

Diagnosics, Assessment, and Measurement in Relation to Inclusive Education – A Systematic Review of International Research

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Abstract

CONTEXT: This article addresses the difficulty that research on the topic of inclusive education employs a variety of terms, and it is often unclear what meanings underpin these terms – particularly in international contexts. For example, the adaptation of inclusion-related concepts, such as those set out in international conventions, across different levels of national or regional education systems leads to recontextualisations, such as the creation of terms specific to practices in various schools. We experience the same phenomenon in scientific contexts, in the form of separate strands of development linked to particular language-specific terms, particularly in international contexts. This raises the difficulty that these terms cannot be translated into English literally, nor be understood detached from their specific local and language-bound context.

APPROACH: The Meta-Project Inclusive Education (MInkBi)² worked on situating the concept of *förderbezogene Diagnostik* (support-related diagnostics) within the predominantly English-speaking international debates. This concept has recently begun to establish itself in the German-speaking academic discourse. Consequently, the project conducted a systematic review of the international literature as an attempt to gain an understanding of what is being researched under the terms: *diagnosics, assessment, and measurement* in relation to inclusive education. By trying to identify salient characteristics and patterns within the international academic discourse, we aim to relate these to the German-speaking discourse, thus showcasing research efforts from all over Germany for the global community.

FINDINGS: Research topics clustered around four main categories: target groups (primarily students with special educational needs or disabilities), tools and strategies (for diagnosis, measurement and assessment), educational circumstances (such as school environments and governance), and outcomes (including learning performance and well-being). Recurrent themes included challenges in the determination of inclusion, of special educational needs and disabilities, school placement decisions, and the centrality of behaviour as both an object and basis of assessment. These issues highlight tensions between inclusion, categorisation, and access to support.

CONCLUSION: Our findings show that patterns prevalent in German-language discourse about ‘inclusive diagnostics/ assessment/ measurement’ are reflected in English-language research across diverse international contexts. This parallel suggests the existence of shared challenges and opportunities and underscores the potential for international collaboration in the field of inclusive education.

Keywords: Inclusion, Assessment, Measurement, Diagnostics, Systematic Review

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Points of Interest

This article aims to gain an understanding of what is researched worldwide under the terms: *diagnostics, assessment, and measurement* in relation to inclusive education, and to draw a connection to the German-speaking discourse.

- Research topics clustered around four main categories: target groups (primarily students with special educational needs or disabilities), tools and strategies (for diagnosis, measurement and assessment), educational circumstances (such as school environments and governance), and outcomes (including learning performance and well-being).
- Recurrent themes included challenges in the determination of inclusion, of special educational needs and disabilities, school placement decisions, and the centrality of behaviour as both an object and basis of assessment. These issues highlight tensions between inclusion, categorisation, and access to support.
- International research on diagnostics, assessment, and measurement in relation to inclusive education mirrors debates found in the German-speaking discourse, especially the contrast between support-oriented and status-oriented diagnostics, and concerns about fairness and potential stigmatisation.

1. Diagnostics in Education from a German Perspective

As part of the Framework Programme for Empirical Educational Research, the Federal Ministry of Education and Research (BMBF) in Germany created the funding guideline: ‘Supportive Diagnostic Testing in Inclusive Education’ (*Förderbezogene Diagnostik in der inklusiven Bildung*), to run from 2021 to 2026. The fact that the BMBF dedicated an entire funding stream to the topic of diagnostics in inclusive education emphasises its importance in Germany. One of the aims of the project MInkBi is to synthesize research findings from around the world, which promises the possibility of situating the construct of ‘support-related diagnostics’ shaped by the German discourse. While the BMBF translated the German title of the funding guideline (*Förderbezogene Diagnostik in der inklusiven Bildung*) into English as ‘Supportive Diagnostic Testing in Inclusive Education’, we have chosen the term ‘support-related diagnostics in inclusive education’ as a more literal translation.

In order to situate the inherent concept against an international background, we first investigated what is understood by the term in the German-speaking discourse. It became apparent that the term *Förderbezogene Diagnostik* (support-related diagnostics) is not common in German academic discourse, which is why its definition remains vague. This is reflected by the fact that it achieves a limited number of hits in relevant library catalogue searches. It is to be expected that this will change with the increasing number of publications arising from the funding guideline projects, insofar as they reproduce the term through their work. This phenomenon illustrates the potential influence that research funders can exert on the development of scientific terminology. For example, representing one of the projects of the funding guideline, Trumpa et al. (2024) specify that support-related diagnostics are evident in lesson preparation and delivery in two ways: first, the concept involves creating learning scenarios that allow for the acquisition of diagnostic knowledge; second, it has the potential to incorporate the gained knowledge for individual support in classes. However, there is a similar term in the German-speaking discourse that can be used to establish a link to *Förderbezogene Diagnostik*

(support-related diagnostics): The term *Förderdiagnostik* (support diagnostics) has a decades-long history in the German-speaking discourse, as discussed below.

In Germany, Austria and Switzerland in the 1960s, originally medical diagnostic procedures were linked to learning processes, and the term *Pädagogische Diagnostik* (pedagogical diagnostics) was coined by Ingenkamp (Ingenkamp & Lissmann, 2008). Over the course of time, a large number of different categorisations and subcategories of this concept emerged, for example, the distinction between educational diagnostics in the narrow vs. broad sense, assignments, learning processes, status, and support diagnostics (Beck, 2023). In the context of special education, standardised test procedures for status diagnostics became common, which assigned pupils to certain disability categories, based primarily on the outcome of intelligence tests (Bundschuh & Winkler, 2019). In the 1970s, representatives of a *critical special needs education* contrasted these test procedures with a process-oriented diagnostic perspective, which became known as *Förderdiagnostik* (support diagnostics) (Neumann & Lütje-Klose, 2020). One author in this field, Kobi (1995), described *Förderdiagnostik* (support diagnostics) as referring in its broadest definition to programmatic, methodical, situation- and case-related collection and processing of information relevant to the teaching and learning process. As a result, diagnostic procedures in special education have developed further, increasingly taking into account other factors that go beyond intelligence testing (Neumann & Lütje-Klose, 2020). Nowadays, diagnostic procedures used in special education in Germany usually contain not only aspects of *Förderdiagnostik* (support diagnostics), but also the so-called *Feststellungsdiagnostik* (assessment diagnostics) (Gebhardt et al., 2022; KMK, 2019). *Feststellungsdiagnostik* (assessment diagnostics) is conceptualised as comprehensive status diagnostics with the purpose of determining special educational needs and the entitlement to special educational support, e.g. a type of school as place of support (Gebhardt et al., 2022). In contrast, *Förderdiagnostik* (support diagnostics) is described as process-oriented diagnostics for planning individual educational programmes, which assesses the current learning status at fixed points in time, in order to recommend support options (Gebhardt et al., 2022). Particular forms of *Feststellungsdiagnostik* (assessment diagnostics) vary considerably between different regions and federal states in Germany, and are viewed as being less beneficial with regard to the inclusion of pupils into the classroom community and their personal learning progress, as well as being associated socially with stigmatisation (Borel et al., 2025; Galeano Weber et al., 2025).

Germany's extensive history of special educational diagnostics is intrinsically linked to the group of children and young people categorised as having disabilities or special educational needs. Thus, the discourse on inclusive diagnostics is firmly anchored within these established structures. In view of the given context, it is apparent that conventional approaches to broader educational diagnostics must evolve to become more inclusive (Reich, 2015). At this juncture, it is imperative to acknowledge the contributions of several authors in the field, who have conceptualised diagnostic frameworks designed to address inclusive pedagogical practices (e.g., Boban & Hinz, 2016; Prengel, 2016). The projects in the funding guideline 'support-related diagnostics in inclusive education' deal with several different forms of diagnostics: those that do not relate to a previously classified group of pupils (e.g., DiaGU); those that relate to a specific group of pupils who are categorised as having special educational needs (e.g., schAUT); those that relate predominantly to teaching-related concepts of diagnostics (e.g., KI-ALF); and those that examine procedures for determining special educational needs (e.g., FePrax, InDiVers). It can therefore be assumed that the term *Förderbezogene Diagnostik* (support-related diagnostics) emphasises the aspect of support in a positive sense for individual students in inclusive education scenarios – an approach which unites the funded projects in researching diagnostics.

In summary, various concepts of diagnostics are relevant in the context of inclusive education, and these are currently under discussion in German-speaking countries. As a research team, we found that

different aspects of diagnostics emerged, depending on the terms that researchers use for literature searches. Based on our findings, we assume that similar inconsistencies could exist in other language domains, and that the international discourse might have developed its own momentum due to the translation of literature from other languages into English. The aim of our research was to provide an initial overview of elements and perspectives that characterise the international discourse on diagnostics in the context of inclusive education, and thus to facilitate the tracing of connections and common patterns between the discourses at different levels. However, we faced the challenge of conducting a comprehensive review without limiting the scope in advance by using restrictive search terms. At the same time, we aimed to avoid unconsciously projecting dominant conditions in the German-language discourse onto the international level. The cautious approach of a systematic review appeared to be the most suitable method for preventing the reproduction of prior knowledge or bias that may be linked to certain terms in this field.

2. Methodology of the Systematic Review

The term *systematic review* refers to a large number of scientific studies that, despite sometimes differing approaches, all endeavour to provide an overview of the current state of knowledge on a specific topic, usually guided by stated research questions. Such reviews have in common the collection, presentation and evaluation of published research findings (Arksey & O'Malley, 2005). The *systematic* component of these procedures refers to the need to present the content, analysis and findings in a comprehensible manner, based on generally recognised methodology, in order to withstand criticism with regard to quality issues such as plausibility and bias (Pati & Lorusso, 2018). The structure of this review is based on the SALSA method according to Grant and Booth (2009), which describes four consecutive work steps: Search, Appraisal, Synthesis and Analysis. We conducted our search using the two literature search portals ProQuest and EBSCOhost, both of which index the most common databases in educational research and cover an extensive range of available records in the field. In order to focus on our stated research questions (see below), we decided to narrow down the search to the following seven literature databases to identify peer reviewed literature in English: PSYNDEX Literature with PSYNDEX Tests, APA PsycArticles, APA PsycInfo, ERIC, ASSIA, IBSS, LLBA.

As that the term *Diagnostik* (diagnostics) itself covers a variety of different meanings in the German education system, ranging from assessing pupils' learning progress to assigning support measures and others, it is difficult to find an adequate English translation that is equivalent in content. Simply translating the term *Förderbezogene Diagnostik* as *support-related diagnostics* and determining what is known about comparable issues appeared to be inappropriate in attempting to do justice to the challenges posed by differing meanings of terms and the resulting prioritisation of content. To ensure an extensive grasp of the international discourse on diagnostics in the context of inclusive education, we developed the following English keywords during conversations with colleagues from various countries: inclusive diagnostics/ assessment/ measurement. This gave rise to the following research questions:

- How are the terms 'assessment/ measurement/ diagnostics' conceptualised and researched internationally in relation to inclusive education?
- What parallel or divergent patterns emerge internationally compared to the German-language discourse?

It is possible that publications that could make interesting contributions to answering our research questions employ different terms to those used in our searches. Our searches were based on key terms in the form of word stems with variable endings (see below), and thus did not include any articles that were not tagged accordingly. This represents a necessary limitation of the current research project.

Therefore, it should not be assumed that this systematic review covers the entirety of all studies on this topic; rather, it should be understood as highlighting a snapshot of the current international discourse. In order to make the search as comprehensive as possible, three individual keyword searches were carried out in each of the two research platforms:

1. 'assessment' AND 'includi*'
3. 'measurement' AND 'includi*'
2. 'diagnos*' AND 'includi*'

As the UNCRPD³ was adopted in December 2006, the period chosen for the publication dates of papers was 2007 until the time of the search, which was run in July 2023. This resulted in a total of 1,236 search hits, and these papers were imported into a literature management programme (citavi). After duplicates (and one non-English paper) were removed (n = 126) the sample was reduced to 1,110 records.

2.1. Screening Process

In accordance with the recommended process for systematic reviews by Grant and Booth (2009), the second step (appraisal) involved evaluating and selecting the studies found during the initial search phase, using predefined inclusion and exclusion criteria.

2.1.1 Screening Step: 'Reference to Formal (Pre-/School) Education'

We decided to take this initial step in order to exclude publications that were irrelevant to the domain of formal education, with the expectation that we could do so without acquiring the full original document in each case. However, it became apparent that for some texts, obtaining the original literature was necessary, as the abstracts did not always provide sufficient information. We opted to take a broader view of the 'reference to education' screening step, to encompass all areas and levels of education, regardless of age (from pre-school to vocational training/ higher education). The criterion for including a publication was that the text should focus on the topic of education, rather than merely mentioning it as a marginal topic. This enabled us to eliminate entirely unrelated contributions from the fields of *chemistry, economics, computer science*, etc., which had no educational relevance. Even articles that could not be immediately discarded (e.g., dealing primarily with *workplace inclusion, social inclusion of adults, or issues in research*) were eliminated by mutual agreement among the team if they lacked sufficient educational references. Following this step, we were left with 558 publications in our sample.

2.1.2 Screening Step: 'Document Type'

For the second selection step, it was necessary to consider what type of documents we wanted to include in the sample, by determining the 'document type' of the papers found. In this respect, we decided to limit the selection to articles in scientific journals. We therefore decided to exclude, for example, letters to the authors, book reviews, book recommendations, and collections of conference posters, as well as entire anthologies – some of which had ended up in the sample. With regard to the methodological orientation of the contributions, we decided to include both empirical and non-empirical work, as well as conceptual, explorative and theoretical contributions. It was meaningful for us to include all these approaches, since valuable contributions in the educational sciences are often developed without using empirical methods. Another reason for including conceptual and theoretical contributions was that we were investigating the understanding of a phenomenon that can be defined differently in various

³ Convention on the Rights of Persons with Disabilities of the United Nations.

contexts. After excluding inappropriate document types, the total number of publications remaining in our sample was 524.

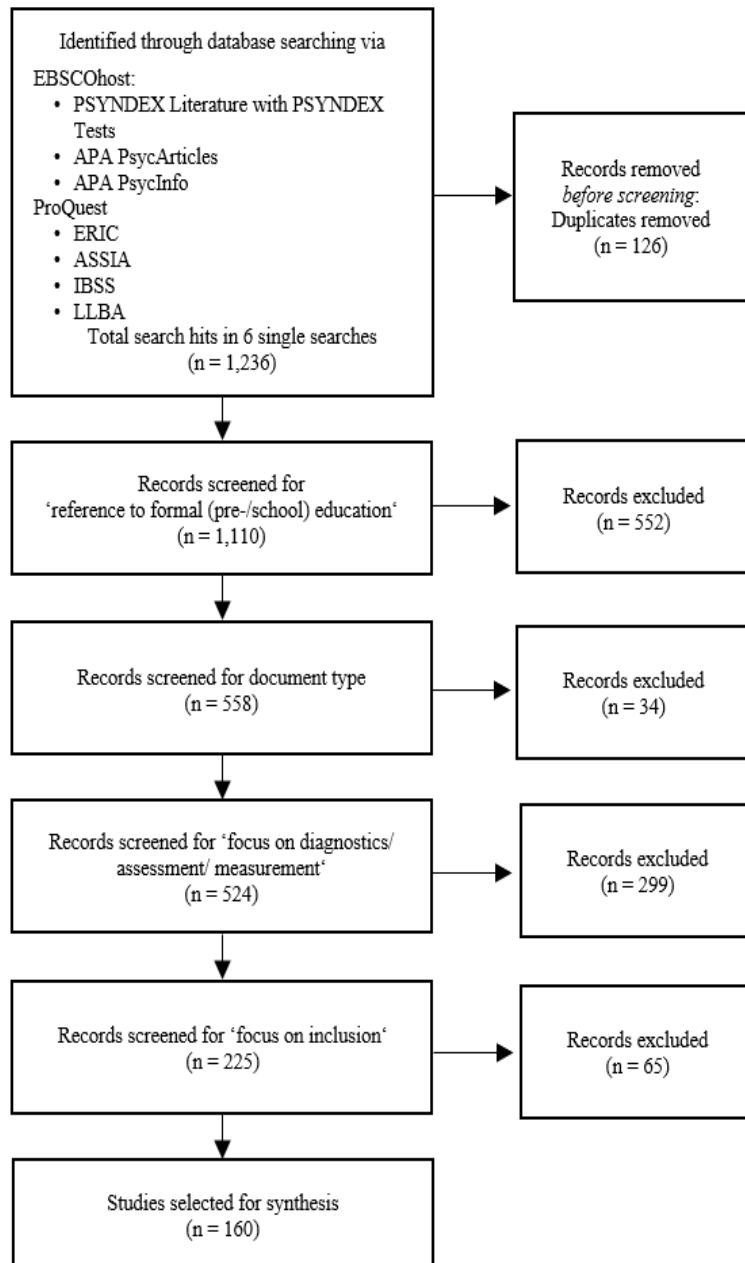
2.1.3 Screening Step: ‘Focus on Diagnostics/ Assessment/ Measurement’

In this selection step, we were confronted with the challenge that ‘measurement’ and ‘assessment’ in particular are terms used in science to describe research work and procedures. Although these words were used several times in numerous articles in the sample, they were not necessarily related to learning processes, school, teaching, or education. For example, if a scientific measuring instrument such as a questionnaire was ‘assessed’, this did not necessarily mean that the content to be recorded by respondents was related to *diagnostics/ assessment/ measurement* with regard to inclusive education. Thus, in order to make the selection of papers as accurate as possible, we decided to include only those that showed a thematic focus on the topic of diagnostics/ assessment/ measurement in relation to formal education scenarios. Papers that dealt with *diagnostics/ assessment/ measurement* more as a marginal topic were therefore excluded. After this selection step, a total of 225 publications remained in the sample.

2.1.4 Screening Step: ‘Focus on Inclusion’

This selection step challenged us as a research team to think about the definitions of inclusion with which we were familiar, and beyond. We noticed that in addition to the term *inclusion*, various synonyms were used in the papers found, or related topics were discussed, for example *integration, individualised education, learning curricula, categorised children, school placement, equity* or *special education*. As a criterion for retaining studies, we decided – referring to our original search terms – to restrict searches to the word stem *includi** (which allows different endings, such as *inclusive, inclusion*) in connection with formal education. We were well aware that studies dealing with similar issues under other terms would be excluded; for example, papers focussing on *social inclusion* would be preserved, while papers using *social participation* as a term might be excluded, even though the same or similar issues might be addressed. It was also to be expected that papers that refer conceptually to the *abolishment of barriers* or *exclusion* would not be identified for the final sample. Following our research questions, our team also decided against including papers that used *integration* as a synonym. This represents a necessary limitation of the research design, resulting from the formulation of our particular research questions. Instead, as in the previous selection step, the conciseness of the use of the term *includi** in relation to the overall text was used to determine the extent to which a paper refers to it in terms of content. Articles that focussed on *inclusion/ inclusive education* were retained, while articles that dealt with this topic only marginally were excluded; for example, studies that took place in an *inclusive classroom* or *inclusive setting* but did not address the topic further were excluded. After excluding unsuitable papers, the final sample consisted of a total of 160 publications.

Figure 1: Flow Diagram of Search Process (based on Page, Moher, et al., 2021)



2.2 Analytical Approach and Coding Process

After the selection process, the content of the remaining publications was transferred to a programme for qualitative data analysis (MAXQDA). Due to the size and diversity of the sample, the research team decided to base the analytical approach on the procedure referred to as 'thematic synthesis' (Thomas & Harden, 2008; Thomas et al., 2017). In addition to summarising relevant research findings from the selected papers, the research team was particularly interested in working out the implicit perspectives and constructs of meaning in the texts, in order to make them available for the international discourse. Beyond a purely descriptive level, analytical and interpretative processes, as well as discussions within the team, were necessary in order to grasp the meanings of these implicit patterns of interpretation.

Thematic synthesis makes it possible to generate interpretative constructs, explanations or hypotheses that are not explicitly contained in the individual studies, over and above a pure summary of the results (Thomas & Harden, 2008). It offers the opportunity to first gain an overview of the content in the sample papers, and then to identify commonalities, argumentative patterns and new insights across the studies. Thematic synthesis is also recognized as a way of providing insights for a wider audience from academic, policy and practice domains, while preserving the context and complexity of the research findings (Thomas & Harden, 2008). This feature aligns with the aims of our meta-project, which has a strong focus on the transfer of research findings.

The research team first carried out deductive coding of the framework data (e.g., countries associated with the authors, methodological approach of the studies, whether there was an international or national perspective, name of the journal, year of publication). At the same time, the first inductive coding steps were initiated by creating in-vivo codes that represented the relevant topics evident in the papers. In the course of further coding steps, these codes were repeatedly enriched, condensed and revised, partly summarised and partly differentiated, so that a complex code system was created at the end of the process. Codes that seemed particularly relevant to the research team were selected in order to examine and synthesise the information they contained in more detail. The manual coding process done by the research team was supported by the new AI functions in the coding software, which generated suggestions for new sub-codes, or facilitated the production of text summaries. The AI function was used exclusively to support the inductive coding process, while all analytical decisions were made by the researchers.

3. Findings

This chapter presents the main findings from the systematic review. The studies cited throughout the following sections, as well as in the following chapter 4 (Conclusions), are drawn from the analysed sample itself and serve to illustrate central patterns and thematic foci that characterise the international research landscape. While sections 3.1 (Overview of the Sample) and 3.2 (Content Taxonomy) present the results in a descriptive manner, section 3.3 (Fields of Interest) provides a more in-depth analysis, reporting findings from individual studies within the sample.

3.1 Overview of the Sample

Texts in the sample came from 106 different journals, with 81 individual journals providing one article each, 17 journals providing two articles each, and eight journals providing three to 12 articles each (45 of the 160 articles – approximately 28% of the total sample – came from eight journals). The *International Journal of Inclusive Education* and the *International Journal of Disability, Development and Education* stand out in particular, which together provided 22 articles in the sample (see Table 1).

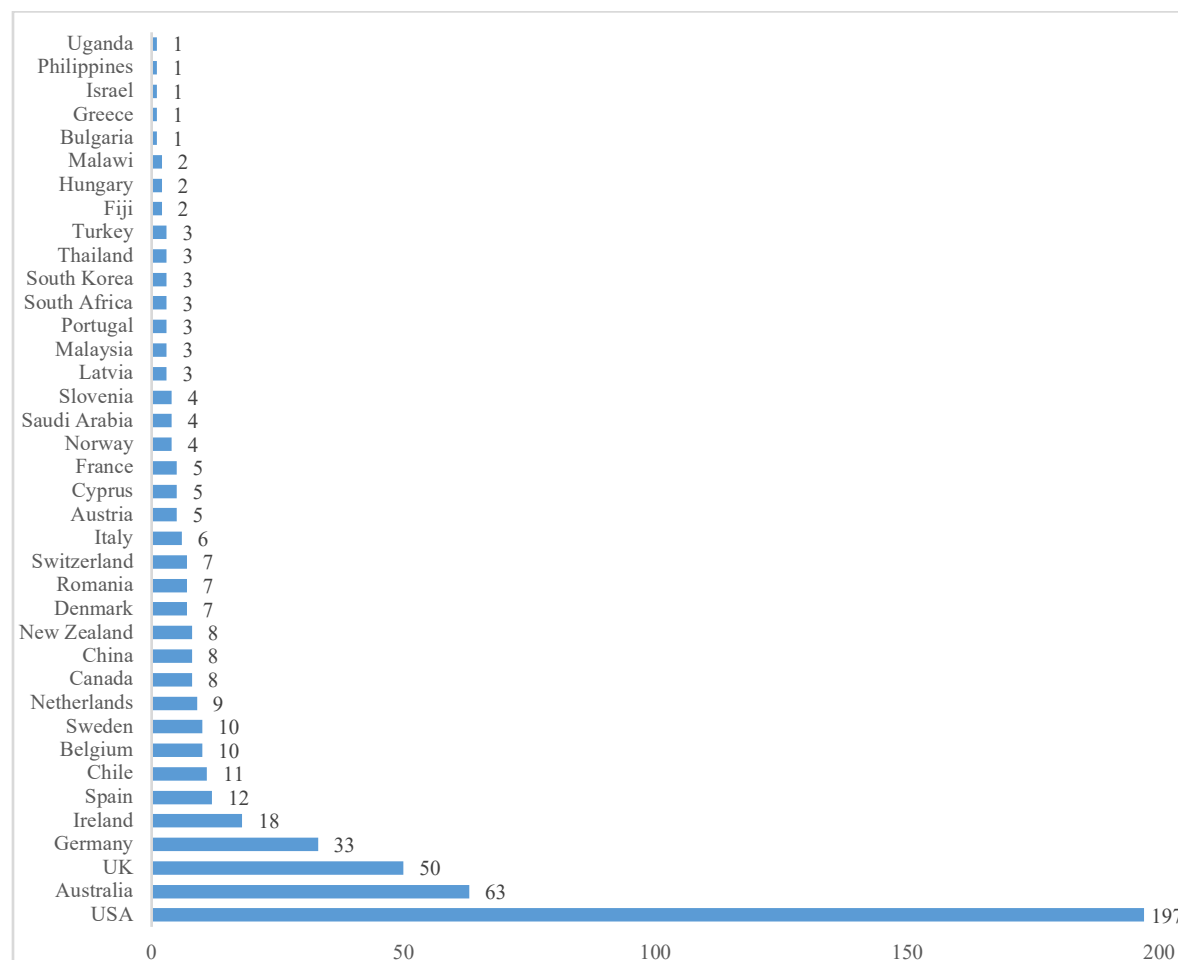
Table 1: Most Frequently Represented Journals as Sources of Articles in the Sample

8 Most Frequent Journals	Number of Papers
<i>International Journal of Inclusive Education</i>	12
<i>International Journal of Disability, Development and Education</i>	10
<i>Emotional and Behavioural Difficulties</i>	5
<i>Journal of Research in Special Educational Needs</i>	5
<i>European Journal of Special Needs Education</i>	4
<i>Education Sciences</i>	3
<i>Assessment in Education: Principles, Policy and Practice</i>	3
<i>Autism</i>	3
<hr/>	
Total: 106	

Thirty-one papers were written by single authors, while 129 papers were submitted by teams of authors. The sample included papers by authors who could be assigned to a total of 38 different countries through their professional affiliation (see Table 2). There were 36 papers by international author teams representing at least two different countries⁴. Authors from the USA, Australia, the UK and Germany were most frequently represented, together accounting for more than half of the authors named. Due to existing hegemonic structures and the search terms being provided in English, it is not surprising that a strong influence of Western countries (or representatives of their research institutions) is evident in the international discourse. This needs to be made transparent in the context of the current work, insofar as the international discourse (represented to a certain extent by the sample provided) is to be compared with the specialised German-speaking discourse.

⁴ It should be noted that some authors were counted more than once, as they contributed to several papers in the sample. Authors were counted once per country if they were assigned to several organisations in different countries.

Table 2: Countries Associated with the Authors (Names: 523)



There were several papers – especially those showing a more theoretical or conceptual approach – that did not delineate a particular context, and discussed concepts or phenomena on a general level on aspects relating to both national and international circumstances. Despite the presence of international references cited in the remaining articles, the majority of them may be clustered as follows, based on the perspective they present. Around 120 papers focused on a single national territory or region. Some of these expressed this national perspective explicitly, for example, by presenting the support services that are available for a certain group in a particular country. Others were based on an implicit national perspective, for example, by selecting a sample for empirical studies limited to a national territory. The same differentiation may be applied to the 30 papers which reflect an international perspective, for example: implicitly, by having a research team with members from different countries developing a common tool; or explicitly, by comparing the measures of different countries with regard to inclusive education.

With regard to the methodology or study design in the selected papers, a clear research design was identified in the majority of the studies, while around 15 papers provided ambiguous information on their methodological approach. In particular, 65 papers worked with predominantly quantitative methods, 35 papers with predominantly qualitative methods, and 17 papers with mixed-method designs. Some of mixed-method designs combined a form of review (mostly literature review) with subsequent empirical surveys. In addition, 10 papers worked exclusively with one form of review (meta-analysis, systematic review, literature review, etc.). The sample also included 18 articles that dealt exclusively

with the current state of research, or presented theoretical-conceptual suggestions without revealing the methodological origin of their considerations.

In papers that referred to one level of education in particular, the area most frequently mentioned in 35 articles was what most countries refer to as *compulsory education* (ISCED-1 primary education, ISCED-2 lower secondary education, ISCED-3 upper secondary education). In addition, 21 papers referred to the area of *higher/ vocational education* (ISCED-4 to ISCED-7) and 17 papers to *early childhood education* (ISCED-0) as a reference area. Only three papers were dedicated to the area of *lifelong learning* in particular.

3.2 Content Taxonomy

In order to gain a more profound overview of the content of the articles, we developed the following categories to cluster the topics covered. These categories furnish a synopsis of the subjects and themes to which the terms ‘diagnosis’, ‘assessment’, and ‘measurement’ had been related in the articles of the sample. The categorisation allows for multiple labels, since numerous papers combined several of the aspects listed below. A clear assignment of an individual article to a single category was therefore the exception rather than the rule.

3.2.1 Target Groups

The research team found that numerous papers focussed on one or several target groups. Where this was the case, it was mostly *pupils/ students/ children/ youths/ adolescents/ individuals* in the role of *learners*. However, some papers also focussed on *professionals* working in the education sector, such as *teachers* or *staff*. A smaller number of papers focussed on *families/ parents*, with two papers addressing the role of *mothers* in particular. Aspects examined in connection with the target groups were related to, for example, *learning processes, behaviour, loneliness, friendships, social inclusion or well-being of pupils, training for parents/staff/teachers, family collaboration/parental involvement in schools, or the understanding and experiences of parents about the diagnosis of their children*.

In most papers, the target groups were described briefly, with specific details provided in an addendum. While *families/parents* and *professionals* were mostly described with reference to a corresponding group of pupils, or a specific type of school, educational level, school subject or study programme, it was particularly noticeable that the descriptive additions most frequently mentioned in connection with *learners* may be summarised under the category ‘*with disabilities/special educational needs*’. Numerous papers mentioned students with *autism, ADHD, learning disabilities, intellectual disabilities, developmental disabilities, behavioural problems* etc., or with *disabilities/ special educational needs* in general. In contrast, terms such as *pre-schoolers, students in higher education, young people at risk, non-traditional learners, linguistically diverse learners, linguistic minority student, sexual minority, students from equity groups, immigrant students* or *indigenous students* were used much less frequently.

Within the target group of *professionals* working in the education sector, *teachers* emerged as being particularly prominent, e.g., *pre-service teachers, in-service teachers, primary school teachers, head teachers, special needs support teachers, special education teachers, general education teachers*. Only occasionally were other professions such as *educational psychologists, child psychiatrists* or *school teams* mentioned. The topics dealt with in connection with teachers may be summarised on the basis of two subject areas: *teacher education/ training* and *teachers’ attitudes/ beliefs/ actions/ self-efficacy*.

3.2.2 Tools and Strategies

In addition to target groups as a key feature in the selected articles, we discovered that a large proportion of the papers were dedicated to some kind of *tools* and *materials* (such as *standardized tests*, *curriculum-based assessments*, *observation tools*, *self-reporting measures*); and *strategies* or *practices* (such as *differentiated instruction* or *individualisation*, *instructional practices*, *universal design for learning* or *behaviour intervention plans*). Certain articles exhibited a more application-oriented character (e.g., *alternative practices*, *functional assessment*, *behaviour intervention plans*), while others were of a more analytical character (e.g., *self-report surveys*, *questionnaires*, *interviews*, *scales*). Articles were identified that referred to a specific school subject or teaching practices (e.g., *literacy behaviours*, *mathematics*, *science*), while others were more focussed on the development of children's competencies or skills (e.g., *speech and language skills/ development*, *oral reading fluency*, *support needs assessment*).

3.2.3 Circumstances

In parallel to the above-mentioned categories clustering key features of the articles, the research team observed that some papers referred in particular to the *circumstances* of education, for example characteristics of schools or organisations involved in educational processes, organisational structures, framework conditions for teaching, and the learning environment in general. This topic appeared partly in connection with one or more target groups, and partly independently of them. Features that were directly analysed included, for example, *accessibility*, *school type*, *school culture*, *classroom environments*, *quality of classroom practices/ instruction in the classroom*, *climate for diversity*, *age-friendly practices*, *inclusive management*. Papers that dealt with these framework conditions at a more distant level, for example, examining overarching interactions, structures and processes beyond the school/community level were categorised under the term *governance*. Related to this topic, the *funding of education* was addressed in some papers, as well as *policies* in certain areas. In addition, one paper stood out by addressing the concept of *home schooling*.

3.2.4 Outcomes

Another content priority was found in the focus on *outcomes*. In line with the inherent interest in the scientific field in analysing the effectiveness of different variables, the majority of the selected papers addressed *outcomes*, *effects*, *impact* or the *influence* of different aspects on each other. These topics included procedures that dealt directly with measuring the outcomes of learning situations, such as the *effectiveness of a training program*, or *student well-being*, *achievement* and *performance*. They also involved the outcomes of scientific instruments and methods that had been developed to analyse aspects of the learning situation, e.g., *the validation of a method for measuring teacher quality in teaching students with behavioural problems*. Another frequently discussed topic in this respect was *large-scale assessments*, in both national and international contexts. The most often thematized type of Large-Scale Assessment was PISA (Programme for International Student Assessment), with particular attention to the participation of students with disabilities.

3.3 Fields of Interest

In addition to the content areas delineated above, we identified the following notable topics as patterns which could prove fruitful in further discussions. These topics, which aroused the interest of our researcher team in the course of the coding process, allowed initial conclusions to be drawn from the review.

3.3.1 Determination of Inclusion

Regarding the *determination of inclusion*, a specific indicator was usually chosen to determine the inclusivity of a certain situation, e.g., teachers' attitudes towards the inclusion of children with disabilities (Bethere et al., 2021), or teachers' knowledge and attitudes regarding the inclusion of autistic children in a school (Derguy et al., 2023). In this regard, we agree with the statement by Kielblock and Woodcock (2023) that there seems to be a lack of measurement instruments that operationalise various aspects of inclusivity. In other words, it still seems to be an open question as to how *inclusion* can be operationalised in a comprehensive way for empirical research.

3.3.2 Determination of Special Educational Needs and Disabilities

Some of the papers discussed or analysed (formal) processes in the *determination of special educational needs and disabilities* in various countries, and the corresponding effects. The increase in clinical diagnoses also appears to be an international phenomenon, as several papers address this trend. For example, Garner and Forbes (2015, p. 225) mention that the number of students identified as 'at risk' (including disabilities and special educational needs) is growing rapidly in all schools worldwide. In addition, Bourke and Mentis (2013, p. 855) explain that assessment in special education has historically acted as a gatekeeper, due to the limited number of resources and specialized support available; and it still serves as a catalyst for deciding whether a child's needs are significant enough to justify further assistance. In particular, related consequences of those determining procedures (e.g., positive: access to support; negative: stigmatization) seem to play an increasingly important role.

3.3.3 School Placement

The *placement* of pupils in several types of schools – predominantly differentiated into special schools versus mainstream or general schools – is strikingly demonstrated in several papers. As Correia et al. (2021, p. 206) aptly summarise: "Placement involves decisions regarding the type of school where the child should be placed, determined as an outcome of the assessment, mainly an inclusive school or a special school". Notably, the selected papers seem to illuminate different perspectives on this topic. For example, Hjørne (2016, p. 540) mentions the demand that every child in Sweden "should as far as possible be included in the mainstream school"; and Fallon et al. (2011, p. 50) describe American regulations that "emphasized ensuring access for students with disabilities to the general education curriculum in the inclusive classroom, to the maximum extent possible". On the other hand, Dillenburger (2012, p. 170) states, "children with the most intensive support needs may need individual teaching assistants, special classrooms, or special school placements". While some studies analysed the process of how students are allocated into different settings (e.g., Gindi, 2020; Hamre, 2013; Ryndak et al., 2014), others examined the effects of different school placements on students' academic achievement, skills development, or behaviour (e.g., Dessemontet et al., 2012; Ferguson et al., 2020; Krämer et al., 2021).

3.3.4. Behaviour

As might be expected, the subject of *behaviour* occupies a prominent place in the sample, as evidenced by the fact that it is mentioned in the majority of the papers. Several of these studies centred on the topic in more detail, for example, by focussing on functional (behaviour) assessment (Banda et al., 2012), assessment-based intervention (Blair et al., 2007), the engagement/ participation of children (Gallagher & Odozi, 2015), or parents' perception of children's behaviour (Catubigan, 2023). Whether the topic is the measurement of student learning outcomes (Dessemontet et al., 2012), or the assignment of a

particular diagnostic status (Graham & Tancredi, 2019), discussions inevitably revert to the topic of behaviour. In most cases, student behaviour is the basis upon which assessments are conducted. With regard to behavioural issues, diagnoses of autism and ADHD among students were of particular significance in the selected papers. Despite the prevailing emphasis on student behaviour, some studies also consider teacher behaviour (Tegtmejer, 2019), or discuss teaching and measurement methods employed with regard to discrimination (Yee & Butler, 2020).

4. Conclusions

Due to the traced developments of the German-speaking discourse a close relationship between the concepts *Förderbezogene Diagnostik* (support-related diagnostics), and *Förderdiagnostik* (support diagnostics), can be assumed. Both concepts have in common an emphasis on the aspect of *support* in order to distinguish them from procedures designed to categorise students and assign them a status. Against the backdrop of historical developments, it can be assumed that both terms inherently involve a critical perspective on status diagnostics. Nevertheless, status diagnostics in the form of *Feststellungsdiagnostik* (assessment diagnostics) continues to be a common component of diagnostic procedures in special education in Germany –particularly relating to the administrative legitimization of resources and decisions regarding the type of school and educational goals of students. Furthermore, this critical perspective does not rule out the common convention of discussing specific issues or support measures for designated categories of students under the two terms mentioned: *Förderbezogene Diagnostik* (support-related diagnostics) and *Förderdiagnostik* (support diagnostics).

Based on awareness that terminology about inclusive education and related concepts are defined in various ways, and it is context-dependent across different languages and reference areas, our aim was to conduct a systematic review about what is researched internationally under the terms: *diagnostics/assessment/measurement* in relation to *inclusive* education. The coding process revealed that according to the sample of 160 systematically selected journal articles, the concepts of *inclusive diagnostics/assessment/measurement* need to be understood as multifaceted constructs. These terms encompass a broad array of practices, procedures, and conceptual frameworks, ranging from standardised assessments for determining deviations from concepts of normality (e.g., Cobb, 2016; García Perales & Palomares Ruiz, 2021), to formative, classroom-based observations for individualising learning and support (e.g., Lebeer et al., 2013). The review further emphasises that research endeavours are not confined exclusively to *students* but extend to encompassing *teachers* (e.g., Restorff et al., 2012) and, to a lesser extent, *parents* (e.g., Rose et al., 2017). Internationally, a substantial corpus of research has been dedicated to investigating *tools, materials, frameworks, strategies* or *practices* pertinent to inclusion (e.g., curriculum-based assessments discussed by Stone-Macdonald and Fettig, 2019, and function-based intervention by Reeves et al., 2013). Further topics include the *circumstances* of education (e.g., the classroom environment in Soukakou, 2012, and policy conditions in Haug, 2014), and measurable *outcomes* (e.g., academic achievement in Cumming & Dickson, 2013, and student participation in Schwab et al., 2015).

Concurrently, our work revealed considerable parallels, as the academic discourse at an international level is marked by a strong connection between *inclusion* and *special education*, much like in the German-speaking context. Our systematic review has demonstrated that *inclusive diagnostics/assessment/measurement* is a recurrent theme in the international academic discourse pertaining to pupils with *disabilities* or *special educational needs* (e.g., Scanlon & Baker, 2012; Venetz et al., 2019). Although numerous papers rhetorically invoke the idea of provision ‘for all’ (e.g., Ryndak et al., 2014), the focus of most empirical studies or theoretical considerations remains on delineated subgroups (e.g., Amado et al., 2013). While labels commonly used in special education, such as *autism* and *ADHD*, were

discussed in numerous articles (e.g., Bailey, 2010; Witmer & Ferreri, 2014), less prevalent concepts in the field, such as *sexual minorities* or *indigenous students*, were found only sporadically (e.g., McKay et al., 2023; Philpott, 2007).

Procedures for *inclusive diagnostics/ assessment/ measurement* are also the subject of critical discussion on an international level, as is the case in German-speaking discourse. The literature reviewed repeatedly addressed the issues of fairness and effectiveness of diagnostic practices, and raised concerns about (unintended) exclusion or stigmatisation (e.g., Davies, 2012; LeRoy et al., 2019). In this context, student *behaviour* emerges as an aspect to be considered. While assessments traditionally rely heavily on observing student behaviour during tests or in class (e.g., Kurz et al., 2012), it appears that recent research has expanded the scope to including issues pertaining to teaching and measurement methods regarding discrimination (e.g., Yee & Butler, 2020). Another notable concern is decisions about educational pathway or the *school placement of pupils*, with discussions on guiding processes and the consequences of these decisions, especially between special schools and mainstream pathways (e.g., Gindi, 2020). Since not all school systems worldwide have separate school types according to these domains, it seems notable that this topic appeared several times in the sample papers. In Germany, the division of state-specific education systems into general, special and inclusive sub-areas is quite common, and therefore comparisons of different educational pathways and types of schooling are considered to be a relevant issue.

Furthermore, both the *determination of inclusion* and the *determination of special educational needs/ disabilities* appear to be issues of international concern. Although various consequences of the imprecision in the determination of the two concepts and related problems have been discussed (e.g., Jansen et al., 2014; Tegtmeyer et al., 2021), no comprehensive solution or approach seems to have been developed yet, that is generally known and accepted. While we conclude that the current situation is characterised by ongoing tension between universal aspirations and the realities of categorisation in education systems (e.g., Brzyska, 2018; Dallas et al., 2016), both the international discourse and the German-language debate about *inclusive diagnostics/ assessment/ measurement* are increasingly converging towards process- and support-oriented approaches (e.g., Bourke & Mentis, 2013).

Our work revealed substantial disparities, as evidenced by the absence of international equivalents to significant German terms. *Förderbezogene Diagnostik*, for example, cannot be fully captured by conventional Anglophone terms, such as formative assessment or individualised planning. The findings of the present study affirm that patterns prominent in the German-language discourse – including support versus categorisation, operational challenges in determining inclusion, and the impact of diagnostics on educational trajectories – are equally present in English-language research conducted in diverse international contexts. This indicates not only the existence of shared challenges, but also the potential for international synergies in addressing the topic of *inclusive diagnostics/ assessment/ measurement*. Bridging differences that are rooted in language, history, and policies, by creating common understandings could improve both scientific and practical advancements towards increased educational participation and equity. This possibility reinforces our motivation to devote future work to the expected need for extensive research, communication, and translation efforts, which are essential for establishing connections between, and shared understanding of concepts and terms of different origins, on an international level.

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Acknowledgements

This project is funded by the Federal Ministry of Education and Research as part of the Framework Programme for Empirical Educational Research (Grant No. 01NV1701). The responsibility for the content of this publication lies with the author, who confirms that no conflict of interest exists.

Disclosure statement

The authors confirm no conflict of interest exists.