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Research Article

An international scoping review focused on gifted and talented children: Early identification and inclusive education

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Abstract: Gifted and talented children should be identified at an early stage and provided with opportunities to thrive, flourish, and develop in inclusive education. Inclusive education refers to a sense of belonging, and development to one's fullest, including talent development. This international scoping review aims to investigate contextual and environmental factors contributing to well-functioning inclusive education, with a particular focus on early identification of gifted and talented children. The Bioecological model for human development and the Differentiating Model of Giftedness and Talent constituted the framework. Twenty-three (N=23) research articles were included and two thematical analyses were conducted. Regarding early identification, five influential factors (i.e., themes) were created: Knowledge about giftedness and talent; Opportunities for all children to demonstrate their abilities; Identification strategies; Collaborations; and Teacher education and professional development. Regarding well-functioning inclusive education, five factors (i.e., themes) were created, which, in addition to early identification, will also play a role; these were: Policies recognising inclusion and gifted and talented children; Appreciation of diversity; Additional educational provisions; Peer interactions and learning; and Home-school partnership. A factor model for early identification and well-functioning inclusive education targeting giftedness and talent is presented, and suggestions for practitioners and further research are provided.

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Education; Gifts and talents; Identification strategies; Preschool and school

Introduction

This international scoping review is about inclusive education, early identification, and giftedness and talent. It aims to investigate contextual and environmental factors that contribute to well-functioning inclusive education, with a particular focus on early identification of gifted and talented children.

The article begins with an introductory section covering inclusive education, early identification, and gifted and talented children. Subsequently, the aim and research questions are clarified. Following this, there is an outline of the review method, and the results are presented. Finally, the article concludes with a discussion.

Inclusive Education and Early Identification

Inclusive education is an appreciation of diversity, where all children obtain a sense of belonging and are able to develop to their fullest (Lundqvist, 2018; Sandall et al., 2019; Tirri & Laine, 2017). Therefore, inclusive education is about children who thrive and flourish, and have opportunities to develop further, together with peers. Thriving covers a child's sense of belonging and psychological well-being, whereas flourishing refers to developing to one's fullest and having the opportunity to contribute to the greater good of society (Sayler, 2009; Sternberg, 2023). However, it is also about ensuring that all staff members

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and families who work and are enrolled in education feel that they are supported and have a sense of belonging (Sandall et al., 2019).

Inclusive education takes various forms (Guralnick et al., 2008; Lundqvist et al., 2015). One example is full inclusion, in which all the children participate in the classroom activities taking place. Another example is partial inclusion, in which inclusive education is combined with some pulled-out educational provisions, when needed.

Previous studies concentrating on inclusive education and gifted and talented children have shown that those children attend inclusive education but are not always provided with opportunities to experience a sense of belonging or to develop to their fullest (Harju-Luukkainen et al., 2022; Margrain & Lundqvist, 2019; Pardeck & Murphy, 2018), for example in preschool and school in Sweden (Margrain & van Bommel, 2022; Mattsson & Bengmark, 2011; Persson, 2010). Consequently, there is room for improvement, and it is important to provide knowledge about factors that contribute to well-functioning inclusive education.

Today, inclusive education is an international agreement and goal, and development to one's fullest is the right of every child. For example, the Salamanca declaration (United Nations Educational, Scientific and Cultural Organisation [UNESCO], 1994) promotes inclusion, the worldwide Sustainable Development Goal Number 4 aims to ensure "inclusive and equitable quality education and promote lifelong learning opportunities for all" (United Nations [UN], 2015, Goal Number 4) by 2030, and the UN Convention on the Rights of the Child states that "the education of the child shall be directed to |…| the development of the child's personality, talents and mental and physical abilities to their fullest potential" (1989, Article 29).

It goes without saying that a teacher who knows the children well in a class can plan and provide an inclusive education that matches the children's abilities. Consequently, identification of children's abilities, such as giftedness and talents, is a factor that contributes to well-functioning inclusive education.

Even at an early age, it is possible to identify children's gifts and (emerging) talents (Brighton & Jarvis, 2017; Coates et al., 2009; Čotar Konrad, & Kukanja Gabrijelčič, 2015). In fact, childhood is considered a crucial period for this (Huang, 2008). Yet, previous studies on early identification, and gifted and talented children have shown that this is not always achieved (Brighton & Jarvis, 2017; Grant & Morrissey, 2021; Luria et al., 2016; Peters et al., 2020). Thus, there is room for improvement in this regard, and it is important to provide knowledge about factors that contribute to early identification of giftedness and talent.

Unidentified and unnurtured giftedness and talents can negatively affect a child, leading to problems such as misinterpretations and underachievement (Brighton & Jarvis, 2017; Delisle & Schultz, 2021; Sayler, 2009; Veas et al., 2016). Some examples are boredom, depression, a low level of self-esteem, and an overall unpleasant inclusive educational experience. Such manifests can create a situation where a child is misunderstood as arrogant, disruptive, and unmannerly, and not, correctly, as a gifted and talented child. Underachievement refers to a considerable gap between expected and actual performance consistent over time, unrelated to a disability (Reis & McCoach, 2000; Ridgley et al., 2020; White et al., 2018). Regarding a child with both gifts and talents, and a disability (i.e., twice-exceptionality), his or her gifts and talents and disability may mask one another (Baldwin et al., 2015). Therefore, only one of these may be identified and addressed during planning and provision of inclusive education. This can also negatively affect a child.

Gallagher and Gallagher (1994) and Sternberg (2022, 2023) have stressed that identifying and nurturing giftedness (and talent) also have great significance for society at large and in the progress towards a better and more sustainable world; thus, these are not only beneficial for individual children's sense of belonging, development, and talent development. Gallagher and Gallagher (1994) explained this as follows:

Failure to help gifted children reach their full potential is a societal tragedy, the extent of which is difficult to measure but which is surely great. |…| These gifted students are a substantial part of the difference between what we are and what we could be as a society. (p. 4)

Theories

In this review, alignment is established with the Bioecological model for human development (Bronfenbrenner & Morris, 1998, 2006). The model encompasses four interplaying contextual systems that, together with two other systems (i.e., the biosystem and chronosystem), influence children's intellectual, social, emotional, and moral development. These four contextual systems are: the microsystem (i.e., the child's immediate settings), the mesosystem (i.e., linkages between these immediate settings), the exosystem (i.e., distal events, seen from a child's perspective, that influence immediate settings and their linkages), and the macrosystem (i.e., characteristics of a culture, such as policy content). These influences from contextual factors on child development are often illustrated by trees' growth rings. One practical scenario is that an education act in a country (macrosystem), allocations of resources to a preschool or school (exosystem), teacher-parent communications (mesosystem), and teacher-child interactions (microsystem) interplay, and jointly influence a child's development.

Alignment is also established with the Differentiating Model of Giftedness and Talent (DMGT, Gagné, 2021), explicitly focused on talent development. Gifts (and giftedness) refer to aptitudes in one or several domains (i.e., intellectual, creative, social, perceptual, muscular, and motor control), whereas talents refer to competencies in one or several fields (i.e., academic, technical, science and technology, arts, people service, management and sales, business systems, sports and athletics, and games). Figure 1 presents an overview of the DMGT. The model presents gifts (G) to the left and talents (T) to the right. In the middle is the developmental process (D) – from giftedness to talent – influenced by both intrapersonal (I) catalysts (i.e., physical, psychological, motivation and volition) and environmental (E) catalysts (i.e., social, interpersonal, and educational). Chance (C) represents opportunities to develop talent and relates to both genetic and family background. It is placed behind G, E, I and D components since it influences these.

DMGT links giftedness and talent to the top 10% of the population. This percentage can be understood as being one or a few children in every preschool group or school class.

These two models are compatible, and, in this review, they are considered to complement one another. Constituting the conceptual and theoretical framework for the review, they provide useful and valuable concepts and explanations.

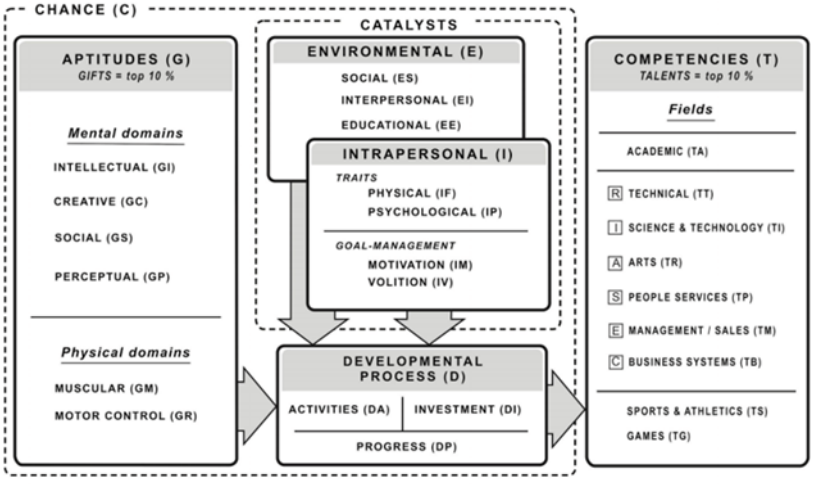

Figure 1. The Differentiating Model of Giftedness and Talent (DMGT) summary
Note. Obtained from "Dr. Françoys Gagné, 2012-2023, 'DMGT EN', para. DMGT Popular Slides". Reprinted with permission.

Aim and Research Questions

This scoping review aims to investigate contextual and environmental factors contributing to well-functioning inclusive education for gifted and talented children. Particular attention is given to early identification of giftedness and talent. The following questions are posed: (RQ1) What factors contribute to

the early identification of gifted and talented children? (RQ2) In addition to early identification, what factors contribute to well-functioning inclusive education in which gifted and talented children experience a sense of belonging and develop to their fullest?

Method

In this international scoping review, guidelines from Arksey and O'Malley (2005), Peters et al. (2015), Levac et al. (2010) and Peters, Marnie et al. (2020) were followed. Using these guidelines, it was possible to identify research results, including implications and conclusions. An online software platform (i.e., Covidence; www.covidence.org) was used in the review as well as the Excel database program. Two reflexive thematic analyses, as presented by Braun and Clarke (2006, 2022), were conducted; one for each research question. Using such analyses, it was possible to identify patterns (i.e., themes) within research results of the chosen topics of interest, and to answer the research questions.

Since the review paid particular attention to early identification, articles dealing with this were sought. Furthermore, since the review also focused on other factors promoting well-functioning inclusive education (i.e., a sense of belonging, and development), such factors were also sought in these articles.

Inclusion Criteria

To begin we set the inclusion criteria. An article had to fulfil several requirements to be included. The criteria related to time, target population, topics, contained articles, the geographical location of researchers, the language used, and peer-review processes (Table 1).

Table 1. Inclusion criteria

Criteria	Description
Time period	1 January 2010 – 30 April 2023
Target population	Children and teachers in educational settings, such as inclusive preschool and early school years, teacher educators, evaluators, and researchers
Topic	Social science, education
Contained articles	Empirical studies or reviews
Geographical location of researchers	International
Language	English
Article	Peer-reviewed

Search Strategy and Selection of Articles

To identify articles for the review, the first author searched the electronic database SCOPUS, using a broad set of terms. The query for SCOPUS was:

> (TITLE-ABS-KEY (gift* OR talent* OR "high* ab*" OR "more ab*") AND TITLE-ABS-KEY (child* OR student* OR pupil*) AND TITLE-ABS-KEY (k OR k-12 OR k-3 OR "childhood education*" OR education* OR preschool* OR kindergarten OR daycare* OR "infant school*" OR school*) AND TITLE-ABS-KEY (identif* OR notic* OR detec* OR recogn* OR discov*) AND TITLE-ABS-KEY (environment* OR "environment* factor*" OR context OR setting* OR influencing OR "influenc* factor*") OR TITLE-ABS-KEY (scale* OR assess* OR observ* OR test OR trace OR character*)) AND PUBYEAR > 2009 AND PUBYEAR < 2024 AND (LIMIT-TO (SUBJAREA , "SOCI")) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (SRCTYPE , "j"))

The result of the SCOPUS search on 26 April 2023: N=994. The articles (N=994) were uploaded into Covidence. Thereafter, the first author, through manual scanning and reading of titles and abstract, excluded a total of 785 articles, and included 207 in the initial selection. Articles were disregarded if they did not meet the inclusion criteria in Table 1 and were kept when they did. To further refine the selection of articles, the first author conducted a second round of reading, involving a full-text review of these 207 articles. Once again, the inclusion criteria were controlled. At the same time, the first author assessed the quality of these articles (i.e., scientific article disposition; the use of empirical data). This phase of review resulted in the additional exclusion of 189; 18 articles were left in the review. Additionally, the first author conducted a hand-search via the reference lists in these remaining articles, as well as a hand-search in these articles' journals. On 23 May 2023, this additional search yielded three more articles. The first author then

performed a search using the electronic database ProQuest (ERIC) to identify relevant studies on the topic, although this did not yield any further articles for inclusion in the review. However, two articles previously known to the authors were added to the review. In summary, 23 articles were included in the review process. This total is calculated as the sum of the initially included 18 articles, the three articles found in the hand-search, and the two articles previously known about. Figure 2 presents a flowchart of the search and selection.

With two exceptions, author two confirmed the inclusion of theses 23 articles. Authors one and two discussed these two minor discrepancies and jointly decided to retain the two articles in the review.

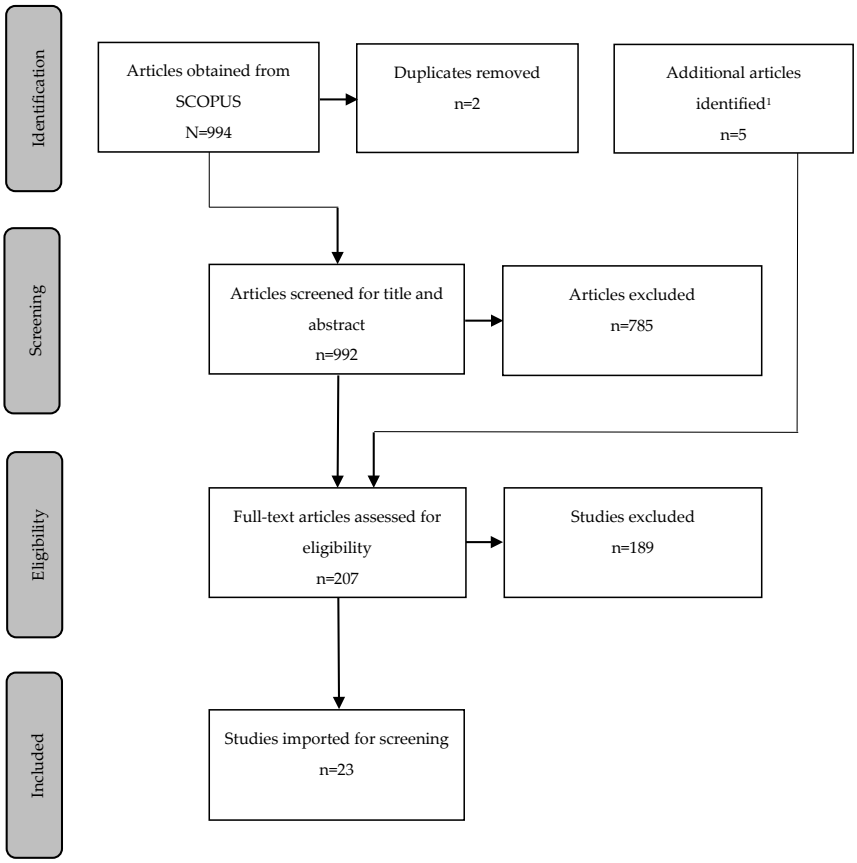

Figure 2. Flowchart of article selections process

[1] No additional articles were obtained from ProQuest (ERIC) but three articles using hand-searching were found and two articles previous known to the authors were added.

Data Chartering for an Overview of the Included Articles

To gain an overview of the included articles, the first author entered data for each of the 23 included articles using the Excel database program. For each article, this author charted the following information: author(s), year of publication, study location, study population (Table 2), aim of the study, methodology, concept, key findings, and important results from the included articles.

Table 2. Articles reviewed

Article number	Author(s)	Year of publication	Geographical location	Educational settings and participants
1	Adedoyin and Chisiyanwa	2018	Botswana	Pre-school teachers
2	Akman et al.	2017	Turkey	Preservice preschool teachers
3	Al-Mahdi et al.	2021	Bahraini	School teachers
4	Bačlija Sušić and Brebrić	2022	Croatia	Preschool/kindergarten children
5	Bildiren	2018	Turkey	Parents to gifted children in preschool

6	Bildren et al.	2023	Turkey	Gifted children and their families
7	Carman et al.	2020	USA	Kindergarten students
8	Dağlıoğlu and Suveren	2013	Turkey	Kindergartens of elementary school teachers and parents
9	Dereli and Deli	2022	Turkey	Pre-school teachers
10	Havigerová et al.	2013	Czech Republic	Preschool nursery teachers and parents
11	Idsøe et al.	2022	Norway	Early Childhood Education and Care (Kindergarten) teachers and parents
12	Jawabreh et al.	2022	Palestine	Pre-school teachers
13	Kaplan Sayı and Yurtseven	2022	Turkey	Primary school students
14	Kazem et al.	2014	Oman	School students
15	Lee et al.	2022	South Korea	Elementary school teachers
16	Mack et al.	2021	Germany	Elementary school teachers
17	Matthews and Rhodes	2020	USA	Kindergarten-2nd grade policies
18	Mohamed and Elhoweris	2022	United Arab Emirates	Preschool teachers
19	Nissen	2019	Denmark	School children, adolescents, parents, and teachers
20	Nordström	2022	Sweden	Preschool teachers and principals
21	Winsler et al.	2013	USA	Childcare or pre-K
22	Yetti et al.	2021	Indonesia	Kindergarten teachers
23	Zhang	2023	China and Scotland	Primary school teachers

In-depth Review Using Two Reflexive Thematic Analyses

The first author conducted reflexive thematic analyses of research results, implications, and conclusions obtained from the included articles. These were not strictly linear analyses, but rather progressive but recursive.

Analysis one was related to RQ1. The first author initiated the analysis by familiarising herself with research data linked to factors contributing to early identification, involving reading and rereading of the included articles, and noting sections or sentences concentrated on such factors (Phase 1). The author semantically coded these research data through a critical reading (Phase 2). The codes were organised into potential themes (Phase 3), the first author reviewed the themes, and ensured all data coded were related to a theme (Phase 4). The author generated a definition for each theme and named the themes (Phase 5). Finally, the first author finessed and finished the writing process and wrote the result for RQ1 (Phase 6). Analysis two, related to RQ2, with one exception, was the same as the first analysis: it was linked to factors, in addition to early identification, contributing to well-functioning inclusive education. One example of the non-linear analyses was going back to previous phases, when needed.

With few exceptions, author two confirmed the themes. Authors one and two discussed these discrepancies and jointly decided to make refinements. These were to merge four themes into two themes, to omit one theme, and to add some more articles to some themes.

The results include numbers related to the articles (Table 2), as well as examples and some quotations from the articles to increase trustworthiness.

Results

The results begin with RQ1.

Contextual and Environmental Factors That Contribute to Early Identification of Giftedness and Talent

Five factors (i.e., themes) were created in the first analysis:

(1.1) Knowledge about giftedness and talent

(1.2) Opportunities for all children to demonstrate their abilities

(1.3) Identification strategies

(1.4) Collaborations (professionals and parent)

(1.5) Teacher education and professional development

Knowledge about Giftedness and Talent

The first factor (i.e., theme) revolves around the importance of teachers (does not exclude other preschool and school staff members in this review) having knowledge about characteristics of giftedness and talent. Teachers need to know what giftedness and talent are to identify such abilities.

According to the review, there are several characteristics of giftedness and talent (Table 3). One overall characteristic is a high ability to learn, that is, rapid and effortless learning. These are characteristics that teachers should pay attention to during early identification. All reviewed articles relate to this factor.

Table 3. Characteristics presented in the articles, and examples

Characteristics	Examples
Curiosity-driven behaviour	Asks specific and clever questions, wonders, engages oneself in theories, and explores further. Is a keen and curious observer.
Concentration, motivation, and intense interests	A long attention span, a willingness to learn, lots of energy and enthusiasm in a topic, and stays on task despite setbacks. Loves, for example, art, dance, music, and/or sport.
A high general intelligence and ability for logical thinking; also creativity and problem-solving ability	Enjoys solving puzzles designed for older children, engages in complex games, thinks quickly and processes information rapidly, foresees outcomes, imagination, makes connections between topics, understands abstract concepts, and solves problems. Imagination, perfectionism, flexibility, structuredness and high ambitions.
A strong memory	Demonstrates strong memory and retention of what has been learned.
Developed perceptions	Good understanding of both visual and verbal impressions, for example in dances and lyrics.
High ability to express oneself and language competence	Early talk, broad vocabulary, long and correct sentences, verbalization, and communications skills. Early reading and above average ability in reading, both decoding and reading comprehension. High language competence regarding writing (i.e., early letter and sounds awareness, and writing skills).
Advanced motor skills	Early and advanced fine motor skills (e.g., grasping and holding objects), gross motor skills (e.g., early walking, high bodily awareness, and smooth movement), a high degree of energy, kinesthetic intelligence, and spatial abilities.
Social competence and leader skills	Prefers older companions/friends, excels in leadership, and shows interest in social issues. Maturity for his/her age, self-confidence, and precociousness.
Subject-specific knowledge and high academic performance	Rapid and effortless learning in preschool and school (e.g., computer program, language, and mathematics) and performs well on tests.
Humour	Great sense of humour.
Compassion	Sensitivity, a sense of fairness, conscientiousness, empathy, and responsibility.
Other examples	At time, bluntness and non-flexibility in socializing with others and question authorities in ways that can be perceived as negative.

Note. The examples should be read as in relation to same-age peers.

Opportunities for All Children to Demonstrate Their Abilities

The second factor reflects that teachers should provide challenges for all children to make it possible for them to demonstrate their abilities. Teachers who provide challenges, for example a problem to be solved, are likely to stimulate children to express themselves in various ways and perform at levels that display giftedness and talent, making it possible and easier to identify gifts and talent among children. Articles related to the second factor are those numbered 2-4, 6-12, 15, 17-18, 21 and 22, and explicitly 4, 17 and 22.

Identifications Strategies

The third factor, closely related to factor 2, focuses on strategies that teachers should be familiar with

and use to identify giftedness and talent among children, according to the review. This factor implies that several strategies (Table 4) are useful and valuable for teachers. Strategies relate to one child, a few selected children, or the whole class, and different methods, instruments, and media are useful and valuable. Articles related to the third factor are 2-4, 6-12, 14-15, 17-19, 21 and 22.

Table 4. Identification strategies presented in the articles and descriptions

Strategies	Descriptions
Observation	A teacher observes children and identifies characteristics of giftedness and talent.
Comparison	A teacher compares a child's abilities, test results or grades with those of same age peers and makes a conclusion regarding giftedness and talent.
Teacher nomination	A teacher nominates a child whom he/she thinks is gifted and talented.
Self-nomination	A child tells a teacher of his/her giftedness and talent, the teacher listens and recognises this.
Peer nomination	A peer nominates a child whom he/she thinks has outstanding abilities.
Video recording or pictures and analysis	Video recording and analysis of a child's characteristics (giftedness and talent). One example is a recording and analysis of a child's dance movements to identify early dance talents via the instrument Measures of Creativity in Sound and Music developed by Wang in 1985 (see article 4).
Portfolio	Having a portfolio for each child in a preschool or school. A portfolio comprises samples (e.g., texts, photographs) of a child's educational activities and work, and shows a child's development over time. A teacher follows and analyses a child's development through a portfolio and makes a conclusion regarding giftedness and talent.
Interview	A conversation regarding giftedness and talent.
A school contest or competition	A contest or competition in which children demonstrate their abilities. A teacher observes and identifies characteristics of giftedness and talent. "Contents and competitions serve as a means to spot talented students" (18, p. 7).
Screening test	A teacher screens the whole class or some selected children by means of a screening tool. Screening is useful and valuable in the beginning of an early identification process, "which involves selecting the potentially gifted and talented from among the students" (18, p. 7). Screenings are universal or near universal; "universal screening provides the best opportunity to identify the highest number of students with gifted potential" (16, p. 430). Two examples of screening test: • Naglieri Non-Verbal Ability Test7 (NNAT2) developed by Naglieri in 2008 (see article 7) is used to assess general abilities through non-verbal tests. • Cognitive Abilities Test7 (CogAT7) developed by Lohman in 2011 (see article 7) is used in groups, covering verbal, quantitative, and non-verbal ability domains.
Tests	Tests developed to identify gifts and talents. Examples are: • Gifted Identification Kit developed by a research team in the USA, to discover gifted children through ten different learning settings, including mathematical, analytical, spatial, and linguistic settings. • The Primary Mental Abilities Test (PMA 5-7), developed by Thurstone and Thurstone in 1981 (see article 8), widely used for prequalification (8, p. 447) consisting of subsections for language, discrimination ability, concept of number and space. • Goodenough-Harris' Draw-a-person Test for children, developed by Harris in 1963 (see article 5 and 8), is a general aptitude test to measure mental development.
Structured observation	A teacher observes children in everyday activities and identifies characteristics of giftedness and talent using structured observation. One example is: • Teacher Observation Forms (TOF), developed by Leroux and McMillian in 1993, (see article 8) to nominate potentially gifted children. It consists of general features and characteristics of gifted behaviour, including sections on learning, creativity, and leadership.
Checklists and scales	A protocol taking the form of a checklist comprising characteristics of giftedness and talent. A teacher compares a result related to a child with one or several same-age peers. A protocol taking the form of scale (e.g., 1=never to 6=always) to identify giftedness and talent. Examples of checklists and scales are: • The Characteristics of Giftedness Scale (CGS), developed by Silverman in 1973 (see article 10), for early identification of intellectually gifted children; it captures behavioural characteristics through a four-level scale. • Scale for Rating the Behavioural Characteristics of Gifted and Talented Students, developed by Demirok and Ozcan in 2016 (see article 12), regarding teachers' perception about gifted children and their characteristics. Through a 5-point Likert scale, graded from 1=strongly disagree to 5=strongly agree, 33 items in five factors − willingness to learn (n=9), expressions characteristics (n=8), personal characteristics (n=6), learning characteristics (n=6), and mental characteristics (n=4) − are considered. • Having Opportunities Promotes Excellence (HOPE-scale), developed by Peter and Gentry in 2012 (see article 15), to identify characteristics that may indicate giftedness and talent in children from low-income and/or culturally diverse families/backgrounds "who may not 'shine' academically"

	(15, p. 425). Eleven items are sorted as academic (n=6) and social (n=5). Examples include eager to explore new concepts, thinks outside the box, and shows compassion for others on a 6-point scale (1=never to 6=always). • Scale for Rating the Behavioural Characteristics of Superior Students (Renzulli scale), developed by Renzulli in 2002 (see article 14). Three extracts from this scale are: "The student demonstrates: advanced vocabulary for his or her age or grade level, the ability to grasp underlying principals, the ability to deal with abstractions". The answer is 1=never, 2=very rarely, 3=rarely, 4=occasionally, 5=frequently or 6=always.
Questionnaire	A teacher and/or parent answers a questionnaire in which giftedness and talent are in the foreground.

Note. Descriptions of instruments are created from the explanations in the articles.

Collaborations

The fourth factor (theme) demonstrates that teachers should collaborate with other professionals and parents during early identification. For example, teachers should cooperate with second language teachers and special education needs coordinators since they may have other insights on gifts and talents that the teachers do not have. Two more examples are a child or school psychologist who helps a teacher to identify giftedness, for example using WISC-R, and an administrator who cooperates during the administration and conduct of standardised tests. Articles related to this element of the fourth factor are 1, 3, 5, 9, 17-18 and 20-21.

This factor also revolves around teachers interacting and collaborating with parents. The theme reflects the importance of parents (i.e., a child's caregiver) sharing information about their child, and teachers listening to parents. This information from parents may encompass descriptions of gifts and talents, and also any difficulties those children may have (i.e., twice exceptionality). One quote from article 8 is: "It is an undeniable fact that parents and teachers are indispensable in the early identification of gifted children" (p. 449). Another quotation (article 18) is as follows: "From parents to teachers, everybody plays a vital role in determining students with giftedness" (p. 5). Parents' motivation for early identification is a decisive factor, and, at times, a formal request from a parent is what initiates an early identification process. This can be referred to as a parent nomination. For example, a parent observes his/her child, makes recordings or a portfolio, compares with other children, and tells a teacher of his/her child's giftedness and talent. The Parent Observation Form (POF), developed by Leroux and McMillian in 1993, is one example of an observational form for parents; it contains general features and characteristics of children's gifted behaviour. However, at times, parents can overestimate their children.

Articles related to this element of the fourth factor are 5, 6, 8-10, 17-19 and 21-22.

Teacher Education and Professional Development

The fifth factor implies that teacher students (i.e., prospective teachers) should be given opportunities to acquire knowledge about giftedness and talent, and early identification, for example by way of a (compulsory) course on giftedness and talent within their teacher education. Articles related to this element of the fifth factor are 1-2, 9 and 20.

This factor also implies that teachers and other staff members already working in a preschool group or school class should be given opportunities to continuously develop and increase their knowledge about the characteristics of giftedness and talent, and early identification, as required, for example by way of in-service training, an online course (perhaps the course given to teacher students), webinars, workshops, academic conferences, and a professional learning community. According to the review, other ways include the use of books, brochures, television programmes, and seminars. Articles related to this element of the fifth factor are 1, 8-9, 12 15, 20 and 23.

Furthermore, according to the review, some teachers experience uncertainty about identifying gifted and talented children while simultaneously expressing a desire to learn and know more, for example about characteristics of giftedness and talent and ways to identify them. Well-educated teachers prepared for these matters easily notice characteristics of giftedness and talent and are also aware of various methods strategies of identification and how to make these (more) equitable.

Contextual and Environmental Factors that Contribute to Well-Functioning Inclusive Education

The results continue with RQ2. In addition to early identification, five factors (themes) were created in the second analysis:

(2.1) Policies recognising inclusion and gifted and talented children

(2.2) An appreciation of diversity

(2.3) Additional educational provisions

(2.4) Peer interactions and learning

(2.5) Home-school partnership

Policies Recognising Inclusion and Gifted and Talented Children

The first factor stresses that inclusion and gifted and talented children should be recognised in educational policies and recommendations. One example is to advocate for additional educational provisions. From such a governmental level, adequate resources should also be provided. Article 1 concludes that "it should be mandatory that all early years teachers engage with the concept of giftedness" (p. 226), and article 20 underlines the importance "of an education that allows all children to develop as far as possible" (p. 282). Article 23 concludes: "To meet the learning needs of highly able children, the government should reform the education system and provide more educational resources so that highly able children are properly supported in regular class teaching" (p. 13). Articles related to the first factor are 1, 12, 17-18, 20 and 23.

Appreciation of Diversity

The second factor reflects the importance of teachers appreciating all children, including gifted and talented children. Some examples include: teachers who provide children a secure everyday life in preschool and school; teachers who are willing to support and stimulate children in their learning; teachers who ensure that children sense success, accomplishment, and meaningfulness; and teachers who are aware of twice-exceptionality and pay attention to both special educational needs and gifts and talents in preschool and school. Articles related to this element of the second factor are 1, 13, 15, 17, 20 and 23.

This theme also reflects the importance of principals appreciating all children at their preschools and schools, including the gifted and talented children. Principals should demonstrate an insight (such as knowledge about giftedness and talent), a willingness to cater for all children, and provide adequate resources (e.g., time for planning and collaboration with colleagues) to teachers. When given these resources, teachers can provide the necessary support and additional educational provisions to the children. Article 20 states that principals "have a key role in terms of if and how gifted children are supported" (p. 271). Articles related to this element of the second factor are 3, 9, 18, 20 and 23.

Additional Educational Provisions

The third factor indicates the importance of giving additional educational provisions to gifted and talented children to ensure they receive a suitable education. According to the review, there are several types of educational provisions. These are inclusive and are referred to as challenging learning tasks and stimulating activities, such as extra or more work, additional tasks, activities, and homework. They also encompass enriched activities, enrichments, and enrichment programs to help children develop interests; differentiated programs, different tasks, activities, and programs; projects rooted in the children's interests; and acceleration (e.g., an acceleration program or grade skipping). These often include opportunities for high-level thinking and assignments aligned with the child's strengths and interests, aiming to motivate and inspire, as well as offering opportunities for a child to exchange ideas, solve problems, conduct experiments, participate in discussions, and engage in tasks on a higher abstract level. These provisions are also referred to as gifted programming, special programs, special classes in selected subjects away from their class, elements of pull-out (e.g., a mentor outside his or her regular classroom, separate special classes,

and special out-of-school activities like weekend, summer or holiday programs and courses), which are not always inclusive oriented.

For these provisions, a wide range of activities (e.g., various types of teacher instructions, brainstorming, group work and self-discovering learning, and teachers who model, interact, scaffold, and endorse), materials (i.e., a variety of supplementary materials such as advanced reading material), and technology tools (e.g., mind and intelligence games) are needed. For this, curricula flexibility and a flexible pacing are also necessary, along with less crowded classrooms, larger classrooms, classroom modifications, teacher energy and willingness, and teachers who collaborate with others.

According to the review, inclusive education benefits gifted and talented children and their peers. Two reasons are that gifted and talented children encourage their peers to pursue excellence, and they develop social skills in inclusive education. However, there are concerns that inclusive education may curb the development of gifts and talent. Therefore, the following conclusion, relating to partial inclusion, is made in article 18: "inclusion with adjunct special sessions or classes might be a better learning set-up" for gifted and talented children (p. 8). Articles related to the third factor are 1, 3-4, 7, 9, 13, 15, 17-21 and 23.

Peer Interactions and Learning

The fourth factor demonstrates the importance of teachers encouraging peer interactions and learning with peers, as well as between like-minded gifted and talented children. Having gifted and talented students together is what 'like-minded' refers to. According to the review, gifted and talented children need and benefit from peer interactions, also with like-minded, for example, facilitated through enrichments, group work, or a special class or similar. Articles related to the fourth factor are 3, 9, 13, 17 and 18.

Home-school Partnership

The fifth factor highlights the importance of teachers working in partnership with and supporting families of gifted and talented children. Teachers need to meet these families with a positive attitude, helping parents to understand the characteristics of giftedness and talent when this is new for them, and supporting them in how to cater for a child with gifts and talents. When working in partnership with families and supporting them, both the (pre)school and home environment will play a significant role in the children's development, two examples being their reading skills and talent development. Articles related to the fifth factor are 9, 10, 18, 20 and 23.

Conclusion and Discussion

The review revealed various contextual and environmental factors contributing to early identification, and to achieving well-functioning inclusive education. These factors do not conflict with each other; instead, they can be understood as interplaying factors complementing one another.

The authors have created a factor model for early identification and well-functioning inclusive education targeting giftedness and talent (Figure 3). It is rooted in the review's results and provide a visual overview. The model can form the basis for important preschool and school discussions and professional development, since it shed light on factors, from the micro to the macro, in need of attention and improvements. The small circles in the model demonstrate, and remind its users of, that early identification is an ongoing process.

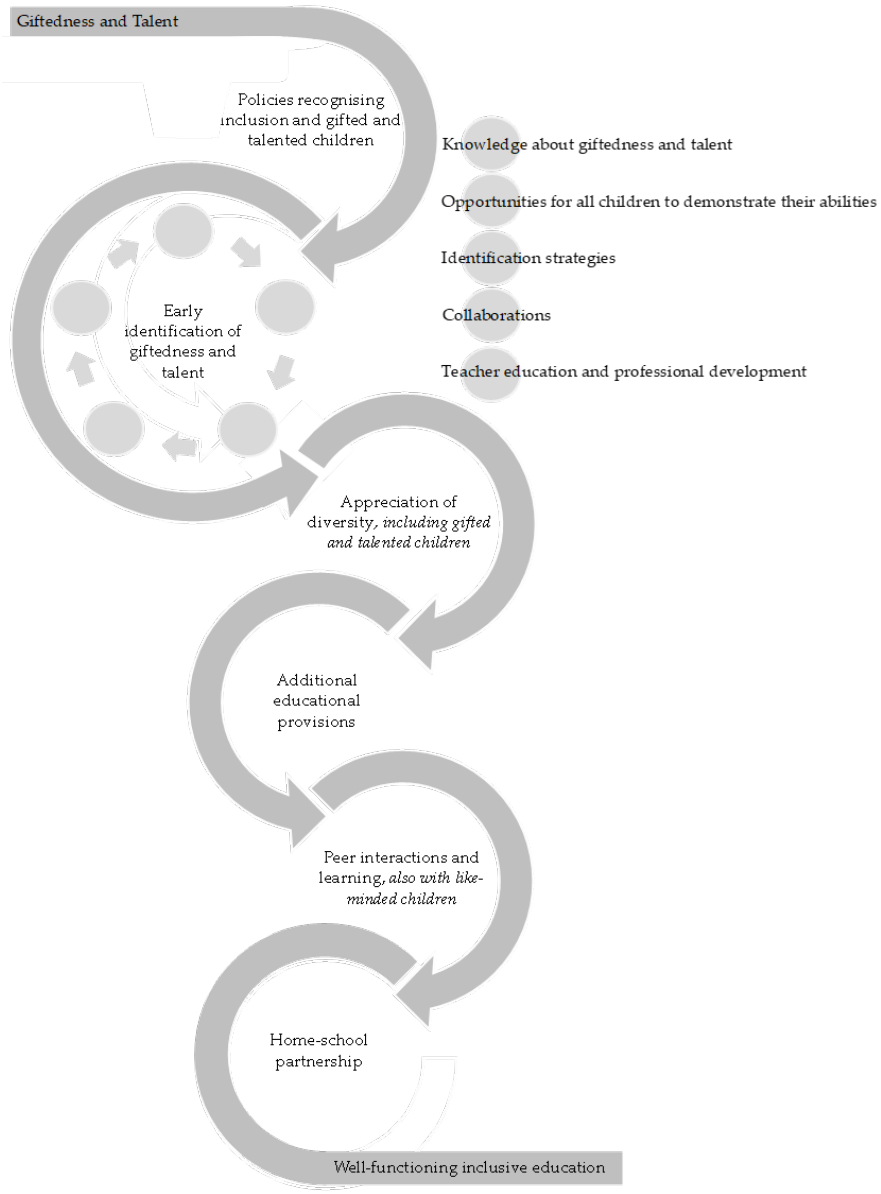

Figure 3. A Factor Model for Early Identification and Well-Functioning Inclusive Education targeting Giftedness and Talent
Note. Various contextual and environmental factors contributing to achieving well-functioning inclusive education. The small circles demonstrate early identification as an ongoing process.

All the created factors (i.e., themes) can be placed within the four contextual systems outlined in the bioecological model for human development (Bronfenbrenner & Morris, 1998, 2006). This includes the microsystem (e.g., knowledge about giftedness and talent; opportunities for all children to demonstrate their abilities; identification strategies; appreciation of diversity; peer interactions and learning; additional educational provisions), the mesosystem (e.g., home-school partnership), the exosystem (e.g., collaborations, teacher education, and professional development), and the macrosystem (e.g., policies recognising inclusion and gifted and talented children). Thus, according to the bioecological model, these are influential contextual factors on children's intellectual, social, emotional, and moral development. It is also possible to relate some elements of the factors to the biosystem (i.e., the child as a person) and chronosystem (e.g., when identification should occur). All the factors (themes) can also be related to the DMGT proposed by Gagné (2021). Corresponding to the DMGT, these are environment catalysts (i.e., social, interpersonal, and educational) for talent development, allocated in between gifts and talents in this model. It is also possible to relate some parts of the factors to the intrapersonal catalysts (i.e., the child as a person). This means that the review provides insight into early identification and well-functioning inclusive education in relation to these two theoretical models. This may facilitate and enhance the use and

value of these factors and theories in preschools and schools.

Noteworthy Results and Implications Related to Early Identification

First, the results show that early identification of gifted and talented children goes beyond IQ tests, and that a high IQ alone should not be equated with giftedness and talent. Thus, one important implication is to not solely rely on an IQ test during early identification, but rather view giftedness and talent in a broader perspective. *Second*, even though early identification is a process depending on several factors, all its elements do not necessarily require considerable amounts of a teacher's time. For example, using a scale does not need to take much time. *Third*, the results of the review suggest that early identification is a shared responsibility. Teachers play an important role but so do principals, colleges, parents, and peers. It is, however, crucial for teachers and principals to understand their pivotal role and undertake leadership positions on this matter. This is reflected in the many factors (i.e., themes) directly related to teachers and principals. These noteworthy results are acknowledged in the model's small circles (Figure 3).

Noteworthy Results and Implications Related to Well-Functioning Inclusive Education

First, the factors contributing to well-functioning inclusive education go beyond one or two additional educational provisions; policies recognising inclusion and gifted and talented children; appreciation of diversity; additional educational provisions; peer interactions and learning; and home-school partnership, also have an influence, as illustrated in the model (Figure 3). *Second*, an early identification of giftedness and talent is not a motive for exclusion, that is, a direct placement in segregated education or special classes. Rather full inclusion or partial inclusion with some elements of pull-out provisions is to be preferred, according to this review. *Third*, the results of the review suggest that child development, including talent development, is a shared responsibility. Teachers and principals play an important role but so do parents, as also illustrated in the model.

Limitations, Knowledge Contribution and Suggestions for Further Research

This review has limitations. It was restricted to articles published in English. Only two databases and some hand searches were used. The review does not reveal whether there are identification strategies that are more widespread or effective than others, or if a certain order of identification strategies is to be preferred. Moreover, under-achieving children and under-represented groups of children with gifts and talents are not in the foreground of this review. Neither does the review reveal whether there are factors that are more important than others for achieving well-functioning inclusive education.

Despite its limitations, this international scoping review provides knowledge on factors that contribute to well-functioning inclusive education, with a particular focus on early identification of gifted and talented children. The review and its theoretical framework are not context-bound but relevant in different countries and educational systems. Some examples of differences are available resources in educational settings, collaboration strategies (e.g., between teacher and parents, and between teachers, special education teachers, and specialists in giftedness and talent), teacher training opportunities, culture emphases on giftedness and talent, and policy implementation (see Adedoyin & Chisiyanwa, 2018; Al-Mahdi et al., 2021; Persson, 2010; Reis & McCoach, 2000). For example, a country with low-resource educational settings, lack of specialized educational training, or cultural barriers such as negative attitudes towards giftedness and inclusive education, will face different challenges than those with high-resource educational settings, specialized educational training, and positive attitudes. While different countries and educational systems can learn and gain insights from the review and its theoretical framework, they have various pathways to early identification and achieving well-functioning inclusive education for gifted and talented children.

Further research could investigate whether there are more influentials factors, and whether some factors are more widespread or effective than others. Further research could also explore how gifted and talented children and their parents experience early identification of giftedness and talent to ensure these are linked to positive experiences. In further research, parents and families can be mentioned in the target population, alongside children and teachers in educational settings (Table 1). Moreover, further research

on early identification and inclusive education could pay particular attention to under-achieving and under-represented groups of children with gifts and talents. In addition, further research might investigate and validate the use and value of the Factor Model for Early Identification and Well-Functioning Inclusive Education targeting Giftedness and Talent, in particular identification strategies (i.e., factor and theme 1.3) suggested in the review, in different countries and inclusive educational settings. One final suggestion for further research is innovative models for teacher training.

Relevance

The review provides important knowledge since previous studies have shown there is room for improvement on such matters as inclusive education and early identification of giftedness and talent (Brighton & Jarvis, 2017; Grant & Morrissey, 2021; Harju-Luukkainen et al., 2022; Luria et al., 2016; Margrain & Lundqvist, 2019; Pardeck & Murphy, 2018; Peters et al., 2020). Inclusive education is an international agreement and goal (UN, 2015; UNESCO, 1994), development to one's fullest is a human right (UN, 1989), and identifying and nurturing giftedness (and talent) have great significance for society at large in the progress towards a better and more sustainable world (Gallagher & Gallagher, 1994; Sternberg, 2022, 2023).

It has relevance to policymakers, principals, head teachers, teachers, parents, teacher educators, educational researchers and others interested in early identification of giftedness and talent, childhood, inclusive education, and sustainable society. The review is, as we see it, of particular importance in countries where giftedness and talent in preschool and school is a growing field of knowledge, for example Sweden.

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