CONCEPTUAL FRAMEWORK AND DEVELOPMENT OF LIFE SKILLS MEASUREMENT TOOL MIDDLE SCHOOL (ENGLISH) LSMT- MS

Communication

Negotiation

Self Awareness

Problem Solving

Decision Making

Creativity

Critical Thinking

Resilience

Empathy

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Central Board of Secondary Education

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Message

As the Chairperson, I take utmost pride in releasing "Life Skills Measurement Tool – Middle School (LSMT – MS) for measuring life skills in English for middle school students of grades 6 - 8 (11-14 years of age)".

CBSE strongly believes that life skill education is vital in today's context and plays an important part in the growth and all-round development of young adolescents. The tools developed by Young Lives India in collaboration with CBSE are an important step to measure the life skills of our school-going students and work on enhancing their capabilities.

The conceptual framework and life skills measurement tool which has been developed through an intensive validation process across the country with CBSE students, highlights the expertise available in our country and our ability to develop contextually relevant tools. Acknowledgment is due to our technical partner Young Lives India who worked seamlessly with the CBSE team to be thought leaders in this field and UNICEF support has been valuable.

This initiative is in line with the National Education Policy, 2020 which recognises the importance of life skills teaching for holistic development of students and this collaborative partnership will help our students grow from strength to strength.

Nidhi Chhibber
Chairperson

Foreword

Life Skill education plays an important part in the lives of young adolescents and we must facilitate their growth and development by equipping them with these vital skills to ensure they realise their potential.

The National Education Policy, 2020, recognises the importance of life skills teaching for holistic development and CBSE's Life Skills Handbook is demonstrative of the policy initiatives undertaken towards mainstreaming of life skills in the curriculum by the Government of India.

CBSE aims to realise its visions of a robust, vibrant and holistic school education. We at CBSE are committed to create learners who are equipped with not only technical skills to foster excellence but vital life skills like resilience, decisions making, communication, empathy which fosters all round personality development. These skills will help young adolescents to make informed decisions, solve problems, think creatively and critically, communicate effectively, build healthy relationships, empathise with others and manage their lives in a healthy and productive manner.

I am very pleased to share that UNICEF and Young Lives India and in collaboration with CBSE, has developed a psychometrically validated "Life Skills Measurement Tool – Middle School (LSMT – MS) for measuring life skills in English for middle school students of grades 6 - 8 (11-14 years of age).

I would like to especially thank the technical team at Young Lives India, particularly Dr Renu Singh for undertaking a rigorous process to develop the construct validated life skills measurement tool and a separate teacher guide. I am sure this successful collaboration with CBSE will mark an important step towards integrating life skills within the Indian educational ecosystem.

Dr. Joseph Emmanuel
Director (Academics)

Development of Life Skills Measurement Tool – An Overview

A. Background of the Young Lives - UNICEF Life Skills Measurement Tool for CBSE ("Project")

A.1 SDG Goal 4.1 states that by 2030, all girls and boys must have access to equitable and quality primary and secondary education leading to relevant and effective learning outcomes. There is increasing awareness that learning must move beyond academic learning to include critical skills often termed as '**Life Skills**'.

A.2 In the specific context of India, which is home to more than 253 million adolescents- developing life skills amongst them is critical to addressing the SDG's and UNICEF, 2011 posited that investing in the world's 1.2 billion adolescents aged 10-19 could break entrenched cycles of poverty and inequity. Therefore, young people must be provided the opportunity to develop and enhance their life skills so as to enable them to participate fully in their society and continue learning. Life skills also helps to protect adolescents from a multitude of vulnerable social environments and risk-taking behaviours[1].

A.3 Given the positive correlation between core affective life skills development and self-concept of adolescents, which in turn affects learning outcomes[2], the role of life skills within school curriculum[3] focused on adolescents is vital.

A.4 In this regard, it is vital to note that the National Education Policy, 2020, focusses on the importance of life skills teaching for holistic development and the CBSE's Life Skills Handbook is demonstrative of policy initiatives towards mainstreaming of life skills in the curriculum by the Government of India[4]. Other initiatives have also been undertaken under the technical leadership of National Council of Educational Research and Training as well as National School of Open Schooling to develop modules on life skills under the auspices of Adolescent Education Programme. However, researchers have noted that there is a stark absence of tools to measure life skills[5] and ascertain whether these initiatives have led to developm   `life skills amongst adolescents. Of the limited tools developed to assess life skills in Indian adoles   YL notes that these tools are cumbersome because of the long list of items covered and a majority of existing tools treat adolescents as a single population irrespective of age group, urban-rural differences and a host of other language as well as socio-economic factors.

A.5 Young Lives in collaboration with UNICEF has already developed a construct validated tool for middle school/ upper primary (Grade 6-8) named LSMT-Middle School as well as a tool for measuring life skills of secondary school students (Grade 9-12) named LSMT-S in Hindi and Gujarati during 2018-2021. The Cronbach Alpha for the construct validated tool in Hindi that was developed for upper primary and secondary classes, stood at 0.87 and 0.85 respectively indicating high reliability with good internal consistency of these tools. In addition, the results of the validity testing on both the tools indicates that these tools are highly reliable for measuring life skills of students studying in mid-level and secondary classes respectively. During the pandemic, CBSE played a key role in supporting development of the LSMT-S tool in Hindi and Gujarati by providing access to students studying in CBSE schools.

A.6 Given that CBSE has English medium schools, UNICEF and Young Lives Trust ("**YL**") in collaboration with CBSE, is in the process of developing construct validated tools for measuring life skills in English for middle school students (11-14 years of age)[6].

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[1] UNICEF, 2012
[2] Singh & Sarkar, 2015
[3] The National Curriculum Framework (NCF) 2005 has put emphasis on teaching students' broader life skills along with providing constructive learning experiences
[4] https://www.cbse.gov.in/cbsenew/list-of-manuals/life_skills_cce.pdf
[5] Subasree & Nair., 2014; Chernyshenko et al., 2018; Olenik, Zdrojewski & Bhattacharya, 2013; Bapna et al., 2017
[6] It is relevant to note that tool development is not merely a translation from Hindi to English and the process of tool development needs to be undertaken by administering pre-pilots and pilots across various regions of India before a final construct validated for English is developed.

B.   Understanding The Term – 'Life Skills'

B.1   A wide variety of terminology is used to refer to life skills, including 21st century skill, transferable skills, soft skills, interpersonal and intrapersonal competencies, and social and emotional learning. These terms are used interchangeably and this accounts for the lack clarity and understanding of what connotes 'life skills. WHO defines life skills as the abilities for adaptive and positive behaviour that enable individuals to deal with, effectively, the demands and challenges of everyday life, while OECD refers to life skills as social, and emotional skills as the abilities to regulate one's thoughts, emotions and behaviour[7]. Given these varying definitions as seen in **Table 1** below, each organisation covers different domains under the term 'life skills' used interchangeably with social-emotional and twenty-first century skills.

Table 1: Life Skills as Defined by Different Organizations

Hilton-Pellegrino framework	World Health Organisation (WHO) framework	Collaborative for Academic, Social and Emotional Learning (CASEL)	Partnership for 21st Century Skills	UNICEF/ Young Lives India Framework
• **Cognitive Competencies:** o Cognitive Processes o Knowledge o Creativity and Innovation • **Intra-personal Competencies:** o Work Ethic o Positive Self-Evaluation o Intellectual Openness • **Inter-personal Competencies:** o Teamwork and Collaboration o Leadership	• Decision-making • Problem-solving • Creative thinking • Critical thinking • Communication • Interpersonal skills • Self-awareness • Empathy • Coping with emotions • Coping with stress	• **Self-awareness:** o Accurately assessing one's feelings, interests, values and strengths • **Self-management:** o Regulating one's emotions to handle stress, and controlling impulses. • **Social awareness:** o Being able to take the perspective of and empathise with others. • **Relationship skills:** o Establishing and maintaining healthy and rewarding relationships, resisting inappropriate social pressure, resolving conflict. • **Responsible decision-making:** o Making decisions, respect for others, applying decision-making skills to academic and social Situations.	• **Learning Skills:** o Critical Thinking o Creative Thinking o Collaborating o Communicating • **Literacy Skills:** o Information Literacy o Media Literacy o Technology Literacy • **Life Skills:** o Flexibility o Initiative o Social Skills o Productivity o Leadership	• Critical Thinking • Creativity • Problem Solving • Negotiation • Decision Making • Empathy • Participation • Resilience • Communication • Self-Awareness

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[7] Social and Emotional Skills, Wellbeing, Connectedness and Success, OECD.

B.2 Accordingly, for the purpose of the Project and to ensure conceptual clarity, YL relies upon the definition given by UNICEF India's Comprehensive Life Skills Framework 2019, which builds upon the WHO framework. Life skills are defined as a set of abilities, attitudes and socio-emotional competencies that enable individuals to learn, make informed decisions and exercise rights to lead a healthy and productive life and subsequently become agents of change[8].

C. Importance of Life Skills and the Need for Developing Life Skills in Adolescents

C.1 In India, 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. Accordingly, development of life skills is key to enable adolescents to achieve in schools, gain work, personal growth[9].

C.2 Research indicates life skills-based teaching content improve academic learning outcomes in high school students in India between the ages of 13 and 15 years (Subasree & Nair, 2014). Additionally, studies reveal that students equipped with strong interpersonal skills for communication and collaboration, creativity; transition from childhood to adulthood in a healthy manner and are empowered to meet the demands and stresses of a fast-changing environment (Vranda & Rao, 2011; Rust, 2013; Kumar & Chhabra, 2014). Public health research highlights life skills training programs effectively address adolescent issues such as alcohol and substance use, reproductive and sexual health, criminal acts, HIV/AIDS prevention and suicide prevention (Pillai, 2012).

C.3 Studies also demonstrate the importance of life skills education for girls, both rural and urban, and life skills training for teachers from secondary school onwards recognizing their importance in children's lives and the importance of skills in improving their relationship with children and their teaching orientation (Pachauri & Yadav, 2014; Kumari, 2014). Studies with a focus on life skills education for girls find that through such education, girls can improve their coping skills, problem solving abilities (Pujar, Hunshal, & Bailur, 2014).

C.4 It is relevant to highlight that per India Skills Report (ISR), 2021 only 45.9 per cent of graduates from India's colleges are found to be employable and these findings have been substantiated by the World Economic Forum[1], which noted that only one in four management professionals, one in five engineers and one in ten graduates are employable. The aforesaid data implies that education is in itself not preparing youth for the fast-changing nature of employment, and the growing requirement for cognitive and socio-emotional abilities and creative skills needed to be effective in work and continuous in growth. There is growing evidence that life skills play as much role as academic skills in shaping longer-term education outcomes through better social competence and grades, employment outcomes through better occupational status and income, and health outcomes through personal well-being and satisfaction with life. 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.

C.5 Given the importance of life skills, the National Curriculum Framework (NCF) 2005 laid emphasis on teaching students broader life skills along with providing constructive learning experiences and the National Education Policy (NEP), 2020 focusses on the importance of life skills teaching in the holistic development of the country. Additionally, the CBSE has called for the inclusion of life skills in the school curriculum across India (Behrani, 2016).

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[8] UNICEF India's Comprehensive Life Skills Framework, 2019
[9] Research suggests a likely casual pathway between the learning of life skills and individual like outcomes in terms of educational achievement (Gutman and Schoon, 2013); employability (Hampf and others, 2017); and self-empowerment (Schuller and others, 2004).

D. Need For Life Skill Measurement Tool in India

D.1 Despite several theoretical frameworks, there are limited tools for life skills measurement, developed and validated both in India and globally. As pointed out by the researchers the multiple conceptual approaches to describing life skills, in addition to varied terminologies associated with it has led to ambiguity in understanding and articulating the exact nature of these skills and competencies. This in turn has led to challenges in developing like skills measurement tools that are empirically sound (Bapna et al., 2017).

D.2 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).

D.3 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, and a host of other language as well as socio-economic factors. Refer to **Table 2** below which highlight the challenges in developing a life skill tool.

Table 2: Challenges Faced While Developing the Life Skills Measurement Tool

Challenges Encountered	Description
Limited Tools	Most existing valid and reliable instruments are privately owned and not available for public use. In addition, the available tools have not been tested in low- income countries like India. It is worthy to point out that some skills have received more attention than others, eg., skills relating to negotiation, critical thinking have limited measures that are reliable and open for public use.
Multi-dimensional Characteristics of Each Life Skill	Each individual life skill encompasses multiple and distinct attributes which makes tool development a challenge on account of overlaps. In addition, life skills contain a combination of knowledge skills with cognitive and non-cognitive elements being used simultaneously.
Difficulty in benchmarking	There is limited research evidence or guidance available on expected proficiency level of different life skills with respect to age. Accordingly, it is difficult to classify the levels of life skills and indicate an absolute level or benchmark with respect to age.
Cultural Differences	The cultural differences in life skills are an area of limited research enquiry and it is relevant to note that most measures have been developed within High Income Countries.

D.4 Inspite of the challenges mentioned above, YL in collaboration with UNICEF has already developed the Life Skills Measurement Tool for upper primary classes (11-14 years) in Hindi, as well as for adolescents in secondary schools in the 14-18 years age range in Hindi and Gujarati. The Project will now develop a construct validated tool for measuring life skills across CBSE Schools in English, for adolescents aged 11-14 years of age.

E. <u>**YL & UNICEF Life Skills Framework**</u>

Young Lives India & UNICEF Life Skills Framework

CRITICAL THINKING

E.1　Critical Thinking

Literature Review – Critical Thinking

Critical thinking emerges from the ancient Greek words, "Kritikos" which means to be able to authorize, discern, or decide. Critical thinking is a 'meta-skill' and Dewey, in his classic work 'How We Think,' described critical thinking as the *"active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and further conclusions to which it tends"* (Dewey, 1910). Critical thinking is a universally applicable complex mental process that involves multiple skills: separating facts from opinion, recognizing assumptions, questioning the validity of evidence, asking questions, verifying information, listening and observing, and understanding multiple perspectives (Lai, 2011). It includes an ability to analyse information in an objective manner. This is essential for children's and individuals' wellbeing, as it helps them to recognize and assess factors that influence their attitudes and behaviours, such as values, peer pressure and information from the media (WHO, 1997), thus helping them to protect themselves from violence, negative influences and radicalization. It is vital to note that critical thinking is a pervasive and self-rectifying process where an individual is aware and open-minded in evaluating circumstances, being honest about personal biases and prudent in making judgements, while reconsidering perspectives to seek results (Facione., 1990). The dispositional aspects of critical thinking include open-mindedness, self-regulation, a commitment to learning and mastery (Giancarlo, Blohm, & Urdan, 2004). Paul and Elder (2002) further indicated that critical thinking is self-directed, self-disciplined, self-monitored, and self-corrective.

Well-developed critical thinking skills enable adolescents to arrive at well-reasoned conclusions and solutions, by testing their assumptions, implications, and practical consequences against relevant criteria and standards (Facione., 1990).

Working Definition: Critical Thinking

Critical thinking is the ability to appropriately analyse information in order to come to a judgement.

Attributes of Critical Thinking:

- Organizing all relevant information,
- Synthesizing and analyzing information,
- Interpreting and evaluating ideas using inductive or deductive reasoning for making inferences,
- Reaching judgement based on factual evidence

Tools Reviewed for Critical Thinking

- Critical Thinking in Everyday Life (Mincemoyer, Perkins &Munyua., 2001)
- Minnesota test of Critical Thinking
- California Critical Thinking Skills Test (Facione, Facione & Sanchez., 1994)
- Ricketts' Critical Thinking Disposition Scales (Pakmehr et al., 2013).
- Halpern Critical Thinking Assessment using everyday situations (HCTAES)
- Cornell Critical Thinking Test
- Watson-Glaser Critical Thinking Appraisal (WGCTA)
- Ennis-Weir Critical Thinking Essay Test
- California Measure of Mental Motivation (CM3)

CREATIVITY

E.2   Creativity

Literature Review – Creativity

Creativity, or being creative, is the ability to generate, articulate or apply inventive ideas, techniques and perspectives (Ferrari et al., 2009), often in a collaborative environment (Lucas and Hanson, 2015). Creativity has been conceptualized in the theory of multiple intelligences as an important feature related to individual aptitude (Gardner, 2000). Researchers generally agree that creativity involves the production of novel and useful responsesand these two attributes are widely mentioned in definitions of creativity (Batey, 2012; Runco & Jaeger, 2012; Zeng, Proctor, & Salvendy, 2009).

While creativity is deemed essential for cognitive and social development in adolescents, measurement tools vary in terms of how they conceptualize this domain. Some tests are self-report tests that encapsulate predictive attitudes that might guide creative thinking (Egalite, Mills & Green., 2016; Kaufman., 2012) . Other tests are experiential tests that assess creative responses in the moment (Torrance., 1972).

Creativity has been seen as thinking skills, a product of creative thinking integrated with personal qualities (Sternberg, 1999). While initially creativity was considered to be a part of an innate tendency for genius, more recent research has advanced creativity, especially in education as something that can be cultivated and that is accessible to every individual.

Being creative is, to a large extent, connected to the learner's cognitive abilities, including analytic and evaluative skills (Sternberg, 2006). Moreover, ideational thought processes are fundamental to creative persons (Kozbelt et al., 2010). Creativity intersects with social and personal management skills; therefore, while related to the arts, creativity is also a pre-condition for innovation and adaptive behaviours and solutions in all life settings, including in learning settings and in the workplace (Partnership for 21st Century Learning, 2015).

Working Definition – Creativity

Ability to generate, articulate and apply inventive & original ideas, techniques and perspectives.

Attributes of Creativity

- Novelty and originality of ideas (generate unfamiliar solutions)
- Apply imagination to generate multiple innovative ideas,
- Fluency and breadth of ideas (rapidly producing ideas),
- Applying inventive ideas, techniques to elaborate a basic idea to a well formulated concept

Tools reviewed for Creativity

- Kaufman Domains of Creativity Scale (K-DOCS; Kaufman, 2012)
- Creativity Tool (Egalate, Mills & Green, 2016).
- Torrance Test for Creative Thinking
- Wallach-Kogan Creativity Tests
- Khatena-Torranc Creative Perception Inventory
- Divergent Thinking Test
- Creative Self efficacy scale
- Creativity Assessment Packet

PROBLEM SOLVING

Literature Review – Problem Solving

Problem-solving is a high-order thinking process inter-related with other critical life skills, including critical thinking, analytical thinking, decision-making and creativity. Being able to solve problems implies a process of planning in the formulation of a method to attain a desired goal.

Problem solving is a skill that coordinates all the cognitive, metacognitive and behavioural processes taking place when individuals encounter a previously unprecedented situation or difficulty. (Karyotaki & Drigas, 2016). Problem-solving begins with recognizing that a problematic situation exists and establishing an understanding of the nature of the situation. It requires the solver to identify the specific problem(s) to be solved, plan and carry out a solution(s), and monitor and evaluate progress throughout the activity (OECD, 2015).

It is vital to note that problem solving is an important skill to help promote independence in adolescence, deal with difficulties, behavioural issues and emotional or mental health. Problem-solving is generally described as being comprised of two main components: problem-solving orientation, one's attitude and beliefs about the problem and their ability to resolve it, and problem-solving style, the cognitive and behavioural actions one takes to resolve the problem (Nezu, 2004).

Working Definition of Problem Solving

Ability to generate, articulate and apply inventive & original ideas, techniques and perspectives.

Attributes of Problem Solving

- Recognition and identification of problem situation/understand the problem,
- Gathering relevant information,
- Thinking of all possible/consider multiple solutions,
- Evaluating and determining the most effective solution

Tools Reviewed for Problem Solving

- Solving Problems Survey (Barkman & Machtmes., 2002).
- Preschool Interpersonal Problem Solving (Spivack & Shure, 1974).
- The Means-Ends Problem Solving Procedure (Platt and Spivack, 1975).
- Inventory of Metacognitive Self-regulation.
- Social Problem-solving inventory for adolescents.
- VIEW – An assessment of problem solving.
- Tower of London, Drexel University.
- Canadian Cognitive Abilities Test.
- Learning Ability Profile.
- Wechsler Intelligence Scale for Children.

NEGOTIATION

E.4   Negotiation

Literature Review – Negotiation

Negotiation is defined as the ability to be aware of one's needs and those of others. Negotiation can be defined as a process of communication between at least two parties aimed at reaching agreements on their "perceived divergent interests" (Pruitt, 1998) and is viewed as a key construct of conflict management and resolution. It has been elucidated in social role theory of taking on social rules and navigating social interactions (Blume, Green, Joanning & Quinn., 1994).

While negotiation relates to a process, it translates into the ability of an individual to interactively and effectively partake in a negotiation process by respecting others while being assertive, being cooperative, using communication skills, showing leadership skills and saying no when one's wellbeing is threatened. Balachandra et al (2005) argued that negotiation is dependent on the ability to improvise in relation to others. Negotiation is the awareness of how personal needs may need to be mediated in response to surrounding contexts, the environment, parents, peers and society(Cooper & Ayers-Lopez., 1985). While two or more parties may initially hold opposing viewpoints that appear to contradict each other, through a process of concession making, they may arrive at a greater level of agreement. Negotiation is a tool that can be used to create a good relationship with others (Stevens et al., 2018).

Working Definition of Negotiation

Ability to come to an agreement with others using logic and persuasion.

Attributes of Negotiation

- Recognition of divergent interests and conflicting views.
- Approach/avoidance.
- Consideration for other person's viewpoint /open to other's suggestions.
- Use logic and engage in dialogue to reach an agreement.

Tools Reviewed for Negotiation

- The Negotiation Scale (Barkman&Machtmes., 2002).
- Interpersonal Negotiation Scales- developed by Mettl (2018).
- Five factor negotiation scale.
- Thomas – Kilmann conflict mode instrument.
- Conflictalk.

DECISION MAKING

Self Awareness • Critical Thinking • Creativity • Problem Solving • Negotiation • Decision Making • Empathy • Participation • Resilience • Communication

E.5   Decision Making

Literature Review – Decision Making

The World Health Organization (WHO) defines decision making as an ability to perceive problems and causes, seek choices, analyse advantages and disadvantages of choices, make the connection between choices and implement a suitable solution (WHO, 1993). Decision-making has consequences on all individuals' wellbeing through the effects of the choices they make (WHO, 1997). Decision-making skills relate to "one of the basic cognitive processes of human behaviour by which a preferred option, or a course of action, is chosen from among a set of alternatives based on certain criteria" (Wang, 2007). Decision-making is used by all individuals on a daily basis and is a complex act or process that involves recognition that there is a particular issue at hand that needs some action and critically evaluating the response one can make (Cater et al., 2010).

Decision-making includes cognitive, behavioural and emotional processes (Janis & Mann., 1977). Furthermore, decision making can be a multi-stage process of understanding concerns, evaluating whether action is to be taken, what various options are available and committing to a final conclusion (Mincemoyer & Perkins., 2003). Decision making is the process of gathering information, identifying the different choices/alternatives, choosing options/actions from the identified alternatives, making constructive decisions, then accepting and carrying out the decisions (Mincemoyer & Perkins., 2003). According to Hastie & Dawes, 2010, decision making competence is based on the premise that a general cognitive competence is reflected in normatively correct decision making, on the basis of two criteria for rationality (i) accurate judgments or choices (e.g., making optimal choices on the basis of explicit decision rules when considering options that differ on multiple attributes) and (ii) consistency across judgments or choices (e.g., across objectively equivalent decisions presented in a contextually different manner)Several factors influence decision-making, including information, time constraints, clarity about objectives, past experience, cognitive biases, age, belief in personal relevance and other individual differences (Dietrich, 2010; Thompson, 2009).

Working Definition of Decision Making

Choosing an option/ action from amongst a set of alternatives available.

Attributes of Decision Making

- Confidence and willingness to make decisions.
- Identification/thinking of alternative choices.
- Weighing choices based on consequences/impact.

Tools Reviewed for Decision Making

- YEAK survey (Cater et al., 2010).
- Making Decisions in Everyday Life (Mincemoyer & Perkins., 2003).
- Adolescent Decision-Making Questionnaire (Mann et al., 1989).
- Decision-making Questionnaire (Gerswick et al., 1988).
- Flenders Adolescent Decision-Making Questionnaire.
- Problem solving. Decision making sub-scale.

EMPATHY
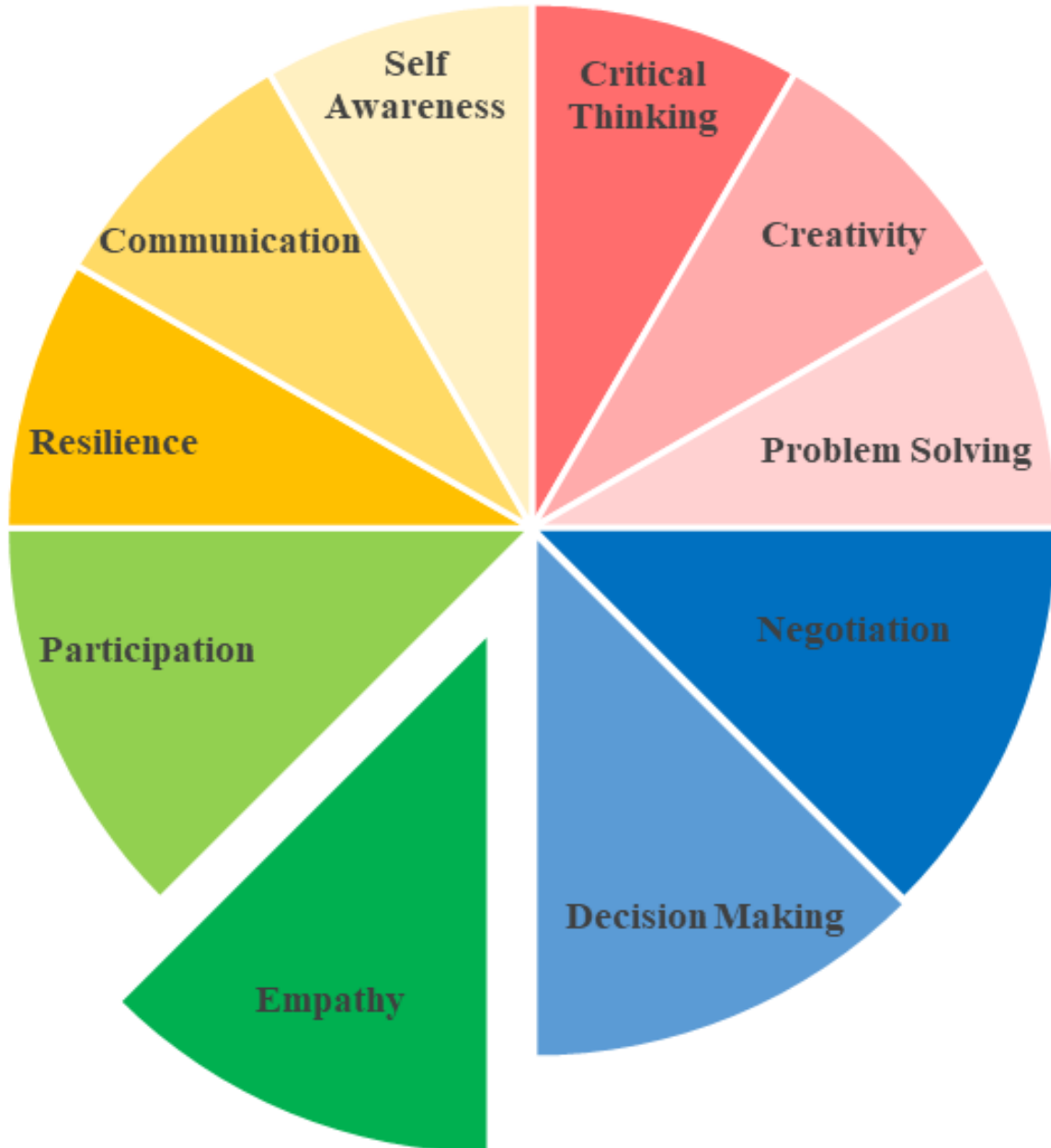
E.6   Empathy

Literature Review - Empathy

Empathy is defined as the ability to understand and accept a diverse range of people, beliefs and values (Bohart, Elliot, Greenberg & Watson., 2002) and is "the ability to comprehend another's feelings and to re-experience them oneself" (Salovey and Mayer, 1990), while never being judgemental. Most researchers agree that empathy involves the adoption of another's affective state so that both the empathizer and the empathic target are in a similar state (Cuff et al., 2016; de Waal, 2008). A key construct in social and developmental psychology, as well as in cognitive and social neuroscience, the ability to empathize is important for promoting positive behaviours toward others and facilitating social interactions and relationships.

A major controversy has existed about the contribution of both affective and cognitive modes of empathy (Knezek & Miyashita., 1994; Bohart, Elliot, Greenberg & Watson., 2002).Despite continuing discussion of the relative importance of cognitive or affective elements, as well as disagreement about which is process and which is outcome, there appears to be general consensus that the cognitive and affective features of empathic processing and responding are both necessary, and that the relative importance of each varies with situations.
Empathy plays an important role in becoming a social person with meaningful social relationships (McDonald and Messinger, 2012) and empathy motivates altruistic behaviour (Jönsson and Hall, 2003).

Working Definition of Empathy

Level of cognitive and affective response and involvement in another's situation that involves identifying others situation, taking perspective of that situation and sharing other's emotional state.

Attributes of Empathy

- Understand another person's emotions, feelings and needs.
- Emotional congruence (experience/feel the same emotion/adopt the other person's affective/emotional state.
- Empathic attitude/concern with action to support other people.

Tools Reviewed for Empathy

- Adolescent Measure of Empathy & Sympathy (AMES; Vossen., Piotrowski., Valkenburg.,2015).
- Bryant's Empathy Index for Children (Bryant, 1982).
- Children's Empathetic Attitudes Questionnaire (CEAQ; Funk, Fox, Chan & Curtiss., 2008).
- Computer-based Attitude Scale (Knezek & Miyashita., 1994).
- Basic Empathy Scale.
- Toronto Empathy Questionnaire.
- Empathy Components Questionnaire.
- Griffith Empathy Measure.
- Interpersonal Reactive Index.
- Questionnaire Measure of Emotional Empathy.

PARTICIPATION

E.7   Participation

Literature Review - Participation

Participation or being participative can be defined as partaking in and influencing processes, decisions, and activities (UNICEF, 2001). Therefore, both a contextualized process and a core life skill, participation is an action of empowerment in relation to the individual and the community Participation for adolescents may consist of awareness of issues that impact self, family and one's community and self-involvement in accordance to how these are prioritized by the individual.

Participation also involves the involvement of other peers and attempts in generating resources. According to Beaumont, O'Doherty, & Shannon (2008), youth investment of time and energy in participatory activities helps explore new roles and identities, foster a sense of empowerment and self-efficacy. Participation consists of two important processes: awareness and action. Participation therefore implies that adolescents can critically evaluate different perspectives and engage together (Westheimer, 2008). Greater participation not only promotes higher levels of social cohesion but also promotes personal agency that can impact actions and even collective behaviour (Ten Dam, Geijsel, Reumerman& Ledoux., 2011). Young people's development through participation is significant for an active citizenship as well as adolescents' personal and social development.

Working Definition of Participation

Ability to contribute actively to processes and situations, influencing decisions and activities.

Attributes of Participation

- Attitude towards participation and complete intent to participate
- Followed by participatory action.

Tools Reviewed for Participation

- Young People's Citizenship Competencies Scale (Dam et al., 2011).
- Altruism Scale (Rushton., 1981).
- Civic Attitude Scale.

RESILIENCE

E.8   Resilience

Literature Review – Resilience

Resilience is the ability to retain one's form and thrive to a full potential despite adversity or difficulties in circumstances. A popular definition describes resilience as "a dynamic process encompassing positive adaptation within the context of significant adversity" (Luthar et al., 2000, p. 543).

Resilience theory argues that there are internal and external factors that interact among themselves and allow people to overcome adversity. Internal protective factors include attitude, self-esteem and self-confidence, internal locus of control, and a sense of life purpose. Optimism has similarly been identified as a key component of resilience by multiple researchers (Black & Lobo, 2008; Gross & Thompson, 2007). External factors are primarily social supports received from family and community. These include a caring family that sets clear, nonpunitive limits and standards; the absence of alcohol abuse and violence in the home; strong bonds with and attachment to the school community; academic success; and relationships with peers who practice positive behaviours (Deater-Deckard., Ivy & Smith., 2005; Infante, 2001; Luthar, Cicchetti & Becker.,2000; Luthar& Ziegler, 1991; Rutter, 1987; Walsh., 2003). Werner and Smith (2001) found that those who are resilient make use of opportunities and resources around them.

Working Definition of Resilience

Ability to cope with stress and calamity and returning to previous level of stasis from some form of disruption, stress or change.

Attributes of Resilience

- Have positive and hopeful outlook.
- Positive adaptation in the face of adversity.
- Overcome challenges/ manage disappointments, bounce back to normalcy.
- Transform in a positive way.

Tools Reviewed for Resilience

- The Resilience Scale (Wagnild& Young, 1987).
- Adolescence Resilience Questionnaire (ARQ, Gartland et al., 2011).
- Brief Resilience Scale (Smith et al., 2008).
- Brief resilient coping scale (Sinclair & Wallston., 2004).
- Connor-Davidson Resilience Scale (CD-RISC., Windle, Bennett &Nayes, 2011).
- Resiliency Attitudes and Skills Profile.
- Resilience and Youth Development Module.
- Resilience Scale for Adolescents (Read).
- Adolescents Resilience Measurement Scale (ARMS).

COMMUNICATION

E.9   Communication

Literature Review – Communication

Communication is defined as a dynamic process by which people exchange thoughts, ideas and messages (Mincemoyer, Perkins & Munyua., 2001). Communication, or being able to communicate, involves the sharing of meaning through the exchange of information and common understanding (Castells, 2009; Keyton, 2011; Lunenberg, 2010).

While listening is an act of hearing, communication involves interpreting and responding appropriately (WHO., 1993). Communication is embedded in the Sustainable Development Goals (SDGs) as one of the essential transferable skills (UNICEF, 2018). *It is an important interpersonal skill that begins to be initiated in early childhood with speech development but consolidates during the ages of 6-14 years* (UNICEF, 2018). Communication skills are integral to the acquisition, practice and development of all other core life skills. Closely linked to communication are life skills related to negotiation, empathy and participation. Communication consists of three important components. While the first component comprises, the words spoken, written or signed message alone, the second component of communication goes a step forward to understand the emotional undertone in the messaging being conveyed. The third and final component of communication is the reflection and mindful analysis of the message from both sender and receiver so appropriate feedback or responses can be supplied.

Working Definition of Communication

Ability to exchange information, express opinions, desires, needs and fears.

Attributes of Communication

- Active listening - attention to stimulus.
- Effective speaking (articulate clearly, confidence, speech and words).
- Two-way dialogue.
- Socially relevant aspects of communication (read and manage own and other's emotions during interactions with others, use appropriate language as per the social context.
- Responsive to diversity.

Tools Reviewed for Communication

- Communication Scale (Barkman & Machtmes., 2002).
- Interpersonal Communication Skills Inventory (Bienvenu., 1971).
- Quality of Communication Life Scale- American Speech and Hearing Association (2017).
- Communicative Adaptability Scale.

SELF AWARENESS

E.10   Self-Awareness

Literature Review – Self Awareness

Self-Awareness is the thinking skill that focuses on a person's ability to accurately judge her/his own performance and behaviour. Self-awareness is made up of emotional awareness, accurate self-assessment and self-confidence (Goleman, 1996). Self-awareness is a metacognitive process that is required to achieve successful outcomes in daily life. People who are self-aware are able to maintain a well-grounded sense of self-confidence. Self-awareness is important for building relationship skills to be able to live and work successfully with other people. It involves understanding how one can influence and affect others

Self-Awareness helps an individual to tune into their feelings, as well as personal strengths and weakness and also helps develop an accurate self-concept. Some key facets of building self-awareness include the ability to identify and store information about self, to develop awareness of one's emotions and response to others emotions, know what makes one happy versus upset, to know what one is good at and the areas of improvement.

Winsler and Naglieri indicate that self-awareness gradually develops during childhood, starting with awareness of concrete, attributes of behavior or physical characteristics, and graduating into more abstract attributes. It is mainly during late adolescence, that a more integrated sense of self-awareness occurs, when adolescents evaluate their performance in relation to that of others with others at school, home and in the neighbourhood.

Working Definition of Self-Awareness

Accurately assessing one's feelings, interests, values, strengths and weaknesses in the context one is living and thereby building self-identity.

Attributes of Self-Awareness

- Self-awareness of strengths and weaknesses,
- Self-awareness of emotions,
- Correct attribution to self in a given situation.

Tools Reviewed for Self-Awareness

- Rosenburg Self-Esteem Scale (Rosenberg., 1965).
- Coopersmith Self-esteem inventory (Coopersmith., 1967)
- Situational Tool (Schonert-Reichl, Lawlor, Oberle, & Thomson, 2009)
- Self-Image Questionnaire (Offer, Ostrov& Howard., 1984)- Hindi version by Pal (2007)
- Self-concept Scale (Saraswat., 1998)
- Self-perception profile for children (Harter., 1985)
- WCSD-SECA Instrument

F. Tool Development

F.1　The development process for the CBSE Life Skills Measurement Tool – Middle School ("**LSMT-MS**") is enumerated in **Figure 1** below.

Figure 1: Tool Development Process
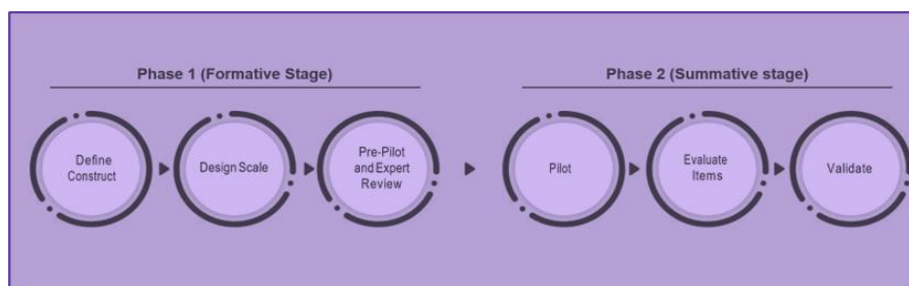
F.2　Formative Stage:

F.2.1　*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, shortlisted 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 and psychometric properties. Relevant tools relating to students aged 11-14 were elaborated in a data matrix and a minimum of four to five tools were reviewed per life skills domain (Refer to **Section E**).

F.2.2　*Developing Conceptual Frameworks and Test Specifications:* A conceptual framework has been developed for each of the ten domains provided in the UNICEF life skills framework, wherein the information from various studies has been synthesized, domain concepts expanded upon and corroborated with other studies vis-a vis the UNICEF definitions (Refer to **Section E**). Given that the life skills constructs like other psychological constructs are not directly observable, the researchers had to connect the construct to a set of observable traits or behaviours' (Price, 2017). A review of related literature, along with consultation with subject-matter experts resulted in concise, clear and precise operational definitions of the construct and its attributes being generated.

F.2.3　The construct operationalization process raised various questions (See **Figure 2)** which the research team along with expert group addressed in order to specify potentially relevant indicators for the tool. The Young Lives team thus developed sub-domains and indicators for each life skill, while answering each of the questions encountered during the tool development process.

Figure 2: Questions Raised During Tool Development
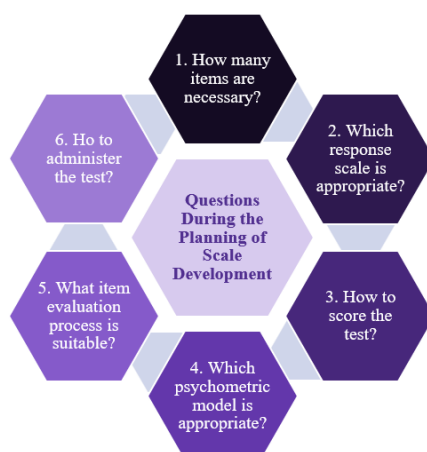
F.2.4 *Process of tool construction:* An expert group has been constituted consisting of psychologists, sociologists, educationists and psychometricians for developing items for the LSMT-MS English tool. Given that the tool was going to be designed as a multi-dimensional tool covering 10 life skills, it was decided to develop two life skills measurement English tool/s using self-assessment statements with a five-point likert scale for the Pre-Pilot 1 and 2, and the main Pilot. Some of the guiding principles in developing the tools are the following:

- The assessment tool must be easy to administer and collate
- The assessment items should be free of value judgement
- The assessment items would cover the agreed domains of life skills
- Avoid double negatives
- Keep items at reading level of students studying in Grades 6-8
- Use simple and clear language

F.2.5 *Developing test specifications:* The researchers in consultation with the expert group developed a larger item pool than that required for the pre-pilot, so that there would be a pool of test items available that needed to be replaced after the pre-pilot analysis, keeping in mind that the field trials would lead to attrition of items in subsequent rounds. The tools used for the Pre-Pilot-1 consisted of 80 statements, followed by 83 Items in Pre-Pilot 2 and revised 83 Items in the main pilot. (**See Annexure 1**).

F.3 Tool Construct Validation Process:

F.3.1 *Construct Validity:* YL took up the task of creating life skill measurement tools for upper primary students by ensuring it has construct validity. Construct validity, refers to the extent to which a measure adequately represents the underlying construct that it is supposed to measure. The construct validation process involves an extensive process of psychometric analyses that are highly analogous to the steps necessary to prove a scientific theory. The validity and reliability of the LSM tool will be established across two phases: (i) formative, and (ii) summative stage (See **Figure 3 on Page 30**). Validity refers to the degree to which evidence and theory support the interpretations of test scores entailed by proposed uses of the test whereas reliability refers to the degree to which the results obtained by a measurement and procedure can be replicated. Sireci (2007) argued that evaluating test validity is not a static, one-time event; rather, it is a continuous process and requires multiple sources of evidence.

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Figure 3: Tool Construct Validation Process

Phase 1 (Formative Stage)
- Define Content
- Design Scale
- Pre-Pilot and Expert Review

Phase 2 (Summative Stage)
- Pre-Pilot 1 (80 Self-Assessment Items)
- Pre-Pilot 2 (83 Self-Assessment Items)
- Pilot (Revised 83 Self-Assessment Items)
- Evaluate Items
- Validate
- FINAL 53 ITEMS TOOL
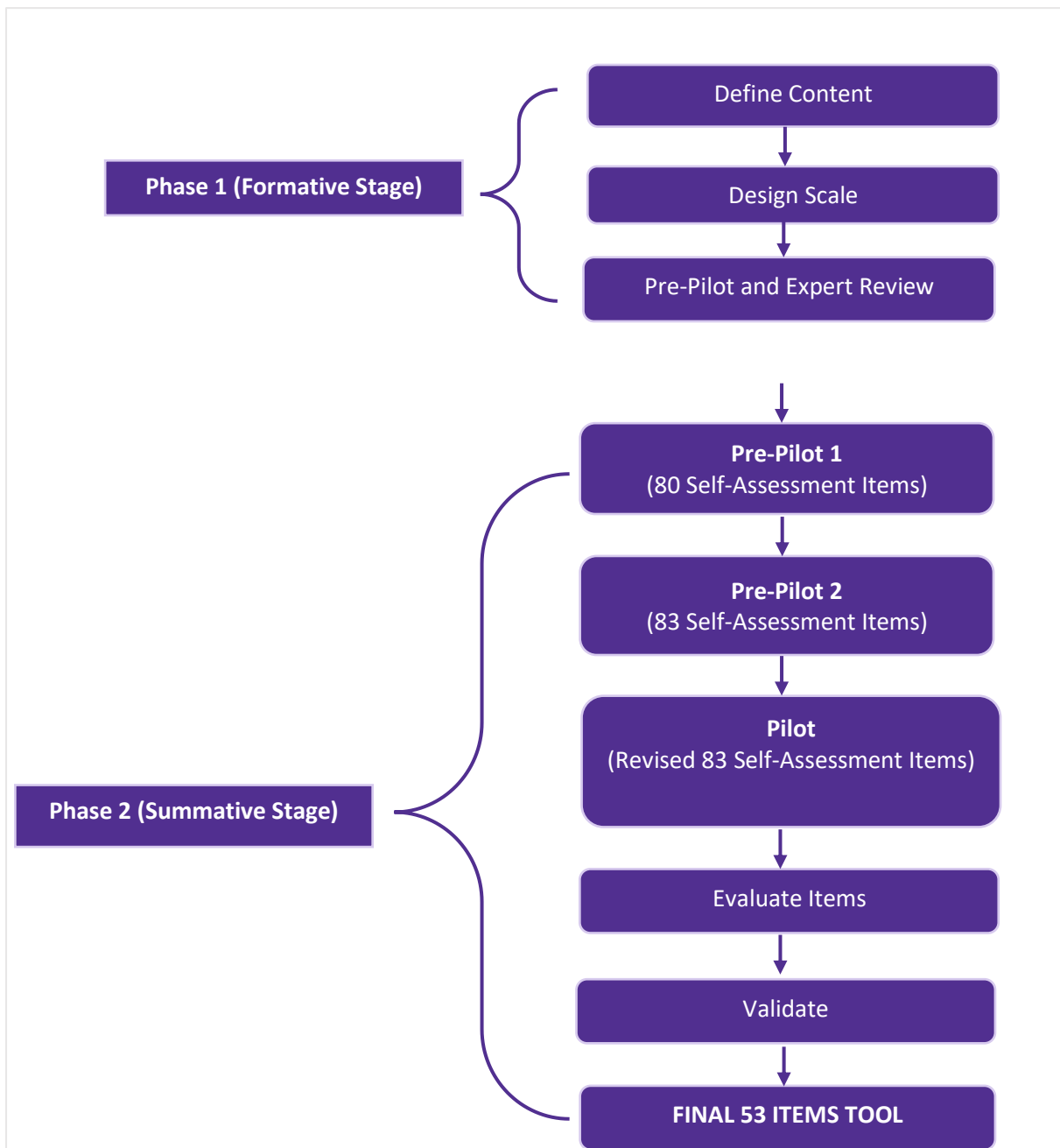
F3.2   *Qualitative Feedback from Students and Teachers*

Critical feedback was also taken from all students who participated in the pre-pilot as well as from teachers with whom the LSM tool was shared during data collection. Feedback questions for students aimed at inquiring about the clarity of instructions and choice of exemplars, difficulties in reading as well as comprehension. Perceived difficulties in answering any items and difficulty in understanding specific words or syntax were also explored. For teachers, feedback questions included open-ended questions about clarity of instructions, reading comprehension of items, suitability of items for diverse student learning curves and individual needs, choice of response format and suitability of the overall tool. All these suggestions were collated and proved extremely useful in informing the development of the draft LSM tool used for the final pilot.

F.3.3 *Pre-Pilot 1 (80-Self-Assessment Items Tool)*

- Pre-Pilot 1 with 80-item likert-scale tool (See **Table 4**) which was converted into a google form was conducted in November 2022 in a private CBSE school in Delhi. The LSMT-MS (English) was pre-piloted with 205 girls and boys across grades 6, 7 and 8. The sample consisted of 63 students from Grade 6, 64 students from Grade 7 and 78 students from grade 8.

Table 4: Number of Items in Each Domain in 80-items Tool

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

- 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. Specifically, the item test correlation was low (below 0.4) for two items of participation; three items of communication; four items each of decision-making, creativity and critical thinking; five items each of problem solving, negotiation and empathy; six items each from self-awareness and resilience.

- In the unrotated factor matrix from EFA, 15 factors emerged to explain the variation in the terms with an eigenvalue of more than 1 while in varimax rotation, 23 factors were emerged with an eigenvalue of more than 1.

- Clearly, EFA revealed that there was low intra-correlation within domains, indicating a need for greater convergence and standardization between items. Therefore, there was a need to review and modify items with low inter-item convergence. Special attention was paid to the language used in each item.

- Given that the 80-Self-Assessment Items Tool in English showed poor internal consistency, the items were reviewed and changed. The items were reviewed critically against attribute as well as distribution of each item and appropriate changes in terms of language, direction (reverse or direct question) was made. One new item each were added in creativity, communication and empathy in this version. Pre-Pilot 2 was thereafter conducted with 83-Self-Assessment likert-scale tool (See **Table 5 on Page 32**) which was converted into a google form in December 2022 in a private CBSE school in Delhi.

Table 5: Number of Items in Each Domain in 83-items Tool

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

F.3.4 *Pre-Pilot 2 (83-Self-Assessment Items Tool)*

- This LSMT-MS (English) was pre-piloted with 287 girls and boys across grades 6, 7 and 8. The sample consisted of 93 students from Grade 6, 99 students from Grade 7 and 95 students from grade 8.

- Like before, KMO test has been conducted for sample adequacy and result shows that the KMO was 0.81 which indicates sample was 'good' enough for further analysis.

- 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. Specifically, the item test correlation was low (below 0.4) for three items each of problem solving, decision-making, creativity, participation and empathy; four items of resilience; five items each of critical thinking, negotiation and communication; six items of self-awareness.

- EFA revealed that in the unrotated factor matrix, 11 factors emerged to explain the variation with an eigenvalue of more than 1 while in varimax rotation, 16 factors emerged with an eigenvalue of more than 1.

- Given that EFA revealed that there was low intra-correlation within domains, it was necessary to build greater convergence and standardization between items. Thus, all items with low inter-item convergence were reviewed and modified. Special attention was paid to the language used in each item. The items were reviewed critically against attribute as well as distribution of each item and appropriate changes in terms of language and direction (reverse or direct question) was made.

The revised tool that emerged from this exercise was a new 83-items Likert-scale tool (See **Table 6**) which was converted into a google form for the main pilot.

Table 6: Number of Items in Each Domain in 83-items Tool

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

F.3.5 *Main Pilot*

- The final Pilot with 83-items in 5-point Likert-scale tool in English language was conducted in February 2023 in ten public and private CBSE schools located in ten states - Delhi, Rajasthan, Punjab, Goa, Uttarakhand, Madhya Pradesh, Punjab, Himachal Pradesh, Andhra Pradesh, and Bihar.

- The LSMT-MS (English) was piloted with 1,331 students (548 girls and 783 boys) across grades 6, 7 and 8. The sample consisted of 483 students from Grade 6, 391 students from Grade 7 and 457 students from grade 8.

- The KMO for this pilot was 0.95 which shows that the sampled data were adequate enough for further analysis.

- The data collected from the pilot was analysed for construct validation of the LSMT-MS through exploratory factor analysis and item-test correlation. Finally, the tool was examined for content validity and convergent/discriminant validity.

F.3.5.1. Validation Process

- Exploratory factor analysis is used to examine the construct validity of the tool. In the unrotated factor matrix, 4 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 3 factors emerged to explain the variation in the items with eigenvalue more than 1. First factor explained maximum of 47.3% variation, and the second to the third factor explained the remaining variation in the items (Refer to **Figure 4**).

Figure 4: Variation Explained by Each Factor (Varimax Rotation)
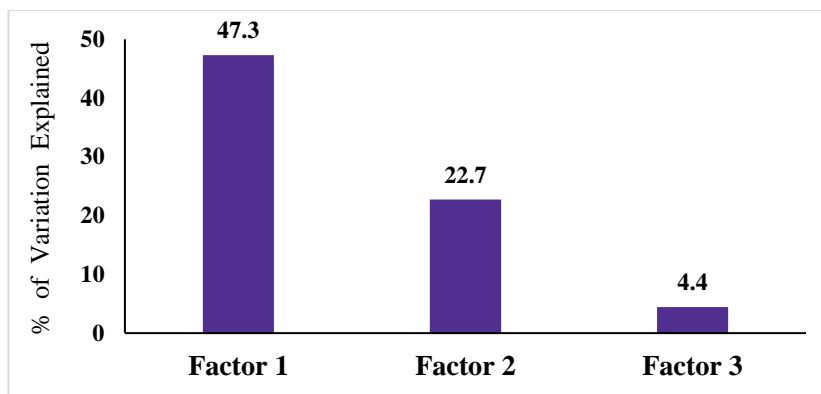
- An item-discrimination test was carried out to examine how well an item was able to discriminate between the students with scores in the top and bottom quartiles. This was done for each item by employing the Chi-square test of association between the two groups of students, i.e., those with scores in the bottom and top quartiles. We find that each item was able to discriminate between the two groups of students, and therefore no item was dropped for further analysis (see **Table 7 on Page 34**).

Table 7. Item Discrimination Test

	Item	Bottom	Top	Chi2		Item	Bottom	Top	Chi2
Problem Solving	psarq1***	333	333	185.4	**Negotiation**	ngaq1***	333	333	151.5
	psdrq1***	333	333	191.7		ngaq2***	333	333	169.9
	pscq1***	333	333	282.5		ngcq1***	333	333	208.2
	psbrq1***	333	333	277.4		ngbq2***	333	333	160.5
	pscq2***	333	333	308.8		ngcrq2***	333	333	151.9
	pscrq3***	333	333	284.8		ngdrq1***	333	333	168.1
	pscrq4***	333	333	264.2		ngdq2***	333	333	179.6
	psdq2***	333	333	207.8		ngbrq1***	333	333	50.7
Empathy	eparq1***	333	333	129.1	**Decision Making**	dmaq1***	333	333	166.2
	epaq2***	333	333	168.7		dmarq2***	333	333	77.9
	epcq2***	333	333	332.4		dmbq1***	333	333	266.8
	epcrq1***	333	333	151.9		dmbrq2***	333	333	140.2
	epbq1***	333	333	378.4		dmcrq1***	333	333	238.4
	epcq3***	333	333	230.2		dmcq2***	333	333	287.6
	epbq2***	333	333	352.7		dmcrq4***	333	333	248.9
	epbrq3***	333	333	179.2		dmcq3***	333	333	199.4
	epbq4***	333	333	303.8					
Creativity	crdq1***	333	333	309.9	**Self-awareness**	swarq1***	333	333	307.2
	craq1***	333	333	318.9		swaq2***	333	333	276.0
	crarq2***	333	333	324.6		swbq1***	333	333	408.5
	crbq2***	333	333	413.4		swbq2***	333	333	362.1
	crcq1***	333	333	442.1		swcrq1***	333	333	278.0
	crbrq1***	333	333	117.3		swcrq2***	333	333	310.1
	crcrq2***	333	333	391.3		swcq3***	333	333	412.3
	crdq2***	333	333	412.5		swcq4***	333	333	366.0
	crdq3***	333	333	403.1					
Participation	ptaq1***	333	333	241.3	**Communication**	cmdq1***	333	333	219.3
	ptarq2***	333	333	283.2		cmaq2***	333	333	244.8
	ptaq3***	333	333	301.4		cmbrq1***	333	333	331.3
	ptarq4***	333	333	276.6		cmbq2***	333	333	295.8
	ptbq1***	333	333	274.3		cmarq1***	333	333	37.2
	ptarq5***	333	333	269.8		cmcq1***	333	333	323.6
	ptbq2***	333	333	257.7		cmdq2***	333	333	282.4
	ptbq3***	333	333	189.8		cmcrq2***	333	333	311.9
						cmdrq3***	333	333	60.6
Critical Thinking	ctaq1***	333	333	256.7	**Resilience**	rscq1***	333	333	324.9
	ctarq2***	333	333	152.5		rsaq1***	333	333	325.9
	ctbq1***	333	333	280.1		rsarq2***	333	333	95.1
	ctbrq2***	333	333	132.6		rsbq1***	333	333	268.6
	ctcq1***	333	333	147.3		rsdrq1***	333	333	78.4
	ctdq1***	333	333	257.1		rscq2***	333	333	328.9
	ctdq3***	333	333	267.8		rsbq2***	333	333	316.9
	ctdrq2***	333	333	97.9		rsdq2***	333	333	350.1

Note: Pearson Chi-square test of association: ***p<0.01, **p<0.5, *p<0.1

o Secondly, item validity was examined using the correlation method at two levels, i.e., item correlation with domain total and item correlation with all-domains total. While correlations between items and the respective domain total, i.e., item-domain correlation were found to be highly significant at a 1% significance level, correlation between items and the all-domains total, i.e., item-total correlation yields a slightly different result. Two items in the item-total correlation were not found significant (highlighted in red) and were considered for

removal in the next stage (see **Table 8**). The dropped items were related to 'decision making' (dmarq2) and 'communication' (cmarq1). Consequently, we were left with 81-items tool for further analysis.

<div align="center">

Table 8. Item Validity Test

</div>

	Item	Item-Domain	Item	Item-Total
Problem Solving	psarq1***	0.45	psarq1***	0.20
	psdrq1***	0.45	psdrq1***	0.13
	pscq1***	0.50	pscq1***	0.53
	psbrq1***	0.51	psbrq1***	0.23
	pscq2***	0.53	pscq2***	0.56
	pscrq3***	0.49	pscrq3***	0.50
	pscrq4***	0.50	pscrq4***	0.24
	psdq2***	0.46	psdq2***	0.53
Negotiation	ngaq1***	0.40	ngaq1***	0.22
	ngaq2***	0.40	ngaq2***	0.22
	ngcq1***	0.47	ngcq1***	0.35
	ngbq2***	0.39	ngbq2***	0.24
	ngcrq2***	0.37	ngcrq2***	0.18
	ngdrq1***	0.39	ngdrq1***	0.21
	ngdq2***	0.42	ngdq2***	0.42
	ngbrq1***	0.25	ngbrq1***	-0.21
Empathy	eparq1***	0.34	eparq1***	0.16
	epaq2***	0.43	epaq2***	0.35
	epcq2***	0.57	epcq2***	0.47
	epcrq1***	0.37	epcrq1***	0.17
	epbq1***	0.58	epbq1***	0.41
	epcq3***	0.48	epcq3***	0.37
	epbq2***	0.56	epbq2***	0.48
	epbrq3***	0.40	epbrq3***	0.26
	epbq4***	0.53	epbq4***	0.48
Decision Making	dmaq1***	0.40	dmaq1***	0.23
	dmarq2***	0.28	**dmarq2**	**0.03**
	dmbq1***	0.51	dmbq1***	0.51
	dmbrq2***	0.39	dmbrq2***	0.17
	dmcrq1***	0.47	dmcrq1***	0.33
	dmcq2***	0.55	dmcq2***	0.50
	dmcrq4***	0.51	dmcrq4***	0.46
	dmcq3***	0.44	dmcq3***	0.34
Creativity	crdq1***	0.58	crdq1***	0.44
	craq1***	0.54	craq1***	0.36
	crarq2***	0.60	crarq2***	0.44
	crbq2***	0.66	crbq2***	0.56
	crcq1***	0.69	crcq1***	0.52
	crbrq1***	0.23	crbrq1***	0.19
	crcrq2***	0.64	crcrq2***	0.52
	crdq2***	0.64	crdq2***	0.51
	crdq3***	0.67	crdq3***	0.56
Self-awareness	swarq1***	0.56	swarq1***	0.41
	swaq2***	0.51	swaq2***	0.38
	swbq1***	0.61	swbq1***	0.47
	swbq2***	0.60	swbq2***	0.48
	swcrq1***	0.55	swcrq1***	0.44

	swcrq2***	0.43	swcrq2***	0.38
	swcq3***	0.64	swcq3***	0.50
	swcq4***	0.62	swcq4***	0.52
Participation	ptaq1***	0.49	ptaq1***	0.25
	ptarq2***	0.49	ptarq2***	0.28
	ptaq3***	0.54	ptaq3***	0.49
	ptarq4***	0.51	ptarq4***	0.31
	ptbq1***	0.53	ptbq1***	0.39
	ptarq5***	0.50	ptarq5***	0.30
	ptbq2***	0.50	ptbq2***	0.45
	ptbq3***	0.44	ptbq3***	0.29
Communication	cmdq1***	0.48	cmdq1***	0.35
	cmaq2***	0.48	cmaq2***	0.37
	cmbrq1***	0.55	cmbrq1***	0.46
	cmbq2***	0.55	cmbq2***	0.43
	cmarq1***	0.17	**cmarq1**	**0.04**
	cmcq1***	0.55	cmcq1***	0.47
	cmdq2***	0.54	cmdq2***	0.45
	cmcrq2***	0.55	cmcrq2***	0.56
	cmdrq3***	0.23	cmdrq3**	0.05
Critical Thinking	ctaq1***	0.49	ctaq1***	0.44
	ctarq2***	0.39	ctarq2***	0.18
	ctbq1***	0.53	ctbq1***	0.47
	ctbrq2***	0.37	ctbrq2***	0.19
	ctcq1***	0.41	ctcq1***	0.27
	ctdq1***	0.51	ctdq1***	0.39
	ctdq3***	0.51	ctdq3***	0.46
	ctdrq2***	0.34	ctdrq2***	0.14
Resilience	rscq1***	0.57	rscq1***	0.47
	rsaq1***	0.55	rsaq1***	0.40
	rsarq2***	0.30	rsarq2***	0.19
	rsbq1***	0.51	rsbq1***	0.39
	rsdrq1***	0.27	rsdrq1***	0.13
	rscq2***	0.55	rscq2***	0.41
	rsbq2***	0.57	rsbq2***	0.51
	rsdq2***	0.60	rsdq2***	0.55

Note: Pearson correlation: ***p<0.01, **p<0.5, *p<0.1

Items in the red font were dropped i.e., those without significant correlation

o In the next step all the items were examined carefully for their contribution to overall internal consistency. For this, the *item-test correlation* was estimated for each item in the 81-items tool and was found to be below 0.4 for one item each from creativity, self-awareness, and communication; two items from resilience; three items each from empathy, critical thinking and decision making; four items each from participation and problem-solving; and six items from negotiation (see **Table 9 on Page 37**). These 28 items with below 0.4 *item-test correlation* value were dropped in this stage. As a result, we were left with a **53-items Tool** as the final revised LSMT-MS tool and was examined further for content and convergent/discriminant validity tests.

Table 9. Item-Test Correlation

	Item	Item-Test Correlation	Item-Rest Correlation	Average Inter-item Covariance
Problem Solving	**psarq1**	**0.13**	**0.10**	**0.19**
	psdrq1	**0.16**	**0.13**	**0.19**
	pscq1	0.54	0.52	0.18
	psbrq1	**0.14**	**0.11**	**0.19**
	pscq2	0.56	0.53	0.18
	pscrq3	0.54	0.51	0.18
	pscrq4	**0.12**	**0.09**	**0.19**
	psdq2	0.56	0.54	0.18
Negotiation	**ngaq1**	**0.29**	**0.27**	**0.19**
	ngaq2	**0.31**	**0.28**	**0.19**
	ngcq1	0.41	0.38	0.18
	ngbq2	**0.36**	**0.33**	**0.18**
	ngcrq2	**0.14**	**0.11**	**0.19**
	ngdrq1	**0.12**	**0.08**	**0.19**
	ngdq2	0.48	0.46	0.18
	ngbrq1	**0.39**	**0.35**	**0.18**
Empathy	**eparq1**	**0.12**	**0.09**	**0.19**
	epaq2	0.41	0.38	0.18
	epcq2	0.52	0.49	0.18
	epcrq1	**0.14**	**0.11**	**0.19**
	epbq1	0.43	0.40	0.18
	epcq3	0.46	0.44	0.18
	epbq2	0.47	0.44	0.18
	epbrq3	**-0.04**	**-0.08**	**0.19**
	epbq4	0.51	0.49	0.18
Decision Making	**dmaq1**	**0.32**	**0.29**	**0.19**
	dmbq1	0.53	0.51	0.18
	dmbrq2	**0.16**	**0.12**	**0.19**
	dmcrq1	**-0.02**	**-0.06**	**0.19**
	dmcq2	0.53	0.51	0.18
	dmcrq4	0.50	0.48	0.18
	dmcq3	0.43	0.40	0.18
Creativity	crdq1	0.48	0.45	0.18
	craq1	0.41	0.39	0.18
	crarq2	0.49	0.47	0.18
	crbq2	0.55	0.53	0.18
	crcq1	0.56	0.54	0.18
	crbrq1	**0.16**	**0.13**	**0.19**
	crcrq2	0.53	0.51	0.18
	crdq2	0.54	0.52	0.18
	crdq3	0.58	0.56	0.18
Self-awareness	swarq1	0.44	0.41	0.18
	swaq2	0.43	0.40	0.18
	swbq1	0.45	0.43	0.18
	swbq2	0.49	0.47	0.18
	swcrq1	0.49	0.47	0.18
	swcrq2	**0.07**	**0.03**	**0.19**
	swcq3	0.51	0.49	0.18
	swcq4	0.52	0.50	0.18

Participation	**ptaq1**	**0.31**	**0.27**	**0.19**
	ptarq2	**0.01**	**-0.03**	**0.19**
	ptaq3	0.51	0.48	0.18
	ptarq4	**0.02**	**-0.01**	**0.19**
	ptbq1	0.45	0.43	0.18
	ptarq5	**0.05**	**0.01**	**0.19**
	ptbq2	0.48	0.45	0.18
	ptbq3	0.40	0.37	0.18
Communication	cmdq1	0.40	0.37	0.18
	cmaq2	0.43	0.40	0.18
	cmbrq1	0.50	0.47	0.18
	cmbq2	0.45	0.42	0.18
	cmcq1	0.50	0.47	0.18
	cmdq2	0.51	0.49	0.18
	cmcrq2	0.54	0.52	0.18
	cmdrq3	**0.23**	**0.19**	**0.19**
Critical Thinking	ctaq1	0.47	0.45	0.18
	ctarq2	**0.18**	**0.15**	**0.19**
	ctbq1	0.53	0.51	0.18
	ctbrq2	**0.15**	**0.12**	**0.19**
	ctcq1	0.40	0.37	0.18
	ctdq1	0.47	0.44	0.18
	ctdq3	0.51	0.48	0.18
	ctdrq2	**0.21**	**0.18**	**0.19**
Resilience	rscq1	0.49	0.46	0.18
	rsaq1	0.44	0.41	0.18
	rsarq2	**0.14**	**0.11**	**0.19**
	rsbq1	0.44	0.41	0.18
	rsdrq1	**0.21**	**0.17**	**0.19**
	rscq2	0.44	0.42	0.18
	rsbq2	0.54	0.51	0.18
	rsdq2	0.55	0.52	0.18

Note: Items in the red font were dropped i.e., those without significant correlation. In others, Items in the red font were dropped i.e., those with item-test correlation below 0.4.

o In the next stage, Cronbach alpha was estimated for internal consistency and reliability of the tool, which stood at 0.94 for all 53 items taken together. The break-up of the alpha by each domain is given in **Table 10.**

Table 10. Number of Items and Cronbach Alpha for Each Domain

Domains	Number of Items	Cronbach Alpha
Problem Solving	4	0.66
Negotiation	2	0.32
Empathy	6	0.62
Decision Making	4	0.58
Creativity	8	0.79
Self-awareness	7	0.71
Participation	4	0.55
Communication	7	0.67
Critical Thinking	5	0.62
Resilience	6	0.67
Overall Cronbach Alpha	**53**	**0.94**

o The goodness of fit of the above 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 (0.044) while the *pclose* test (0.875) was not significant, indicating a good fit. The CFI (0.988) and the Tucker-Lewis index (0.985) were both more than 0.95, indicating a very good fit of the model.

o CFA further reveals that there is no problem with convergent and discriminant validity with this 53-items LSMT-MS tool (See **Table 11**).

Table 11: Convergent and Discriminant Validity Assessment

Squared correlations (SC) among latent variables		
Life-skill	Life-skill	
	1.000	
Average variance extracted (AVE) by latent variables		
AVE	0.558	No problem with discriminant validity.
		No problem with convergent validity.
Note: • When AVE values >= SC values there is no problem with discriminant validity. • When AVE values >= 0.5 there is no problem with convergent validity		

G. Final Format of the LSMT-MS (English)

• 53 items with high item-test correlation were retained and constitute the items in the final tool. The final validated 53-items LSMT-MS (English) tool is given in Table A1 in the Appendix.

• The results of the construct validation process undertaken in developing the LSMT-MS indicates that it is an accurate measure of multi-dimensional life skills of students studying in upper primary classes. The process used to validate the LSMT-MS was rigorous. While face validity is the lowest form of validity, feedback from teachers and experts were particularly useful for revising the questionnaire and its operationalization. One of the most important features of the tool development was taking children's voices into account while finalizing the language of the items. 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 and convergent validity of the tool was achieved.

• The culmination of the summative stage analyses led to 53 items being finalized 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 53 items, 8 items were reverse coded. The scoring criterion for the tool has been detailed in **Table 12** below:

Table 12: LSMT-MS (English) Scoring Key

Life Skills	Item Numbers	Scores				
		Always	**Often**	**Sometimes**	**Rarely**	**Never**
Problem Solving	16	5	4	3	2	1
	25	5	4	3	2	1
	31	1	2	3	4	5
	49	5	4	3	2	1

Life Skills	Item Numbers	Scores				
		Always	Often	Sometimes	Rarely	Never
Negotiation	10	5	4	3	2	1
	46	5	4	3	2	1
Empathy	6	5	4	3	2	1
	17	5	4	3	2	1
	26	5	4	3	2	1
	32	5	4	3	2	1
	35	5	4	3	2	1
	52	5	4	3	2	1
Decision Making	14	5	4	3	2	1
	34	5	4	3	2	1
	43	1	2	3	4	5
	48	5	4	3	2	1
Creativity	1	5	4	3	2	1
	8	5	4	3	2	1
	12	1	2	3	4	5
	22	5	4	3	2	1
	27	5	4	3	2	1
	36	1	2	3	4	5
	42	5	4	3	2	1
	51	5	4	3	2	1
Self-awareness	2	1	2	3	4	5
	11	5	4	3	2	1
	15	5	4	3	2	1
	21	5	4	3	2	1
	28	1	2	3	4	5
	41	5	4	3	2	1
	50	5	4	3	2	1
Participation	19	5	4	3	2	1
	29	5	4	3	2	1
	44	5	4	3	2	1
	53	5	4	3	2	1
Communication	3	5	4	3	2	1
	9	5	4	3	2	1
	20	1	2	3	4	5
	23	5	4	3	2	1
	37	5	4	3	2	1
	39	5	4	3	2	1
	45	1	2	3	4	5
Critical Thinking	4	5	4	3	2	1
	13	5	4	3	2	1
	24	5	4	3	2	1
	30	5	4	3	2	1
	38	5	4	3	2	1
Resilience	5	5	4	3	2	1
	7	5	4	3	2	1
	18	5	4	3	2	1
	33	5	4	3	2	1

Life Skills	Item Numbers	Scores				
		Always	Often	Sometimes	Rarely	Never
	40	5	4	3	2	1
	47	5	4	3	2	1

G.1 Norms of Interpreting the Scores from Raw Scores

- Raw scores have been collected as global scores in the LSMT-MS tool. Interpretation of these scores is provided in the next section.

G.1.1 *Global Raw Score for the Life-skill Tool*

- Global raw scores could range between 53 and 265 and the interpretation of the scores is clubbed into five classifications: Highly Proficient, Proficient, Emerging Proficiency, Limited Proficiency and Basic Proficiency (**Table 13**).

  o 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 range is 237-265, i.e., *Highly Proficient*).
  o Those who fall between the +1SD and +2SD are in Category 2 that denotes students with Proficient life skills (Global Score range is 215-236, i.e., *Proficient*).
  o Those who fall between the -1SD to +1SD are in Category 3 that denotes students with Competent life skills (Global Score range is 170-214, i.e., *Emerging Proficiency*).
  o Those who fall between the -1SD and -2SD are in Category 4 that denotes the Basic level of life skills. (Global score range is 148-169, i.e., *Limited Proficiency*).
  o Those who fall below -2SD are in category 5 that denotes students with Emerging life skills (Global score range is 53-147, i.e., *Basic Proficiency).*

Table 13: Interpretation of Global Raw Score of Life-skill

FINAL SCORES (Mean = 192, SD = 22)			
Category	Classification	Criteria	Global Score
Category 1	Highly Proficient	Above +2SD of Mean	237-265
Category 2	Proficient	Between +1SD and +2SD of Mean	215-236
Category 3	Emerging Proficiency	Between -1SD and +1SD of Mean	170-214
Category 4	Limited Proficiency	Between -1SD and -2SD of Mean	148-169
Category 5	Basic Proficiency	Below -2SD of Mean	53-147

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Annexure

Table A1: Final 53-Items LSMT-MS Tool

Name of the Student:_____

Date of Birth:_____

Name of School:_____

Class:_____ Section:_____

Instructions for Students

1. The objective of this activity is to know you better in terms of life skills.
2. There are 53 statements in this activity that relate to your everyday life.
3. Please take time to read each statement carefully and understand it.
4. Select the option that is most applicable to you. (Always - 100 % agree, Often - 75% agree, Sometimes - 50% agree, Rarely - 25% agree, Never - Do not agree
5. Please answer all the statements.

Sr. No	Question	Always	Often	Sometimes	Rarely	Never
1	I do my assignments in innovative ways.					
2	I find it difficult to identify my strengths and weaknesses.					
3	During a conversation, I observe the other person's body language.					
4	I am able to sort out vital information while working on my assignments.					
5	I continue to work even when faced with difficult situations.					
6	I recognise when someone else is angry, even if they try to hide it.					
7	I remain hopeful when faced with a difficult situation.					
8	I can think of many creative and novel ways to use a brick in an art project.					
9	I am able to focus and listen to my friend even when my classmates are distracting us.					
10	When involved in a disagreement with friends on what game to play, I also consider their interests.					

Sr. No	Question	Always	Often	Sometimes	Rarely	Never
11	I am aware of areas that I need to strengthen in order to make more friends.					
12	I find development of novel and new ideas challenging					
13	While undertaking a task, I am able to analyse the critical information I have collected.					
14	I make up my mind after considering different choices.					
15	I am aware of my moods and feelings.					
16	When facing a challenge, I consider every aspect related to it in order to find a solution.					
17	Whenever I see a homeless person in my neighbourhood, I feel bad and take steps to help.					
18	Even when faced with criticism for a task, I do not lose interest in it.					
19	I volunteer to help my parents at home in all activities.					
20	I find it daunting to express myself when I am in an unknown situation.					
21	I am able to recognize my emotions and how they influence my actions.					
22	I use my imagination to develop innovative ideas.					
23	I am easily able to communicate with acquaintances during a family function.					
24	I am able to critique ideas proposed by others using reasoning.					
25	When resolving a problem, I consider all possible solutions.					
26	It saddens me to see my aunt unhappy.					
27	I am able to easily generate many innovative ideas.					
28	I do not think my actions will shape what happens in my life.					
29	I willingly volunteer for different activities in my community.					
30	I make judgements based on factual information.					

Sr. No	Question	Always	Often	Sometimes	Rarely	Never
31	In my daily life, I am unable to find solutions to my problems.					
32	I show concern and intervene when a person is treated unfairly in my neighbourhood.					
33	I am able to deal with a stressful situation.					
34	I analyze my choices and prioritize them while making a decision.					
35	I am happy when my class teachers praise my friend.					
36	I am challenged when asked to suggest many creative and novel ideas at home and school.					
37	I listen to others without interrupting them during a conversation.					
38	I formulate my opinions after looking at a situation from different perspectives.					
39	I choose my words with utmost consideration while speaking to others.					
40	I find ways to study even when my routine is disturbed.					
41	I am aware of my emotions during difficult situations.					
42	I work with different materials to create innovative models for my school projects.					
43	I do not consider the possible consequences of my actions while taking decisions.					
44	I am actively involved in making family holiday plans.					
45	I find paying attention to the responses of others when engaging with them difficult.					
46	I discuss and convince others of my views when there is a disagreement.					
47	I am able to learn valuable life lessons from challenging circumstances.					
48	I spend time weighing all my choices when making decisions in my daily life.					

Sr. No	Question	Always	Often	Sometimes	Rarely	Never
49	I am able to arrive at the best solution after considering merits and demerits of possible options.					
50	I am aware that my grades reflect how prepared I was for my exam.					
51	I combine ideas to create new ways of doing things.					
52	When scolding my friend, I consider how my friend might be feeling.					
53	I take out time to improve my neighbourhood.					