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Rethinking Student Success in HEIs: A Validation study of Holistic Student Development

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Abstract

Purpose: The objective of this study is to develop and psychometrically validate a Holistic Student Development Measurement Scale (HSDMS) based on multidimensional theoretical framework which is laid out in the National Education Policy (NEP) 2020 for Indian HEIs.
Design/Methodology/Approach: A systematic approach of scale development which is a mix of qualitative and quantitative methods is used. Phase I comprises of Focus Group Discussions (FGDs), Systematic Literature Review (SLR), item generation (60 items), face validation and content validation by the Content Validity Index (CVI). A pilot study (n = 104) was conducted before the large scale data collection, which was done from 1,067 students from three HEIs in India adopting multistage stratified sampling technique. After data cleaning, 995 valid responses were randomly divided into two sets: One for Exploratory Factor Analysis (EFA) with 490 responses and the other for Confirmatory Factor Analysis (CFA) with 505 responses.
Result: Principal Component Analysis revealed five factors namely Physical Quotient (PQ), Emotional Intelligence Quotient (EIQ), Social Intelligence Quotient (SIQ), Intellectual Quotient (IQ), and Spiritual Intelligence Quotient (SpIQ) with 32 items and explained around 66% of total variance. CFA on the independent subsample confirmed the five-factor structure with satisfactory model fit: $x^2/df = 2.31$, GFI = 0.92, AGFI = 0.90, CFI = 0.95, TLI = 0.94, IFI = 0.95, RMSEA = 0.050, SRMR = 0.048. The Cronbach's alpha (α) coefficient varied from 0.87 to 0.93 for each construct. The results showed that the Composite Reliability (CR) was ranging from 0.89 to 0.94 and Average Variance Extracted (AVE) range from 0.61 to 0.66, which indicate convergent validity. The Fornell-Larcker criterion was used to determine the discriminant validity.
Originality/Value: This study introduces one of the first rigorously validated, multidimensional HSDMS in the HEI context explicitly aligned with NEP 2020 framework. The scale provides a valid and culturally relevant instrument for evaluating and improving student outcomes across the entire student experience for institutional administrators, policymakers, accreditation agencies, and researchers.

1. INTRODUCTION

Academic achievement has long held a privileged place in establishing students' success in higher education. The social, economic, and technological context, however, is becoming more dynamic, and its new requirements lead to the rising importance of graduates who have emotional intelligence, social responsibility, physical health, and ethical values, as well as intellectual skills. This recognition has led to the global move towards holistic education in which students' development is promoted across all aspects of human potential.

This is reflected most prominently in the National Education Policy (NEP) 2020, which emphasizes a holistic and multidisciplinary approach to education, noting the importance of nurturing well-rounded individuals who can make a meaningful impact in society and solve global problems. The NEP 2020 makes it very clear that the focus is on developing all the capacities of human beings, namely, intellectual, aesthetic, social, physical, emotional, and moral – in an integrated fashion, with a strong emphasis on moving past the rote-learning and examination-centric frameworks that have hitherto defined Indian HEIs.

Although the concept of Holistic Student Development (HSD) has picked up increasing acceptance as an important educational outcome, it is still poorly developed in the literature. Current assessment systems tend to be outcome based and not holistic. Moreover, there is no standardized, psychometrically validated measurement tool to capture the assessment of HSD specifically in the context of Indian higher education; it makes it challenging for institutions to systematically measure and monitor students' overall development.

To overcome the above gaps, this research employed a rigorous sequential methodology, including Focus Group Discussions, Systematic Literature Review, Content Validity analysis, Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA), to build and validate the Holistic Student Development Measurement Scale (HSDMS). The study is guided by the following core objectives:

- To explore the factors of Holistic Student Development.
- To design and develop a measurement scale for Holistic Student Development.

- To validate the model of Holistic Student Development.

2. LITERATURE REVIEW

2.1 Evolution of Holistic Student Development

The concept of holistic student development came about in 1937 when 'Student Personnel Point of View' came into existence, which stated that the development of the whole student should not be limited to academic achievement (American Council on Education, 1937). Building on this seminal work, student development theory progressed to include the work of Erikson (1959); Marcia (1966); Chickering (1969); Piaget (1952); Perry (1968); Lewin (1936; Belenky, Clinchy, Goldberger, and Tarule (1986); Sanford (1962); and Heath (1968) who highlighted the connectedness of cognitive, psychosocial, interpersonal, and identity development as elements of student development. In contemporary higher education, students' development is multidimensional and dynamic, shaped by their personal attributes and experiences, as well as by institutional environments (Chickering & Reisser, 1993).

The purpose of higher education has been changing over time from the transfer of knowledge to developing graduates who are intellectually, emotionally, socially, ethically and personally competent. Developing the overall potential of learners is now increasingly recognized as a necessary product of higher education, corresponding to the educational reforms followed at an international level and the concept of education as learning to be, learning to live together, learning to do, and learning to know, as advocated by UNESCO's 4P of learning (Delors, 1996).

2.2 Theoretical Framework

According to Covitality Theory, propounded by Furlong et al., (2017) student flourishing is the synergistic interaction among several positive psychological strengths: belief-in-self, belief-in-others, emotional competence, and engaged living. Students are seen as whole persons in Whole Person Development Theory, where development of their intellectual, emotional, social, physical, moral, and career competencies all relate to and influence one another (Ng et al., 2016). Social-Emotional Competence Frameworks focus on four key factors to student success: self-awareness, self-management, social awareness and relationship skills (Dwiastuti et al., 2024). Student Well-Being Frameworks build on the knowledge of development by adding academic, physical, psychological, financial, and relational well-being (Khatri et al., 2024). Together, these models provide a clear understanding that success for students is multi-faceted and encompasses all aspects of human development.

2.3 Existing Measurement Instruments

There are a number of instruments available that address various aspects of holistic development such as the Social Emotional Health Survey for Higher Education (SEHS-HE), the Comprehensive Student Strengths and Well-being Questionnaire (CSSWQ), the Whole Person Development Inventory (WPDI), and instruments based on Social-Emotional Competence frameworks. Previous research consistently shows that holistic development has a positive impact on student well-being, engagement, resilience, psychological health and overall success (Ng et al., 2016). Construct validity and reliability is usually tested and validated using EFA and CFA (Worthington & Whittaker, 2006).

2.4 Research Gap

Although much progress has been made, current tools vary greatly in terms of conceptualizations, scope, psychometric quality and cultural suitability. The physical, spiritual, moral-ethical and career aspects are not consistently promoted in the current instruments. Most tools have been already used in certain cultural settings (mainly Eastern), which restrict their implementation in the different cultural context of India's Higher Education sector. Moreover, there is less research available on a comprehensive model that integrates various aspects of student development in one validated model. Hence, it is essential to develop and validate a comprehensive, reliable and culturally competent HSDMS which can measure the students' multidimensional development in HEIs in India.

3. RESEARCH METHODOLOGY

To tackle the gap in the literature, a structured method was used, which included both scale construction methods and strong statistical validation methods. The study adopted a multiphase sequential design that combined exploration and validation phases of mixed qualitative and quantitative methods.

3.1 Phase I: Construct Exploration and Item Generation

3.1.1 Focus Group Discussion I (FGD-I) — Inductive Exploration

The objective of this phase is to generate exploration and item ideas.The goal of this phase is to build exploration and item ideas. The study began with an inductive approach to the construct, which involved the use of a Focus Group Discussion (FGD-I) with Subject Matter Experts to generate keywords that were related to the construct of Holistic Student Development and preliminary themes were identified. The thought provoking question raised was: What is the understanding about the concept of Holistic Student Development in higher education in India? In your opinion, what qualities or size are necessary for a student to have a well-rounded personality?" Further questions aimed at probing neglected aspects of the existing HE system in India, as well as cultural/contextual aspects of HEIs in India, differentiating between holistic and academic growth and its presence. The main output of the FGD was 48 keywords and initial conceptual categories.

3.1.2 Systematic Literature Review (SLR) — Deductive Exploration

Expert discussions helped to get a preliminary understanding of the construct's practical and experiential elements, while a Systematic Literature Review (SLR) was performed to offer theoretical triangulation and empirical support. The SLR guided the examination of primary dimensions of HSD in relation to the published body of evidence to ensure the relevance of dimensions, update dimensions and to identify area of non-examined dimensions. The selection process for articles was conducted with the aid of the PRISMA flow diagram.The PRISMA flow diagram was used to guide the selection of articles. A synthesis of selected literature was carried out using the ADO framework (Paul & Benito, 2018) which involved analyzing the antecedents, dimensions, and outcomes of HSD. A dimension analysis identified that dimensions focused on emotional well-being, intellectual growth, interpersonal skills, and ethical values were ones that have been extensively studied, while others related to self-reflection, positive thinking and spiritual development were less studied — demonstrating the importance of the ability of the FGD to ensure their inclusion.

The variables were kept as dimensions of HSD when they satisfied at least one of the following criteria: (a) they were identified by the expert panel in the FGD-I; (b) they were used in the literature to define or conceptualize Sd; or (c) they were operationalized in empirical studies in HE as measurable dimensions.

3.1.3 Item Generation

The validity and reliability of the measurement instrument (final instrument) will rely largely on the quality and comprehensiveness of the initial item pool, also known as the item generation step in scale development (Churchill, 1979; DeVellis, 2017). Items from the keyword and literature-based scale indicators were translated into declarative statements, and the initial item pool was designed to have more statements than the final scale (Hinkin, 1998; Worthington & Whittaker, 2006). A number of positively worded and negatively worded statements were created to reduce acquiescence bias with four negatively worded items appearing on various dimensions. Each item was measured on a 5 point likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Every effort was made to ensure that the questions are not double-barrelled, technical, leading or ambiguous. The initial pool of 60 items was the result of this process.

3.2 Phase II: Face Validation and Content Validation

3.2.1 Face Validation (FGD-II)

Face validity assessment was concerned with the clear, comprehensible, appropriate, and readable nature of the items, the identification of ambiguity, redundancy, and problems with item wording and response style (Netemeyer et al., 2003; Papadas et al., 2017). The second Focus Group Discussion (FGD-II) was held with a panel of 10 students (5 Under Graduate and 5 Post Grade) and 5 Faculty members and presented on four items: (a) Clarity of wording; (b) Ease of understanding; (c) Relevance to student development; and (d) Perceived redundancy. The feedback resulted in dropping 13 items because they were redundant, ambiguous, or didn't apply to the majority of the participants; adding three new items that covered missing content; and modifying seven items to make them more precise and clear.

3.2.2 Content Validation using Content Validity Index (CVI)

Lynn (1986) and Polit et al. (2007) and Yusoff (2019) CVI method was used to test the adequacy and representativeness of the items. A panel of ten experts was established that included scale developers, educators, psychologists, educational development professionals, students, and student well-being professionals. A four-point relevance scale (Not Relevant: 1 to Highly Relevant: 4) was employed to rate each item by experts. For computing the Item-level CVI (I-CVI), and Modified Kappa Coefficient (κ*), items with a CVI score of ≥ 3 (or 4) were considered as Relevant and those with a CVI score of 1 or 2 (or ≤ 2) were deemed as Not Relevant. After content validation, 8 items were excluded because of insufficient expert agreement and 42 items met the criteria and were used for pilot testing. Two marker variables were then added to check for common method variance and four items were then reworded as negatively worded statements.

3.3 Phase III: Pilot Study

To assess the preliminary psychometric properties of the 42-item instrument before administering on a larger scale, a pilot study was carried out with convenience sampling of n = 104 students, following the recommendations of Carpenter (2018). IBM SPSS 23 was used for analysis. To determine suitability of the data for factor analysis, Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity were used. KMO value was 0.880 and this value was higher than the minimum value recommended by Kaiser and Kloser (0.60) and Bartlett's test of sphericity was statistically significant (x^2 = 1819.230, df = 253, $p < 0.001$), which showed the data were suitable for factor analysis.

3.4 Data Collection and Sample Characteristics

For large-scale data collection, multistage stratified sampling was employed. From the universe of 1,168 Universities, 45,473 Colleges, and 12,002 Stand-Alone Institutions (AISHE Report, 2025), three institutional categories were selected: Central University (54), State Government-funded University (445), and State Private University (483). The following institutions were sampled:

- **Central University:** Sri Aurobindo College, University of Delhi (n = 3,356 students)
- **State Government-funded University:** Engineering Department, Delhi Technological University (n = 5,032 students)
- **State Private University:** Sri Sri University (n = 2,641 students)

The total population was 11,029, from which a sample size of 995 was determined. A total of 1,067 questionnaires were administered. Following data cleaning — exclusion of 57 responses with more than 10% missing values (Hair et al., 2010) and 15 unengaged responses with zero standard deviation — 995 valid responses were retained for analysis.

Table 1: Demographic and Academic Profile of Respondents (N = 1,067)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	589	55.2
	Female	478	44.8
Age (Years)	Below 18	42	3.9
	18-20	463	43.4
	21-23	425	39.8
	Above 23	137	12.9

Level of Study	Undergraduate	742	69.5
	Postgraduate	325	30.5
Programme	Arts & Humanities	138	12.9
	Commerce	122	11.4
	Engineering & Technology	351	32.9
	Management	236	22.1
	Science	164	15.4
	Others	56	5.3
Institution	Sri Aurobindo College, DU (Central)	365	34.2
	Delhi Technological University (State Public)	352	33.0
	Sri Sri University (State Private)	**350**	**32.8**

3.5 Assessment of Common Method Variance

Common method variance (CMV) is an error variance, common to behavioral research, that can cause observed relationships to be biased (Podsakoff et al., 2003). A marker variable technique as proposed by Lindell and Whitney (2001) was used, with fashion consciousness (Simmering et al., 2015) as the marker variable measured by two items (Cronbach's α = 0.883) and which is theoretically unrelated to the other variables. The negligible correlations between the marker variable and substantive study variables found in this study suggests that CMV was not a serious threat to validity.

3.6 Subsample Split for EFA and CFA

After data were cleaned, the 995 valid responses were randomly split into two independent sub-samples: one for exploratory factor analysis (EFA) and the second for confirmatory factor analysis (CFA).The 995 valid responses were randomly partitioned into two sub-samples – one for exploratory factor analysis (EFA) and the second for confirmatory factor analysis (CFA). This split sample method follows the accepted good practice of scale development literature (Worthington & Whittaker, 2006).

4. EXPLORATORY FACTOR ANALYSIS (EFA)

4.1 Rationale and Approach

The exploratory factor analysis (EFA) was done on Subsample 1 (n = 490) using IBM SPSS 23. The underlying factor structure was obtained using Principal Component Analysis (PCA), and varimax rotation. Varimax rotation is an orthogonal rotation technique that tends to give extreme (either high or low) loadings, reduces the number of variables that are highly correlated, and facilitates the identification of each item with the single factor (Hair et al., 2010). This is in line with the previously used procedures in scale development research (Worthington & Whittaker, 2006; DeVellis, 2017).

4.2 Sampling Adequacy

The suitability of the dataset for EFA was verified using two standard tests. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy initially obtained a value of 0.825, which improved to 0.828 after the removal of items with communalities below the recommended threshold of 0.50. Both values exceed the minimum recommended threshold of 0.60, confirming adequate factorability. Bartlett's Test of Sphericity was statistically significant (x^2 = 1819.230, df = 253, $p < 0.001$), confirming the presence of sufficient correlations among variables and rejecting the null hypothesis that the correlation matrix is an identity matrix.

4.3 Communalities and Item Purification

After initial extraction the communalities of all variables were analyzed to establish how much of the variance of individual variables was explained by the factors extracted. Following the general guidelines of 0.50 (Hair et al., 2010), five items were deemed to have communalities lower than the suggested

threshold, and thus were not included in the analysis. The result of this step of purification of the items was an improvement in the KMO value from 0.825 to 0.828.

4.4 Reliability of Retained Items

The internal consistency reliability of the remaining 39 items was tested for using Cronbach's Alpha. The alpha coefficient obtained was 0.789 which was deemed as satisfactory for testing internal consistency of the scale and suitability of data for further factor analysis (Nunnally, 1978). This value was above the typical range of 0.70, and thus showed acceptable reliability for this stage in the development of the scale.

4.5 Factor Extraction and Rotation

The number of factors to retain was decided by using the Kaiser criterion, which is an eigenvalue of greater than or equal to 1.0. The five factors that met this criterion accounted for about 66% of the total variance of the statements that were included, which is regarded as adequate for scale development (Hair et al., 2010). The rotated component matrix was then analyzed for elimination of items that were not clearly defined to be part of a single factor. Two items were dropped due to factor loadings below 0.50 and three items because of their cross loadings, resulting in a 32 item scale for further validation.

4.6 Factor Identification and Naming

The five factors in which the 32 items were grouped were named in accordance with the core meaning they represented and the competency domain they most closely reflected, drawing on both the theoretical literature and the empirical analysis. The five extracted dimensions were identified as:

- **Factor 1 — Intellectual Quotient (IQ):** Academic development, critical thinking, and problem-solving (9 items)
- **Factor 2 — Emotional Intelligence Quotient (EIQ):** Emotional well-being, regulation, resilience, optimism, and positive thinking (6 items)
- **Factor 3 — Social Intelligence Quotient (SIQ):** Social connectedness and social responsibility (5 items)
- **Factor 4 — Spiritual Intelligence Quotient (SpIQ):** Ethical values, self-awareness, purpose in life, and higher-purpose orientation (7 items)
- **Factor 5 — Physical Quotient (PQ):** Physical well-being, healthy lifestyle, and participation in physical activities (5 items)

Table 2: EFA — Rotated Component Matrix (Factor Loadings)

Item	Dimension / Factor	F1 (PQ)	F2 (EIQ)	F3 (SIQ)	F4 (SpIQ)	F5 (IQ)
Q1	I engage in regular physical activity	0.841				
Q2	I often neglect habits that support my physical well-being	0.823				
Q3	I get adequate sleep and rest	0.804				
Q4	I pay attention to my nutrition	0.779				
Q5	I consciously adopt habits that promote long-term health	0.752				
Q6	I am aware of my emotional reactions		0.857			
Q7	I can regulate my emotions effectively in different situations		0.842			
Q8	I feel emotionally balanced in my daily life		0.826			
Q9	I maintain a positive outlook towards life		0.801			
Q10	I remain optimistic about my future		0.774			
Q11	I look for solutions instead of dwelling on problems		0.742			

Q12	I often feel disconnected from people around me			0.831		
Q13	I work effectively with others to achieve common goals			0.814		
Q14	I communicate effectively with others			0.789		
Q15	I contribute positively to society			0.756		
Q16	I participate in activities that contribute to community development			0.718		
Q17	I act honestly even when no one is watching				0.848	
Q18	I uphold ethical principles in my actions				0.835	
Q19	I make decisions based on moral principles				0.821	
Q20	I rarely reflect on the purpose of my life				0.809	
Q21	I practice meditation/chanting regularly for spiritual growth				0.794	
Q22	I seek opportunities to serve others				0.776	
Q23	I feel inspired to work towards a meaningful purpose in life				0.751	
Q24	I actively seek opportunities to expand my knowledge					0.724
Q25	I enjoy learning beyond prescribed coursework					0.689
Q26	I regularly set academic goals for myself					0.861
Q27	I take responsibility for my learning					0.845
Q28	I evaluate information before accepting it as true					0.826
Q29	I analyse issues from multiple perspectives					0.811
Q30	I can identify weaknesses in an argument					0.786
Q31	I use evidence to support my decisions					0.764
Q32	I can apply knowledge to solve real-world problems					0.728

Note: Only primary factor loadings are displayed. Items with loadings < 0.50 or cross-loadings were removed during item purification. PCA with Varimax rotation; n = 490.

5. CONFIRMATORY FACTOR ANALYSIS (CFA)

5.1 Rationale and Approach

To test the 5 factor structure found in the EFA, Confirmatory Factor Analysis (CFA) was performed on the independent subsample of 505 respondents (Subsample 2). CFA was conducted with the help of IBM AMOS 26.0 software program with Maximum Likelihood (ML) estimation. This sequential EFA-CFA approach with independent subsamples was done in accordance to the good practice in scale development and validation (Worthington & Whittaker, 2006; Hair et al., 2019). Independent subsamples prevent overfitting and offer true test of generalizability of the factor structure.

5.2 Model Fit Assessment

The five factor measurement model, which was used, was tested for the observed data with a wide range of fit indices recommended by Hu and Bentler (1999) and Hair et al. (2019). None of the fit indices was enough by itself and several additional indices were considered to determine overall model fit.

Fit Index	Recommended Value	Obtained Value	Verdict
x^2/df (CMIN/DF)	< 3.00	**2.31**	✓ Acceptable
GFI (Goodness of Fit Index)	> 0.90	**0.92**	✓ Good
AGFI (Adjusted GFI)	> 0.80	**0.90**	✓ Good
CFI (Comparative Fit Index)	> 0.90	**0.95**	✓ Good
TLI (Tucker-Lewis Index)	> 0.90	**0.94**	✓ Good
IFI (Incremental Fit Index)	> 0.90	**0.95**	✓ Good
RMSEA	< 0.08	**0.050**	✓ Acceptable
SRMR	< 0.08	**0.048**	✓ Good

The model fit indices showed a good fit between the measurement model of HSDMS and the observed data. The x^2/df value was 2.31, which is less than the recommended value of 3.00. The GFI (0.92), AGFI (0.90), CFI (0.95), TLI (0.94), and IFI (0.95) all exceeded the recommended criterion of 0.90. Moreover, the RMSEA (0.050) and SRMR (0.048) values were both within acceptable limits and very close to the threshold values (0.08), respectively.

5.3 Standardized Factor Loadings

All 32 items had standardized factor loadings above 0.69 and 0.86, which is higher than the recommended cut-off of 0.50 (Hair et al., 2019). These findings suggest that all indicators were able to sufficiently reflect their respective latent variables and that they were all significant in the measurement model.

Table 4: CFA — Standardized Factor Loadings, Composite Reliability, and AVE

Construct	Item	Standardized Loading (λ)	CR	AVE
Physical Quotient (PQ)	PQ1	0.84	**0.90**	**0.65**
	PQ2	0.82		
	PQ3	0.80		
	PQ4	0.78		

	PQ5	0.74		
Emotional Intelligence Quotient (EIQ)	EIQ1	0.86	**0.92**	**0.66**
	EIQ2	0.84		
	EIQ3	0.82		
	EIQ4	0.80		
	EIQ5	0.77		
	EIQ6	0.74		
Social Intelligence Quotient (SIQ)	SIQ1	0.83	**0.89**	**0.62**
	SIQ2	0.81		
	SIQ3	0.79		
	SIQ4	0.75		
	SIQ5	0.71		
Intellectual Quotient (IQ)	IQ1	0.85	0.94	0.61
	IQ2	0.84		
	IQ3	0.82		
	IQ4	0.80		
	IQ5	0.79		
	IQ6	0.77		
	IQ7	0.75		
	IQ8	0.72		
	IQ9	0.69		
Spiritual Intelligence Quotient (SpIQ)			0.93	0.65

	SpIQ1	0.86		
	SpIQ2	0.84		
	SpIQ3	0.83		
	SpIQ4	0.81		
	SpIQ5	0.79		
	SpIQ6	0.76		
	SpIQ7	0.73		

Note: CR = Composite Reliability; AVE = Average Variance Extracted. Recommended thresholds: CR > 0.70; AVE > 0.50 (Fornell & Larcker, 1981). n = 505.

5.4 Convergent Validity

The convergent validity was achieved as all the standardized factor loading were greater than 0.50. The Composite Reliability (CR) ranged from 0.89 to 0.94, which are above the recommended value of 0.70 (Fornell & Larcker, 1981); the Average Variance Extracted (AVE) ranged from 0.61 to 0.66 which are also above the recommended value of 0.50 (Fornell & Larcker, 1981). These results indicate that the scales have satisfactory convergent validity for all 5 dimensions.

Table 5: Convergent Validity Assessment

Construct	Items (n)	Loading Range	Cronbach's α	CR	AVE
Physical Quotient (PQ)	5	0.72 - 0.84	0.88	0.90	0.65
Emotional Intelligence Quotient (EIQ)	6	0.74 - 0.86	0.91	0.92	0.66
Social Intelligence Quotient (SIQ)	5	0.71 - 0.83	0.87	0.89	0.62
Intellectual Quotient (IQ)	9	0.69 - 0.85	0.93	0.94	0.61
Spiritual Intelligence Quotient (SpIQ)	7	0.73 - 0.86	0.92	0.93	0.65

Note: CR = Composite Reliability; AVE = Average Variance Extracted. All values meet recommended thresholds (CR > 0.70; AVE > 0.50).

5.5 Discriminant Validity

In order to determine the discriminant validity, the Fornell-Larcker (1981) criterion was employed, which is to ensure that the square root of the AVE of each construct is larger than its correlation with the other constructs. The correlation matrix with the square root of AVE on the diagonal is shown in Table 6. As shown in the table, the AVE estimates of each construct are above the Maximum Shared Variance (MSV) with all other constructs, which shows that there is adequate discriminant validity across the five dimensions of the HSDMS in terms of the AVE estimates.

Table 6: Discriminant Validity — Fornell-Larcker Criterion

Construct	PQ	EIQ	SIQ	IQ	SpIQ
Physical Quotient (PQ)	**0.806**				
Emotional Intelligence Quotient (EIQ)	0.542	**0.812**			
Social Intelligence Quotient (SIQ)	0.486	0.598	**0.787**		
Intellectual Quotient (IQ)	0.514	0.633	0.576	**0.781**	
Spiritual Intelligence Quotient (SpIQ)	0.471	0.561	0.548	0.624	**0.806**

Note: Diagonal elements (bold) represent the square root of AVE. Off-diagonal elements are inter-construct correlations. Discriminant validity is confirmed where diagonal values exceed all off-diagonal values in corresponding rows and columns (Fornell & Larcker, 1981).

6. DISCUSSION

6.1 The Five-Dimensional Structure of HSD

The present study developed and validated the Holistic Student Development Measurement Scale (HSDMS) that identified HSD as a multidimensional construct composed of five empirically based dimensions: Physical Quotient (PQ), Emotional Intelligence Quotient (EIQ), Social Intelligence Quotient (SIQ), Intellectual Quotient (IQ), and Spiritual Intelligence Quotient (SpIQ). The five-factor structure is logical and consistent with key theories in the fields of whole-person education and student development literature such as the Whole-Person Development Theory (Ng et al., 2016), the Covitality Theory, and the multidimensional wellness model (Hettler, 1984).

The dimension of the Intellectual Quotient, which includes academic development, critical thinking and problem-solving, is the most well-documented in the literature and the development of a new dimension has validated the importance of thinking processes in any holistic measurement of student growth. Most importantly, however, as EIQ, SIQ, PQ, and SpIQ emerged as independent factors with high reliability coefficients and significant factor loadings, HSD is indeed multidimensional; that is, academic achievement doesn't equate to holistic development of a student.

6.2 Physical Quotient (PQ)

The study found Physical Quotient as one of the dimensions of the Holistic Student Development which includes physical wellbeing, healthy lifestyle practices and physical activity participation. This finding is in keeping with the philosophy of holistic education that is rooted in the interrelatedness of mind, body and spirit. A physically healthy student can better participate in school-related learning, social, and emotional activities. The enhancement of PQ as a separate subject is also aligned with the explicit focus on yoga, sports, and physical well-being as core elements of a holistic education as outlined in the NEP 2020.

6.3 Emotional Intelligence Quotient (EIQ)

Emotional Intelligence Quotient was one of the most salient components of the HSDMS which includes emotional well-being, emotional regulation, resilience, optimism, and positive thinking. The results indicate that students with better emotional skills can manage better academic problems, inter-personal relationships and life transitions. With the fast changes in the education system, emotional intelligence is increasingly crucial to student success, and students need to be able to manage stress and stay motivated and engaged (Goleman, 1995). These results support the increasing demands of HEIs to enhance counselling and mentoring systems and implement emotional wellness interventions.

6.4 Social Intelligence Quotient (SIQ)

Social Intelligence Quotient (SIQ), which incorporates social connectedness and social responsibility, was one of the key independent factors identified, reflecting the value of higher education for interpersonal relationships, team work, empathy, social engagement and responsible citizenship. Engaging in social interactions and activities in the community helps students to improve their communication abilities, increase social awareness, and broaden perspectives. The discovery reinforces the idea of education for students that goes beyond being merely skilled workers to being good citizens, which forms the core of both NEP 2020 and the United Nations Sustainable Development Goal 4.

6.5 Spiritual Intelligence Quotient (SpIQ)

Ethical values, self-awareness, purpose in life, and higher-purpose orientation were determined to be a unique and valid dimension of HSD in the context of Indian HEI, which was measured by the Spiritual Intelligence Quotient. Clear purpose and ethical values are correlated with higher

levels of resilience, commitment and responsible behavior, among students. This dimension is very relevant in the Indian educational tradition as it reflects the ancient ideals of Vidyā – education as education that cultivates wisdom and moral character in the learner and the NEP 2020's explicit mention of value-oriented and character-based education that includes the four values of satya, dharma, shanti, prem and ahimsa.

6.6 Psychometric Properties

The HSDMS demonstrated robust psychometric properties across all five dimensions. Internal consistency, as measured by Cronbach's alpha, ranged from 0.87 (SIQ) to 0.93 (IQ), all well

above the acceptable threshold of 0.70. Composite Reliability (CR) ranged from 0.89 to 0.94, and AVE ranged from 0.61 to 0.66, both meeting or exceeding established recommended thresholds. The CFA model fit indices — $x^2/df = 2.31$, GFI = 0.92, AGFI = 0.90, CFI = 0.95, TLI = 0.94, IFI = 0.95, RMSEA = 0.050, SRMR = 0.048 — collectively confirm an acceptable and well-fitting measurement model. Discriminant validity, established using the Fornell-Larcker criterion, further confirms that the five dimensions, while interrelated, are conceptually and empirically distinct.

6.7 Implications for Policy and Practice

For Policymakers and Regulatory Bodies: The validated HSDMS offers a detailed framework to evaluate student outcomes across a broad spectrum of indicators, beyond just academic measures. HEIs can use the HSD indicators in their evaluation framework either as part of the National Assessment and Accreditation Council (NAAC) or the National Institutional Ranking Framework (NIRF) evaluation frameworks to gauge the role played by HEIs in the overall development of students. The HSD score can be used as a standardized measure of institutional effectiveness, along with the various measures of academic excellence and research productivity.

For NEP 2020 Implementation: The concept of Holistic education in NEP 2020 can be operationalized in a concrete way using the five validated dimensions which are Physical, Emotional, Social, Intellectual, and Spiritual. The HSDMS provides a systematic tool for institutions to measure and monitor the holistic growth of ethically grounded, socially responsible, emotionally resilient, intellectually competent and globally conscious individuals.

For Higher Education Institutions: HEIs can use the HSDMS both as a diagnostic and developmental tool to measure the effectiveness of curricular, co-curricular and extra-curricular initiatives. The scale may be used to help institutions understand gaps in student development and strategically plan interventions to improve student development in a holistic manner. HSD score can be used as an institutional Key Performance Indicator (KPI) for tracking student outcome of development.

For Employers and Industry: The HSDMS provides a more holistic assessment than just academic records for Employers and Industry. The scale offers a valuable insight into a candidate's physical state, emotional maturity, social competence, intellectual abilities and ethical orientation – all skills that are valued by organizations in the knowledge economy of the 21st century.

7. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

The present study, while methodologically rigorous, is subject to several limitations that should be acknowledged. First, the data were collected from three HEIs located in two states of India. While the institutions represent three distinct institutional categories (Central, State Government-funded, and State Private universities), the findings may not be fully generalizable to the entire diversity of India's higher education landscape across 36 states and union territories. Future research should seek to replicate and validate the HSDMS with samples from a broader geographical and institutional range.

Second, the study employed a cross-sectional design, precluding conclusions about the longitudinal trajectory of holistic student development across semesters and academic years. Future studies employing longitudinal designs would be valuable in tracking developmental change and assessing the sensitivity of the HSDMS to growth over time.

Third, the study relied primarily on self-report data, which is susceptible to social desirability bias — particularly for dimensions such as ethical conduct (SpIQ) and social responsibility (SIQ). Future research could explore multi-method approaches incorporating peer assessment, faculty observation, and behavioral indicators alongside self-report measures.

Fourth, measurement invariance testing across gender, programme of study, and institution type was not conducted in the present study. Future research should assess whether the HSDMS factor structure and loadings are invariant across these groups, which would strengthen the instrument's utility for comparative institutional and policy research.

Finally, while the HSDMS provides a validated tool for assessing the five dimensions of HSD, future studies should explore the relationships between HSDMS scores and important downstream outcomes such as academic performance, graduate employability, well-being, and civic engagement to further establish the predictive validity of the scale.

8. CONCLUSION

Holistic Student Development represents a transformative framework for higher education — one that enables institutions to nurture well-rounded individuals who are intellectually competent, emotionally resilient, socially responsible, physically healthy, and spiritually grounded. The present study responded to an identified gap in the literature by developing and validating the Holistic Student Development Measurement Scale (HSDMS), a 32-item, five-dimensional psychometric instrument tailored to the Indian HEI context.

Through a rigorous sequential methodology — spanning Focus Group Discussions, Systematic Literature Review, Content Validity analysis (CVI), pilot testing, Exploratory Factor Analysis (n = 490), and Confirmatory Factor Analysis (n = 505) — the study established a robust five-factor structure comprising Physical Quotient, Emotional Intelligence Quotient, Social Intelligence Quotient, Intellectual Quotient, and Spiritual Intelligence Quotient. The scale demonstrated strong reliability (Cronbach's α: 0.87–0.93), composite reliability (CR: 0.89–0.94), convergent validity (AVE: 0.61–0.66), and discriminant validity across all five dimensions. CFA confirmed acceptable model fit ($x^2/df = 2.31$; CFI = 0.95; RMSEA = 0.050; SRMR = 0.048).

The HSDMS makes three primary contributions. Methodologically, it applies a gold-standard sequential EFA-CFA validation design to a construct of growing policy significance in Indian higher education. Theoretically, it integrates classical Indian educational philosophy with contemporary international frameworks for holistic development, producing a culturally contextualised and empirically validated model. Practically, it offers HEIs, institutional researchers, policymakers, and accreditation bodies a validated, actionable measurement tool

— aligned with the vision of NEP 2020 and the NCF 2023 — for assessing and advancing holistic student outcomes in India's rapidly evolving higher education landscape.

The study ultimately affirms that Holistic Student Development is measurable, that its measurement is psychometrically sound, and that the proposed HSDMS can serve as a

practical framework for nurturing well-rounded, socially responsible, and ethically grounded graduates — individuals equipped not merely to succeed in the workplace, but to contribute meaningfully to an equitable and inclusive society.

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