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Assessment of Reading Literacy in PISA-D: Connotation, Framework Design and Enlightenment

Xinyi Tian [1,*]

[1] Beijing Language and Culture University, Beijing 100083, China,

*** Correspondence:**

Xinyi Tian

txyashore@163.com

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Abstract

To assist low- and middle-income countries (LMICs) in participating in international education assessment, diagnosing their education systems, and advancing education-related Sustainable Development Goals, the PISA-D project has achieved three key innovations based on PISA. Firstly, it expanded assessment targets to include both in-school students and out-of-school youth through categorized design, filling the gap in traditional assessments that neglect out-of-school populations. Secondly, it developed a "downward-compatible" reading literacy assessment framework, adding the lower-difficulty Level 1c and optimizing item difficulty distribution to accurately reflect students' performance in LMICs. Thirdly, it designed contextual questionnaires based on Willms' prosperity model, refining equity and equality indicators to comprehensively capture deep-seated factors influencing academic performance. These innovations provide significant references for China to improve compulsory education Chinese subject assessment, particularly in enhancing the sensitivity of assessing vulnerable groups and optimizing the regional education quality monitoring system.

Keywords: PISA-D; Reading Literacy; Prosperity Model; Assessment of Compulsory Education Quality

1. Introduction

In 2014, drawing on the experience of 40 middle-income countries and 4 low-income countries participating in the Programme for International Student Assessment (PISA) since 2000, the Organization for Economic Co-operation and Development (OECD) launched the PISA for Development (PISA-D) initiative, a development assistance program. The initiative aims to enable broader participation of low- and middle-income countries (LMICs) in international education assessment through three strategic approaches: expanding the assessment population, enhancing the reading literacy assessment tools, and refining the relevant factor questionnaires. By doing so, PISA-D seeks to assist these countries in comparing educational opportunities and

outcomes within their own systems and those of other countries, strengthening their capacity for evidence-based education policy-making and feedback mechanisms, striving to reduce regional disparities, mitigating the influence of socioeconomic status, and ultimately improving learning outcomes.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) proposed a new global education goal in its 2030 Agenda for Sustainable Development—Sustainable Development Goal 4 (SDG 4)—which aims to ensure that by 2030, all girls and boys complete free, equitable, and quality primary and secondary education, acquiring relevant and effective learning outcomes; and ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy (UNESCO, 2016). The Agenda also designates PISA assessment results as a key metric for global basic education quality. Consequently, PISA is expected to include more UN member states in the future, extending its influence to middle-income countries outside the OECD. The OECD report Experience of Middle-Income Countries with PISA 2000–2015 reveals that, except for Vietnam, 15-year-old students in middle-income countries participating in PISA have academic performance lower than their OECD counterparts, with significant variability in performance among these middle-income countries. In many low- and middle-income countries (LMICs), high out-of-school rates among school-aged children mean that many 15-year-olds are ineligible for PISA testing, resulting in a national population coverage rate of less than 50% for tested 15-year-olds in LMICs (Lockheed et al., 2015). Regarding the contextual factors influencing academic performance, PISA's measurement of family socioeconomic status (SES) indicators does not fully capture the true impact of negative factors such as parental education levels, income, and poverty on academic underperformance in LMICs. These issues have compromised the scientific validity and applicability of test results in LMICs to some extent, reducing these countries' motivation to participate in PISA.

As the number of countries participating in PISA continues to grow, PISA's assessment framework and implementation model require further optimization to meet the more diverse needs of participating nations. In response, the OECD launched the six-year PISA for Development (PISA-D) project, which involves the categorized design of assessment tools and contextual factor questionnaires for in-school students and out-of-school youth. Specifically, the in-school assessment targets 15-year-old students enrolled in Grade 7 or above, consistent with PISA's original scope. The out-of-school youth assessment covers 14–16-year-olds not included in the in-school assessment, including both dropouts and students enrolled in Grade 6 or below.

PISA-D involves countries and regions across Asia, Africa, and Latin America, including Cambodia, Ecuador, Guatemala, Honduras, Lao PDR, Paraguay, Senegal, and Zimbabwe. These participants collaborated in developing assessment tools and contextual questionnaires tailored to their educational contexts.

The initiative aims to enable broader participation of LMICs in international education assessment through three strategic approaches: expanding the assessment population, enhancing the reading literacy assessment tools, and refining the relevant factor questionnaires. By doing so, PISA-D seeks to assist these countries in comparing educational opportunities and outcomes within their own systems and those of other countries, strengthening their capacity for evidence-

based education policy-making and feedback mechanisms, striving to reduce regional disparities, mitigating the influence of socioeconomic status, and ultimately improving learning outcomes.

2. The Implementation Purpose of PISA-D

2.1. The Impact of Out-of-School Youth on Pisa Test Results

Notably, the proportion of 15-year-old out-of-school students exerts a significant impact on PISA test results, as evidenced by substantial research. In many developing countries, a high proportion of 15-year-olds are out of school due to multiple economic and social factors (UNESCO, 2025). Take Vietnam as an example: in the PISA 2015 assessment, the Vietnamese sample covered only 48.5% of the country's 15-year-olds, the lowest coverage rate among all participating countries(OECD, 2016a) . OECD analyzed that the 15-year-olds not included in the sample were likely academically weaker than those tested. By comparing Vietnam's science scores with other PISA data (assuming the scores of out-of-school 15-year-olds were at or below the national median level), he estimated that Vietnam's "real" scores might be 50 to 60 points lower than its average science scores, which would mean Vietnam's ranking in the science subject could drop from 8th to 35th - 40th (Lockheed et al., 2015).

Similar situations are also observed in other countries. In some low- and middle-income countries, a large number of 15-year-olds cannot access education due to poverty and a shortage of educational resources (Lockheed et al., 2015). When these countries participate in PISA assessments, if only in-school 15-year-olds are taken as samples, the test results may overestimate the overall level of the country's students. This is because out-of-school students, often lacking systematic education, are obviously backward in knowledge and skills compared with in-school students. If this group of students is taken into account, the overall scores will inevitably be affected, pulling down the country's average scores and related rankings in PISA assessments.

2.2. The Selection Method of PISA-D Out-of-School Youth

In the PISA-D project, the selection of out-of-school youth is a complex and rigorous process. Firstly, the scope of potential out-of-school youth groups is determined through multi-channel data collection. On the one hand, statistical data from educational authorities of various countries are used to understand the dropout situation of students in different regions and schools, and to obtain preliminary lists or relevant information of out-of-school students. For instance, some countries regularly calculate the dropout rates of students in compulsory education and record information such as the time and reasons for students leaving school, which provides an important basis for determining the scope of out-of-school youth (OECD, 2020a).

On the other hand, cooperation is carried out with community organizations and non-governmental organizations to utilize the information they have acquired in their grassroots work. These organizations come into contact with a large number of out-of-school youth who have dropped out due to poverty, family changes and other reasons while carrying out poverty alleviation, educational assistance and other work, and they can provide more detailed and

accurate information about out-of-school youth, including students' family conditions and where they go after dropping out of school.

After identifying the potential groups, a combination of stratified sampling and random sampling is adopted to select samples. Stratification is conducted according to factors such as the economic development level and educational resource status of different regions. In areas with backward economies, scarce educational resources and high dropout rates, the sampling proportion is appropriately increased to ensure that out-of-school youth in these areas have sufficient representativeness. Then, random sampling is carried out within each stratum to select a certain number of out-of-school youth as the final samples. For example, in a certain poverty-stricken area, after preliminary data statistics, there are 500 out-of-school youth, and according to the sampling plan, 50 are determined to be selected for research. 50 are selected from these 500 through methods such as random number generation to ensure that each out-of-school youth has the same probability of being selected.

Meanwhile, to ensure the comprehensiveness and accuracy of the samples, cross-validation and supplementation of the samples are conducted. Data obtained from educational authorities and community organizations are compared to check for omissions or duplicates. For some remote areas or special groups where accurate information is difficult to obtain, supplementary sampling is carried out through on-site visits, volunteer surveys and other methods, so as to make the selected samples of out-of-school youth truly reflect out-of-school groups with different backgrounds and situations as much as possible, and provide reliable data support for the subsequent research and evaluation of out-of-school youth in the PISA-D.

Based on the above analysis, PISA-D aims to establish a more inclusive and equitable international student assessment framework to support evidence-based policy-making in low- and middle-income countries (LMICs) and assist them in assessment progress toward achieving the 2030 Education Sustainable Development Goals (SDGs). The project’s evaluation objectives are specifically reflected in the following three aspects:

First, by expanding the assessment scope to include both in-school students and out-of-school youth in participating LMICs, enhancing the sensitivity of literacy assessment tools, and developing targeted contextual factor questionnaires and data collection instruments, PISA-D seeks to comprehensively capture disparities in student learning, teacher instruction, and school education system operations in LMICs. This provides a platform for these countries to diagnose their education systems, compare the strengths and weaknesses of educational systems, and identify areas for improvement. Meanwhile, maintaining the comparability of assessment tools and questionnaires with PISA enables in-depth analysis of how contextual factors across different backgrounds correlate with student academic achievement, offering policy recommendations to education decision-makers in participating countries on how to support better student learning, more proficient teaching, and more effective school system operations.

Second, PISA-D designs learning and capacity-building programs to encourage and assist LMICs interested in and motivated to participate in PISA (OECD, 2018a). Through a series of safeguards, the project helps these countries build the capacity to conduct large-scale academic

quality assessment, analyze, and utilize assessment results to inform national policies and evidence-based decision-making.

Finally, the implementation of PISA-D contributes to the realization of education SDGs. The project's development experience and assessment items will be integrated into PISA 2022, while the out-of-school youth assessment will become an optional component of future PISA cycles. PISA-D aims to enable more LMICs to benefit from scientific and effective international comparative data for validating national education policies, improving educational quality, and assessment progress toward education SDGs (OECD, 2018a).

3. The "Downward-Compatible" Reading Literacy Assessment of PISA-D

3.1. The Assessment Framework and Proficiency Level of Reading Literacy

PISA-D defines reading literacy as an individual's ability to understand, use, reflect on, and engage with written texts to achieve personal goals, develop knowledge and potential, and participate in society, which is largely consistent with PISA 2009's definition of reading literacy. The development of PISA-D reading literacy is based on three main task characteristics:

Texts: Refers to the scope of reading materials, involving text media, text structure, text form, and text type.

Situation: Refers to the context or purpose of reading, covering personal, educational, vocational, and public scenarios.

Processes: Refers to the cognitive methods, strategies, and purposes through which test-takers engage with texts, including accessing and retrieving information, integrating and interpreting content, and reflecting and evaluating.

Given that the assessment population includes not only students across multiple grades but also out-of-school youth in the labor market, PISA-D test items address a broader range of reading contexts that students may encounter both in and out of school—such as job hunting through classified ads in newspapers or following workplace instructions. In the dimension of reading processes, PISA-D emphasizes basic reading skills by introducing a "literal comprehension" process, requiring students to understand the explicit literal meanings of individual words, sentences, and paragraphs. It also expands the "information retrieval" process, expecting students to locate explicitly stated single pieces of information (e.g., individual words or phrases) (UNESCO, 2018).

Within the original PISA reading literacy assessment framework, PISA-D appropriately lowers the assessment standards and tilts test items toward lower proficiency levels to increase the detection rate of students in LMICs who perform at the bottom in reading. Meanwhile, PISA-D retains sufficient items for equating with PISA to ensure the comparability of results. Additionally, given the historically low reading performance of students in LMICs on PISA, approximately 65% of PISA-D reading literacy test items are at Level 2 or below in difficulty distribution to better reflect these countries' students' academic performance levels (OECD, 2018a). In terms of

dimensional distribution, the processes of integration and interpretation in reading and educational situation in reading account for the largest proportions, as shown in table 1.

Table 1. Reading item counts by framework category

Process	**Items**	**Percent**
Access and retrieve	22	33%
Integrate and interpret	31	46%
Reflect and evaluate	14	21%
Situation	**Items**	**Percent**
Personal	22	33%
Educational	21	31%
Occupational	4	6%
Public	2	30%

* OECD (2018), PISA for Development Assessment and Analytical Framework: Reading, Mathematics and Science, OECD Publishing, Paris, 10.

PISA-D identifies task or text characteristics closely related to reading difficulty. The first is quantitative characteristics and conditions, referring to how many elements readers must locate or consider in the text to answer a question. Tasks are simpler when fewer characteristics or conditions are required. The second is proximity of required information segments, i.e., how close related information segments are to each other in the text. The third is amount of competing information, defined as how much information in the text might be mistakenly identified by readers as target information; more competing information makes tasks more difficult. The fourth is salience of necessary text information, indicating how easily readers can locate required information. Target information is more easily found when it is clearly signaled by headings, positioned near the text's beginning, or part of very short texts. The fifth is relationship between task and required information, referring to the complexity of the relationship between the task and the text. Tasks are more difficult if their wording is linguistically complex or requires readers to infer their relationship to the text through reasoning. The sixth is semantic match between task and text, measuring the degree to which the task uses the same words as relevant parts of the text or words from the same lexical domain; closer lexical alignment simplifies tasks. The seventh is familiarity of information required to answer, i.e., readers' familiarity with the task's content or theme. The eighth is discourse structure, encompassing the form and syntactic complexity of the discourse. The ninth is degree of extra-textual information required, referring to the extent to which readers must use prior knowledge to answer questions. Tasks are more challenging when they require readers to reflect on and evaluate the text or construct meaning using prior knowledge to supplement the text.

PISA 2015 classifies reading literacy assessments into seven proficiency levels (1b–6), with Level 6 being the highest and Level 2 marking the baseline level of student reading performance, serving as one of the metrics for youth literacy under SDG 4. Students reaching this level are considered to have begun developing the ability to effectively participate in social life as students, workers, and citizens (OECD, 2016b). Based on an analysis of task or text characteristics, PISA-D implements a "downward-compatible" adaptation of PISA's reading performance proficiency levels, placing in-school and out-of-school youth assessment participants on a unified proficiency scale to present a comprehensive picture of academic performance among LMIC students.

The PISA-D reading literacy assessment is divided into eight proficiency levels, with the addition of Level 1c. Students at this level exhibit the following characteristics: tasks at this stage require them to understand the literal meanings of individual written words and phrases in very short sentences, grammatically simple paragraphs, or familiar contexts. Some tasks ask students to locate single words or phrases in short lists or texts based on literal matching cues. Level 1c reading texts are extremely brief, containing minimal distracting information. Texts employ familiar structures and explicit information to support student responses(OECD, 2018a) .

3.2. The Results of Reading Literacy

The results revealed urgent needs to improve students' reading literacy levels in these nations. On average, only 43% of 15-year-olds had enrolled in Grade 7 by age 15 and qualified for the PISA-D test, far lower than the 89% average in OECD countries. In Cambodia, Senegal, and Zambia, this proportion was approximately 30%.

In terms of score distribution, participating students generally showed low reading performance. Taking PISA Level 2—the baseline proficiency for "understanding simple and familiar texts literally" and demonstrating basic information integration and reasoning skills, which aligns with the minimum literacy target of SDG 4 (ensuring all youth achieve minimum proficiency in reading by 2030)—only 23% of students met this threshold, compared to 80% in OECD countries. This indicates that the average reading proficiency of 15-year-old students in these countries needs to quadruple to reach the SDG 4 target, excluding out-of-school youth (OECD, 2018b).

Country-specific data showed more severe challenges: only 5% of tested students in Zambia achieved the minimum proficiency, with an average score of 275—over two standard deviations below the OECD average of 500. Ecuador performed relatively better among participants, with 49% of students meeting the baseline and an average score of 409. Notably, since PISA-D only assesses in-school children, the actual learning levels may be lower due to upward bias in test samples—students with poorer academic performance are more likely to dropout, skewing results (OECD, 2020b).

These findings highlight the significant educational gaps in LMICs, particularly in foundational reading skills, compared to developed nations. PISA-D results provide empirical evidence for these countries to adjust education policies and optimize resource allocation, aiming to enhance students' reading literacy and overall educational quality.

4. The "Inclusivity and Equity" Contextual Questionnaire of PISA-D

4.1. The Theoretical Basis for the Construction of the Questionnaire Framework

The OECD designed the PISA-D questionnaire framework based on Willms (2018)' education success model. Willms (2018) argues that a society's ability to cultivate young people's essential and fundamental literacy depends on its capacity to provide appropriate human and material resources to support young people's healthy development from conception to adolescence. He further posits that traditional methods for measuring educational progress fail to capture the nuances of child development, and many evaluation frameworks overlook the cumulative effects of various factors influencing students' healthy development. Meanwhile, educational inputs and school-level factors are not the sole determinants of academic success; the establishment of evaluation frameworks should adopt a broader perspective to consider factors contributing to academic success (Mayer, 2009).

Willms (2018) also emphasizes that contextual information surveys in low- and middle-income countries (LMICs) should focus on indicators related to equality and equity. The "equality" pathway refers to disparities in educational outcomes across different groups. Assessments must identify relevant subpopulations, such as students of different ethnicities, those living in poverty, or students with disabilities, and accurately measure their academic performance. The "equity" pathway concerns the school resources and process conditions that influence educational outcomes and serve as the foundation for student success, including family factors like parental engagement, parent-child relationships, and parental care; institutional and school factors such as safe and inclusive environments, teaching quality, learning time, and material resources; and community capital and resources (Willms et al., 2012). Assessments should focus on disparities in access to these resources among different student groups.

4.2. Adaptation and Innovation of the PISA Questionnaire

Guided by the education success model's definition of individual academic success outcomes and foundational determinants, the PISA-D questionnaire framework comprises 15 content modules, covering four educational success outcomes, five success foundations, six equity-and-equality assessment factors, and influencing factors related to teachers, schools, and education systems. The contextual factor questionnaire for in-school assessments includes three components: student, teacher, and school surveys. For out-of-school youth assessments, PISA-D has developed youth questionnaires, parent questionnaires, and family observation questionnaires completed by specialized interviewers. In terms of measurement indicators, the PISA-D contextual factor questionnaire builds on PISA 2015 through revisions, improvements, and innovations to better measure factors more closely associated with academic performance in low- and middle-income countries (LMICs). Core indicators are retained to ensure comparability with the PISA program.

4.2.1. Indicators Related to Educational Success Outcomes

Educational success outcomes include academic performance, educational attainment, health and well-being, and attitudes toward school and learning. Academic performance in educational outcomes is measured by the reading literacy assessment, while other outcome indicators are collected through contextual factor questionnaires.

Educational Attainment, a key outcome of educational development in low- and middle-income countries (LMICs), measures the highest level of schooling students have achieved. PISA-D assesses educational attainment to understand students' pathways to their current academic performance and reasons for school dropout. Data on grade repetition, pre-school experience, attendance, chronic absence and its causes are collected through student and youth questionnaires, while information on retention policies and academic support services is obtained via school questionnaires in in-school assessments (OECD, 2018a). For out-of-school youth, the survey also focuses on employment status, weekly working hours, and wages; factors hindering youth from completing compulsory education are captured through parent questionnaires for out-of-school youth (OECD, 2018c) .

PISA defines well-being as the psychological, cognitive, social, and physical functions and capabilities necessary for students to lead happy and fulfilling lives, comprising five dimensions: cognitive well-being, psychological well-being, physical well-being, social well-being, and material well-being. Cognitive well-being, defined as the level of subject-specific skills and competencies acquired, is measured by the reading literacy assessment (OECD, 2017). Research by Helliwell et al. indicates that students in LMICs are more vulnerable to adverse factors such as hunger and chronic diseases affecting physical health (Helliwell et al., 2025). Accordingly, PISA-D asks students about their general health perceptions and experiences of anxiety and depression over the past year. Parent questionnaires for out-of-school youth collect data on prenatal and early-life experiences, including maternal health during pregnancy, childbirth complications, feeding practices within the first six months of life, and health issues before age five (OECD, 2018c). Social well-being, linked to a sense of belonging and interpersonal communication, involves students' attitudes toward school and learning. Finally, material well-being is assessed through questions on socioeconomic status, poverty, and school material resources.

Students' attitudes toward schooling and their engagement in school activities are seen as indicators of their propensity to collaborate with others and function in society, serving as critical educational outcomes for promoting lifelong learning and productive citizenship (OECD, 2003). Following PISA's framework, PISA-D measures school belonging through student questionnaires and adds questions in youth surveys about attitudes toward school, learning outcomes, and participation in learning activities. Youth questionnaires also collect information on literacy-related activities, such as frequency of reading newspapers, magazines, or books, and writing texts or emails. Parents of out-of-school youth are asked about their values and attitudes toward school education.

4.2.2. Indicators Related to Foundations for Success

Foundations for success include inclusive environments, teaching quality, learning time, instructional resources, and family and community support. In the education success model, an inclusive environment refers to a setting where all students can achieve success. "All" encompasses learners across boundaries of gender, ethnicity, nationality, religion, disability, and social class; "success" involves students' achievement in academic, physical, social, emotional, and spiritual dimensions(American University., 2019). Providing an inclusive environment is critical to educational success in LMICs, as it relates to learning opportunities for children of

diverse ethnic, linguistic, and religious backgrounds, children with disabilities, and whether these groups can enjoy learning, participate in school life, and gain full school experiences of acceptance by peers and teachers. At the institutional level, inclusivity involves policy provisions such as admission policies for diverse student groups or ability-based streaming; at the school and teacher levels, it involves whether schools provide necessary support for students with special learning needs and teachers' values toward student diversity. Specifically, PISA-D assesses school belonging, school climate, and school safety through student and youth questionnaires, and asks about school admission and grouped instruction via school questionnaires (OECD, 2019).

Effective teaching behavior is externally manifested when teachers recognize, understand, and actively pursue teaching objectives, uphold the purpose of promoting learning, and directly or indirectly transmit knowledge or content they deem valuable to students (UNESCO, 2004). PISA-D includes questions on classroom climate and teacher-student relationships in student and youth questionnaires. It also asks teachers about their attitudes and specific approaches toward teaching struggling students, and principals about teacher behaviors that may negatively impact classroom climate and teaching quality (OECD, 2019).

Addressing the issues of late school entry and high repetition rates among LMIC students, PISA-D student and youth questionnaires inquire about study time inside and outside school, reasons for absence or dropout, and causes of teacher absenteeism. Principals are asked about policies on teacher absences, specifics of reduced teaching time, and their causes (OECD, 2019).

Data from Murillo and Román (2011)' assessment of education quality in Latin America show that, even after accounting for students' socioeconomic status, school resources significantly influence academic development in LMICs. Therefore, PISA-D's measurement indicators for school material resources are more refined and comprehensive than those of PISA. PISA-D collects information on basic school services, teaching facilities, and instructional resources through school questionnaires. It also gathers principals' perceptions of resource shortages, availability of internet and ICT resources, and accessibility of teaching facilities and resources, as well as data on teachers' access to and condition of instructional resources and their usage of these resources.

Finally, family and community support reflects the social and familial dynamics that provide children with support, care, love, guidance, and protection—critical conditions for their physical and mental health development. PISA-D investigates students' and youth's communication with parents and family members through student and youth questionnaires, parents' engagement via teacher questionnaires, and how parents and communities contribute to schools through school questionnaires. It also surveys parents of out-of-school youth about the educational support they provided during their children's early adolescence.

4.2.3. Indicators Related to Equity and Equality Assessments

Grounded in Willms (2018)' education success model, which emphasizes the dual dimensions of "equality" and "equity" in educational assessment. Factors for assessing equity and equality include gender, family socioeconomic status (SES) and poverty, home language, instructional language, geographic location, migration status, and disability. PISA-D has made significant

adjustments to PISA's family SES measurement indicators by adding poverty-related metrics to more comprehensively reflect the lower educational attainment and household income levels of most students in low- and middle-income countries (LMICs). PISA-D collects data on parental highest education level, parental occupational status, and household wealth index through student and out-of-school youth questionnaires. Among these, the household wealth index is revised based on LMICs' economic development and income profiles. The questionnaire includes additional items on poverty experiences, covering material possessions, parental education, and participation in literacy activities. School questionnaires gather information on school meal programs. For out-of-school youth, questions on employment status and government education support are added. Additionally, PISA-D has specially designed family observation questionnaires to be completed by interviewers, collecting data on housing type, location, and surrounding environment to supplement SES and poverty-related information for out-of-school youth (OECD, 2018c).

4.2.4. Indicators Related to Teachers, Schools, and Education Systems

At the education system level, PISA-D collects data on national-level assessment and examination systems, teaching time, teacher training and compensation, education finance, national accounting, and population statistics. To scientifically and accurately gather information about teachers and schools related to student academic and psychosocial development in low- and middle-income countries (LMICs), PISA-D's teacher questionnaires include surveys on whether teachers teach multiple grades, engage in multidisciplinary teaching or work outside teaching, pre-service training, family socioeconomic status (SES), and health and well-being. School questionnaires add questions about school location and nearby safety conditions (OECD, 2019).

5. Discussion

The PISA-D project actively expands reading literacy assessment tools and contextual factor questionnaires, incorporates out-of-school youth assessments, and conducts corresponding analyses of related factors. Despite National Compulsory Education Quality Assessment Program in China not covering out-of-school students like PISA-D, PISA-D's experience remains valuable. Its "downward-compatible" assessment framework (e.g., Level 1c for basic literacy) can enhance our ability to identify weaknesses in disadvantaged students. The education success model-based questionnaire design, with detailed indicators on family and community support, offers insights for improving our equity monitoring systems. Furthermore, this series of development and implementation experiences of PISA-D provides important references for improving China's compulsory education Chinese subject assessment and enhancing Chinese language education and teaching.

In the context of the overall construction of the assessment system, it is crucial to draw on the experience of PISA-D to carry out specialized Chinese language subject assessment for special regions or groups and improve the national basic education quality assessment system. The Education Blue Book: Report on China's Education Development (Yang, 2019) highlights that there is a significant gap in education between urban and rural areas in China, and the

education quality in western remote provinces is relatively backward, reflecting the persistent problem of unbalanced regional education development. This situation indicates that efforts to secure baseline standards and address weaknesses in compulsory education still need to be strengthened. The academic performance of relatively disadvantaged groups, such as students in rural areas, migrant and left-behind children, children from single-parent families, as well as the teaching conditions of rural teachers, require more accurate diagnosis. China, boasting the world's largest basic education system, officially established the compulsory education quality assessment system in 2015, and the National Compulsory Education Quality Assessment Program (2021 Revised Edition) further improved this system (MOE, 2021). Nevertheless, the national basic education quality assessment system presented in the new program still resembles the main assessment in the U.S. assessment system. Given that a single assessment has limited purposes and functions, various assessment objectives should be achieved through multiple assessment projects. For example, in addition to the main assessment, the United States also conducts long - term trend assessments and specialized studies, including research focusing on specific student groups (Li et al., 2017). Therefore, China can learn from the development and implementation experience of PISA-D to further improve the national basic education quality assessment system, carrying out both regular Chinese language subject assessment and specialized assessment according to actual needs.

Regarding the design of assessment indicators and content, it is necessary to revise and improve assessment indicators and tools in a targeted manner to enhance sensitivity to special regions or groups. National-level specialized Chinese language subject assessment can draw on the construction ideas of PISA-D's reading literacy assessment tools and contextual factor questionnaires to integrate and update existing assessment indicators, enhancing the sensitivity and versatility of assessment tools, and contributing to the promotion of more equitable and high-quality education. According to the 2019 National Compulsory Education Quality Assessment Report, 18.3% of fourth-grade students and 20.7% of eighth-grade students have Chinese language academic performance at the level that needs improvement (BNU., 2022). Considering China's huge primary and secondary school student population, these proportions mean that a considerable number of students still need improvement. Following the design ideas of PISA-D, specialized assessment can adapt and update existing national basic education Chinese language subject assessment tools, conduct small-scale pre-tests, and find test items and questionnaire indicators that are more suitable for the Chinese language academic performance of disadvantaged groups and the influencing factors, providing empirical evidence and references for primary and secondary schools and teachers to formulate targeted teaching improvement measures.

6. Conclusions

In conclusion, the PISA-D represents a significant advancement in international education assessment, particularly tailored to the needs of LMICs. By expanding assessment coverage to include out-of-school youth, refining reading literacy assessment tools, and enhancing contextual factor questionnaires, PISA-D addresses the limitations of traditional PISA in capturing the

diverse educational landscapes of LMICs. Its focus on equity and inclusion, as reflected in the measurement of factors such as family socioeconomic status, poverty, and access to educational resources, offers a more comprehensive understanding of the determinants of academic success in these regions.

The multi-faceted questionnaire framework of PISA-D, informed by education success model, not only assesses educational outcomes but also delves into the foundational elements that support student development. This holistic approach provides a rich dataset for evidence-based policy-making, enabling countries to identify disparities and allocate resources more effectively. The project's "downward-compatible" proficiency levels and targeted task design further enhance its relevance, ensuring that assessments are sensitive to the varied capabilities of students in LMICs.

For China, PISA-D offers valuable insights for improving Chinese subject assessment and education. Given China's challenges of regional educational inequality and the need to support vulnerable student groups, lessons from PISA-D can guide the refinement of the national basic education quality assessment system. By incorporating specialized assessment for specific regions and populations, adapting assessment tools to measure relevant factors more accurately, and promoting equity in resource allocation, China can leverage PISA-D's experience to elevate the quality and fairness of Chinese language education. As such, PISA-D not only contributes to global educational goals but also serves as a practical model for countries seeking to enhance their domestic education assessment and policy-making processes.

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