



Learner Aptitude and Profiling (LEAP) Programme: Design, Implementation, and Evaluation of a Comprehensive Profiling and Guidance Initiative for High School Students in Kerala, India

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Abstract

This paper reports the conceptualisation, development, and large-scale implementation of the Learner Aptitude and Profiling (LEAP) programme, a state-level, school-based career guidance initiative introduced in Kerala, India. Designed within a culturally responsive and systems-oriented framework, LEAP integrates aptitude assessment with exploratory profiling of interests, personal characteristics, extracurricular engagement, and contextual social support. The bilingual (English–Malayalam) online platform is implemented at two developmental stages—Grade 8 and Grade 10—supporting career exploration in early adolescence and informed educational decision-making at the secondary level. During 2023–25, LEAP was administered to approximately 128,000 students (about 80,000 from Grade 8 and 48,000 from Grade 10) in government-funded schools. A preliminary evaluation based on multi-stakeholder feedback suggests enhanced student self-awareness, greater clarity regarding educational pathways, reduced career-related anxiety, and increased teacher and parental engagement in career decision-making. Anchored in life-span, social cognitive, and systems theories of career development, LEAP offers a scalable and contextually responsive model for embedding structured career guidance within public education systems in India.

Keywords: career guidance, aptitude assessment, adolescence, school-based intervention, Kerala, LEAP program

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Introduction

Adolescence is a critical developmental period marked by identity exploration, increasing autonomy, and future-oriented decision-making (Erikson, 1968; Steinberg, 2014). Within this phase, the formation of career identity—defined as the integration of personal motivations, interests, and competencies with socially available career roles—is particularly salient (Meijers, 1998). As adolescents begin to reflect on their strengths and preferences, early career-related experiences play a key role in shaping educational choices and long-term well-being (Super, 1980; Keevers & Bradley, 1999; Marcionetti & Zammiti, 2023).

Major career development theories converge in emphasising that effective career guidance must account for individual characteristics alongside developmental stage and contextual influences. Super's (1980) life-span, life-space theory positioned adolescence as a phase of exploration rather than commitment. Parsons' (1909) trait-and-factor approach foregrounded person–occupation fit, Social Cognitive Career Theory (Lent et al., 1994) highlighted the role of self-efficacy and outcome expectations, and systems-based perspectives underscored the influence of family, school, and socio-economic environments on career development (Patton & McMahon, 1999). Empirical evidence supports the value of structured career interventions during adolescence. Studies consistently show improvements in career maturity, decision-making skills, and alignment between educational pathways and occupational aspirations following systematic guidance (Crisan & Turda, 2016; Agarwal & Srivastav, 2023). Longitudinal research further indicates that sustained engagement in career education contributes to academic motivation and reduced career-related anxiety (Choi et al., 2015; Lent et al., 1994). Career development research also identifies aptitude, interest, and personality as core dimensions influencing career outcomes.

Aptitude reflects underlying capacities relevant to task performance, while interests guide engagement and exploration (Arulmani, 2014; Hoff et al., 2021). Personality traits influence both objective and subjective indicators of career success (Sutin et al., 2009; Semeijn et al., 2018). Importantly, interests are not static; they are shaped by educational exposure and social context, particularly during adolescence (Su et al., 2019). In culturally diverse and economically stratified settings, career assessment therefore requires integrated and context-sensitive approaches (Arulmani, 2014).

In the absence of structured career guidance, many Indian adolescents continue to follow socially valorised but narrowly defined career paths, often misaligned with their abilities and preferences (Chakrabarty, 2019; Ahmad, 2024). Research further indicates that involving parents, teachers, and counsellors enhances the effectiveness of career interventions by aligning individual aspirations with familial and institutional realities (Lent et al., 1994).

The need for culturally informed career guidance is particularly evident in Kerala. Despite high literacy rates and strong educational aspirations, formal career counselling within schools remains limited, leaving families reliant on informal networks and prevailing trends (Krishnan & Lasitha, 2019; Fernandez et al., 2023; Gupta, 2025). Such mismatches between student profiles and educational pathways often result in stress, disengagement, and underutilisation of potential (Holland, 1997; Agarwala, 2008). International and Indian scholarship emphasises that career guidance models must be adapted to local cultural and socio-economic contexts to be effective (UNESCO, 2002; Arulmani, 2013).

Responding to this need, the Learner Aptitude and Profiling (LEAP) program was designed as a longitudinal, school-based career guidance initiative that integrates

aptitude assessment with exploratory profiling of interests, personal characteristics, and contextual social support. The present study describes the design and implementation of LEAP for high school students in Kerala and reports preliminary outcomes related to career awareness, decision-making, and stakeholder engagement, with implications for policy and practice in large-scale public education systems.

Method

Conceptualisation of the LEAP Program

The Learner Aptitude and Profiling (LEAP) program was conceptualised as a structured, research-driven career guidance intervention addressing the absence of systematic school-based career counselling in Kerala. Grounded in developmental and systems-oriented career theories, LEAP follows a longitudinal, student-centred model that combines repeated assessment, guided reflection, and contextualised counselling. The program emphasises exploratory profiling, personalised feedback, and active family involvement, enabling students to engage with career planning in a developmentally appropriate manner rather than through one-time evaluative testing. Two complete versions of the platform were developed: LEAP 8 for Grade 8 students and LEAP 10 for Grade 10 students. While both versions share a common framework, LEAP 8 is designed to support early exploration and academic skill development, whereas LEAP 10 focuses on facilitating informed educational and occupational decision-making at the point of school transition. A Grade 9 module intended to provide continuity across the three-year progression is under development.

Program Structure and Institutional Collaboration

The LEAP was implemented under the STARS (Strengthening Teaching-Learning

and Results for States) initiative of the Ministry of Education, Government of India (Government of India, Ministry of Education, n.d.), through Samagra Shiksha Kerala (SSK). Samagra Shiksha Kerala (Department of General Education, Government of Kerala, n.d.) functions as the state implementing wing of the centrally sponsored Samagra Shiksha Abhiyan (SSA).

The program was developed and executed through institutional collaboration between SSK, the Additional Skill Acquisition Programme (ASAP), and the Department of Psychology, Government College for Women, Thiruvananthapuram. While SSK coordinated implementation and access to schools, ASAP managed the technical platform, and the academic team led assessment development, validation, and counselling design.

SSK LEAP Assessment

At the core of the program is the SSK LEAP Assessment, a bilingual (English and Malayalam) online platform assessing students' interests, aptitudes, personal characteristics, study habits (LEAP 8), extracurricular achievements, and social context. The platform allows students to switch languages within the same session and across individual items, ensuring accessibility.

Assessment items were developed following extensive review of national and international career development frameworks, including O*NET and the National Classification of Occupations (Directorate General of Employment, 2015). Items were adapted to Grade 9–10 curriculum content, culturally contextualised, and translated using forward–backward translation procedures. Table 1 presents an overview of the assessment components and response formats for LEAP 8 and LEAP 10. Example items are given in Appendix 1.

Table 1.
Structure of the LEAP Assessment and Response Formats

Serial Number	Subcomponent	Number of items in LEAP 10	Number of items in LEAP 8	Type of response required
1	Activities I enjoy doing	45	31	Multiple-response (check-all-that-apply)
2	Subjects I like presently	12	12	Multiple-response (check-all-that-apply)
3	Subjects I like to study in future	80	Not included	Multiple-response (check-all-that-apply)
4	Occupations I would like to choose	73	53	Multiple-response (check-all-that-apply)
5	Aptitude	77	60	Multiple-choice timed tests for 6 aptitudes
6	Personal characteristics	20	Not included	Forced choice pairs
7	Values	14	Not included	5-point scale
8	Study Habits	Not included	22	5-point scale
9	Achievements	31	27	Choice from a drop-down list

Interest-related components (the first four) employ multiple-response formats and are mapped to occupational clusters rather than summed, reflecting their exploratory purpose. Aptitude components are administered as timed, multiple-choice tests. Personality items use forced-choice pairs to

reduce social desirability, while values and study habits employ Likert-type responses. Extracurricular achievements are recorded through structured drop-down lists aligned with state-recognised activities.

Development and Validation of Aptitude Components

Table 2.
Validation Information of Aptitude Components

Aptitude Domain	Basis of Item Construction	Validation Sample	Validation Criterion
Verbal Ability (English)	Items aligned with Grade 9–10 State syllabus content	600 students (Class 9 and 10) from 6 schools across two districts	Correlation with average term examination marks-English; correlation with DAT verbal subtests
Verbal Ability (Malayalam)	Items aligned with Grade 9–10 State syllabus content	Same sample	Correlation with school examination marks-Malayalam
Numerical Ability	Items based on Grade 9–10 State syllabus topics	Same sample	Correlation with school examination marks (Mathematics) and DAT numerical subtest
Mechanical Ability	Expert-constructed items modelled on DAT Mechanical subtest	304 students from 7 schools	Correlation with DAT Mechanical subtest
Spatial Ability	Expert-constructed items modelled on DAT spatial subtest	Same sample	Correlation with DAT Spatial subtest
Perceptual Speed & Accuracy	Test-team constructed items (50-item pool)	780 students from 8 schools	Correlation with DBDA clerical subtest
Logical Reasoning	Test-team constructed items drawing from verbal and abstract reasoning domains	Same sample	Correlation with selected DAT verbal and abstract reasoning items

Initial item pools consisted of 30–40 items per aptitude domain (50 for perceptual speed and accuracy). Following pilot testing, items of moderate difficulty were retained. Criterion-related validity was examined using two external criteria: standardised aptitude measures and academic performance. Spearman's rank correlations with corresponding Differential Aptitude Test (DAT; Bennett et al., 1947) subtests ranged from .61 to .87 ($p < .01$). Perceptual Speed and Accuracy correlated significantly with the clerical subtest of David's Battery of Differential Abilities ($r = .60$; David, 1963). Verbal and numerical aptitude scores also showed statistically significant positive associations with students' average academic marks, supporting ecological validity.

The aptitude component of LEAP 10 comprises six distinct aptitude domains elected to capture a broad range of cognitive abilities relevant to academic and occupational performance: perceptual speed and accuracy, logical aptitude, numerical aptitude, mechanical aptitude, spatial aptitude, and verbal aptitude. Each one is assessed through timed multiple-choice tasks.

Validation of Interest, Values, and Personality Components

Interest, values, and personality components were designed as exploratory profiling tools rather than standalone psychometric scales. Interest items were developed by the test team based on occupational cluster descriptions derived from O*NET and refined through qualitative consultations with a minimum of three professionals below 35 years of age, selected based on indicators of career success and self-reported job satisfaction. These consultations focused on retrospective reflections on school-age interests and values, informing content refinement and cultural relevance.

Values items were developed alongside interest items to capture orientations influencing educational and occupational preferences. The personality component employed forced-choice pairs mapped to Holland's RIASEC model (Holland, 1997), with iterative refinement to ensure balance and minimise social desirability. Validation across these components emphasised content relevance, occupational alignment, and expert review rather than internal consistency indices, consistent with their guidance-oriented purpose.

Study Habits Component

A 22-item Study Habits Questionnaire, developed and standardised by the test team among high school students, is incorporated into LEAP 8 to provide formative feedback on learning strategies and study-related behaviours. The questionnaire assesses four domains: Time Management, Learning Techniques, Motivation, and Memory. It is intended to support self-reflection and counselling discussions rather than diagnostic classification.

Feedback from this component is used to enhance academic self-awareness and skill development rather than to inform career-specific recommendations. All students receive descriptive guidance on effective study strategies, irrespective of their scores in the four domains.

Extracurricular Achievements

Extracurricular achievements—including sports, arts, science fairs, and social activities—are collected through structured drop-down lists integrated into the online assessment platform. The activity list was obtained from the Department of General Education, Government of Kerala, ensuring alignment with programmes formally recognised within the state education system. Activities are graded by level of achievement and mapped onto relevant

occupational clusters based on the skills and competencies they represent.

Students endorse only activities in which they have participated and indicate the highest level attained. Instructions are framed to avoid negative self-evaluation among students without co-curricular involvement. This component contributes to career readiness by capturing transferable skills, an area emphasised within Kerala's education system.

Social Support Information

A distinctive feature of LEAP is the integration of teacher and parent inputs through structured social support information forms, consistent with a systems-oriented approach to career development. These need-based forms were developed through focus group discussions with the programme officers of Samagra Shiksha Kerala and capture information on socioeconomic conditions, learning environments, family aspirations, communication patterns, and behavioural observations. Administered as printed data schedules, they are used by counsellors during individual counselling sessions to contextualise assessment findings.

The teacher-completed form includes 10 items assessing institutional and familial support (e.g., access to scholarships, exposure to career guidance, and parent-student agreement on future plans), while the parent-completed form includes 33 items covering socioeconomic resources, health-related factors, parental availability, and home-based learning facilities. Information from both forms is used to identify facilitators and barriers to career development and to situate students' interests and aptitudes within broader familial, institutional, and social systems.

Output Formulation

The output of the LEAP online platform is a downloadable bilingual (Malayalam and English) report designed to support career exploration and educational planning for students and parents. The report begins with brief explanatory material on key factors relevant to career decision-making—such as aptitude, interests, and personality—and highlights the developmental nature of career profiles.

In the results section, students receive feedback in the form of ranked career clusters based on their assessment profile. For LEAP 10, the report presents a ranked list of suitable career clusters, each accompanied by a brief description, major occupations, and higher education options available after Class 10. Career clusters group occupations requiring similar knowledge and skill sets and were conceptualised using international and national frameworks, including O*NET and the National Career Clusters Framework (O*NET Resource Center, 2016). The cluster framework was finalised by the test team in consultation with an expert panel.

For each cluster, an ideal profile was generated by integrating weighted contributions from all assessed components. Aptitude measures and extracurricular achievements carried relatively greater weight, while interests, personality characteristics, and values contributed proportionately less for most clusters. Weights varied across clusters to reflect occupational requirements, and total weights summed to one. Students' profiles were matched against these ideal profiles, and clusters with the highest degree of match were presented as most suitable, along with relevant higher education pathways.

The LEAP 8 output follows the same logic with developmentally appropriate adaptations. Feedback is provided across 17 broad occupational areas rather than specific

clusters, maintaining an exploratory focus. LEAP 8 reports also include feedback on study habits across four domains, offering both indicative scores and descriptive guidance on effective study strategies to all students, irrespective of performance.

Across both levels, reports provide ranked cluster-based feedback and adopt a non-prescriptive approach. Rather than directing students toward specific career choices, the outputs are intended to facilitate informed exploration and dialogue, with final decisions supported through counselling that considers individual profiles, contextual factors, and developmental readiness.

Norm Development and Percentile-Based Interpretation

Large-scale pilot testing was conducted across 60 schools in Kerala, involving 2,400 Grade 10 and 1,500 Grade 8 students. After data screening, responses were used to establish cluster-wise percentile norms (27 clusters for LEAP 10; 17 for LEAP 8), computed separately for each cluster to reflect relative standing within the reference group.

These norms were embedded into the interpretation algorithm during large-scale administration. Instead of raw composite scores, norm-referenced cluster recommendations were based on percentile ranks, with the three highest-percentile clusters presented as most suitable. This norm-referenced approach improved interpretability by placing individual profiles within a peer comparison framework and minimising scale-specific score effects.

Training to Conduct Assessment and Counselling Sessions

Prior to large-scale implementation, a structured, multi-tiered training programme was conducted to ensure standardised assessment administration and counselling. Training was delivered at three levels.

First, a half-day training was organised for district-level programme officers from all 14 districts of Kerala, led by the test development team, technical team, and education department representatives. This focused on programme objectives, assessment structure, and operational protocols.

Second, these officers, supported by the technical team, conducted half-day district-level trainings for Block Resource Centre (BRC) officials and selected teachers from government-funded schools responsible for administering assessments in school computer laboratories. Training emphasised logistics, student onboarding, and adherence to standardised procedures.

Third, a two-hour online orientation was conducted for 166 psychosocial counsellors employed under the Women and Child Development Department (WCD). Led by the test development team, this orientation focused on interpretation of assessment outputs and counselling processes.

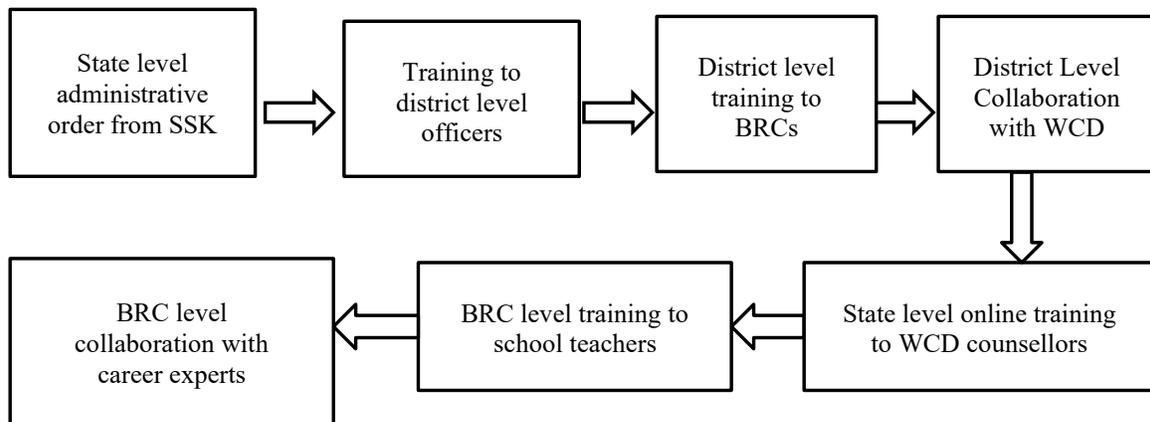
Schools and student numbers were identified at the BRC level, with each of the 168 BRCs coordinating assessments for approximately 200 students. To ensure smooth implementation, assessments initially began with small batches, followed by daily administration to 40–50 students (Samagra Shiksha Kerala, 2024). Assessments were conducted during forenoon sessions in school computer laboratories. LEAP 10 was administered during the post-Class 10 examination vacation period, prior to result declaration, while LEAP 8 was conducted on working days before final examinations. Login credentials generated by the technical team were shared with teacher coordinators at each school.

Counselling sessions were organised at BRCs on designated Saturdays through collaboration between SSK and the WCD. School counsellors conducted individual counselling sessions for students and

parents, supported by career orientation sessions facilitated by trained teachers and external career experts, covering career pathways, higher education options, and

application procedures. Figure 1 presents a flowchart of the training and implementation process.

Figure 1.
Flowchart of the Training and Implementation Process



Conduct of Counselling Sessions

The counselling process followed a standardized sequence across centres. Counselling sessions were conducted at Block Resource Centres (BRCs) in batches of approximately 25 students and their parents, typically over a half-day. The sessions followed a structured yet flexible format designed to combine group orientation with personalised guidance. Prior to each session, schools collected completed social support information forms from class teachers and parents and submitted them to the BRCs. These forms were reviewed by counsellors and used to contextualise assessment findings during individual counselling.

Each counselling programme commenced with a group orientation for students and parents, followed by individual counselling sessions with each student–parent pair. Individual guidance was informed by the student’s assessment report in conjunction

with information from the social support forms.

For Class 10 students, counselling focused on the career decision-making process, the role of aptitude, interests, and personal characteristics, the concept of career clusters, and interpretation of assessment results. Individual reports were distributed and discussed during one-to-one student–parent sessions. This was followed by a 45-minute session led by a career expert, addressing higher education pathways, occupational opportunities, and application procedures relevant to post–Class 10 transitions.

Counselling sessions for Class 8 students emphasised early career planning, exposure to broad areas of higher studies, improvement of study skills, and general interpretation of assessment reports. Individual counselling at this stage was conducted on demand, and no separate sessions with career experts were organised. At the Grade 10 level, counselling additionally emphasised immediate post-

school educational and occupational pathways.

Program Implementation

The LEAP program was implemented in government-funded schools in Kerala during the academic years 2023–24 (Phase I) and 2024–25 (Phase II). Assessments were scheduled concurrently across multiple schools, with login credentials issued at the BRC level. Given the online mode of administration, a large number of assessments could be conducted daily.

To date, the program has been administered to over 128,000 students, including around 80,000 students from Class 8 and 48,000 students from Class 10 (Additional Skill Acquisition Programme Kerala, n.d.). This scale of implementation positions LEAP as one of the most extensive state-level school-based career guidance initiatives undertaken in the country.

Preliminary Evaluation of the Program

As a preliminary exercise, the LEAP program was evaluated to generate early insights into its implementation processes and perceived outcomes in 2024. Feedback was obtained from multiple stakeholders, including 900 students (Classes 8 and 10), 1023 parents, 612 teachers, and 30 career counsellors. The feedback instruments and procedures for all stakeholder groups were designed by the research team.

Student feedback was collected indirectly through teachers using brief post-counselling interviews. Teachers were oriented to this process by district-level programme officers under the guidance of the research team. The student interview comprised three open-ended questions: (a) experience of participating in the LEAP program, (b) perceived gains from the program, and (c) difficulties faced during assessment or counselling. The research team did not have direct access to individual student responses; instead, teachers compiled and

reported the general content and themes emerging from student feedback.

Feedback from parents and teachers was collected using structured online data collection forms designed by the research team. The parent feedback form, administered in Malayalam, consisted of eight items, while the teacher feedback form included 17 items.

Career counsellor feedback was obtained through a focus group discussion conducted after the completion of all counselling sessions. This evaluation meeting was facilitated by the research team and counsellors were invited to reflect on the implementation process and suggest improvements.

Summary of Feedback

Student feedback

According to teacher-compiled reports, 92.5% of students described the assessment platform as user-friendly. Students most frequently reported greater clarity regarding higher education streams and occupational areas, followed by improved self-awareness, enhanced self-confidence, and reduced confusion and anxiety. The primary difficulty reported by students related to technical issues, particularly login problems and internet disconnections during assessment. Approximately 8% of teachers indicated that their students experienced such technical difficulties.

Teacher feedback

96.2% teachers reported that students were actively engaged in the process, and 86.9% indicated that no technical issues were encountered during administration. Social support information forms were completed for all students by 81.1% of teachers, while the remaining teachers reported partial completion. Nearly 94% of teachers observed that students and parents left the

counselling sessions with actionable steps. Network-related issues were reported by 9.2% of teachers, and power-related disruptions by 0.8%. Teachers reported that, on average, 8.4% of parents did not participate in the counselling process. Importantly, 73.86% of teachers reported feeling more empowered to guide students due to the availability of assessment reports and social support information. The most common suggestions were to conduct the program earlier in the academic year (18.13%) and to extend it to all students in Classes 8 and 10 (15.68%).

Parent feedback

Among parents, 57.5% reported that the assessment accurately reflected their ward's aptitudes and interests, while 39.1% felt it did so to a moderate extent. A large majority (96.5%) indicated that the suggested career options could be meaningfully pursued further. Only 3.5% did not approve of the recommendations; among these, approximately two-thirds expressed concerns about perceived job opportunities in the suggested fields. A small proportion of parents suggested conducting the program earlier in the academic year (7.16%), increasing the frequency of sessions (3.13%), or extending the duration of counselling sessions (1.17%).

Counsellor feedback

76.67% of counsellors reported complete satisfaction with the overall process. About 23% noted that some students approached the assessment casually and suggested that assessment conditions could be made more formal. Counsellors reported that parents did not accompany approximately 5% of students. A key recommendation from counsellors was to integrate the program into the formal curriculum to ensure timely and universal access for students.

Overall Evaluation

A synthesis of feedback across stakeholder groups identified five overarching themes: enhanced student self-awareness, more informed family-level decision-making, improved clarity and reduced anxiety regarding future choices, increased parental engagement in career discussions, and greater teacher empowerment in providing guidance. These preliminary findings suggest that LEAP holds promise as a comprehensive, school-based career guidance intervention, while also highlighting areas for refinement in implementation and delivery.

Challenges Identified

- Network issues were reported by 9.2% of teachers, while 0.8% reported power-related interruptions during assessment sessions.
- A proportion of parents (8.4%, as reported by teachers) participated less actively in the counselling process, apparently due to work-related constraints and limited familiarity with formal career counselling practices.
- Based on estimates provided by the technical support team, approximately 10–15% of teachers reported operational difficulties despite prior training, particularly in assigning login credentials and downloading assessment reports.

Based on feedback from Phase 1, several corrective measures were implemented during Phase 2, including scheduling assessment sessions earlier in the academic year. According to reports from the technical team, the proportion of technical complaints declined to below 5% in phase 2. However, as no systematic stakeholder feedback was collected during Phase 2, the extent to which other challenges, such as parental engagement gaps and teacher-related operational difficulties, were mitigated could not be formally documented.

Discussion

The present study examined the design, implementation, and preliminary outcomes of the LEAP program as a large-scale, school-based career guidance intervention for adolescents in Kerala. The findings indicate that LEAP contributes meaningfully to students' self-awareness, clarity in educational and career decision-making, and reduced career-related anxiety, while also strengthening parental engagement and teacher involvement. These outcomes can be theoretically situated within established career development frameworks.

Super's (1980) life-span, life-space theory provides a central framework for interpreting the LEAP model. The exploratory, non-prescriptive nature of LEAP outputs, particularly at the Grade 8 level, aligns with Super's assertion that career guidance during adolescence should prioritise awareness, experimentation, and self-understanding over definitive choices.

The reported improvements in students' confidence and decision clarity are also consistent with Social Cognitive Career Theory (Lent, Brown, & Hackett, 1994). Reduced career-related anxiety reported by students and parents may be understood as a consequence of enhanced self-efficacy and more realistic outcome expectations, fostered through objective assessment, structured feedback, and guided discussion. From a systems perspective (Patton & McMahon, 1999), LEAP's integration of teacher and parent inputs through structured social support information forms represents a significant methodological and conceptual strength. This systems-oriented approach helps explain the relatively high parental involvement and the perceived usefulness of counselling sessions for family-level decision-making.

The bilingual delivery of the assessment and the emphasis on cultural and contextual

relevance further substantiate Arulmani's (2014) concept of cultural preparedness in career guidance. By grounding assessment content, occupational information, and counselling processes in locally meaningful frameworks and delivering them bilingually, LEAP enhances accessibility and acceptance within Kerala's sociocultural landscape.

Taken together, these theoretical alignments help explain the program's reported outcomes. Student feedback reflected increased self-awareness, greater clarity regarding higher education options, and reduced anxiety surrounding career decisions. Teachers felt more empowered to guide students using structured reports and contextual information. Parents largely perceived the assessment outcomes as credible and actionable, even when reservations were expressed due to concerns about labour market prospects. Collectively, these findings suggest that LEAP functions not merely as an assessment platform, but as a facilitated decision-making ecosystem that promotes informed dialogue among students, families, and schools.

At the same time, the implementation experience highlights challenges inherent in large-scale, technology-mediated interventions within public education systems. Technical disruptions, variability in parental participation, and minor administrative difficulties were reported during the first phase. These challenges underscore the need for robust infrastructure, sustained training, and early scheduling within the academic calendar. Notably, refinements introduced in the second phase, such as earlier administration and improved technical coordination, were associated with a marked reduction in reported technical issues, indicating the program's capacity for iterative improvement.

Several methodological considerations merit reflection. The interest, values, personality, and study habits components were intentionally designed as exploratory profiling tools rather than psychometric scales and were therefore validated primarily through expert consultation, occupational alignment, and cultural relevance rather than internal consistency or factor-analytic methods. While appropriate to the program's guidance-oriented purpose for younger adolescents, this limits their interpretation as standardized psychological measures. Similarly, the integration of heterogeneous components, including objective aptitude tests and self-reported preferences, into composite cluster scores introduces methodological constraints, although such integration is often unavoidable in large-scale, real-world guidance systems.

The evaluation is preliminary and constrained by reliance on self-report data, purposive sampling, and short-term outcomes. While the breadth of stakeholder feedback lends credibility to the observed

patterns, longitudinal evidence is required to assess the durability of career clarity, educational alignment, and psychosocial benefits. Importantly, the program's original longitudinal intent—tracking students from Grade 8 through Grade 10—remains only partially realised, underscoring the need for systematic follow-up in future phases, including the development of an intermediate Grade 9 module.

Despite these limitations, the findings affirm that structured, culturally responsive, and system-integrated career guidance can be embedded within mainstream schooling at scale. LEAP demonstrates that career development interventions need not be episodic or test-centric, but can function as an integral component of public education when supported by policy alignment, institutional collaboration, and contextual sensitivity. In doing so, the program offers a promising model for regions seeking to strengthen adolescent career guidance within public education systems.

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Appendix 1.
LEAP Assessment- Components and Example items

Serial Number	Subcomponent	Example item (illustrative)
1	Activities I enjoy doing	Participating in science exhibitions/quiz
2	Subjects I like presently	Biology
3	Subjects I like to study in future	Zoology
4	Occupations I would like to choose	Zoologist
5	Aptitude	–
6	Personal characteristics	When I am in a group, I don't like to draw attention to myself. <i>Or</i> I am the one who often takes the conversation ahead while in the company of friends. (Sociability)
7	Values	Whatever I intend to do should be practical. (practicality)
8	Study Habits	I take down lecture notes while teachers are teaching in class. (learning techniques)
9	Achievements	Mark the highest prize/certificate you have won for the Mathematics Fair. If you have not participated in any, mark 'Not Participated.'