between the mean post-test scores of the students of control and experimental groups of class IX in the conceptual knowledge and intended behaviour of the leadership skills of communication and empathy.

Method

A quasi-experimental research design was used and the Pre-test-Post-test-Non-Equivalent-Control Group Design was followed in the study. A convenient sampling technique was used to draw the sample. Two schools in the city of Vadodara were selected and one section of standard IX in one school constituted the experimental group while a section of standard IX in the second school formed the control group. As the design is non-equivalent in nature, it becomes essential to match the experimental and control groups which were done by administering the Raven's Matrices (Raven's Progressive Matrices) as a pre-test. The participants who finally participated were (n = 30) in both the groups.

Material

Intelligence: Raven's Progressive Matrices (1998 edition, revised 2003) Intelligence Test was used. It has a reliability score of 0.96 and was administered as a pre-test to the experimental and control groups only with the aim of matching the groups.

The intelligence test was selected for the purpose of matching the group. Many researches on the relation between intelligence and learning ability find no difference in intelligence tests (such as an IQ test) and learning ability/skill development. Moreover, it implies a powerful correlation between the ability of skill development ability and intelligence ability.

Conceptual Knowledge: A Leadership Knowledge Test was constructed for the students by the investigators to study their conceptual knowledge in communication and empathy skills. The Leadership Knowledge Test for both the leadership skill of communication and empathy comprised a total of 32 items which were of a total of 40 marks. There were open-ended and close-ended items related to the meaning, definition, and characteristics of the skills, respectively. The different types of items consisted of multiple-choice questions, one sentence answers, fill in the blanks, and true/false. The Leadership Knowledge Test had a reliability coefficient of 0.79 when tested for test-retest reliability.

Intended Behaviour: An Intended Leadership Behaviour Scale was constructed by the investigators to study the intended behaviour of students towards communication and empathy skills. The marks allocated to each skill were 40, making it a total of 80 marks. It consisted of eight situations for each skill. There were five close-ended alternatives to each situation wherein the students had to choose one appropriate alternative. The five alternatives had strongly positive polarity, neutral polarity, negative polarity, strongly negative polarity and the alternative scores ranged from 1 to 5, 1 for strongly negative polarity, and 5 for strongly positive polarity. When tested for test-retest reliability, the intended leadership behaviour scale showed a reliability coefficient of 0.76.

The Intended Leadership Behaviour Scale and Leadership Knowledge Test were validated by the expert in the field of education.

Procedure

Development of Student Leadership Programme (SLP): The Student Leadership Programme was developed for the secondary students of standard IX to develop leadership skills of communication and empathy. For each skill, a total of thirteen interactive session

plans with aims, knowledge, and activity inputs were developed. Each session consisted of conceptual knowledge about the topic and sub-topics of the skills taken, keeping the student's level in view. The programme had features of a stress-free, fun-filled environment for student participation. Every session consisted of 40 minutes in which the theoretical inputs were of 15 minutes duration and the activities were conducted for 25 minutes, focusing on the theoretical inputs imparted. The theoretical input of each session started with general objectives, instructional objectives, and content on different sub-topics. It was followed by indoor and outdoor activities, self-reporting exercises, role plays, assignments, video clips, documentary movies, daily to-do tasks and case studies that could help students relate to the real-world scenarios, as parts of the programme. At the end there was an engaging de-briefing/discussion session with the students. The discussion method was used.

The research was carried out in four phases. In the first phase, the Student Leadership Programme (SLP) was developed. Raven's Progressive Matrices Intelligence Test was administered to the control and experimental groups, with the sole purpose of matching the groups in the second phase. In the third phase, Student Leadership programme (SLP) was implemented for the experimental group. The experiment included 26 sessions, where the students of the experimental group were taught the skills of communication and empathy during one school academic year. For each skill, 13 sessions were conducted. One session consisted of 40 minutes which was taken during three days of the school week. For both the skills of empathy and communication, the sessions were conducted for nine hours each, making it a total of 18 hours. The sessions involved a variety of activities, such as indoor games, outdoor games, assignments, written exercises, short documentary films, video clips, case studies, role plays and a debriefing exercise at the end of each activity. The discussion on conceptual knowledge of different skills included the meaning, characteristics, components, and their relevance in the day to day life of the concerned students. On the other hand, regular curricular and co-curricular activities were conducted in the control group without the implementation of Student Leadership Programme (SLP). The various inputs in the control group included regular assembly events such as reading the news, prayer, and school updates. The control group students were also subjected to debate competition, essay writing, quiz competition, school council elections and dance/*rangoli* competition.

In the fourth phase, the Leadership Knowledge Test and the Intended Leadership Behaviour Scale were administered as a post-test to both the control and experimental groups.

The data collected were analysed quantitatively, using non-parametric statistics as non-probability sampling technique was used. Mean, SD, and Mann-Whitney U-test were used to analyse the data. The Mann-Whitney U-test was considered appropriate as the sample was selected by a convenient sampling method. It is one of the most powerful and robust nonparametric tests, taking care of a small sample size. The mean of post-test scores of the experimental and control groups were taken for analysis in accordance with the experimental design.

Results

TABLE 1

Summary of Mann-Whitney U-Test for the Conceptual Knowledge of Communication Skill

Students	*N*	*Mean of Ranks*	*Sum of Ranks*	*U-Value*	*Z- Value*	*Probability (p)*
Control Group	**30**	15.50	465.00			
Experimental Group	**30**	45.50	1365.00	**0.000**	**-6.77**	**0.000**

The analysis shows that the experimental group (M = 11.23, SD = 1.47) differed from the control group (M = 1.7, SD = 1.17). The higher mean score of the experimental group in the Conceptual Knowledge of Communication Skill was about whether the difference in the mean was significant or by chance. It aimed to test the null hypothesis. The Mann-Whitney U-test was used as the sample was taken by a convenience sampling technique.

Table 1 presents the results of the Mann-Whitney U-test. Referring to the Table for normal probability (Table A of Siegel, 1956) under null hypothesis (H_o) of z, for z <= -5.490, the two tailed probability was found to be 0.00 which was lesser than our decided $\alpha = 0.01$. Hence the null hypothesis was rejected. The findings suggest that the students of the experimental group and the control group differed significantly in the Conceptual Knowledge of Communication Skill. It can be concluded that the Conceptual Knowledge of Communication Skill of the students in the experimental group was stochastically higher than that of the students in the control group, which was due to the Student Leadership Programme in developing the leadership skill.

TABLE 2

Summary of Mann-Whitney U-Test for the Intended Behaviour of the Leadership Skill of Communication

Students	*N*	*Mean of Ranks*	*Sum of Ranks*	*U-Value*	*Z- Value*	*Probability (p)*
Control Group	30	17.17	515.00			
Experimental Group	30	43.83	1315.00	**50.000**	**-5.933**	**0.000**

The analysis shows that the experimental group (M = 33.9, SD = 3.91) differed from the control group (M = 23.2, SD = 3.61). The higher mean score of the experimental group in the Intended Behaviour of the Leadership Skill of Communication in comparison to the control group may be attributed to the Student Leadership Programme in developing the leadership skill. To find whether the difference in the mean was significant or by chance and to test the null hypothesis, Mann-Whitney U test was used as the sample was taken by a convenience sampling technique.

Table 2 presents the results of the Mann-Whitney U-test. Referring to the Table for normal probability (Table A of Siegel, 1956) under null hypothesis (H_o) of z, for z <= -5.490, the two tailed probability was found to be 0.00 which was lesser than our decided $\alpha = 0.01$. Hence the null hypothesis was rejected. The findings suggest that the students of the experimental group and the control group differed significantly in the Intended Behaviour of the Leadership Skill of Communication. It can be concluded that the Intended Behaviour of the Leadership Skill of Communication of the students in the experimental group was stochastically higher than that of the students in the control group which was due to the Student Leadership Programme in developing the leadership skill.

TABLE 3

Summary of Mann-Whitney U-Test for the Conceptual Knowledge of Empathy Skill

Students	*N*	*Mean of Ranks*	*Sum of Ranks*	*U-Value*	*Z- Value*	*Probability (p)*
Control Group	**30**	15.50	465.00			
Experimental Group	**30**	45.50	1365.00	**0.000**	**-6.757**	**0.000**

The analysis shows that the experimental group (M = 11.8, SD = 0.98) differed from the control group (M = 1.2, SD = 1.27). The higher mean score of the experimental group in the Conceptual Knowledge of Empathy Skill in comparison to the control group may be attributed to the Student Leadership Programme in developing the leadership skill. To find whether the difference in the mean was significant or by chance and to test the null hypothesis, Mann-Whitney U-test was used as the sample was taken by a convenience sampling technique.

Table 3 presents the results of the Mann-Whitney U-test. Referring to the Table for normal probability (Table A of Siegel, 1956) under null hypothesis (H_o) of z, for z <= -5.490, the two tailed probability was found to be 0.00 which was lesser than our decided $\alpha = 0.01$. Hence the null hypothesis was rejected. The findings suggest that the students of the experimental group and the control group differed significantly in the Conceptual Knowledge of Communication Skill. It can be concluded that the Conceptual Knowledge of Empathy Skill of the students in the experimental group was stochastically higher than that of the students in the control group which was due to the Student Leadership Programme in developing leadership skill.

TABLE 4

Summary of Mann-Whitney U-Test for the Intended Behaviour of the Leadership Skill of Empathy

Students	*N*	*Mean of Ranks*	*Sum of Ranks*	*U-Value*	*Z- Value*	*Probability (p)*
Control Group	**30**	16.92	507.50	**42.500**	**-6.038**	**0.000**
Experimental Group	**30**	44.08	1322.50			

The analysis shows that the experimental group (M = 33.3, SD = 4.19) differed from the control group (M = 23.8, SD = 3.20). The higher mean score of the experimental group in the Intended Behaviour of the Leadership Skill of Empathy in comparison to the control group may be attributed to the Student Leadership Programme in developing the leadership skill. To find whether the difference in the mean was significant or by chance and to test the null hypothesis, Mann-Whitney U-test was used as the sample was taken by a convenience sampling technique.

Table 4 presents the results of the Mann-Whitney U-test. Referring to the Table for normal probability (Table A of Siegel, 1956) under null hypothesis (H_o) of z, for z <= -5.490, the two tailed probability was found to be 0.00 which was lesser than our decided $\alpha = 0.01$. Hence the null hypothesis was rejected. The findings suggest that the students of the experimental group and the control group differed significantly in the Intended Behaviour of the Leadership Skill of Empathy. It can be concluded that the Intended Behaviour of the Leadership Skill of Empathy of the students in the experimental group was stochastically higher than that of the students in the control group which was due to the Student Leadership Programme in developing the leadership skill.

Discussion

The results showed that the Student Leadership Programme (SLP) developed to inculcate leadership skills among secondary school students was effective. It was found that the conceptual knowledge and intended behaviour in leadership skills of communication and empathy skills for Class IX students of the experimental group was higher due to the implementation of Student Leadership Programme (SLP). The control group was given curricular and co-curricular inputs as scheduled in their regular school program wherein the focus on the skills of communication and empathy may have been lacking.

The adolescent students at the secondary level were at the appropriate stage for skill development. This is consistent with Dean's (2018) study that community-based group programmes for adolescent students are useful in the development of leadership skills. However, community-based activities were not a part of the programme which could have been included.

The Student Leadership Programme (SLP) comprised hands-on activities which led to experiential learning. The interest and involvement of the students in various activities at the secondary stage further helped in skill development. The individual and group indoor and outdoor activities included games, assignments, group discussions, video clips,

documentary movies, role plays amongst others. Parlar *et al* (2017) found that teachers are in favour of indoor and outdoor skills-oriented activities other than the prescribed curricular activities.

The programme had sessions scheduled systematically for the leadership skills of communication and empathy in which discussion and activities were incorporated to enhance conceptual understanding and develop skills. This is in line with Mbele and Msomi's (2006) finding which confirmed that leadership skills can be acquired through conscious effort. The Student Leadership Programme (SLP) focused on developing communication skills with their relevant theoretical and practical inputs which led to its effectiveness. Sapriadil *et al* (2018) & Venkatraman (2011) showed the importance of communication skills at school that supported the development and implementation of SLP for secondary students. A deliberate and conscious effort was made to expose the students in different sessions to various communication situations, which led to a better understanding of communication skill and was reflected in their intended behaviour. Iksan *et al* (2012) found that students get acquainted with communication situations in the real world when they have the right exposure in terms of conceptual knowledge and practical activities. It has been observed that communication and empathy skills go hand in hand.

The study by Eriguc and Kose (2013) has shown a significant correlation between emotional intelligence and communication. Therefore, a student leadership programme with two critical leadership skills, such as communication and empathy, is an important step in the initial development of skills. The students were exposed to discussions on empathy skill along with indoor and outdoor activities which were integral components of the Student Leadership Programme. Studies by Cain and Carnellor (2008), Durlak and Weisberg (2011) and Cunico *et al* (2012) have confirmed the importance of the training / programme to the significant development of skills among students that conferred that exposure of various practical activities with conceptual knowledge has helped the students to have more understanding about the empathy skill.

Implications

The study found that the Student Leadership Programme (SLP) was effective in developing leadership skills of empathy and communication. This has important implications for the policy makers and curriculum designers. Leadership skills could be integrated with the content of various subjects in the school curriculum and transacted. The secondary school teachers could design a separate leadership programme to inculcate leadership skills in the learners as a part of the curricular or co-curricular activities .The school teachers also have a scope to teach the content integrated with leadership skills using the Integrated Approach. The findings also have significance for secondary school principals who could play an encouraging role by providing resources to teachers to design and implement the leadership programmes.

Conclusion

In any democracy, the importance of leadership skills for secondary school students cannot be denied. It is critical for the development of the self and the nation. Training programmes in leadership skills would go a long way in realising this aim. The Student

Leadership Programme (SLP) was found to be effective in developing the communication and empathy skills in terms of conceptual knowledge and intended behaviour in secondary students. There is no doubt that the prescribed secondary school curriculum has activities to develop the leadership skills of communication and empathy among students directly or indirectly. However, the transaction of the school curriculum at the secondary level often lacks focus on these skills. A systematic, concentrated approach in the way of a Student Leadership Programme (SLP), developed and implemented for secondary students, would be effective in accomplishing the goals of skill development. The students today are the leaders of tomorrow, taking the country forward.

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Developing Problem Solving Skill in Secondary Students

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Abstract

The need for developing leadership skills amongst students has been felt for a long time. The study's objective was to develop and implement a Student Leadership Program (SLP) and study its effectiveness for developing the leadership skill of problem-solving among secondary school students. The research design was quasi-experimental in nature and convenient sampling technique was used. The sample included two secondary schools of Vadodara city, one being the experimental and the other the control group. The SLP was developed and implemented. The data were collected using the Leadership Knowledge Test and Intended Behavioural Scale. Mean, SD, and Mann-Whitney U-test was used for data analysis. The results showed that the Student Leadership Program (SLP) was effective as the experimental group students had significantly higher conceptual knowledge and intended behavior in problem-solving skill.

Key Words: *Leadership skills, Problem-solving skill, Student leadership program*

Introduction

It is necessary to note that leadership roles and responsibilities go much beyond participating in public and organizational meetings. There are numerous challenges in life that leadership faces. In such a scenario problem-solving is an important skill for leaders to carry on when it comes to the successful management of difficult circumstances. Problem-solving is identifying a problem, developing potential paths of the solution, and taking the required course of action. An individual with this skill has an opportunity to make a significant difference. A leader cannot solve challenges effectively from the mundane to the critical without using problem-solving skill. The students at the secondary level need to have leadership skills, be calm under pressure, develop the ability to analyse any situation, consider what will happen, and how their choice will affect the problem and derive its solution. This skill must be honed and mastered, like any other talent, to be effective. It is a significant part of the students' curriculum for life. The skilled student takes responsibility for their learning, takes personal action to solve problems, settle disagreements, consider

alternatives, and reflect on thought as an integral element of the curriculum. This skill development will provide students with opportunities for practical, real-life experiences that help them work at higher thought levels. Problem-solving is a critical skill to be learnt in schools to help the child learn to solve their problems and work efficiently in crisis conditions. Rossman (1993) indicates that the student's role shifts from a passive receiver of knowledge to a participant in understanding when students use problem-solving skill. Moreover, all these aspects develop a vital concern to focus on developing efficient problem-solving among the students.

Problem-solving skill at Secondary School Level: Importance

Problem-solving ability is a multi-faceted competence that utilizes other abilities, including strategic thought, coordination, and creativity. Leaders with problem-solving skill can build the capacity to evaluate, diagnose and deal with problems in a satisfactory manner. A leader needs to be able to look at the concerns they have experienced in the past and to be able to use those experiences to channelize the things of their present predicament.

Problem-solving skill involves the thought of knowing the problem and being patient, the study and use of analytical methods, making decision, and getting a solution. On the point of leadership, Mulford (2006) claimed that solving problems is crucial for leadership success. For leaders, the secret to success is their calmness under pressure, their ability to analyse any situation, know what will occur, and how their decision will impact the situation. A good leader learns from their failures, and to fix potential challenges; they use specific experiences. The students of today are the leaders of tomorrow must be prepared by schools in acquiring the skill of problem-solving. It is always considered that any learning method must ideally prepare students to face the challenges of life. When faced with challenges or situations that are new to them, students need to build the capacity to apply problem-solving skill. For students, problem-solving abilities are very crucial in their day-to-day school life and other areas of their existence. It was well put by Keen (2011) that if problem-solving skills are a cognitive practice, education could be the most beneficial step to develop problem-solving skill. The development of problem-solving helps student's works and decides how to explore the problem independently. Problem-solving as an ability is a life skill and essential for each student irrespective of their academic achievement. NCERT (2000) presented the necessary core skills needed for the overall development of an individual, and it is found that the essential problem-solving ability falls under that category. For the efficient development of problem-solving skill, "it is important to recognize that students need to be familiar with new approaches and methods that make them efficient in solving problems" (Posamentier and Krulik, 1998).

An essential purpose of education is to help students learn how to think more productively by integrating creative thinking (to produce ideas) and critical thinking when solving problems (to evaluate ideas). It is required to consider that "Students in 21st Century schools are expected to learn in new ways by using an inquiry and problem-solving approach in all subject areas" (Wagner, 2018). Problem-solving abilities are essential for academic and social performance.

The development of problem-solving skill allows students to use newly gained knowledge practically, integrating it with the previous experience for the purpose of imparting this

knowledge in real-life activities. Students with good problem-solving skill will be able to use their initiatives and weigh up actions and consequences throughout the school day to guide their decisions. There are various ways for the development of leadership skills in students with a focus on inculcating problem-solving skill. One way is to develop and implement a student leadership program.

Student Leadership Program

We cannot deny that school learning has a phenomenal effect on students' comprehension and progress in either academic or co-curricular life. By designing and implementing the Student Leadership Program, the leadership skills can be developed and strengthened, as it allows the learner to get well acquainted with the varied circumstances and conscious learning takes place.

People may be born with highly analytical mindsthat helps themanalyse circumstances and decide the best course of action easily, but that ability may fade away without the experience of using it under different conditions. It must be honed and mastered, like any talent, to make it work properly. It is observed that Leadership Development Training/Program has great significance in today's world as leaders are regarded as developed rather than innate/born" (Bhaskar, 2009). It is needed that a deliberate effort be provided for skill development. Such efforts could come in the form of the student leadership program. Student leadership includes participating in the school assembly, helping the higher authorities make vital decisions, upholding order in the school premises, and expressing their expectations of the school's success. Students will work together within a leadership program framework to inform, empower, and encourage them to achieve goals. Hitt's (1992) research shows that it is possible to improve critical competencies such as communication, team building, and problem-solving with the program's help. Developing such a program would help studentsrealize the significance of their better lives by becoming aware of different skills, strengths, and succession planning. In short, in such a program, we would assume that the learner can engage in acquiring the abilities they will use in their every-day lives.

According to Allington and Gabriel (2012), "leadership skills can be encouraged and developed through a wide range of school programs and activities, where implementation of the Student Leadership Program could be one step." The planning and implementation of a student leadership program at the high school level areessential for skill development. Such programs create leadership opportunities that contribute positively to each student and create a positive and ethical culture of moral school where students can take the challenges rather than the pressure as a healthy state of mind.

The current study aims to develop and implement a student leadership program (SLP) to develop leadership skills of problem-solving in secondary school students. Its further studies the effectiveness of the Student Leadership Program in terms of students' conceptual knowledge and intended behavior in the above skill.

Null hypotheses were formulated and tested at a 0.01 level of significance. Therefore, we hypothesizedthat there would be no significant difference between the mean post-test scores of students of the control and experimental group of class IX in the conceptual knowledge and intended behavior of the leadership skill of problem-solving.

Method

A quasi-experimental research design was used, and the Pre-test-Post-test- Non-Equivalent-Control Group Design was followed in the study. A convenient sampling technique was used to draw the sample. Two schools in the city of Vadodara were selected, and one section of standard IX of one school constituted the experimental group, and another section of standard IXof the second school formed the control group. As the design is Non-Equivalent in nature, it becomes essential to match the experimental and control groups. It was done by administering the Raven's Matrices (Raven's Progressive Matrices) pre-test. The participants who finally participated were (n=30) in both groups.

Material

Intelligence

Raven's Progressive Matrices (1998 edition, updated 2003) Intelligence Test with a reliability score of 0.96 was administered to the experimental and control group as a pre-test only with the purpose to match the groups. The Intelligence test was chosen to ensure that the group was matched. In several studies on the relationship between intelligence and learning ability (Vaci et. al., 2019; Diamond et. al., 2007), the intelligence test (such as an IQ test) and learning ability/skill growth show very little difference. Furthermore, it suggests a strong connection between the ability to learn skills and intelligence ability.

Conceptual Knowledge

Leadership Knowledge Test was designed for students to study their conceptual knowledge in problem-solving skill. The Leadership Knowledge Test for problem-solving skill comprised of 16 items that were of a total of 20 marks. There were open-ended and close-ended items related to the meaning, definition, and characteristics of problem-solving. The different items consisted of multiple-choice questions, one-sentence answers, fill in the blanks, and true/false questions. The Leadership Knowledge Test had a reliability coefficient of 0.79 when tested for test-retest reliability.

Intended Behaviour

The Intended Leadership Behaviour Scale was designed to study students' intended behavior towards problem-solving skill. The marks allocated were 40. The scale consisted of eight situations for the taken skill. There were five close-ended alternatives to each situation wherein the students had to choose one appropriate alternative. The five alternatives had strongly positive polarity, positive polarity, neutral polarity, negative polarity, strongly negative polarity, and the alternative scores ranged from 1 to 5, 1 for strongly negative polarity and 5 for strongly positive polarity. When tested for test-retest reliability, the intended leadershipbehavior scale showed a reliability coefficient of 0.76.

Procedure

Development of Student Leadership Program (SLP)

The Student Leadership Program was developed for the secondary students of standard IX to develop leadership skill of problem-solving. A total of thirteen interactive session plans with aims, knowledge, and activity inputs were developed. Each session consisted of conceptual knowledge about the topic and sub-topics of the skills taken, keeping the student's level in

mind. The program had features of a stress-free, fun-filled environment for student participation. Every session consisted of 40 minutes in which the theoretical inputs were of 15 minutes duration and the activities were conducted for 25 minutes focusing on the theoretical inputs imparted. The theoretical inputs for each session were introduced with general objectives, instructional objectives, and content on different subtopics. It was followed by indoor and outdoor activities, self-reporting exercises, role plays, assignments, video clips, documentary movies, daily to-do tasks and case- studies that could help students relate to real-world scenarios were a part of the program. At the end there was an engaging de-briefing/discussion session with the students. The Discussion Method was used.

The research was carried out in four phases. In the first phase, the Student Leadership Program (SLP) was developed. Raven's Progressive Matrices Intelligence Test was administered to the control and experimental groupwith the sole purpose of matching the groups in the second phase. In the third phase, the Student Leadership Program (SLP) was implemented for the experimental group. The experiment included 13 sessions, where the students of the experimental group were taught the skill of problem solving during one school academic year. One session consisted of 40 minutes which was taken during three days of the school week. The sessions were conducted for nine hours. Indoor and outdoor games, tasks, written exercises, short documentary films, video clips, role plays, and a debriefing exercise at the end of each task were among the activities included in the sessions. The definition, features, elements, and importance of problem-solving skill in students' daily lives were discussed during the discussion of conceptual inputs. In the control group, however, normal curricular and co-curricular activities were carried out without the implementation of the Student Leadership program (SLP). Normal assembly activities such as reading the news, prayer, and school updates were among the different inputs in the control group. In the fourth phase, the Leadership Knowledge Test and the Intended Leadership Behaviour Scale were administered as a post-test to both the control and experimental groups.

The data collected was analysed quantitatively using non-parametric statistics as a non-probability sampling technique was used. Mean, SD, and Mann-Whitney- U-test was used to analyse the data. The Mann-Whitney U -Test was considered appropriate as it is one of the most potentand robust non-parametric tests taking care of a small sample size. The mean post-test scores of the experimental and control group were taken for analysis in accordance with the experimental design.

Result and Discussion

TABLE-1

Summary of Mann-Whitney U-Test for the Conceptual Knowledge of Problem-solving Skill

Students	N	Mean of Ranks	Sum of Ranks	U-Value	Z- Value	Probability (p)
Control Group	30	15.50	465.00	0.000	-6.697	0.000
Experimental Group	30	45.50	1365.00			

The analysis shows that the experimental group (M = 12.100, SD = 1.18) differed from the control group (M = 1.83, SD = 1.17). The higher mean score of the experimental group in the

conceptual knowledgeof problem-solving skill in comparison to the control group may be attributed to Student Leadership Program implemented for developing problem-solving skill. To find whether the difference in the mean was significant or by chance and to test the null hypothesis, the Mann-Whitney U test was used as the sample was taken by convenience sampling technique.

Table 1 presents the results of the Mann-Whitney U test. Referring to the Table for normal probability (Table A of Siegel, 1956) under the null hypothesis (Ho) of z, for z <= -5.490, the two-tailed probability was found to be 0.00, which was lesser than our decided $\alpha = 0.01$. Hence the null hypothesis was rejected. The findings suggest that the experimental and control group students differed significantly in the conceptual knowledge of problem-solving skill. It can be concluded that the conceptual knowledge of the problem-solving skill of the students in the experimental group was stochastically higher than the students in the control group, which was due to the use of the Student Leadership Program in developing problem-solving skill.

TABLE-2

Summary of Mann-Whitney U-Test for the Intended Behaviour of Problem-solving Skill

Students	N	Mean of Ranks	Sum of Ranks	U-Value	Z- Value	Probability (p)
Control Group	30	16.10	483.00	18.000	-6.413	0.000
Experimental Group	30	44.90	1347.00			

The analysis shows that the experimental group (M = 34.1, SD = 0.53) differed from the control group (M = 24.0, SD = 0.67). The higher mean score of the experimental group in the intended behaviour of problem-solving skill in comparison to the control group may be attributed to Student Leadership Program implemented for developing problem-solving skill. To find whether the difference in the mean was significant or by chance and to test the null hypothesis, the Mann-Whitney U test was used as the sample was taken by convenience sampling technique.

Table 2 presents the results of the Mann-Whitney U test. Referring to the Table for normal probability (Table A of Siegel, 1956) under the null hypothesis (Ho) of z, for z <= -5.490, the two-tailed probability was found to be 0.00, which was lesser than our decided $\alpha = 0.01$. Hence the null hypothesis was rejected. The findings suggest that the experimental and control group students differed significantly in the intended behaviour of problem-solving skill. It can be concluded that the intended behaviour of the problem-solving skill of the students in the experimental group was stochastically higher than the students in the control group, which was due to the use of the Student Leadership Program in developing problem-solving skill.

Discussion

The results showed that the Student Leadership Program (SLP) developed to inculcateproblem-solving skill among secondary school students was effective. It was found that the conceptual knowledge and intended behavior in leadership skill of problem-solvingfor Class IX students of the experimental group was higher due to the implementation

of the Student Leadership Program (SLP). The control group was given curricular and co-curricular inputs as scheduled in their regular school program where-in the focus on the skill of problem-solving may have been lacking.

Problem-solving is a mental process. The students who can solve problems effectively could become individuals who can succeed in any sphere of life, a classroom, or society. Theinvestigator had planned sessions to develop problem-solving skill among the students by exposing them directly to discussions and activities. It goes in line with the study of Picus et. al., (1983) where the researcher had conducted a literature study about problem-solving skill and their inculcation in the curriculum and found that students can learn to be better solvers through exposure to focused instruction and directed teaching. It also validated that problem-solving competence requires adequate knowledge in the content area. In the study, the skill development began with various activities that again go in line with this research where it was claimed that transfer and use of problem-solving strategies appear more likely when problems used in instruction are like those that will be routinely encountered.

The investigator had developed the theoretical inputs for each session that helped understand various vital concepts to learn the skill more effectively. It can be substantiated by the study of Bransford et. al., (2006) where it was concluded that the programs designed to teach problem-solving could be strengthened by focusing more explicitly on domain knowledge. The investigator also used various activities for each session that helped the students understand the importance of multiple components in amore practical way. The study of Bransford et. al., (2006) is also in this path in regards that different learning methods can affect their abilities to solve relevant problems in a significant way.

In various sessions, the investigator had used group activities. It was found that it enhances the learning among the students that can be supported by Henry's (2005) research where the effectiveness of cooperative learning techniques was observed quite significant in terms of the development of problem-solving skill.

The investigator had prepared a specific student leadership program (not integrated into the curriculum) for the development of problem-solving skill, and it can go in line with Calsikan et. al., (2009), where the results reflected that the specific program was influential in developing the skill among the students as well as it also enhances their conceptual knowledge on various themes of skill development.

The various inputs of the SLP were imparted in a deliberate manner and this conscious effort for skill development had a positive impact on student learning. It goes in line with Gamze et. al., (2010), where traditional teaching was combined with strategic teaching, and it gave significant results in the performance of the students towards skill development.

It is imperative to provide proper exposure of conceptual knowledge during adolescent age with clarifications of concept. In this program, the investigator provided the theoretical inputs for each sub-theme with practical examples. There was a significant increase in the knowledge level of students. In the study of Parvathy and Pillai (2015), it was found that the knowledge level of the experimental group is more due to proper inputs of concepts in the program.

Adolescent students need to work on all the domains of knowledge. The developed program had various forms of activities that impact their cognitive environment, and it has also shown a positive impact on their learning. This is consistent with the study of Klegeris et. al.,

(2013), where the results depicted that cognitive domain development significantly impacted their skill development. The use of different techniques and approaches in an effective way showsthe positive impact on learning among students. The investigator had utilized the sessions giving due weightage to theoretical inputs and skill-oriented activities. This has made a significant impact on the learning of the experimental group students. It is in line with Yulindar et. al., (2018) findings where the enhancement of problem-solving ability was observed due to the applicability of model-specific problem-solving skill development.

Conclusion

The Student Leadership Program (SLP) effectively developed problem-solving skill in terms of conceptual knowledge and intended behaviour insecondary students. However, the transaction of the school curriculum at the secondary level often lacks focus on this skill.

When the students are faced with unique challenges, it has been observed that they may lack the ability to analyse different options/alternatives to solve problems. However, every child has a unique ability to solve the problem on their own. What they need is severalreliable inputs in the form of intelligent problem-solving methods and techniques. A systematic and concrete approach for skill development with the help of Student Leadership program could be a useful step in developing problem-solving skill. The findings of the study have implications for school principals who could encourage the development and use of such leadership programs, making it a part of their school curriculum. The schoolteachers can be encouraged to give theoretical and activity inputs to develop leadership skills. The text-book designers can focus on leadership skills in their school text.

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