

LIFE SKILLS MEASUREMENT TOOL
(SECONDARY STAGE): HINDI
TECHNICAL MANUAL

Data in this report are drawn from the most recent available statistics from UNICEF and other United Nations agencies, annual reports prepared by UNICEF Country Offices and the Annual Report of the Executive Director of UNICEF presented to the Executive Board, November 2020

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01 | Introduction



1.1 Context Setting

- 1.1.1 There has been a growing interest to include life skills education within school curriculum in recent years in order to ensure that adolescents gain the required psycho-social competencies required to face day-to-day life situations. The New Education Policy 2020 emphasizes on enabling learners to develop life skills (e.g., communication, resilience, creativity and critical thinking) to encourage logical decision-making and innovation among them (NEP 2020).
- 1.1.2 UNICEF defines “Life skills” as psychosocial abilities for adaptive and positive behavior that enable individuals to deal effectively with the demands and challenges of everyday life. The Comprehensive Life Skills Framework recently developed by UNICEF India (Refer to Annexure 1) defines life skills as a set of abilities, attitudes and experiences that enable individuals to learn to make informed decisions and exercise rights to lead a healthy and productive life and subsequently become change makers (UNICEF, 2018). As per the Middle East and Northern Africa (MENA) framework developed by UNICEF, life skills learning is a process that applies to cognitive, individual, social and instrumental dimensions.
- 1.1.3 Young Lives India (YLI) is a research organization, which develops quality tools and research evidence to inform policy and practice. YLI undertook the task of developing a validated Life Skills Measurement Tool (Secondary Stage) for adolescents in the age group 14-18 years for UNICEF India, which shall hereinafter be referred to as the “LSMT-S”. The LSMT-S was constructed based on UNICEF’s Comprehensive Life Skills Framework and has been developed in both Hindi and Gujarati¹. Since no other validated self-assessment measurement tool existed in Hindi for this age group, YLI had to undertake several field trials to develop the measurement indicators including its grading rubrics and interpretation guidelines for the LSMT-S. The LSMT-S has been piloted in three State/s (Uttar Pradesh, Rajasthan and Delhi), and after several modifications the tool has been finalised to be used in Hindi speaking State/s and UTs of India.



1.1.4 This manual has been developed to support use of LSMT-S for assessment of life skills of adolescents in the age group of 14-18 years, in Grades 9-12. The field trials were possible with the support extended by the Central Board of Secondary Education, Rajasthan, Delhi and Uttar Pradesh Education Department/s.

1.2 Importance of Life skill

1.2.1 According to the Comprehensive Life Skills Framework published by UNICEF, India is home to more than 253 million adolescents and developing life skills amongst them is critical to addressing the Sustainable Development Goals. UNICEF posits that investing in the world's 1.2 billion adolescents aged 10-19 years could break entrenched cycles of poverty and inequity. Caste, gender, poverty and location continue to pose barriers for a large number of young people to realize their full potential. There is evidence that psychosocial competencies, including resilience, personal agency and self-confidence can help a person move out of poverty and life skills can enable young people to protect themselves from a multitude of vulnerable social environments and risk-taking behaviors. Therefore, young people must be provided the opportunity to gain knowledge and develop relevant values, attitudes and skills that will enable them to participate fully in their society and to continue learning.

1.3 Need for Life Skill Measurement Tool in India

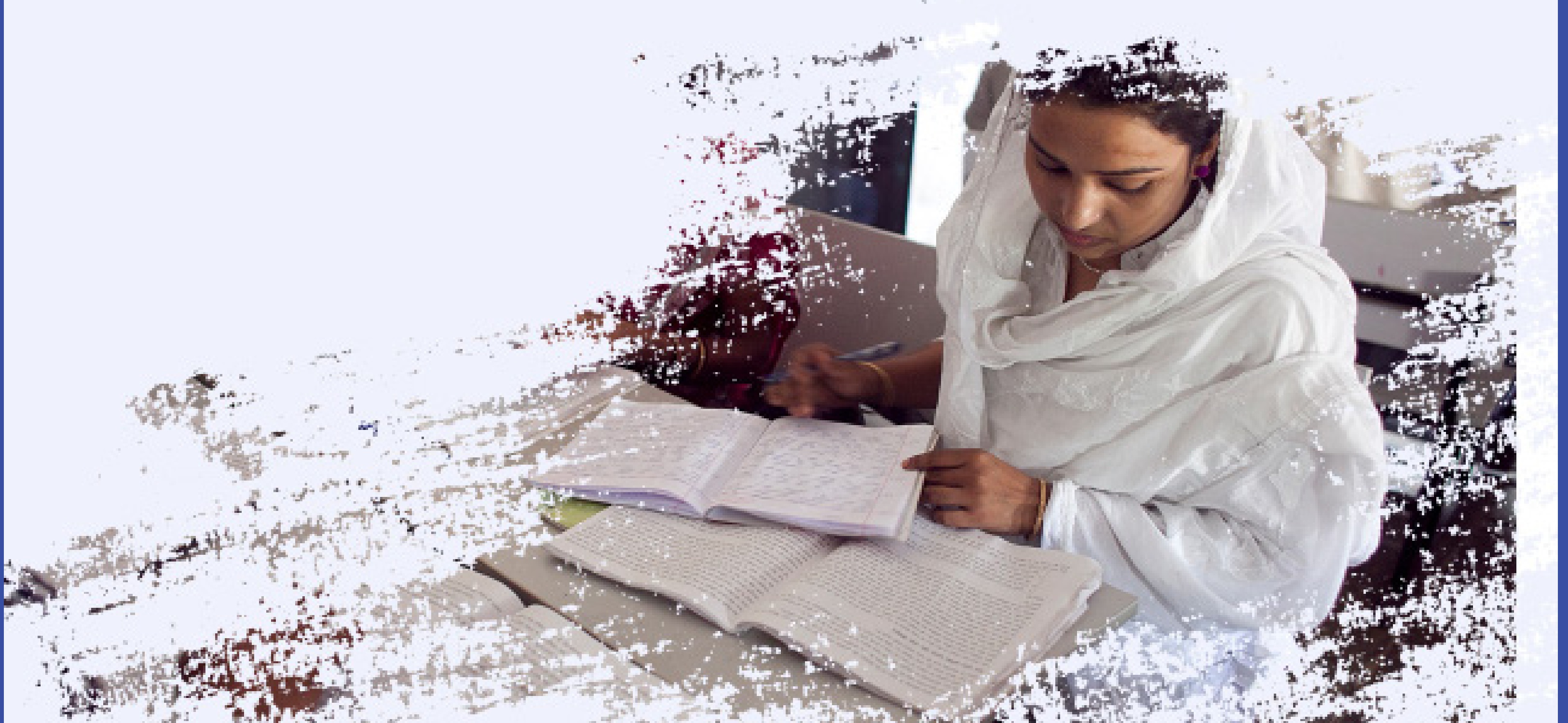
1.3.1 Despite several theoretical frameworks, there are limited tools for life skills measurement, developed and validated both in India and globally. It is widely acknowledged that quality measurement tools for assessing life skills would enable education decision makers and



practitioners to track current levels and distribution of life skills across target populations, identify progress of policies and programmes designed to enhance these skills, as well as identify potentially useful interventions (Bryony and Liyuan, 2019). Nevertheless, limited validated assessment instruments on life skills exist and past research has indicated that there is a lack of comprehensive and systematic assessment tools (Subasree & Nair., 2014; Chernyshenko et al., 2018). Furthermore, with increasing efforts towards early intervention, the need for a multi-dimensional life skills measure emerges that is applicable to a wide range of adolescents across various contexts. Measurement can help evaluate baseline assessment of life skills for both urban and rural adolescents while also providing post-intervention data about the effectiveness of life skills education programs or modules that are implemented. While some effort has been made to assess life skills in Indian adolescents, even this remains too cumbersome because of the long list of items (Subasree & Nair, 2014). Majority of existing tools treat adolescents as a single population irrespective of age group, urban-rural differences, in school/out of school context and a host of other language as well as socio-economic factors.

- 1.3.2 While YLI in collaboration with UNICEF has already developed the Life Skills Measurement Tool (Elementary Stage), the need for an age-specific, context-friendly life skills measurement tool has also emerged for adolescents in secondary schools in the 14-18 years age range. A key challenge that researchers faced was that the measurement tool needed to be valid across different contexts, so that the validity of the tool and its capacity to measure life skills domains remains constant; in spite of slight variations in the different life skills modules being implemented by State/s. Furthermore, the measurement tool and its administration needed to be designed in such a manner that it could be implemented by Education Departments with minimal effort. To meet this requirement, YLI was therefore given the task to design a tool in Hindi and Gujarati, to measure the prevalence and pattern of life skills amongst 14-18-year-old adolescents.

02 | Process of Tool Development and Standardisation

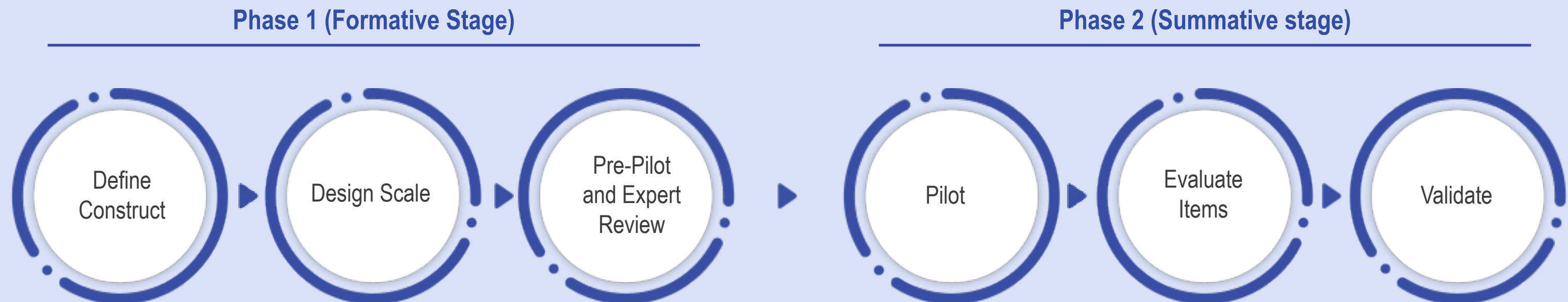


Young Lives India established the validity and reliability of the LSMT-S across two phases as described in [Figure 1](#) below:

- (i) Formative stage, and
- (ii) Summative stage.

FIGURE 1

Process of LSMT-S Tool Development



2.1 Formative Stage

2.1.1 Review of existing tools

A literature review of life skills and related measurement tool/s was conducted from various sources and over a hundred studies were collated, reviewed, short listed and consolidated for their relevance to life skills measurement across the 10 domains identified by UNICEF. Additionally, conceptual, empirical, and tool validation academic papers were reviewed and analysed for project suitability. Relevant studies were elaborated in a data matrix and a minimum of four to five tools were reviewed per life skills domain, with a special focus on those developed for the Indian context. These measures were found to have been predominantly developed in western contexts for adolescents and adults and cross-cultural validity emerged as a major concern. Furthermore, the majority of existing reliable instruments mainly focussing on single domains (e.g., decision making) were priced and not available for public use.

2.1.2 Process for tool construction

An expert group was constituted consisting of psychologists, sociologists, educationists and psychometricians for developing items for this tool. These experts were very familiar with the topic of life skills and developed a continuum of attributes for each of the ten life skills. Tool development for LSMT-S was an iterative process and feedback from teachers and students after each pre-pilot lead to further changes in the items.

Some of the guiding principles in developing the tool were:

- The assessment must be easy to administer and collate
- The assessment items should be free of value judgement
- The assessment items would cover the agreed ten life skills
- The tool could be administered both as a paper-pencil version as well as a digital tool

¹ The dictionary meaning of vignettes is a brief evocative description, account, or episode.

2.1.3 Developing conceptual frameworks and test specifications

Thereafter, conceptual frameworks were developed for each of the ten life skills, wherein the information from various studies were synthesized, each concept expanded upon and corroborated with other studies viz-a-viz the UNICEF definitions. The YLI team also traced conceptual shifts in published research across the 10 life skills and synthesized the studies for each one. A majority of the tools reviewed were in a self-reporting format. Based on this review, self-reported items were evaluated for their appropriateness and applicability to the prescribed population (14-18-year-old) in the Indian context studying in secondary schools. The existing scales were also evaluated based on past psychometric information and rigour displayed. Given that existing tools were rooted in a culturally-specific version of the English language, and items were not found appropriate or contextually relevant for this age group, it was decided to develop a new tool based on constructs developed for each of the ten life skills. Though the LSMT-E mentioned earlier was developed using vignettes for adolescents aged 11-14 years, it was proposed that a self-assessment tool with a 5-point likert scale for secondary stage may be best suited for this population. Since the researchers were developing new items for each attribute of the ten life skills, the expert group developed a 100-item tool to begin with, keeping in mind that the field trials would lead to attrition of items in subsequent rounds. This tool was piloted even though it was clear that the 100-item tool was too long to administer. Each item was checked for consistency of wording, applicability to response options and to ensure there was no value judgement attached to the items.

2.2

Summative Stage

2.2.1. Construct Validity

YLI took up the task of creating a life skills measurement tool for secondary students by ensuring it had construct validity. Psychometric theorists have increasingly stressed construct validity as the principal criterion for the validation of psychological tests. The construct validity of a test is the extent to which the test may be said to measure a theoretical construct or trait (Anastasi, 1988; Cronbach, 1990). The construct validation process involves an extensive process of experiments and analyses that are highly analogous to the steps necessary to prove a scientific theory. The YLI team pulled many pieces of evidence together to inform the development of the LSMT-S tool and data from the statistical analysis was triangulated with qualitative feedback from critical stakeholders such as students, teachers and the expert group.

3.

Pre-Pilot 1: Delhi

- 3.1 Pre-pilot 1 with 100-item tool was conducted in November 2020 in Delhi Government aided secondary schools. The draft LSMT-S (Hindi) was pre-piloted with 535 girls and boys across Grades 9,10, 11 and 12 in Delhi. The data from the pre-pilot was analysed for continued iteration and revision of the content of the LSMT-S.
- 3.2 The sample consisted of 103 students from Grade 9, 126 students from Grade 10 and Grade 11 each, and 180 students from Grade 12. Analysis revealed that the mean score for the sample was 350.75 with a score range of 100 to 500. There was a significant difference in scores between boys and girls with girls getting higher mean scores. There was also marginal difference in scores by student's class with participants from Class 9 and 12 receiving higher scores.
- 3.3 The items were examined carefully for their contribution to overall internal consistency. Correlations between items were estimated and found to be low in certain items of life skills, for instance, item test correlation was low (below 0.3) for two items of problem solving and three items of self-awareness. Overall, correlations between the 10-life skills ranged between 0.4 to 0.65.
- 3.4 Exploratory Factor Analysis (EFA) is a statistical technique that can be used to explore patterns underlying a data set. As such, EFA can elucidate how different items and constructs relate to one another and help researchers identify items that do not empirically belong to the intended construct and that should be removed.
- 3.5 EFA gives unobservable underlying variables that explain the interrelations of observed variables, which are called factors. In the unrotated factor matrix, 9 factors emerged to explain the variation in the items with eigenvalue more than 1.
- 3.6 Further, the KMO test of sampling adequacy in this pilot sample was 0.86, indicating that EFA would measure items efficiently.
- 3.7 To make better sense of the data and find a clear and easy-interpreted structure of EFA, rotation of the factor matrix was undertaken, where rotation implies rotation of the axis in multidimensional space using statistical software, i.e., STATA. For the purpose of this analysis the varimax rotation (it is an orthogonal rotation that assumes that the factors in the analysis are uncorrelated) was undertaken. Analysis revealed that there were 8 factors that explained the variation in the items with eigenvalue more than 1.
- 3.8 Cronbach alpha was estimated for internal consistency and reliability test, which stood at 0.93 for all the 100 items taken together.
- 3.9 EFA revealed that there was low intra-correlation within domains, indicating a need for greater convergence and standardization between items in one particular domain. Domains with low inter-item convergence were reviewed and responses modified for the next pilot. Items were also modified after seeking feedback of students and teachers as well as based on the overall analysis mentioned above. Special attention was paid to the language used in each item as the tool was modified for the next pilot by the expert group.

4.

Pre-Pilot 2: Uttar Pradesh

- 4.1 Pre-pilot 2 with a 100-item tool was conducted in February 2021 in Uttar Pradesh. The draft LSMT-S (Hindi) was pre-piloted with 766 girls and boys across Grades 9,10, 11 and 12 in Government schools of Uttar Pradesh. The data from the pre-pilot was analysed for continued iteration and revision of the content of the LSMT-S.
- 4.2 The sample consisted of 215 students from Grade 9, 221 students from Grade 10, 192 students from Grade 11, and 138 students from Grade 12. Analysis revealed that the mean score for the sample was 340.8 with a score range of 100 to 500.
- 4.3 The items were examined carefully for their contribution to overall internal consistency. Correlations between items were estimated and found to be low in certain items of life skills, for instance, item test correlation was low (below 0.3) for four items from creativity, three items each from problem solving, decision making, critical thinking, negotiation, self-awareness, resilience, participation and communication as well as two items of empathy. Overall, correlation between the 10 life skills ranged between 0.61 to 0.76.
- 4.4 Cronbach alpha was estimated for internal consistency and reliability test, which stood at 0.91 for all the 100 items taken together. This indicated that the tool was consistently reliable and had a good internal consistency. It is relevant to note that Cronbach alpha coefficient was less than 0.6 for decision making (0.54), creativity (0.56), negotiation (0.56), self-awareness (0.59), communication (0.47) and resilience (0.49) for their respective 10 items taken together.
- 4.5 Construct validity was undertaken using Exploratory Factor Analysis (EFA). In the unrotated factor matrix, 15 factors emerged to explain the variation in the items with eigenvalue more than 1.
- 4.6 The KMO test of sampling adequacy in this pilot sample was 0.82, indicating that the sample was adequate.
- 4.7 Low intra correlations within domains still appeared indicating the need for greater convergence, although correlations between domains were found to be sufficient for divergence.
- 4.8 The tool was therefore revised to accommodate the findings from the pre-pilot 2 and 30 items with poor frequency distribution were dropped, resulting in a 70-item tool.

5.

Pre-Pilot 3: Rajasthan

- 5.1 After the LSMT-S pilot in Uttar Pradesh , the tool was modified and items revised to generate a 70-item tool which was used for Pre-pilot 3 in Rajasthan.
- 5.2 Table1 shows the number of items in each life skill in the 70-item tool that was used in the Rajasthan pre-pilot.

Table 1: Number of items in each domain in 70-items tool

Sr. No	Domains	Number of Items
1	Problem Solving	7
2	Decision Making	7
3	Creativity	9
4	Critical Thinking	7
5	Self-awareness	6
6	Negotiation	8
7	Participation	5
8	Communication	7
9	Empathy	6
10	Resilience	8

- 5.3 Pre-pilot 3 with 70-item tool was conducted in October in 2021 in government-aided schools of Udaipur. The draft LSMT-S (Hindi) was pre-piloted with 330 girls and boys across Grades 9,10, 11 and 12 in Rajasthan. The data was collected from a paper-pencil tool. The data from the pilot was analysed for continued iteration and revision of the content of the LSMT-S.
- 5.4 The sample consisted of 90 students from Grade 9, 65 students from Grade 10, 84 students from Grade 11, and 91 students from Grade 12. Analysis revealed that the mean score for the sample was 231.2 with a score range of 70 to 350.
- 5.5 KMO test results showed that the KMO was 0.78.
- 5.6 The items were examined carefully for their contribution to overall internal consistency. Correlations between items were estimated and found to be low in certain items of life skills, for instance, item test correlation was low (below 0.3) for the five items of resilience; four items each of negotiation and creativity; three items each of problem solving, decision-making, participation and empathy; and two items each of critical thinking, self-awareness, and communication.
- 5.7 Cronbach alpha was estimated for internal consistency and reliability test, which stood at 0.86 for all the 70 items taken together. It is relevant to note that Cronbach alpha coefficient was less than 0.6 for problem solving (0.41), decision making (0.46), creativity (0.50), critical thinking (0.46) negotiation (0.41), self-awareness (0.45), participation (0.53) communication (0.46), empathy (0.30) and resilience (0.39) for their respective items taken together.
- 5.8 Construct validation was undertaken using Exploratory Factor Analysis (EFA). EFA revealed that 7 factors explained the variation in the items with eigen value more than 1, in the unrotated factor matrix. For the purpose of a clear and easily interpreted structure of EFA analysis, the varimax rotation was undertaken which found that 10 factors emerged to explain the variation in the items with eigenvalue more than 1.
- 5.9 Based on the above analysis (frequency distribution of items as well as varimax factor loadings), Young Lives modified the existing tool by changing fifteen items, i.e., four items of participation, three items each of creativity and empathy; two items each related to communication and problem-solving; and one item each of decision-making, negotiation, resilience and self-awareness.

6. Final Pilot in Rajasthan

6.1 The final pilot for the LSMT-S was held using both a paper pencil tool as well as the digital tool. As mentioned earlier, after the pre-pilot of the 70-items tool in Rajasthan, there was a need to change certain items in the tool based on the frequency distribution and internal consistency. As a large number of items did not perform well in the pre-pilot, YLI restructured the items as well as reordered the items in tool. Also, changes were made in how the Likert self-reported response scale was structured (Refer to [Table 2](#)) after State Resource Group members in Rajasthan gave the team feedback. It is important to note here that though the number of items in each domain remain as same as the Pre-Pilot – 3, fifteen items were revised.

Table 2: Changes in response-options (Likert scale)

Sr. No	Pre-Pilot-3 (Rajasthan)	Final Pilot (Rajasthan)
1	Strongly disagree	Always
2	Disagree	Often
3	Neutral	Sometimes
4	Agree	Rarely
5	Strongly agree	Never

6.2 The pilot with the 70-items tool were administered in two phases. In the first phase, Google-based forms were used to assess the life-skill from in JNV schools with 629 girls and boys across Grades 9, 10, 11 and 12 in Rajasthan. In the second phase, a paper-pencil based tool was administered to a total of 2,753 girls and boys in three districts of Rajasthan, i.e., Barmer, Dungarpur and Udaipur. This sample was basically an over-sample considering that there existed the likelihood of many forms being submitted with incomplete responses. The filled-in paper-pencil forms were sent back to YL Delhi office, where data-entry operators made the data-entry using a template which had specially been prepared to ensure quality assurance. All incomplete forms were rejected and data entry was undertaken under the close supervision of YLI researchers who carried out double data entry to ensure quality check. Finally, after rigorous data cleaning, a total sample of 1,734 was considered from the paper-pencil survey. Hence, the total combined sample (google and paper-pencil) for the 70-items Hindi tool was 2,363 boys and girls across Grades 9,10, 11 and 12 (Refer to [Table 3](#)). The data from this pilot was analysed for construct validation and finalisation of the LSMT-S in Hindi.

Table 3: Description of Sample from Final Pilot

Gender Grade	9	10	11	12	Total
Boys	297	310	230	276	1,113
Girls	288	345	293	324	1,250
Total	585	655	523	600	2,363



6.3 Descriptive Statistics

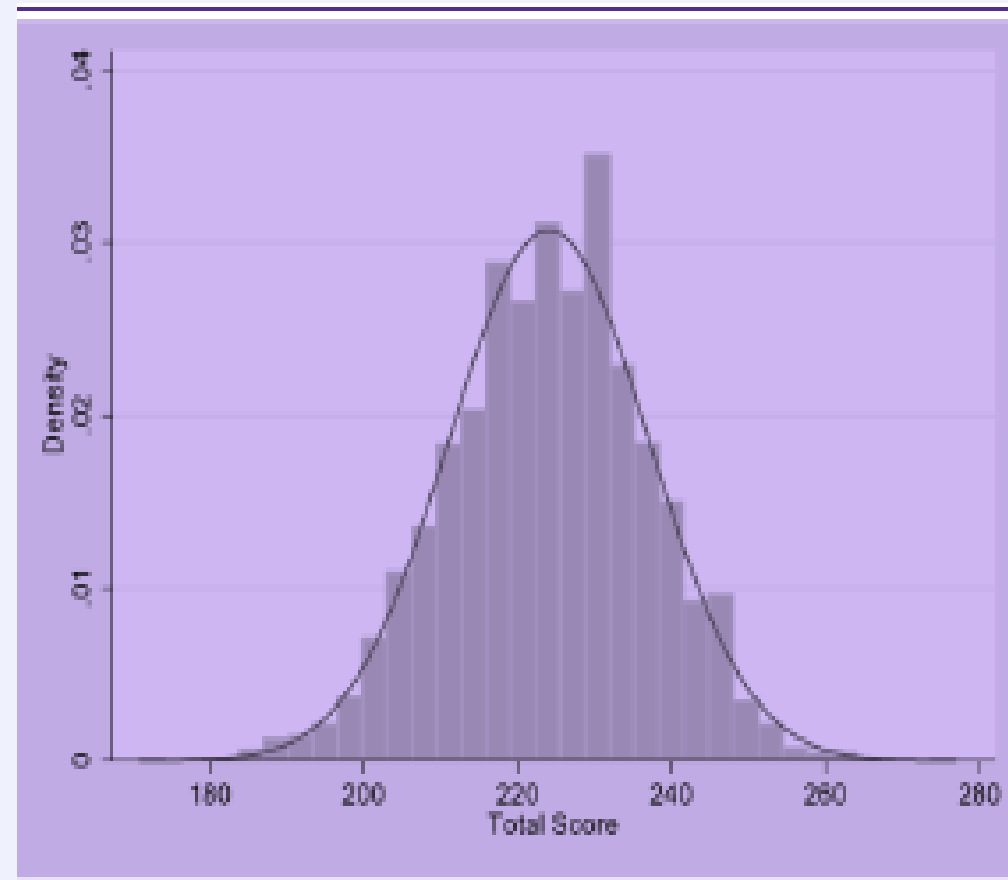
The sample has the mean score of 224.14, an almost similar median of 225, and standard deviation of 13.0, for the sample size of 2,363 (Refer to [Table 4](#)). However, no significant statistical difference was observed between the test scores by gender, age and class.

Table 4: Descriptive Statistics of the Sample

Characteristic	Sample size	Mean	Standard Deviation	Minimum	Maximum	Skewness	Kurtosis	Median	
Total	2363	224.14	13.0	171	277	-0.13	3.08	225	
Gender	Girl	1254	223.83	12.5	184	262	-0.08	2.81	224
	Boy	1109	224.49	13.5	171	277	-0.18	3.29	225
Grade	9	585	223.11	12.3	171	257	-0.26	3.41	224
	10	655	224.22	13.1	180	262	-0.15	2.91	225
	11	523	223.36	13.3	187	262	-0.06	2.76	224
	12	600	225.75	13.1	183	277	-0.09	3.26	226
Age (in years)	14	531	223.57	12.6	171	262	-0.13	3.19	224
	15	578	224.43	12.7	180	261	-0.24	3.19	225
	16	625	223.53	13.1	185	259	-0.14	2.74	224
	17	496	225.17	13.4	183	277	-0.04	3.36	226
	18	129	224.44	13.1	190	256	-0.07	2.62	225

The skewness and kurtosis combined analysis shows that the sample has a normal distribution (Refer to [Figure 2](#)).

Figure 2: Distribution of Scores



6.3.1 KMO test for sampling adequacy

Before undertaking further analysis, YLI conducted the KMO test for sample adequacy of the collected data. Result showed that the KMO was 0.91 which implies that the sample was highly adequate for further analysis.

6.3.2 Content Validity

YLI analyzed the data for construct validation of the LSMT-S. Cronbach alpha was estimated for internal consistency and reliability test, which stood at 0.85 for all the 70 items taken together. This indicates that the tool is consistently reliable and has a good internal consistency. However, it is relevant to note that Cronbach alpha coefficient was less than 0.6 for problem solving (0.43), creativity (0.44), decision making (0.37), critical thinking (0.49) negotiation (0.36), self-awareness (0.33), participation (0.43) communication (0.37), empathy (0.26) and resilience (0.38) for their respective items taken together.

6.3.3 Internal Validity

The items were examined carefully for their contribution to overall internal consistency. Correlations between items were estimated ([Table 5](#)) and found to be low in certain items of life skills, for instance, item test correlation was low (below 0.3) for seven items related to resilience, six items of negotiation, five items each of empathy, decision-making and creativity; four items each of self-awareness and critical thinking; three items of problem solving; two items of communication and one item related to participation.

Table 5: Item Test Correlations

Sr. No	Items	Item-test Correlation	Sr. No	Items	Item-test Correlation
1	Problem Solving Item 1	0.2689	36	Decision Making Item 4	0.2485
2	Empathy Item 1	0.123	37	Negotiation Item 6	0.1785
3	Negotiation Item 1	0.2149	38	Empathy Item 3	0.161
4	Creativity Item 1	0.218	39	Resilience Item 5	0.0772
5	Resilience Item 2	0.2404	40	Empathy Item 4	0.391
6	Self-awareness Item 1	0.1688	41	Problem Solving Item 4	0.3895
7	Decision Making Item 2	0.1806	42	Communication Item 4	0.3643
8	Resilience Item 1	0.1792	43	Creativity Item 7	0.1842
9	Problem Solving Item 2	0.3891	44	Participation Item 2	0.3214
10	Empathy Item 2	0.2214	45	Self-awareness Item 4	0.4147
11	Creativity Item 2	0.2816	46	Negotiation Item 7	0.2328
12	Critical Thinking Item 1	0.364	47	Critical Thinking Item 5	0.2994
13	Critical Thinking Item 2	0.2999	48	Self-awareness Item 6	0.2973
14	Negotiation Item 2	0.24	49	Resilience Item 7	0.2298
15	Communication Item 1	0.38	50	Communication Item 7	0.3449
16	Resilience Item 6	0.1978	51	Self-awareness Item 5	0.1442
17	Creativity Item 3	0.3646	52	Decision Making Item 6	0.4392
18	Communication Item 2	0.1176	53	Critical Thinking Item 6	0.2755

Sr. No	Items	Item-test Correlation	Sr. No	Items	Item-test Correlation
19	Creativity Item 4	0.3868	54	Empathy Item 5	0.2655
20	Self-awareness Item 2	0.1827	55	Problem Solving Item 5	0.1497
21	Participation Item 1	0.4124	56	Creativity Item 8	0.3905
22	Resilience Item 4	0.2581	57	Problem Solving Item 6	0.373
23	Decision Making Item 3	0.1209	58	Negotiation Item 8	0.1215
24	Problem Solving Item 3	0.2288	59	Participation Item 5	0.337
25	Participation Item 3	0.3536	60	Decision Making Item 5	0.0602
26	Critical Thinking Item 3	0.3085	61	Participation Item 4	0.1592
27	Negotiation Item 3	0.357	62	Resilience Item 3	0.2602
28	Creativity Item 5	0.3846	63	Creativity Item 9	0.2105
29	Self-awareness Item 3	0.3856	64	Critical Thinking Item 7	0.333
30	Decision Making Item 1	0.1562	65	Communication Item 5	0.3405
31	Negotiation Item 4	0.274	66	Problem Solving Item 7	0.3287
32	Critical Thinking Item 4	0.1352	67	Decision Making Item 7	0.3693
33	Creativity Item 6	0.1872	68	Empathy Item 6	0.0747
34	Communication Item 3	0.3323	69	Resilience Item 8	0.3588
35	Negotiation Item 5	0.3681	70	Communication Item 6	-0.0393

6.3.4 Exploratory Factor Analysis

Construct validity was undertaken using Exploratory Factor Analysis (EFA). In the unrotated factor matrix, 2 factors emerged to explain the variation in the items with eigenvalue more than 1. For the purpose of this analysis the varimax rotation (it is an orthogonal rotation that assumes that the factors in the analysis are uncorrelated) was undertaken, and 4 factors emerged to explain the variation in the items with eigenvalue more than 1. First factor explained maximum of 39.1% variation, and the second to the fourth factor explained the remaining variation in the items (Refer to [Figure 3](#)).

Figure 3: Variation Explained by Each Factor (Varimax Rotation)

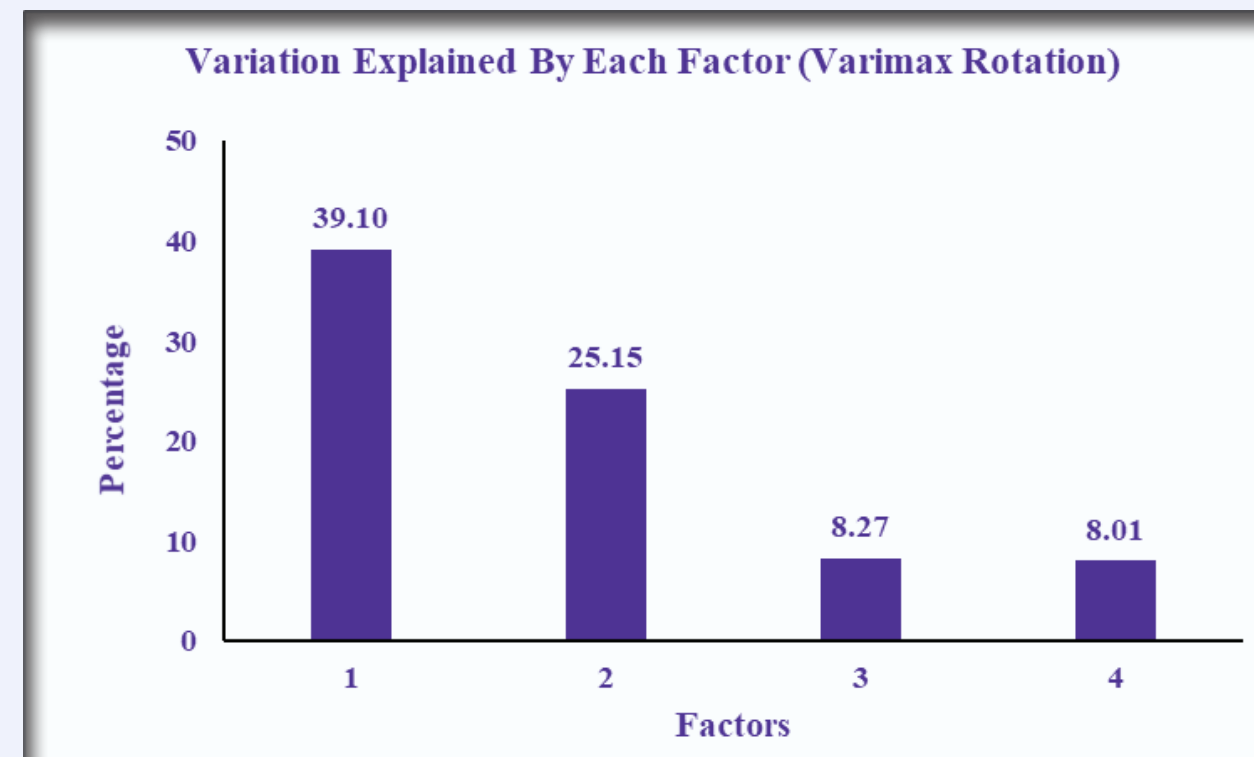
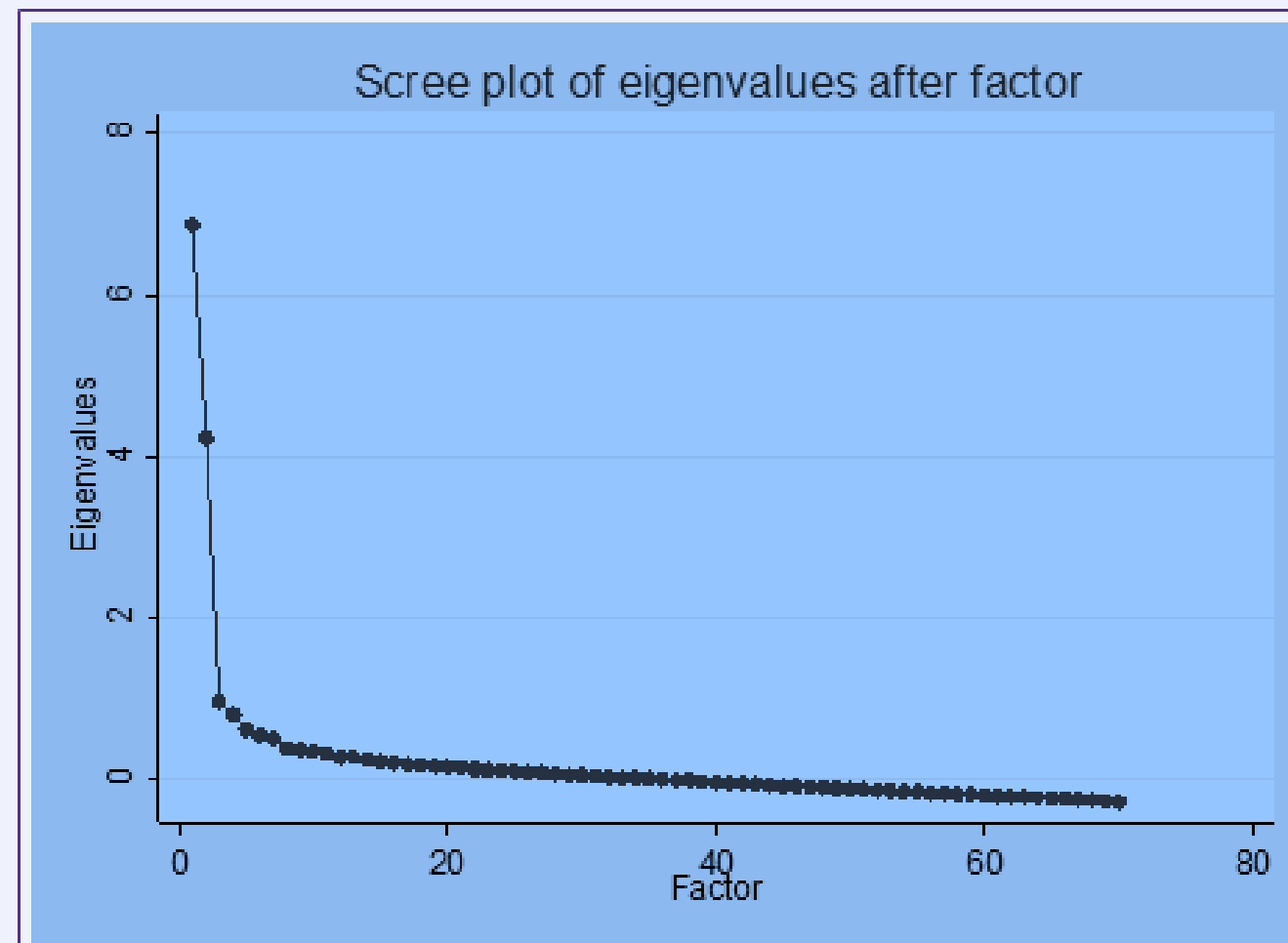


Figure 4 displays a scree plot of all the factors, including the four factors exceeding eigen value of 1.

Figure 4: Scree Plot



6.3.5 Confirmatory Factor Analysis (CFA)

CFA allows us to test a-priori model by plotting the proposed factors structure with measured variables loading on to the proposed variables. The fit of the proposed model was evaluated based on Comparative Fit Index (CFI), also known as the root mean squared error of approximation (RMSEA). The CFI provides the measure of fit and it is generally accepted that CFI value equal or greater than .90 represents a well-fitting model.

The factor loadings based on the CFA conducted on the pilot sample is significant for all the items. The RMSEA value was significant (0.028) while the pclose test was not significant, indicating a good fit. The CFI (0.941) and the Tucker-Lewis index (0.925) were both more than 0.90, indicating a good fit of the model.

6.3.6 Discriminant Validity

Discriminant validity was conducted using Confirmatory Factor Analysis. [Table 6](#) demonstrates that there was no problem with discriminant validity.

Table 6: Discriminant Validity Assessment

Squared correlations (SC) among latent variables		
	Life-skills	
Life-skills	1.000	
Average variance extracted (AVE) by latent variables		
AVE Life-skills	0.122	No problem with discriminant validity.
Note:		
• When AVE values \geq SC values there is no problem with discriminant validity.		

7. Final format of LSMT-S

7.1 Based on the varimax factor loadings, 47 items with high coefficients were retained and constitute the items in the final tool. The number of items from each of the ten life skills in the final tool are given below in [Table 7](#):

Table 7: 47 Items in the Final Tool

Life Skill	Number of Items	Cronbach- Alpha
Problem Solving	6	0.42
Empathy	3	0.23
Negotiation	3	0.17
Creativity	8	0.47
Resilience	5	0.39
Self-awareness	3	0.44
Decision Making	3	0.27
Critical Thinking	7	0.49
Communication	5	0.43
Participation	3	0.45
Total	47	0.86

7.2 The results of the validity testing on the LSMT-S indicates that it is an accurate measure of life skills of students studying in secondary classes. The process used to validate the LSMT-S was rigorous. While face validity is the lowest form of validity, feedback from teachers, students and experts was particularly useful for revising the questionnaire and its operationalization. Content validity helped ensure that the content was relevant to the concept of life skills, while factor analysis assessed the theoretical construct of the tool and reliability and assured that discriminant validity of the tool was achieved.

7.3 The culmination of the summative stage analyses led to 47 items being finalised across the ten life skills , with a five-response option created for each item. Items were structured on an ordinal scale from 1- 5, with each response being graded sequentially in relation to the other. Out of the 47 items, 19 items are reverse coded. The scoring criterion for the tool has been detailed in [Table 8](#) below:

Table 8: LSMT-S Scoring Key

Life Skills	Item Numbers	Scores				
		Always	Often	Sometimes	Rarely	Never
Empathy	15	1	2	3	4	5
	27	1	2	3	4	5
	35	5	4	3	2	1
Negotiation	16	5	4	3	2	1
	21	1	2	3	4	5
	39	1	2	3	4	5
Self-Awareness	18	5	4	3	2	1

Life Skills	Item Numbers	Scores				
		Always	Often	Sometimes	Rarely	Never
	28	5	4	3	2	1
	30	5	4	3	2	1
Decision Making	22	5	4	3	2	1
	33	5	4	3	2	1
	46	5	4	3	2	1
Participation	6	1	2	3	4	5
	10	1	2	3	4	5
	13	1	2	3	4	5
	40	5	4	3	2	1
Resilience	3	1	2	3	4	5
	20	5	4	3	2	1
	31	1	2	3	4	5
	41	1	2	3	4	5
	47	5	4	3	2	1
Communication	8	1	2	3	4	5
	11	5	4	3	2	1
	25	1	2	3	4	5
	32	5	4	3	2	1
	44	5	4	3	2	1
Problem Solving	2	5	4	3	2	1
	12	5	4	3	2	1
	24	5	4	3	2	1
	36	1	2	3	4	5
	38	5	4	3	2	1
	45	1	2	3	4	5
Critical Thinking	5	5	4	3	2	1
	7	5	4	3	2	1
	14	5	4	3	2	1
	17	1	2	3	4	5
	29	5	4	3	2	1
	34	1	2	3	4	5
Creativity	43	5	4	3	2	1
	1	1	2	3	4	5
	4	5	4	3	2	1
	9	5	4	3	2	1
	19	1	2	3	4	5
	23	1	2	3	4	5
	26	5	4	3	2	1
37	5	4	3	2	1	
	42	5	4	3	2	1

7.4 Norms of Interpreting the Scores from Raw Scores

Raw scores are collected for both, global scores as well as for each of the ten life skills covered in the LSMT-S. Interpretation of these scores is provided in the next section.

7.4.1 Global raw scores for the LSMT-S

Global raw scores could range between 47 and 235 and the interpretation of the scores is categorised into five classifications: Skilled, Proficient, Competent, Basic and Emerging.

- Those who fall above the +2SD are in Category 1 that denotes students who are performing at the highest level in life skills (Global Score 167-235, i.e., Skilled).
- Those who fall between the +1SD and +2SD are in Category 2 that denotes students with Proficient life skills (Global Score 158-166, i.e., Proficient).
- Those who fall between the -1SD to +1SD are in Category 3 that denotes students with Competent life skills (Global Score 140-157, i.e., Competent).
- Those who fall between the -1SD and -2SD are in Category 4 that denotes the Basic level of life skills. (Global score 131-139, i.e., Basic).
- Those who fall below -2SD are in Category 5 that denotes students with Emerging life skills (Global score 47-130, i.e., Emerging).

Table 9: Interpretation of Global Raw Score of Life-skill

Category	Classification	Global Score
Category 1	Skilled	167-235
Category 2	Proficient	158-166
Category 3	Competent	140-157
Category 4	Basic	131-139
Category 5	Emerging	47-130

7.4.2 Specific Life Skill scores

Ten life skills raw scores have been interpreted in [Table 10](#) given below and are categorized into three classifications: Skilled, Competent and Emerging.

Table 10: Interpretation of Raw-Scores for Specific Life skills

Life Skills	Classification 1 (Skilled)	Classification 2 (Competent)	Classification 3 (Emerging)
Empathy	11-15	7-10	3-6
Negotiation	11-15	7-10	3-6
Self-Awareness	14-15	10-13	3-9
Decision Making	13-15	9-12	3-8
Participation	12-20	8-11	4-7
Resilience	19-25	13-18	5-12
Communication	17-25	13-16	5-12
Problem Solving	24-30	18-23	6-17
Critical Thinking	26-35	20-25	7-19
Creativity	27-40	21-26	8-20

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Annexure 1: UNICEF Life Skills Framework



**THE FOUR
DIMENSIONS
OF LIFE SKILLS**

Annexure 2 - जीवन कौशल मापन टूल



Annexure 2 - जीवन कौशल मापन टूल

छात्र का नाम: _____ क्लास (सेक्शन): _____ लड़की/ लड़का/ अन्य: _____ आयु: _____

राज्य: _____ ज़िला: _____ विद्यालय: _____ स्थान: शहरी (___)/ ग्रामीण (___)

छात्रों के लिए निर्देश:

1. इस गतिविधि का उद्देश्य आपके जीवन कौशल का आकलन करना है।
2. यह कोई परीक्षा नहीं है।
3. अपने सहपाठियों से चर्चा करे बिना इस गतिविधि को ध्यान से पढ़कर खुद पूरा करें।
4. इस गतिविधि में 47 कथन हैं जो आपके रोजमर्रा के जीवन से संबंधित हैं।
5. कृपया प्रत्येक कथन को ध्यान से पढ़ें और समझें।
6. प्रत्येक कथन में पांच विकल्प दिए गए हैं - हमेशा, ज्यादातर, कभी कभी, शायद ही कभी, कभी नहीं।
7. इनमें से अपने लिए सबसे उपयुक्त विकल्प चुनें।
8. कृपया सभी कथनों के उत्तर दें। यदि आप एक भी कथन का उत्तर नहीं देते हैं तो अंत में यह फॉर्म जमा नहीं हो पाएगा।

उदाहरण

कथन	हमेशा	ज़्यादातर	कभी कभी	शायद ही कभी	कभी नहीं
मैं टीवी देखने के लिए अपना मन पसंद कार्यक्रम आसानी से चुन पाती/पाता हूँ।					



संख्या	कथन	हमेशा	ज़्यादातर	कभी कभी	शायद ही कभी	कभी नहीं
1.	प्रोजेक्ट्स करते समय मुझे अनेक नए तरीके सोचने में मुश्किल होती है।					
2.	जब किसी स्थिति में मुझे उलझन होती है तो मैं उससे जुड़ी उचित जानकारी जुटाने की कोशिश करती/करता हूँ।					
3.	कठिन परिस्थितियों का सामना करते समय मुझे लगता है कि आगे हालात और भी बिगड़ेंगे।					
4.	दोस्तों के साथ खेलते समय, मैं खेल के नए तरीके सुझा सकती/सकता हूँ।					
5.	अपने असाइनमेंट करते समय मैं सबसे पहले पूरी जानकारी का समन्वय करती/करता हूँ।					
6.	मैं अपनी कक्षा के सामूहिक कामों में भाग लेने से कतराती/कतराता हूँ।					
7.	मैं किसी कार्य को करते समय उससे सम्बंधित जानकारी का विश्लेषण आसानी से कर पाती/पाता हूँ।					
8.	दोस्तों के साथ लंबी बातचीत के दौरान मैं उनपर पूरा ध्यान नहीं दे पाती/ पाता हूँ।					



9.	मेरे दिमाग में ऐसे नए विचार आते हैं जो पहले कभी किसी ने भी नहीं सोचे होंगे ।					
10.	मैं अपने विद्यालय के छात्र समूहों में पूरे आत्मविश्वास से भाग नहीं ले पाती/पाता हूँ।					
11.	बड़े समूहों में बात करने में मुझे कोई मुश्किल नहीं होती।					
12.	किसी समस्याजनक परिस्थिति में मैं उसके सभी पहलुओं को समझने की कोशिश करती/करता हूँ।					
13.	मैं वार्षिक उत्सव जैसे स्कूल आयोजनों में भाग लेने से कतराती/कतराता हूँ।					
14.	मैं एकत्रित जानकारी का पूरा जायज़ा ले कर सुनिश्चित करती/करता हूँ कि वह मेरे कार्य के लिए पर्याप्त है।					
15.	जब कोई कठिन परिस्थिति में हो तो मुझे उनसे हमदर्दी नहीं होती।					
16.	मैं विवादपूर्ण स्थिति में सबको स्वीकार्य समाधान खोजने का प्रयास करती/ करता हूँ।					
17.	दूसरों द्वारा प्रस्तुत किए गए विचारों की आलोचना करने में मुझे मुश्किल होती है।					

18.	मैं अपने गुणों/ अवगुणों का आकलन करने में सक्षम हूँ।					
19.	मुझे रचनात्मक तरीके से सोचने में मुश्किल होती है।					
20.	मैं अपनी असफलताओं से निराश नहीं होती/ होता और उनसे सीख लेती/ लेता हूँ।					
21.	अगर मैं लोगों से असहमत हूँ तो मैं अपने विचार प्रकट करने में झिझकती/ झिझकता हूँ।					
22.	निर्णय लेने से पहले मैं विभिन्न विकल्पों की पहचान करने में समय बिताती/बिताता हूँ।					
23.	मैं आसानी से विभिन्न रचनात्मक विचारों को लागू नहीं कर पाती/पाता।					
24.	मैं किसी समस्या को हल करने के लिए कई विकल्प सोच पाती/ पाता हूँ ।					
25.	मैं दूसरों के साथ रुचिपूर्ण संवाद नहीं कर पाती/ पाता हूँ।					
26.	मैं घर और स्कूल में रचनात्मक और नए सुझाव दे पाती/पाता हूँ।					



27.	जब मैं किसी व्यक्ति को दूसरों की मदद करते देखती/ देखता हूँ, तो मुझे उनके प्रति आत्मीयता महसूस नहीं होती है।					
28.	मैं कठिन परिस्थिति में अपनी भावनाओं को पहचान पाती/ पाता हूँ।					
29.	मैं किसी भी स्थिति में उपलब्ध जानकारी का विवेचन कर पाती/पाता हूँ।					
30.	मैं इस बात से परिचित हूँ कि मेरे व्यवहार का मेरे जीवन पर क्या असर पड़ता है।					
31.	मैं हर कठिन परिस्थिति में सकारात्मक सबक नहीं सीख पाती/पाता हूँ।					
32.	सामाजिक समारोहों में मैं दूसरों के साथ सहजता से बातचीत कर पाती/ पाता हूँ।					
33.	मैं निर्णय लेते समय विकल्पों की जाँच करके उन्हें प्राथमिकता देती/देता हूँ।					
34.	निर्णय लेते समय मेरे लिए विकल्पों के फ़ायदे और नुकसान का विश्लेषण करना मुश्किल होता है।					
35.	जब किसी के साथ बुरा व्यवहार किया जाता है तो मैं परेशान हो जाती/ जाता हूँ।					



36.	किसी कठिन परिस्थिति का सामना करते समय मैं उसके सभी संभावित समाधान सोच नहीं पाती/ पाता।					
37.	मैं कई अवधारणा को जोड़ कर काम करने के नए तरीके सोच पाती/ पाता हूँ।					
38.	मैं समस्याओं को हल करने के लिए तर्क /लॉजिक का उपयोग करती/करता हूँ।					
39.	यदि सामूहिक कार्यों में मेरे विचार स्वीकार नहीं किये जाते तो मैं चर्चा करना बंद कर देती/देता हूँ।					
40.	मैं अपने आस - पड़ोस को बेहतर बनाने की गतिविधियों में भाग लेती/ लेता हूँ।					
41.	विफलता का सामना करने पर मैं मायूस हो जाती/ जाता हूँ।					
42.	मैं विभिन्न सामग्रियों का उपयोग कर के भिन्न भिन्न प्रकार की कलाकृतियां बना पाती/पाता हूँ।					
43.	मैं अपनी राय तथ्यों के आधार पर बनाती/बनाता हूँ।					
44.	मैं दूसरों के साथ बातचीत करते समय उनकी प्रतिक्रिया पर ध्यान देती/देता हूँ।					



45.	मुझे किसी समस्या का प्रभावी समाधान ढूँढने में मुश्किल होती है।					
46.	निर्णय लेते समय मैं व्यवस्थित तरीके से विभिन्न विकल्पों की तुलना करती/करता हूँ।					
47.	मैं चुनौतियों को जीवन में तरक्की करने के नज़रिये से देखती/ देखता हूँ।					

शिक्षकों के लिए

मैंने इस फॉर्म की जाँच की है और छात्र ने सभी 70 प्रश्नों के उत्तर दिए हैं।

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newdelhi@unicef.org

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