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THEORETICAL FOUNDATIONS AND INTERNATIONAL EXPERIENCE OF DEVELOPING THE HUMAN CAPITAL OF TALENTED YOUTH

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ABSTRACT

This article treats the development of talented youth as an educational-management problem rather than a selection exercise. It combines human capital theory, developmental accounts of giftedness and strategic talent management in one analytical framework. The state-supported architectures of Singapore, the Republic of Korea, Israel, Russia and Kazakhstan are examined through a structured, focused comparison covering six dimensions: public mandate, governance, identification, development provision, data and evaluation, and equity and adaptation. The findings are presented as five evidence-based design propositions rather than causal laws. Durable systems tend to rest on a stable public mandate, a lead authority with defined interorganizational responsibilities, alignment between identification and service capacity, a data-evaluation-feedback cycle, and a formal capacity to revise policy. The article then assesses the institutional design established in Uzbekistan under Presidential Decree No. PF-86. It proposes a longitudinal participant registry, capacity-linked admissions, repeated and domain-sensitive entry routes, equity indicators, staged evaluation and post-programme pathways. These measures would allow the emerging initiative to learn from its first cohorts without copying any foreign model in full.

ACCEPTED

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Introduction

The economic meaning of education changed when knowledge, skills and health came to be treated as productive assets rather than as residual social benefits. Smith placed acquired abilities within fixed capital [1]. Schultz later recast expenditure on education and health as investment [2], while Becker developed an economic account of general and specific human capital [3]. Mincer supplied an empirical framework for estimating the relationship between schooling, experience and earnings [4]. Endogenous-growth models subsequently showed how learning, research capacity and knowledge spillovers can sustain productivity growth beyond the contribution of physical capital alone [5, 6]. At the policy level, the World Bank Human Capital Index and OECD education indicators have strengthened the demand for measurable links between public expenditure, learning and future productive capacity [7, 8].

Talented youth occupy a small but strategically consequential part of this agenda. Their potential is uncertain, domain-specific and sensitive to the environment in which it develops. Natural aptitude does not yield expertise through selection alone. Gagné's model describes talent as the outcome of a developmental process that transforms ability through learning, practice and environmental catalysts [9]. Subotnik, Olszewski-Kubilius and Worrell likewise place giftedness on a trajectory from potential to competence, expertise and, in rare cases, eminent

performance [10]. A public system therefore has to manage a sequence: noticing potential, validating it fairly, providing appropriate opportunities, supporting transitions and learning from later outcomes.

Uzbekistan entered a new phase of system building with Presidential Decree No. PF-86 of 15 May 2025, which established the "President's Talented Children" initiative and its national governance arrangements [11]. The initiative creates an opportunity to connect school-age identification with advanced preparation, specialised schooling and a community of graduates. It also raises familiar management questions. How many students can the development infrastructure serve? Which institution owns the participant journey across programmes and years? How should regional, linguistic and socioeconomic access be assessed? Which outcomes would justify continuation or redesign?

The article addresses three research questions. First, what theoretical principles follow when human capital, giftedness and talent management are read together? Second, which institutional design patterns recur across established national systems? Third, how can those patterns inform the implementation and evaluation of Uzbekistan's emerging architecture? The contribution is analytical rather than classificatory. The countries are not ranked, and institutional continuity is not equated with educational effectiveness. The comparison instead identifies design propositions that can be examined through later administrative and outcome data.

2. Theoretical framework

2.1. Human capital: investment, time and return

Human capital theory supplies two propositions relevant to talented youth. The first concerns time. Education produces returns over long periods, often after several transitions between school, higher education and employment. A programme assessed only through immediate examination results may therefore confuse an intermediate output with the investment return. The second concerns opportunity cost. Resources allocated to a selective programme cannot be justified by the label "investment" alone; the programme must demonstrate additional value, distributional legitimacy and a credible connection to later capability.

The theory does not imply that every form of selective education has a positive return. Becker's distinction between general and specific human capital is useful here [3]. Some competencies remain transferable across institutions and occupations; others are tied to a narrow programme, contest or admission route. A national strategy should favour development that broadens durable capabilities - analytical reasoning, disciplinary depth, research practice, communication, self-regulation and collaboration - while avoiding an excessive dependence on short-lived selection formats.

Measurement also requires restraint. The Human Capital Index estimates the future productivity of a child through population-level education and health measures [7]; it is not a tool for attributing national growth to a gifted programme. OECD indicators provide comparative information on participation, attainment, finance and system performance [8], but they do not isolate the causal effect of selective provision. For talented-youth policy, the defensible sequence is narrower: define intended capabilities, follow participant progression, compare outcomes with suitable benchmarks, and record costs and distributional effects.

2.2. Giftedness as a developmental and domain-sensitive construct

Early gifted-education practice often relied on general cognitive testing and fixed thresholds. The Marland Report broadened the policy definition by recognising intellectual ability, specific academic aptitude, creativity, leadership, visual and performing arts, and psychomotor ability [12]. Renzulli's three-ring conception placed gifted behaviour at the intersection of above-average ability, creativity and task commitment [13]. The Munich Model similarly treated achievement as the product of several ability factors, non-cognitive characteristics and environmental conditions [14].

These accounts alter the management problem. A single test can identify performance under specified conditions, but it cannot exhaust the domains in which potential may emerge. Age matters because the predictive value of indicators changes across development. Domain matters because mathematical, artistic, athletic and leadership potential are expressed differently. Opportunity matters because prior access shapes observed achievement. A defensible identification system therefore uses several sources of evidence, permits entry at more than one age, distinguishes potential from prior training and provides an appeal or re-entry route.

The developmental view also clarifies why selection and provision must be planned together. The identification decision creates an expectation of suitable education. If service places, trained staff or mentoring capacity are unavailable, the system produces a formal status without a developmental pathway. Conversely, an

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inclusive school-based provision can develop a broad group while more intensive programmes remain available for students who need greater depth. The design question is not whether a system should be inclusive or selective in the abstract; it is how levels of provision correspond to demonstrated need.

2.3. Strategic talent management and public governance

Strategic talent management shifts attention from isolated high performers to the positions, capabilities and institutional processes that matter for an organisation's future. Collings and Mellahi define the field through the identification of strategically important positions, the development of talent pools and a differentiated human-resource architecture [15]. At national scale, macro talent management adds education, migration, labour-market institutions, research systems and public policy to the analysis [16]. The Global Talent Competitiveness Index reflects this broader concern with countries' capacity to enable, attract, grow and retain talent [17].

The public sector introduces a coordination problem that corporate models often understate. Ministries, schools, universities, research institutes, local authorities, families and employers hold different resources and incentives. Bryson's account of public strategy places stakeholder management and implementation capacity at the centre of strategic planning [18]. Mintzberg's critique of formal planning is equally relevant: a strategy is not validated by the existence of a document; it is validated when organisations can adjust action in response to experience [19].

Taken together, the three theoretical lines suggest an integrated management cycle. Human capital theory asks what capabilities are being built and how their return will be assessed. Developmental theories of giftedness require repeated, domain-sensitive opportunities. Strategic talent management specifies governance, differentiated provision and transition pathways. The cycle is completed only when data from participation, progression, equity and outcomes return to the institutions that can change policy.

3. Research design

3.1. Comparative approach and case selection

The study uses a qualitative structured, focused comparison. In this approach, every case is examined through the same set of questions, while the researcher retains enough contextual detail to avoid treating formally similar institutions as equivalent [20]. The method is appropriate because the available evidence consists mainly of laws, policy documents, administrative descriptions and scholarly case studies rather than harmonised outcome data.

The five cases were selected purposively. Singapore and Israel show long-running systems in small, highly urbanised states. The Republic of Korea combines legislation, national and regional governance, research capacity and an integrated database. Russia illustrates a national centre linked to a regional network rather than a ministry-only model. Kazakhstan offers a post-Soviet administrative context and a presidentially initiated specialised centre with direct relevance to Uzbekistan. The cases provide variation in legal form, centralisation, identification and service delivery while retaining a common focus on state-supported education for school-age high-ability learners.

3.2. Sources, coding and analytical dimensions

The source corpus contains official laws and government webpages, materials published by coordinating institutions, and peer-reviewed or scholarly literature available up to 5 August 2026. Official sources were used to establish current mandates, governance arrangements, selection procedures and programme forms. Scholarly sources were used to interpret historical development and reported limitations. No confidential administrative records or participant-level data were used.

Each case was coded against six questions: (1) What public instrument authorises the system? (2) Which body leads policy, and how are responsibilities distributed? (3) How are learners identified, and can they enter through more than one route or at more than one point? (4) What forms of development follow identification? (5) What data, evaluation and feedback mechanisms are visible? (6) How does the system address access, adaptation or revision? A claim was retained in the cross-case analysis only when it could be traced to a cited source and applied through the same question to all five cases.

3.3. Operational definition and limits of inference

The dependent concept is termed institutional continuity and adaptive capacity rather than sustainability. It refers to a system's ability to maintain a public mandate across time, coordinate a participant pathway, align service capacity with entry, collect information on implementation and outcomes, and revise its design when evidence or social conditions change. This definition does not assume that a durable institution is effective or equitable.

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Educational effectiveness would require comparable outcome data and an identification strategy capable of separating programme effects from prior advantage.

The comparison is exploratory. Different countries publish data for different years and with different definitions. Official webpages describe formal arrangements more reliably than implementation quality. The study cannot rank national systems, estimate causal effects or judge cost-effectiveness. Its claims are design propositions for policy development and later testing.

3.4. Author positionality

The author is employed by the Agency for Specialized Educational Institutions and works in the unit responsible for implementing the "President's Talented Children" initiative. This position provides direct knowledge of the policy setting but may also influence the interpretation of institutional readiness. To reduce that risk, the Uzbekistan assessment is limited to publicly available instruments and separates formal provisions from demonstrated operating capacity. The analysis and recommendations are the author's scholarly judgement and should not be read as an official position of the Agency.

4. International cases

4.1. Singapore: from a narrow central programme to layered provision

Singapore introduced the Gifted Education Programme (GEP) in 1984 after preparatory work by a specialised Ministry of Education unit [23]. Under the current programme, students are identified through a two-stage exercise in Primary 3 and selected learners enter an enriched curriculum in Primary 4 [24]. The programme has served approximately one per cent of a cohort in nine primary schools [21]. Its design combined central assessment, teacher preparation, curriculum development and concentrated provision.

The reform announced in August 2024 does not amount to an immediate closure. It applies to the 2024 Primary 1 cohort, which reaches Primary 4 in 2027 [21]. The Ministry's 2026 implementation update states that the existing GEP will cease admitting new Primary 4 students from 2027, while existing classes continue until the final cohort completes Primary 6 in 2028 [22]. All primary schools will expand school-based extensions and after-school programmes; around ten per cent of the cohort is expected to benefit. Students requiring further stretch may attend weekly advanced modules in English, mathematics or science at fifteen designated centres.

The refreshed identification process retains a common assessment but removes the second central selection stage. Schools may add teacher observation and student work, and learners can be identified again at the end of semesters in Primary 4 and Primary 5 [22]. The case shows a move from one narrow gate and school transfer toward layered provision, domain-specific extension and repeated entry. The policy remains centrally designed, but development is distributed more widely.

4.2. Republic of Korea: statutory architecture, differentiated institutions and an integrated database

The Republic of Korea created a statutory basis through the Gifted Education Promotion Act, enacted in 2000 and effective from March 2002. The Act defines gifted schools, gifted classes, gifted education centres and gifted education research institutes [25]. It establishes a Central Committee in the Ministry of Education and regional committees in city and provincial education offices. This is a coordinated multi-level structure rather than a single institution.

The Act permits selection across general intelligence, specific academic aptitude, creative thinking, artistic talent, physical talent and other special abilities. It also authorises separate measures for learners whose potential has not developed because of socioeconomic disadvantage or residence in vulnerable areas [25]. Provision is differentiated among specialised schools, classes in ordinary schools and centres attached to education offices, universities or research institutions. The legal framework requires continuity between educational levels and allows curriculum recognition and credit linkage.

Research and information infrastructure form a distinctive part of the Korean arrangement. The Act assigns research institutes responsibility for policy research, identification tools, teacher training, support systems and the construction and management of integrated gifted-education databases [25]. The KEDI-operated Gifted Education Database (GED) supports applications, teacher recommendations, institutional information, learner records, online programmes and national statistics [26]. Its 2025 dashboard reported 63,167 learners, 1,267 institutions and 16,611 teachers involved in gifted education [26]. Historical analysis also documents the use of national master plans and the gradual expansion of science-oriented provision [27].

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Korea offers the clearest formal connection between governance, differentiated provision, research and data. Its limitation for international transfer is equally clear: legal completeness does not show that identification is free from social bias or that all programme types produce comparable outcomes. The infrastructure creates the capacity to evaluate; it does not substitute for evaluation.

4.3. Israel: national reach, psychometric thresholds and diverse programmes

Israel operates a national identification process through the Ministry of Education's Department for Gifted and Outstanding Students. For the 2026/27 admissions cycle, the Ministry retained a two-stage process in official schools. Stage A is administered in Grade 2 in Jewish society and Grade 3 in Arab, Druze, Bedouin and Circassian society. About fifteen per cent of learners proceed to Stage B through test performance or school recommendation. Admission to gifted programmes is normally set at approximately the 97th national percentile, with a lower threshold for outstanding-student programmes [28].

Development provision is not limited to one institutional form. Ministry information describes full-day weekly gifted centres and after-school frameworks, alongside school-based and national programmes. Content ranges from science, mathematics and technology to humanities research, learning skills and early access to matriculation or academic credit [29]. Earlier scholarship also describes pull-out centres and specialised classes as established elements of the system [30].

The Israeli model's strength is national administrative reach and a common procedure across sectors. Its main design tension lies in the weight given to psychometric thresholds and the relationship between identification and available provision. Critical scholarship reports long-standing concerns about unequal access, programme scale and limited outcome research [31]. These claims are not an official performance assessment; they identify the administrative data that should be linked to service uptake, social-group participation, progression and programme quality.

4.4. Russia: a national resource centre linked to regional systems

The Talent and Success Educational Foundation was established in December 2014, and the Sirius Educational Centre was created on Olympic infrastructure to identify, develop and provide further professional support to children with outstanding achievements in science, arts, sport and technical creativity [32]. Sirius offers intensive programmes, online courses, teacher development and partnership-based routes into research and professional practice.

Regional centres are created by the constituent entities of the Russian Federation, while the Foundation supplies coordination, methods, information environments, teacher development and exchange of practice [33]. Centres identify learners, design programmes and individual routes, build university and employer partnerships, and conduct monitoring research. Official reporting in 2026 referred to 85 centres operating on this model [33].

The case demonstrates a hub-and-network arrangement: a national institution supplies methods, platforms and authority while regions operate services. Its strength is the connection between intensive provision, online reach, educator development and later pathways. Participation records, however, do not establish equity or long-term contribution; comparable regional outcome reporting remains necessary.

4.5. Kazakhstan: presidential mandate and a specialised coordinating centre

Kazakhstan's current architecture grew from Presidential Order No. 3002 of 24 May 1996 on state support and development of schools for gifted children. The order required a specialised-school regulation, a state programme for supporting young talent and measures to preserve and expand educational institutions for gifted learners [34]. The Republican Scientific and Practical Centre "Daryn" was established through Government Resolution No. 256 of 24 March 1998 [35].

Daryn's mission covers the identification, development and professional support of gifted children and talented youth. Its functions include a national information environment, testing programmes and methods, supporting teachers and organisations, and establishing regional resource centres [35]. Olympiads, specialised schools, methodological work and international cooperation remain core instruments.

The case is institutionally relevant to Uzbekistan because a presidential mandate became a permanent specialised organisation and regional infrastructure. It also warns against equating visible competition results with broader development. A coordinating centre still needs evidence on entry, service receipt, progression and differences by region or social background.

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5. Cross-case comparison

Table 1 applies the same analytical dimensions to all five cases. The entries describe formal and publicly visible arrangements; they are not scores. Where official sources did not publish a complete evaluation cycle, the table records the mechanism as partial rather than inferring its existence.

Table 1.

Structured comparison of state-supported systems for high-ability learners

Country	Public mandate and governance	Identification	Development provision	Data, evaluation and feedback	Equity and adaptation	Principal analytical limitation
Singapore	Ministry policy since 1984; central curriculum and identification, with implementation moving toward all-school provision from 2027.	Current two-stage Primary 3 exercise; refreshed process uses one common assessment plus school evidence and repeated entry in Primary 4-5.	Enriched GEP classes until 2028; school-based extensions, after-school programmes and advanced modules at 15 centres from 2027.	Periodic ministerial review and implementation updates; published reform parameters. No participant-level national outcome evaluation identified in the public sources reviewed.	Broader coverage (about 10%); no compulsory school transfer for advanced modules; several identification points.	The reform is being implemented, so its access, quality and outcome effects cannot yet be assessed.
Republic of Korea	Gifted Education Promotion Act; central and city/provincial committees; statutory research institutes and local operating bodies.	Multiple domains; institution-level selection; legal provision for socially or economically disadvantaged learners.	Gifted schools, classes and centres; curriculum flexibility, linkage between levels, teacher training and online provision.	Integrated GED database, learner records, institutional statistics, research functions and national planning capacity.	Special selection measures are authorised for vulnerable groups; regional governance is formalised.	Extensive infrastructure does not by itself demonstrate causal programme effects or equal participation.
Israel	Ministry department and nationally administered procedure rather than a separate comprehensive gifted-education statute.	Two-stage process across official schools; Stage B for about 15%; gifted threshold around the 97th national percentile; recommendations and appeals supplement testing.	Weekly full-day centres, after-school frameworks, school and national programmes, and links to academic credit.	National testing and administrative data are visible; a complete published data-evaluation-policy cycle was not identified.	Common national process across sectors; language, sector and special-condition arrangements exist.	Strong reliance on psychometric thresholds and contested evidence on access, financing and programme reach.
Russia	Talent and Success Foundation and Sirius as a national resource hub; regional centres are established and operated by regions.	Competitive selection through achievements, programme-specific tasks and applications; online routes broaden reach.	Intensive residential programmes, online courses, teacher development, individual routes and university/industry partnerships.	Information platforms, participant records and monitoring expectations for regional centres; public outcome definitions remain uneven.	Network designed for countrywide coverage; programmes are free on a competitive basis; regional capacity varies.	A hub-and-network model complicates attribution and requires comparable regional reporting.
Kazakhstan	Presidential Order No. 3002 (1996), Government Resolution No. 256 (1998), Daryn centre and regional resource structures.	Olympiads, competitions and admission to specialised institutions are prominent routes.	Specialised schools, olympiad preparation, methodological support, teacher and institutional development.	Information and methodological functions are stated; publicly available longitudinal outcome and equity indicators are limited.	Regional centres and social/legal support are included in Daryn's mandate.	Competition outcomes may dominate broader measures of development, participation and transition.

Source: compiled by the author from official and scholarly sources [21-35]. "No complete cycle identified" means that the reviewed public sources did not document all stages from data collection to evaluation and policy adjustment.

5.1. Design proposition 1: durability depends on a public mandate, not on one legal form

The cases do not support the claim that a separate law is necessary in every setting. Korea uses a comprehensive statute; Kazakhstan relies on a presidential order and government resolution; Singapore and Israel have long operated through ministry policy; Russia combines a foundation, presidential support and regional instruments. The shared feature is a durable public mandate that assigns responsibility, authorises expenditure and survives changes in individual programmes. Legal form should therefore be treated as context-dependent. The policy requirement is continuity and enforceable responsibility, not formal uniformity.

5.2. Design proposition 2: systems need a lead authority and an explicit network of responsibilities

None of the cases is governed by one institution acting alone. Even the most centralised arrangements depend on schools, testing bodies, research institutes, universities, regional offices or

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specialised centres. The recurring pattern is a lead authority combined with a defined network. Effective coordination requires clarity over who sets standards, who selects participants, who provides services, who owns data, who evaluates programmes and who acts on findings. A “single coordinating institution” is therefore too narrow; a lead authority with a documented responsibility architecture is the more accurate design principle.

5.3. Design proposition 3: identification and development must form one capacity-managed pipeline

Identification creates no human-capital return unless it is followed by appropriate development. Capacity should be calculated before admissions: number of places, teacher expertise, mentoring hours, geographic access and support for transitions. The Singapore reform illustrates a layered response, with broad school-based provision and smaller advanced modules. Korea’s differentiated institutions serve different levels and domains. Israel shows the administrative strength of national identification but also the need to examine service uptake after status is awarded. Pipeline management should include a suitable route for learners who do not enter the most intensive programme and a re-entry mechanism for late-emerging potential.

5.4. Design proposition 4: a database becomes strategic only when linked to evaluation and decisions

Participant records, application portals and institutional statistics are necessary but insufficient. A data-evaluation-feedback cycle requires five connected elements: stable identifiers, defined indicators, periodic analysis, reporting to authorised decision-makers and a recorded response. Korea’s legal assignment of database and research functions provides the most complete formal architecture among the cases. Other systems show elements of the cycle, but public sources often describe monitoring without specifying outcome measures or decision rules. The management value of data lies in what the system changes after examining them.

5.5. Design proposition 5: adaptation and equity must be built into the operating model

A policy that cannot revise identification, provision or resource allocation will preserve early design errors. Singapore’s current reform is evidence of institutional adaptation after four decades of programme experience. Korea’s law authorises measures for underserved learners. Israel’s sector- and language-specific procedures recognise that a uniform test administration can produce unequal conditions. Russia and Kazakhstan seek regional reach through networks, but regional structures also expose differences in local capacity. Equity should therefore be monitored as a distributional outcome - not assumed from national coverage - and adaptation should occur through scheduled review rather than ad hoc reaction.

6. Implications for Uzbekistan

6.1. The architecture established under Presidential Decree No. PF-86

Decree No. PF-86 establishes three connected directions: a national programme for selected ninth-grade graduates, the Al-Beruniy International School and a community linking talented young people and graduates [11]. The decree also creates a National Council and implementation arrangements that involve several ministries, the Agency for Specialized Educational Institutions, higher education and other public bodies. Public presentation materials describe annual selection of up to 1,500 learners for preparation toward leading foreign universities, specialised advisers and portfolio-building opportunities [36]. The 2026/27 admissions announcement confirms that the national programme has moved from decree to recurring intake [37].

This design has two advantages. First, it connects selection to a defined development offer rather than conferring status alone. Second, it extends the pathway beyond school through international university preparation, specialised schooling and a graduate community. The unresolved management task is to turn these components into one participant journey with shared standards, compatible data and explicit transition rules.

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6.2. Governance: from formal coordination to operating responsibility

The existence of a National Council satisfies the need for high-level mandate, but strategic oversight and daily system ownership are different functions. The implementing architecture should specify one accountable lead for the end-to-end participant pathway and publish a responsibility matrix. At minimum, the matrix should identify responsibility for selection design, appeals, regional access, adviser quality, programme placement, safeguarding, data protection, outcome evaluation, university transition and alumni engagement.

A permanent interagency secretariat could prepare decisions for the National Council, maintain the programme logic model and review implementation data. The scientific-methodological function should be institutionally distinct enough to question programme assumptions, while remaining close enough to administrative data to produce timely analysis. External academic review can strengthen this arrangement at key stages, particularly after the first complete cohort.

6.3. Identification: multiple evidence, repeated entry and capacity-linked admissions

Current selection for the national programme is directed at ninth-grade graduates and uses examination and additional criteria. This creates a clear entry point but should not become the sole national definition of talent. Different domains and developmental stages require different evidence. A national architecture can retain competitive academic selection for programmes that demand it while supporting other routes through teacher nomination, portfolios, research tasks, creative work, olympiad performance and later re-entry.

Admissions numbers should be tied to actual service capacity. Before each cycle, the implementing body should publish the number of adviser places, programme places by region and language, expected mentoring load, criteria for continuation and alternative offers for applicants who meet a threshold but cannot enter the most intensive tier. This prevents the selection gate from expanding faster than the development system.

6.4. Longitudinal data, consent and the evaluation cycle

Uzbekistan needs a longitudinal registry that follows participants across application, selection, programme participation, school completion, higher education and early professional stages. The registry should not be a public ranking system. It requires lawful purpose limitation, role-based access, documented consent or other legal basis, retention rules and protection against the use of early labels as permanent judgments. A participant identifier should link records without exposing unnecessary personal data to every institution.

Evaluation should proceed in stages. The first cycle should test implementation quality: whether selection occurred as designed, whether adviser loads were manageable, whether services were delivered and whether participation differed by region, school type, language, sex or socioeconomic status. The second cycle should examine intermediate outcomes such as retention, portfolio quality, academic progression, wellbeing and university readiness. Long-term evaluation may examine higher-education completion, research or professional contribution, but such outcomes should not be promised before sufficient follow-up time has elapsed.

6.5. Proposed monitoring framework

Table 2 translates the comparative findings into a compact monitoring framework. The indicators should be specified in an implementation manual with definitions, responsible data owners and suppression rules for small groups. Targets should be set only after a baseline year.

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Table 2.

Proposed monitoring framework for the Uzbekistan initiative

Management domain	Core indicator	Disaggregation	Frequency	Decision supported
Reach	Eligible applicants, applicants, selected participants and service recipients; conversion at each stage.	Region, urban/rural location, school type, language, sex, socioeconomic proxy.	Each admissions cycle	Adjust outreach, test access and regional quotas or support.
Capacity	Places available, adviser caseload, contact hours, staff qualifications, programme completion.	Programme, provider, region and language.	Termly	Match admissions to delivery capacity and identify bottlenecks.
Equity	Representation ratios and stage-specific attrition gaps.	Same groups as reach; disability where lawful and feasible.	Each cycle and annually	Review selection instruments, accommodations and support.
Progression	Continuation, re-entry, transition to advanced programmes and higher education.	Cohort, programme and participant group.	Annually	Redesign transition rules and alternative pathways.
Learning and development	Validated academic, research, creative, psychosocial and portfolio measures suited to programme aims.	Programme and baseline level.	Baseline and programme end	Assess programme contribution and improve curriculum.
Long-term outcomes	Higher-education completion, field alignment, research, innovation, public-service or professional contribution.	Cohort and programme; use aggregate reporting.	At 3-, 5- and 10-year intervals	Test the human-capital rationale without overclaiming early returns.
Adaptation	Recommendations issued, decisions taken, implementation status and reasons for non-action.	Responsible institution.	Annual review	Close the feedback loop and create an audit trail for policy learning.

Source: developed by the author from the theoretical framework and cross-case comparison.

6.6. Regional and linguistic access

Foreign models cannot be transferred without reference to Uzbekistan's geography, school distribution and language environment. Participation costs include travel, internet access, test familiarity, adviser availability and the ability of schools to prepare documents or portfolios. A formally national competition may still favour urban schools with stronger information and coaching networks. Regional outreach should therefore be accompanied by diagnostic reporting on application rates, pass rates and service uptake, not by outreach counts alone.

Assessment content, instructions and appeals should be available in the authorised languages of administration, with equivalence checks rather than literal translation alone. Remote preparation can reduce distance but should not replace local mentoring where connectivity is weak. Regional advisers need common standards, supervision and professional development, while retaining enough discretion to respond to local conditions.

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6.7. Alternative and post-programme pathways

A high-stakes pipeline inevitably contains learners who do not advance at a particular stage. The system should specify what follows: school-based enrichment, online advanced modules, referral to specialised programmes, later re-entry or career guidance. An alternative pathway is not a consolation mechanism; it protects earlier investment and recognises that readiness develops at different rates.

The graduate community should also have a defined function. Its value lies in mentoring, research and project networks, internships, knowledge exchange and later contribution to national institutions, not in ceremonial membership. Participation should be voluntary, governed by clear data rules and assessed through substantive engagement rather than membership totals.

7. Discussion

The comparison changes the interpretation of gifted-education policy in three ways. First, the policy object is not the gifted label but the developmental pathway. This follows from Gagné's distinction between natural abilities and developed talents [9] and from the staged account of domain-specific expertise [10]. A system that optimises test administration while leaving development and transition fragmented manages classification rather than talent.

Second, continuity and centralisation are not synonyms. Singapore is distributing provision while retaining ministry standards. Korea combines central and regional committees, several institutional forms and a national database. Russia uses a national resource hub without direct management of every regional centre. The common requirement is an intelligible allocation of responsibility across a network.

Third, monitoring should be understood as a governance process rather than an information technology project. Registries and dashboards can count participants, but strategy requires interpretation and authorised response. The proposed Uzbekistan framework therefore includes an adaptation indicator: recommendations, decisions and implementation status. This records whether the system has learned, not merely whether it has collected data.

The design propositions also qualify the human-capital argument. Long-term economic or social contribution cannot be inferred from olympiad medals, university admissions or programme completion. Those measures may be meaningful intermediate outcomes, but the return claim requires later evidence and attention to costs and distribution. A credible policy can acknowledge this delay while establishing the records and comparison groups needed for future assessment.

8. Limitations and research agenda

The study relies on public documents and published literature. Internal budgets, participant-level records, programme-quality reviews and unpublished evaluations were unavailable. Country data refer to different years, and institutional terms do not always have exact equivalents across languages. The cases were selected for analytical relevance, not statistical representation. The five propositions should therefore be tested in a wider sample and through fieldwork with administrators, educators, participants and families.

Further research in Uzbekistan should begin with a process evaluation of the first cohorts. It should examine how applicants learn about the programme, whether test and additional criteria behave similarly across regions and languages, how adviser support is delivered, which learners decline or leave, and what alternative services they receive. A later quasi-experimental design may compare selected participants with applicants near the threshold, provided that the selection rule, data quality and ethical conditions permit such analysis. Qualitative follow-up is also needed because achievement indicators alone will not capture wellbeing, identity, motivation or institutional fit.

9. Conclusion

Developing the human capital of talented youth requires more than early identification. Human capital theory frames development as an investment whose benefits emerge over time and must be measured with discipline. Developmental theories of giftedness show why potential is domain-sensitive,

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environmentally dependent and open to later emergence. Strategic talent management places the pathway within a network of institutions, differentiated opportunities and transitions.

The five-country comparison supports five provisional design propositions. A durable system needs a stable public mandate; a lead authority with explicit responsibilities across a network; capacity alignment between identification and development; a data-evaluation-feedback cycle; and a scheduled ability to revise policy while monitoring equity. These propositions do not identify a single best national model. They describe management conditions that can be adapted to different legal and institutional settings.

Uzbekistan's PF-86 architecture provides a strong mandate and several connected programme components. Its next stage is institutional integration. A longitudinal registry, capacity-linked admissions, repeated entry routes, distributional indicators, staged evaluation and defined post-programme pathways would allow the initiative to learn from its first cohorts. The central test of the system will not be how many learners it selects, but whether it can convert diverse potential into sustained capability and adjust when the evidence shows that part of the pathway is not working.

Declarations

Conflict of interest and positionality

The author is employed by the Agency for Specialized Educational Institutions and works in the unit responsible for implementing the "President's Talented Children" initiative. No confidential administrative data were used. The analysis and recommendations are the author's scholarly interpretation and do not constitute an official position of the Agency.

Data availability

The study is based on publicly available legal instruments, official institutional materials and published scholarly literature. The principal online sources and access date are provided in the reference list.

REFERENCES

1. Smith, A. An Inquiry into the Nature and Causes of the Wealth of Nations. London: W. Strahan and T. Cadell; 1776.
2. Schultz, T.W. Investment in human capital. American Economic Review. 1961;51(1):1-17.
3. Becker, G.S. Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education. Chicago: University of Chicago Press; 1964.
4. Mincer, J. Schooling, Experience, and Earnings. New York: National Bureau of Economic Research; 1974.
5. Lucas, R.E. On the mechanics of economic development. Journal of Monetary Economics. 1988;22(1):3-42. doi:10.1016/0304-3932(88)90168-7.
6. Romer, P.M. Endogenous technological change. Journal of Political Economy. 1990;98(5, Part 2):S71-S102. doi:10.1086/261725.
7. World Bank. The Human Capital Index 2020 Update: Human Capital in the Time of COVID-19. Washington, DC: World Bank; 2020. https://openknowledge.worldbank.org/handle/10986/34432.
8. OECD. Education at a Glance 2025: OECD Indicators. Paris: OECD Publishing; 2025. https://doi.org/10.1787/1c0d9c79-en.
9. Gagné, F. Transforming gifts into talents: the DMGT as a developmental theory. High Ability Studies. 2004;15(2):119-147. doi:10.1080/1359813042000314682.
10. Subotnik, R.F., Olszewski-Kubilius, P., Worrell, F.C. Rethinking giftedness and gifted education: a proposed direction forward based on psychological science. Psychological Science in the Public Interest. 2011;12(1):3-54. doi:10.1177/1529100611418056.

ISSN: 2181-3337 | SCIENTISTS.UZ

11. President of the Republic of Uzbekistan. On measures to implement the “President’s Talented Children” initiative. Presidential Decree No. PF-86, 15 May 2025, as amended. https://lex.uz/uz/docs/7533151 (accessed 5 August 2026).
12. Marland, S.P. Education of the Gifted and Talented: Report to the Congress of the United States by the U.S. Commissioner of Education. Washington, DC: U.S. Government Printing Office; 1972.
13. Renzulli, J.S. The three-ring conception of giftedness: a developmental model for creative productivity. In: Sternberg RJ, Davidson JE, editors. Conceptions of Giftedness. Cambridge: Cambridge University Press; 1986. p. 53-92.
14. Heller, K.A., Perleth, C., Lim, T.K. The Munich Model of Giftedness designed to identify and promote gifted students. In: Sternberg RJ, Davidson JE, editors. Conceptions of Giftedness. 2nd ed. Cambridge: Cambridge University Press; 2005. p. 147-170. doi:10.1017/CBO9780511610455.010.
15. Collings, D.G., Mellahi, K. Strategic talent management: a review and research agenda. Human Resource Management Review. 2009;19(4):304-313. doi:10.1016/j.hrmr.2009.04.001.
16. Khilji, S.E., Tarique, I., Schuler, R.S. Incorporating the macro view in global talent management. Human Resource Management Review. 2015;25(3):236-248. doi:10.1016/j.hrmr.2015.04.001.
17. Monteiro, L.F., Escalona Reynoso, R., Evans, P.A.L., editors. The Global Talent Competitiveness Index 2025: Talent and Resilience - Navigating an Era of Disruption. Fontainebleau and Washington, DC: INSEAD and Portulans Institute; 2025. ISBN 979-8-90155-183-7.
18. Bryson, J.M. Strategic Planning for Public and Nonprofit Organizations. 5th ed. Hoboken, NJ: Wiley; 2018.
19. Mintzberg, H. The Rise and Fall of Strategic Planning. New York: Free Press; 1994.
20. George, A.L., Bennett, A. Case Studies and Theory Development in the Social Sciences. Cambridge, MA: MIT Press; 2005.
21. Ministry of Education, Singapore. Strengthening support for higher-ability learners. Press release, 19 August 2024. https://www.moe.gov.sg/news/press-releases/20240819-strengthening-support-for-higher-ability-learners (accessed 5 August 2026).
22. Ministry of Education, Singapore. Committee of Supply 2026: Refreshed approach to support primary students with academic strengths and talents. 3 March 2026. https://cos.moe.gov.sg/2026-announcements/ (accessed 5 August 2026).
23. National Library Board, Singapore. Gifted Education Programme. Singapore Infopedia. https://www.nlb.gov.sg/main/article-detail?cmsuuid=eeea4b7d-8303-494b-b448-48a90a499cbb (accessed 5 August 2026).
24. Ministry of Education, Singapore. Gifted Education Programme. Updated 11 March 2026. https://www.moe.gov.sg/education-in-sg/our-programmes/gifted-education (accessed 5 August 2026).
25. Republic of Korea. Gifted Education Promotion Act, Act No. 6215 of 28 January 2000, as amended through Act No. 21065 of 1 October 2025. Korea Legislation Research Institute. https://elaw.klri.re.kr/eng_mobile/viewer.do?hseq=71732 (accessed 5 August 2026).
26. Korean Educational Development Institute. Gifted Education Database (GED): national gifted-education information management system and 2025 statistics. https://ged.kedi.re.kr/ (accessed 5 August 2026).
27. Kang, D.Y. Past, present, and future of gifted science education in Korea: a historical perspective. Asia-Pacific Science Education. 2019;5:12. doi:10.1186/s41029-019-0045-8.
28. Ministry of Education, Israel. Admissions tests for gifted and outstanding programmes for the 2026/27 school year. 10 November 2025. https://www.gov.il/he/pages/tests-outstanding-students (accessed 5 August 2026).

ISSN: 2181-3337 | SCIENTISTS.UZ

29. Ministry of Education, Israel. Frameworks and programmes for gifted and outstanding students. https://mosdot.education.gov.il/students/gifted/gifted-program/ (accessed 5 August 2026).
30. Peyser, M. Identifying and nurturing gifted children in Israel. International Journal for the Advancement of Counselling. 2005;27(2):229-243. doi:10.1007/s10447-005-3185-1.
31. David, H. The failure of gifted education in Israel. Journal of Gifted Education and Creativity. 2023;10(3):141-155.
32. Educational Centre Sirius. General information. Talent and Success Educational Foundation. https://sochisirius.ru/o-siriuse/obschaja-informatsija (accessed 5 August 2026).
33. Educational Centre Sirius. Regional centres for identifying, supporting and developing abilities and talents in children and young people. https://sochisirius.ru/regions-info (accessed 5 August 2026).
34. President of the Republic of Kazakhstan. On state support and development of schools for gifted children. Order No. 3002, 24 May 1996. https://adilet.zan.kz/rus/docs/N960003002_ (accessed 5 August 2026).
35. Republican Scientific and Practical Centre Daryn. About the centre. Ministry of Education of the Republic of Kazakhstan. https://daryn.kz/en/about-center/ (accessed 5 August 2026).
36. Ministry of Preschool and School Education of the Republic of Uzbekistan. Presentation of the “President’s Talented Children” initiative. 12 June 2025. https://gov.uz/oz/uzedu/news/view/60627 (accessed 5 August 2026).
37. Agency for Specialized Educational Institutions. Admission to the “President’s Talented Children” National Programme for the 2026/27 academic year. 7 May 2026. https://ariza.piima.uz/news/prezident-iqtidorli-farzandlari-milliy-dasturiga-2026-2027-o-quv-yili-uchun-qabul-e-lon-qilinadi (accessed 5 August 2026).

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