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Measuring Lifelong Career Planning in Inclusive Education: Psychometric Properties of the PRISMA Scale using Rasch Analysis

Adi Atmoko[1]*, Khairul Bariyyah[1], Juntika Nurihsan[2], Tri Leksono Prihandoko[3], Cepi Riyana[2], Juwanto[4], Qurnia Fitriyatinur[3], Laily Tiarani Soejanto[5], Nail Hidaya Afandi[1], and Diani Akmalia Apsari[1]

[1]Guidance and Counselling Department, Universitas Negeri Malang, 65145 Malang, Indonesia
[2]Guidance and Counselling Department, Universitas Pendidikan Indonesia, 40416 Bandung, Indonesia
[3]Guidance and Counselling Department, Universitas Ivet Semarang, 50233 Semarang, Indonesia
[4]Guidance and Counselling Department, Universitas Prof. DR. Hazairin SH, 38115 Bengkulu, Indonesia
[5]Guidance and Counselling Department, Universitas PGRI Kanjuruhan Malang, 65148 Malang, Indonesia

ABSTRACT

This research created and validated PRISMA (PRencanaan Inklusif Siswa untuk MAsa Depan), a psychological tool intended to assess lifelong career planning competencies among Indonesian secondary school students in inclusive educational environments. A cross-sectional survey gathered data from 541 students aged 15 to 18 years across various educational tracks. The original instrument had 60 questions based on Super's life-span, life-space theory, Krumboltz's learning theory of career counselling, Savickas' career construction theory, and Banks' multicultural education framework. The development process included expert judgment for face and content validity, a pilot study, and psychometric testing with Rasch analysis (Winsteps). The results showed that the psychometric performance was very good, with a person reliability of 0.96, an item reliability of 0.99, and a Cronbach's alpha of 0.96. Principal Component Analysis of Residuals validated unidimensionality, and local dependency stayed beneath critical thresholds. The four-point Likert scale functioned effectively, though the lowest category was infrequently utilised. The Wright map showed that the difficulty of the items matched the students' abilities well. However, it also showed that more difficult items were needed to test students with very advanced career planning skills. Differential Item Functioning (DIF) analysis revealed that the majority of items operated comparably across gender and

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E-mail addresses:
khairul.bariyyah.fip@um.ac.id (Khairul Bariyyah)
juntikanurihsan@upi.edu (Juntika Nurihsan)
kokok_abkin@yahoo.co.id (Tri Leksono Prihandoko)
cepi@upi.edu (Cepi Riyana)
mrjuanto1510@gmail.com (Juwanto)
qurniafitriyatinur@gmail.com (Qurnia Fitriyatinur)
lailytiarani@unikama.ac.id (Laily Tiarani Soejanto)
nail.hidaya.2301119@students.um.ac.id (Nail Hidaya Afandi)
diani.akmalia.2308118@students.um.ac.id (Diani Akmalia Apsari)
adi.atmoko.fip@um.ac.id (Adi Atmoko)
* Corresponding author

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age demographics, exhibiting negligible bias. In general, PRISMA is a valid, reliable, and fair tool that can help counsellors give career advice that is fair and includes everyone.

Keywords: Career assessment; inclusive education; instrument development; lifelong career planning; Rasch analysis

INTRODUCTION

Such factors as globalisation, digitalisation and the fourth industrial revolution have changed the world of work dramatically. Therefore, people are expected to possess not only academic knowledge but also need to develop skills, to be self-confident and to be able to look ahead in an environmentally friendly way (Sima et al., 2020; Yaqub & Alsabban, 2023). The younger generation has to learn how to manage their careers throughout their lifetime to be able to cope with the challenges of the 21st century. The competency comprises the knowledge, skills, and adaptable attitudes that individuals require to sustain their careers in a constantly changing world of work, (Van den Broeck et al., 2024; Zhang et al., 2022). It is quite a challenge to develop career planning skills which will last a lifetime in an inclusive education environment as students that attend such schools may have certain additional issues namely; difficulties in accessing career information, lack of support from the environment, and social stereotypes which make them less prepared for future planning (Kuijpers, 2025; Makhambetova & Magauova, 2023; Thwe & Kálmán, 2024). If this situation is not handled properly, it can become a factor to widen the difference in the gap of opportunities between the disadvantaged groups of students and students overall. To narrow down this gap, the education system requires assessment tools that can neutrally and precisely depict career readiness in all students.

The availability of tools to assess career competencies is not enough because most of the earlier research works have not given the dimension of sustainability (lifelong) and inclusiveness full prominence while the validation is usually only through confirmatory factor analysis without testing for fairness across different groups. The instrument available now includes a multidimensional validated Career Crafting Assessment (CCA) but the testing related to aspects of fairness among demographic groups is still very limited (Chifor & Oprea, 2023; Lee et al., 2021; Verkooijen et al., 2024). Verkooijen et al. conducted a systematic review that identified 18 instruments focussing on lifelong learning, and most of them only recognised content validity and internal consistency, and hardly any dimensions of sustainability or clear concept operationalisation were addressed (Verkooijen et al., 2024). Both Thailand and China have modified career planning instruments according to their local cultures; however, they use confirmatory factor analysis (CFA) without considering fairness evaluation for different respondent groups (Chaiyama & Kaewpila, 2022; Wang et al., 2023).

Despite the growing availability of career planning instruments, empirical evidence regarding their adequacy in inclusive educational contexts remains limited. Widely used measures such as the Career Adapt Abilities Scale (CAAS), Career Crafting Assessment (CCA), and Planning for Career and Family Scale (PLAN) have demonstrated satisfactory construct validity; however, their validation is predominantly based on confirmatory factor analysis (CFA), which provides limited information about how items function across diverse learner groups. In particular, issues related to measurement fairness, sustainability (lifelong orientation), and inclusivity across different educational tracks, socio-cultural backgrounds, and learner characteristics are rarely examined explicitly. Consequently, existing instruments offer insufficient evidence to support their use as equity sensitive assessment tools in inclusive secondary school settings, highlighting the need for a career planning instrument that integrates lifelong orientation with explicit evaluation of measurement fairness (Kakara Anderson et al., 2025; Townend et al., 2025).

Unlike these approaches, PRISMA was developed using the Rasch measurement integrated with Differential Item Functioning (DIF) analysis to evaluate both psychometric quality and measurement fairness. Rasch modelling was selected because it enables simultaneous evaluation of item functioning, person ability, and measurement fairness, making it particularly suitable for inclusive education contexts (Andrianie et al., 2024; Ifdil et al., 2024). PRISMA is an instrument developed in a Global South context, specifically Indonesia, which remains underrepresented in global career assessment research.

There is a growing demand for inclusion-based lifelong career planning instruments in Indonesia, a country that is rich in cultural, social, and educational backgrounds. The existence of such tools is important to ensure that every student has the same opportunity to plan their career futures (Aminah et al., 2024; Nieminen, 2024). PRISMA (Inclusive Student Planning for the Future) is a solution to this problem. It includes 60 statement items that were specially created to lower the level of lifelong career planning skills of secondary school students in Indonesia, who are an inclusive group. The resulting instrument was designed to reflect different levels of career readiness among students of various backgrounds.

PRISMA represents a scale comprising 60 statement items specifically developed to measure the lifelong career planning competencies of secondary school students in Indonesia. The instrument was developed from an inclusive point of view and hence was expected to capture career readiness variations among students from diverse backgrounds. For reliability, item fit, unidimensionality, and measurement fairness, the instrument uses a contemporary psychometric approach, the Rasch Model, along with the Differential Item Functioning (DIF) analysis to account for demographic characteristics such as gender, age, and residential location (Andrianie et al., 2024; Boone, 2016; Stetz, 2022).

Although sustainable and inclusive career planning is gaining more importance, most of the tools that are presently available do not consider equity differences between various student groups. The gap underscores the necessity of PRISMA as a tool that first of all measures career competencies over a lifetime and secondly, guarantees inclusiveness according to the norms of multicultural education. This research is purposed to perform a validation of PRISMA through Rasch analysis thereby providing a trustworthy, fair, and theoretically sound instrument which can be implemented in inclusive educational settings. The aim of this research is to make a theoretical contribution by broadening the career assessment literature through the creation of instruments that emphasise fairness and sustainability (lifelong). On the ground, the output of this research may be of great help to educators, guidance and counselling teachers, and policymakers in designing career intervention programmes that are accessible to all, thus providing equal opportunities for every student to shape a better future.

Consequently, this research will serve to validate PRISMA as a tool that sensitively measures equity for assessing lifelong career planning competences among secondary school students in inclusive education settings through Rasch analysis.

LITERARTURE REVIEW

Lifelong Career Planning

Lifelong Career Planning idea is based on the idea that a career is not just a series of different jobs, but rather a continuous and changing process which goes along with a person's life. The concept of career planning on a lifelong basis implies the holding of an attitude which is flexible, integrative, and long-term oriented, taking into consideration the mutual interaction between work and other roles as well as the necessity to adapt to the ever-changing world of work (Hirschi et al., 2022; MacKinnon, 2020). The theory of lifespan, which was developed by Super and holds that one goes through life continuous staging from exploration to maintenance (Super, 1980), is the base of the recent studies. These studies are in line with what was earlier argued by Super and even extend the notion by articulating that sustainable careers are dynamic processes which involve the interaction between work and non-work roles as well as the adjustment to changing life goals throughout the individual's lifespan. The concept of sustainable careers is not far from professional success as it emphasises also the balance between work, social life, and family for the goal of health, happiness, and productivity being kept sustainably (De Vos et al., 2020; Russo et al., 2023).

Lifelong Career Planning in an Inclusive Framework

Lifelong career planning within an inclusive framework should highlight that careers are not static but rather evolutions of stories that happen throughout one's lifetime involving different roles and transitions affected by personal and impersonal factors. Such a plan takes into consideration the individual's

life holistically, even the aspects that do not involve work such as family, community, and personal well-being and still provide equal access to and opportunities for everybody without discrimination (Litano & Major, 2016; Savickas et al., 2009a). Moreover, an inclusive framework calls for organisational policies and practices that promote diversity, accessibility, and work-life balance, for instance, among the vulnerable groups or persons with disabilities. Career planning interventions that are successful, thus, have to be specific to the individual's requirements, offer resources that are easily accessible, provide culturally appropriate guidance, and give exposure to relevant practical activities (Savickas et al., 2009b; Y. Zhang & Perey, 2024).

Career planning should be thorough and must uphold the principle of equity, which guarantees that each person gets career services that are of real value to them regardless of whether they have a physical, social, cultural, or psychological background (Bennett, 2021). Studies indicate that accessing career development services unequally can lead to wage gaps in education and employment outcomes, and therefore, minorities and other marginalised groups such as students from racial minorities, students with disabilities, and those from low socioeconomic backgrounds may be most affected by this situation (Ansel et al., 2022; Bennett, 2016). Therefore, career assessment instruments designed to capture the sustainability, adaptability, and long-term career orientation of individuals are needed, especially those based on inclusion, so that students have equal opportunities in planning their career futures. Banks and Banks (2019) through the Multicultural Education framework emphasise the importance of fair assessment to ensure no student groups are marginalised (Banks & Banks, 2019)

Development of Career Planning Instruments

Several career planning instruments have been developed and validated for measurement across various groups and contexts. One widely used instrument is the Planning for Career and Family Scale (PLAN), which has been tested on engineering students and proven to have validity across gender, race/ethnicity, and academic year, thus can be used to wunderstand career and family planning needs among diverse student groups (Hu et al., 2025). Moreover, the Career Futures Inventory is a tool that aims at clarper aspects like career adaptability, career optimism, and market knowledge. It has been employed in studies to locate the predictors of career planning attitudes among university students (Kirikkanat, 2023). The Career Adapt-Abilities Scale (CAAS) is a relevant and r method for measuring student career planning, by focussing on career adaptability (Xu, 2020). The instruments grounded in Cognitive Information Processing (CIP) theory depict career planning as a process, where children's grades and personalities are considered along with interests, abilities,

and values (Wang et al., 2023). The work values instruments in Indonesia, by way of example, have also been modified to recognise the work value preferences of the graduating university students, hence making their career plans more comprehensive before getting the degree. (Sulistiobudi & Hutabarat, 2022).

Several instruments have been widely used in career assessment research, including the Career Adapt-Abilities Scale (CAAS; Savickas & Porfeli, 2012), the Career Crafting Assessment (CCA; Lee et al., 2021), and the Planning for Career and Family Scale (PLAN; Hu et al., 2025). All three of these instruments have been significant in their respective fields but they are still somewhat restricted in terms of their range. CAAS is centred around the concept of adaptability when encountering career challenges, CCA is more about using self-directed strategies for career crafting, whereas PLAN shows the planning aspect as being related to the family roles. However, none of these instruments was specifically designed to capture inclusivity within educational contexts or to provide a comprehensive orientation towards lifelong career planning.

International literature has lately been amplifying on how career assessment tools should be designed to be inclusive and fair for all groups of learners, especially in multicultural and inclusive education settings. Researchers claim that if measurement equivalence is not explicitly evaluated, assessment instruments may end up perpetuating the existing social and educational inequalities (Khalatbari-Soltani et al., 2022). As a result, fairness evaluation and measurement invariance have been central issues nowadays in the development of instruments along with traditional validity evidence and enhancing the interpretability of the assessment outcomes across demographic groups.(Khalatbari-Soltani et al., 2022; Strijbos et al., 2021)

The majority of these career planning assessment instruments emphasise construct validity through CFA, rarely exploring issues of sustainability (lifelong) and inclusivity. Furthermore, validation of fairness aspects across demographic groups remains very limited. PRISMA is designed based on major career theories (Super, Krumboltz, Savickas) and inclusivity principles (Banks), while being validated using Rasch analysis. This approach enables testing of reliability, unidimensionality, scale functioning, and measurement fairness through DIF, allowing PRISMA to provide an original contribution to equitable career assessment relevant to student diversity in Indonesia.

METHODS

Research Design

The present investigation utilised a quantitative design with a cross-sectional approach. The main emphasis of the study was to determine the validity and reliability of the PRISMA (Inclusive Student Planning for the Future) instrument in the case of Indonesian adolescents. The researchers decided on this design to get a single snapshot of the PRISMA psychometric

properties and the changes in students' responses within a specific timeframe.

Participants

The instrument was administered online through dedicated links distributed via school networks, youth communities, and social media platforms. Purposive sampling was employed to ensure that participants were drawn from inclusive secondary schools and represented diverse student characteristics relevant to fairness testing (Berndt, 2020; Etikan et al., 2016) Participants were drawn from secondary schools implementing inclusive education programmes. In this study, inclusive education refers to educational settings in which students with diverse learning needs are enrolled in regular classrooms and provided with educational services without segregation. This approach ensured the representation of students from diverse backgrounds and characteristics, such as gender and educational tracks, which is essential for testing the fairness and inclusiveness of the instrument.

The research participants were adolescents aged 15-18 years enrolled in different secondary school pathways. In the initial phase, 897 students completed the online survey. Prior to Rasch analysis, the dataset was reviewed to identify and remove extreme response patterns and outliers that could potentially affect item calibration and person estimation. Following this refinement process, data from 541 participants were retained for final analysis. The final sample consisted of 129 male and 412 female students.

Instrument

The creation of the PRISMA tool involved five different phases, which are detailed in Table 1.

Each phase of the PRISMA design work was methodically planned to address a particular scientific need. Content relevance and conceptual clarity were ensured through the theoretical foundation and expert validation; pilot testing helped to demonstrate empirical feasibility. Rasch analysis was used to offer measurement at the interval level and to study item functioning and measurement fairness, which are key aspects of equity-sensitive assessment in inclusive education contexts.

The deluxe version of this instrument consists of 60 statement items directed at assessing lifelong career planning competencies in an inclusive education framework context. The 4-point Likert scale (1 = strongly disagree to 4 = strongly agree) is incorporated in each item, thus enabling the level of agreement of the respondents with the statements concerning lifelong career planning competencies to be captured. For example, one representative item assessing career planning readiness states: “I actively organise daily or weekly study plans as concrete steps towards achieving my future career goals” (Item I21). Apart from the primary items, the tool also comprises straightforward demographic questions like age, gender, and educational background. The additional information is intended to make the difference in response patterns based on individual characteristics analysis easier while at the same time,

Table 1
Stages of PRISMA Instrument Development

Stage	Description	Output
Item Construction	Items were developed based on a literature review of career planning and referred to three main theories: Super's Career Development Theory, Krumboltz's Career Learning Theory (Saunders, 2021)), and Savickas's Career Construction Theory (2013), as well as Multicultural Education theory by James A. Banks (Banks & Banks, 2019b).	Initial draft of the instrument (60 items)
Validity Phase	Experts in guidance and counselling, psychometrics, and education were involved in the evaluation of face validity and content validity to check the relevance, clarity of the language, and the readability of the items.	Validated instrument (content and language)
Pilot Testing	A pilot test was conducted with students to examine readability, response distribution, and initial reliability.	Pilot test data for reliability and distribution analysis
Psychometric Analysis (Rasch Model)	The investigation considered item and person reliability, unidimensionality, item fit (Infit/Outfit MNSQ), scale diagnostics, and Differential Item Functioning (DIF) analysis according to gender and age.	Psychometric statistics (reliability, item fit, DIF, Wright map)
Instrument Refinement	Revision or elimination of problematic items was conducted based on Rasch analysis, including items with significant DIF or low fit.	Final version of the PRISMA instrument (valid, reliable, fair)

ensuring that the instrument can be used fairly across different student populations.

Statistical Analysis

Data analysis was carried out through the Rasch model method, using the Winsteps programme. Unidimensionality, reliability, and item fit were examined using standard Rasch model criteria. The Rasch model was selected for its feature of checking the consistency between the items while the measurement stays stable for different types of respondents. The analytical procedures involved: the estimation of person and item reliability, unidimensionality test through principal component analysis of residuals, item fit examination based on Outfit MNSQ values (0.5–1.5), local dependency analysis with residual correlations, differential item functioning (DIF) evaluation to confirm the absence of bias between groups, and rating scale diagnostic review (Andrich & Marais, 2019; Medvedev & Krägeloh, 2022; Storey, 2021).

The first analysis results with 897 respondents showed person reliability = 0.95, item reliability = 1.00, and Cronbach's alpha = 0.95. As a result of the removal of outlier data and the refinement of the sample to 541 respondents, better measurement

consistency has been achieved with person reliability = 0.96, item reliability = 0.99, and Cronbach's alpha = 0.96. These metrics are evidence that PRISMA has very good psychometric quality.

Ethical Clearance

This study obtained ethical approval from the Research Ethics Committee of Universitas Negeri Malang (Letter No. 28.4.24/UN32.14/PB/2025). All participation was voluntary, and complete confidentiality of respondent data was guaranteed. Informed consent was explicitly obtained from each prospective respondent after they received a clear explanation of the study's purpose, procedures, and their rights prior to participation. For participants who were minors, informed consent was also obtained from parents or legal guardians through coordination with the participating schools, in accordance with institutional ethical guidelines.

RESULTS

Demographic Characteristics of the Participants

Table 2 summarises the demographic characteristics of the participants (N = 541). The sample comprised 129 male students (23.8%) and 412 female students (76.2%). Participants were aged 15–18 years, with most being 17 years old (45.8%), followed by those aged 16 years (28.5%), 18 years (15.3%), and 15 years (10.4%). More than half of the participants were enrolled in Grade XII (55.3%), while 29.6% were in Grade XI and 15.2% in Grade X. The majority of participants were from schools located on Java Island (98.9%), with a small proportion from outside Java Island (1.1%).

Summary Statistics of Rasch Measurement Model

Based on Table 3, the PRISMA instrument demonstrates a person reliability value of 0.96 with a separation index of 4.75,

Table 2
The demographic details of the participants (N=541)

Demography	Category	N	%
Gender	Male	129	23.8
	Female	412	76.2
Age Group (Years)	15	56	10.4
	16	154	28.5
	17	248	45.8
	18	83	15.3
School Grade	Grade X	82	15.2
	Grade XI	160	29.6
	Grade XII	299	55.3
Geographical Region	Java Island	535	98.9
	Outside Java Island	6	1.1

Table 3
Summary statistic of person and item (I=60, N=541)

	Reliability	Separation Index	Mean Measure *)	SD	Cronbach's Alpha
Person	0.96	4.75	2.33	1.28	0.96
Item	0.99	13.62	0.00	0.00	

indicating that the instrument is capable of differentiating respondents across dimensions of lifelong career planning ability. The person mean measure value of 2.33 with a standard deviation of 1.28 indicates that generally students possess career planning levels above the average logit, with considerable variation in abilities. Infit and Outfit MNSQ values show that the items function appropriately, while ZSTD values were interpreted cautiously due to sample size sensitivity (Boone et al., 2013; Boone & Staver, 2020).

Based on item values, PRISMA shows an item reliability of 0.99 with a separation index of 13.62, demonstrating that instrument items are widely distributed across the difficulty spectrum, thus capable of capturing respondent ability variations from low to high levels. The item mean measure value at 0.00 logit with zero deviation aligns with Rasch model expectations, as items are calibrated against the centre of the distribution. The combination of very high reliability values, adequate separation indices, and consistent Cronbach's alpha (0.96) strengthens evidence that PRISMA is a stable, consistent, and sensitive instrument for measuring variations in lifelong career planning competencies among secondary school students in Indonesia.

Unidimensionality and Local Dependency

Table 4 shows that the Principal Components Analysis of Residuals (PCAR) indicates 44.7% of the variance is explained by the instrument, with

Table 4
Unidimentionality

Category	Eigenvalue	Observed	Expected
Raw variance explained by measures	44,7	42.7%	42.6%
Raw variance explained by person	23.2	22.2%	22.1%
Raw variance explained by items	21.5	20.5%	20.5%
Unexplained variance in 1st contrast	4.6	4.5%	7.8%

contributions of 23.2% from persons and 21.5% from items. The values here could also be interpreted for the most part as Rasch model figures, which would imply that the main source of variance in the dataset remains that of the construct being measured, i.e., lifelong career planning (Boone & Staver, 2020). Furthermore, the variance unexplained by the first contrast amounted to 4.6 (4.5%), thus still being under the eigenvalue threshold of 5.0 or 10% of the variance, which means that no secondary dimension is sufficiently strong to disrupt the instrument's structure. PRISMA, therefore, based on this evidence panel, is a single-dimensional function assumption model in which items operate in a consistent manner to measure a single primary construct. Hence, the device used is capable of producing a single, lucid representation of students' lifelong career planning skills, unaffected by other dimensions.

Local dependency analysis was conducted to examine whether there is excessive inter-item dependence beyond what should be explained by the primary construct (Han, 2022). As reported in Table 5, residual correlation analysis identified several item pairs with moderate associations, including I59–I60 (0.52), I37–I38 (0.48), and I54–I56 (0.44). These correlations suggest that the items share similar content, leading to aligned student responses.

The PRISMA set of items can be seen as fairly safe in terms of the risk of item redundancy. Some items are conceptually similar, but this does not influence the Rasch model's reliability. Instead, the findings signal that the tool is able to deliver extensive content coverage while not causing structural bias, though editorial refinements might be taken into consideration for further studies.

Table 5
Local dependency

Correlation	Item 1	Item 2
0.52	I59	I60
0.48	I37	I38
0.44	I54	I56
0.43	I13	I14
0.42	I30	I31
0.41	I53	I54

Rating Scale Diagnostics

Analysis of the four-point Likert scale suggests that the response categories were well-functioning (Table 6). The Andrich thresholds were aligned, varying from −4.07 to +3.92, and the Observed Average went up steadily through the categories, which shows that the respondents understood the categories consistently. Most of the responses were in Agree (58%) and Strongly Agree (24%) categories, whereas Strongly Disagree was almost not used. Infit and Outfit MNSQ values were around 1.0 for the three main categories, while the lowest category had increased values due to a few responses. In general, these findings are confirmation of the PRISMA four-point scale as a valid instrument and effective in capturing the variation of students' levels of agreement.

Table 6
Item threshold and fit indices of response format

Category	Andrich Threshold	Observed Average	Observed Count (%)	Infit MNSQ	Outfit MNSQ
Strongly Disagree	NONE	-1.24	0	1.72	1.64
Disagree	-4.07	0.54	17	0.97	0.98
Agree	0.15	2.19	58	0.95	0.93
Strongly Agree	3.92	3.99	24	1.01	1.00

Table 7
The summary of item measure

Item	Total Score	Measure	S.E.	Infit MNSQ	Outfit MNSQ	Pt Measure Corr
I14	1196	3.4	0.09	1.02	1.02	0.36
I13	1233	3.11	0.09	1.14	1.11	0.38
I21	1345	2.27	0.09	0.97	0.96	0.54
I45	1435	1.63	0.09	1.82	1.84	0.43
I11	1441	1.59	0.09	1.54	1.54	0.45
I15	1441	1.59	0.09	1.13	1.13	0.49
I23	1454	1.5	0.09	1.16	1.16	0.56
I16	1460	1.46	0.09	1.34	1.34	0.46
I41	1461	1.45	0.09	1.11	1.12	0.52
I12	1510	1.1	0.09	1.18	1.18	0.5
I40	1876	-1.65	0.09	0.74	0.7	0.57
I43	1910	-1.93	0.09	1.11	0.99	0.51
I4	1919	-2.01	0.09	1.03	1.04	0.42
I7	1946	-2.24	0.09	0.9	0.9	0.46
I6	1955	-2.32	0.09	1.03	1.04	0.38
I56	1787	-0.95	0.09	0.75	0.73	0.57
I48	1788	-0.96	0.09	0.81	0.81	0.6
I60	1800	-1.05	0.09	0.72	0.71	0.59
I2	1843	-1.39	0.09	0.94	1	0.46
I44	1768	-0.8	0.09	0.72	0.69	0.64

Item Measures

The following are the 10 items with the highest measures and the 10 items with the lowest measures (Table 7).

The analysis of student skills through item measure describes the extent of the students' career planning skills variation which have the highest logit score of +7.18 and the lowest of about +2.31. The substantial number of respondents are credentialed from the moderate to the high level which is indicative of a generally

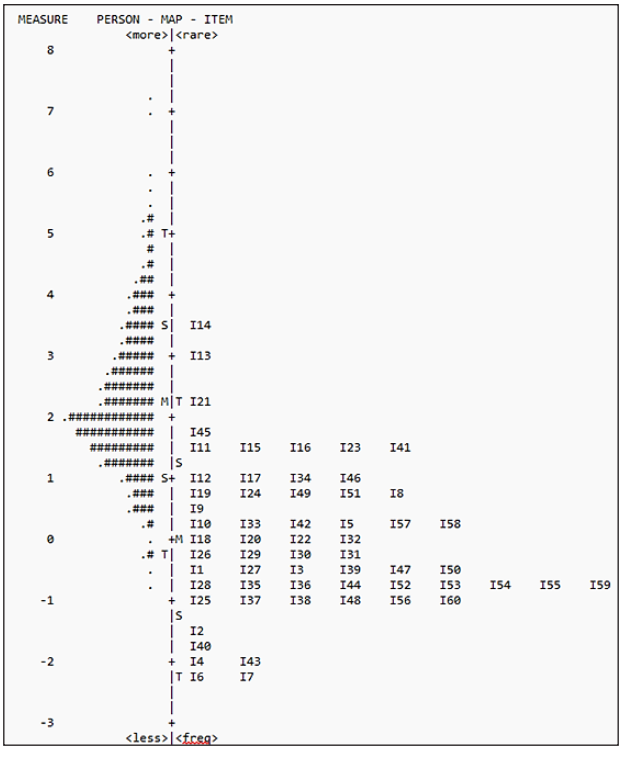

Figure.1 Item wrightmap

positive level of career readiness. Most people's Infit and Outfit MNSQ values are within the 0.5–1.5 range, which means that the response data are consistent with the Rasch model expectations, although there are a few respondents who have extreme values and it is acceptable for a large sample. These findings confirm that PRISMA accurately maps the heterogeneity of lifelong career planning ability within the secondary school student population.

The Wright Map (Figure 1) displays the distribution of student abilities on the left and item difficulties on the right on the same logit scale. Most students fall within the moderate to high range (+1 to +4 logits), while the majority of items are concentrated between 0 and +2 logits, indicating good alignment between respondent ability and item difficulty. The most difficult item is I14 (+3.4 logits), and the easiest is I6 (−2.3 logits), suggesting that the instrument provides sufficiently broad coverage to map variation in career planning ability. Although there is a slight gap in item coverage at very high ability levels (above +5 logits), overall PRISMA represents and accurately captures the distribution of students' competencies.

Person Measure

The person measure results displayed in Table 8 indicate substantial variability in students' abilities, with the highest value reaching +7.18 logits and the lowest

Table 8
The summary of person measure

Entry	Total Score	Measure	S.E.	Infit MNSQ	Outfit MNSQ	Pt Measure Corr	Person
105	236	7.18	0.56	1.68	1.62	0.23	Female 18
29	235	6.9	0.51	1.26	0.67	0.41	Female 18
533	235	6.9	0.51	1.47	0.52	0.49	Female 17
546	235	6.9	0.51	1.24	0.94	0.23	Female 17
115	231	6.11	0.4	0.8	0.81	0.51	Male 17
483	231	6.11	0.4	0.98	0.97	0.4	Female 16
374	230	5.96	0.38	1.18	0.67	0.56	Male 16
893	230	5.96	0.38	1.24	0.63	0.62	Female 17
791	229	5.82	0.37	1.51	0.97	0.39	Female 17
13	228	5.69	0.36	1.18	1	0.52	Female 16
243	188	2.31	0.26	1.32	1.29	0.56	Female 15
341	188	2.31	0.26	1.45	1.47	0.48	Female 17
456	188	2.31	0.26	1.45	1.47	0.48	Female 18
670	188	2.57	0.26	1.45	1.47	0.48	Female 18
747	188	2.57	0.26	1.37	1.37	0.83	Female 18
794	188	2.57	0.26	0.76	0.75	0.63	Female 17
823	188	2.57	0.26	0.85	0.86	0.1	Female 17
865	188	2.57	0.26	1	1.02	0.44	Female 18
876	188	2.57	0.26	1.17	1.19	0.25	Male 18
760	186	2.44	0.26	1.26	1.28	0.49	Female 17

around +2.31 logits, suggesting a small group with very high as well as relatively low lifelong career planning competencies. Most students fall within the moderate to high range (approximately +2 to +6 logits), reflecting generally favourable career readiness among the majority of respondents. The majority of individuals' Infit and Outfit MNSQ values lie within the 0.5–1.5 range, consistent with Rasch model expectations, although a few respondents exhibit extreme values, which is reasonable in a large sample. Overall, PRISMA accurately captures the heterogeneity of student ability and effectively differentiates competency levels from low to very high.

The DIF Analysis

Differential Item Functioning (DIF) analysis by gender indicates that most items align closely between male and female students (Figure 2), meaning the majority of items function equivalently across groups. The differences between the genders are quite small in most of the items, but a few items show significantly different patterns of response. To give an example, male students are I13, I14, I15, I16, I45, and I46 in which

these items mostly favour them, while I43, I50, and I54 are the ones that mostly favour female students. These differences do not extend beyond the small subset of 60 items total and thus, the overall fairness of the instrument is not affected by them. The findings, in general, indicate that PRISMA does not have much gender bias. However, the team should consider revising the wording of the items that show a significant difference in gender response in their next development.

Differential Item Functioning (DIF) analysis by age indicates that most items function equivalently across the 15, 16, 17, and 18 years old groups, as reflected by largely overlapping lines across the logit range (Figure 3). Nevertheless, several items exhibit notable differences: for example, I7 is easier for 17 years old, I9 favours 18 years old, and I17, I20, I24, I34, I41, and I58 tend to favour 15 years old. Even so, the number of items with significant DIF is small relative to the total

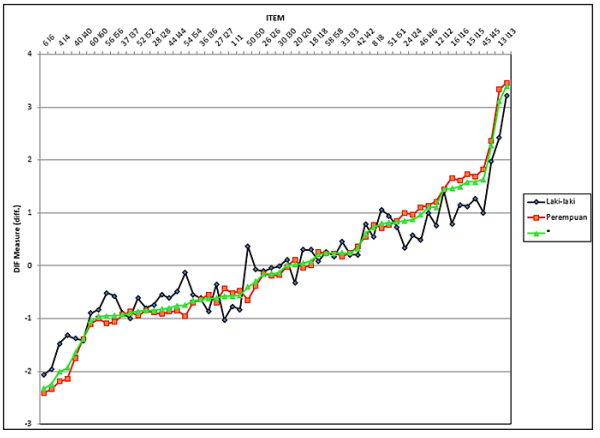

Figure 2. DIF gender

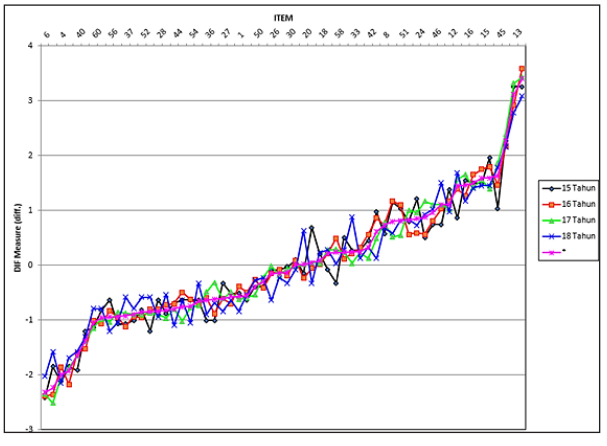

Figure 3. DIF age

of 60 items. Accordingly, the PRISMA instrument can still be considered fair for measuring lifelong career planning ability across age groups, with the caveat that these specific items may warrant revision in future development.

Observed DIF in a small number of items may be associated with contextual and developmental variations among students. Rather than indicating systematic bias, these results highlight areas for cautious interpretation and potential refinement in future instrument development

This research identified a limited number of items exhibiting Differential Item Functioning (DIF) across gender and age groups. The DIF extent, in general, was minor, which is a good indication of the fairness of measurement across demographic groups. The DIF flagged items will be reviewed to check for any possible changes in wording or context that should be kept in mind when covering lifelong career planning competencies.

DISCUSSION

The findings highlight that the PRISMA tool reveals top-notch psychometric attributes. It has eminent person (0.96) and item (0.99) reliability along with a perfectly working four-point response scale. The results from this study are an encore to the significance of measurement tools that can recognise developmental changes in career trajectories throughout the lifespan. A very recent publication on sustainable careers points to the requirement for such instruments that can depict the interaction of the work and non-work roles and also reflect the changes in individual goals and priorities during different life stages (Hirschi et al., 2022; Van der Heijden et al., 2020). Moreover, the Wright map exhibits that both persons and items are well-distributed which means that PRISMA offers genuinely representative coverage for charting students' career planning skills.

In terms of the fairness of the measurement, DIF analyses indicate that the majority of the items operate similarly for males and females as well as younger and elder groups. A few items not fitting the model or indicating DIF were observed, these changes are probably due to developmental or contextual differences rather than a bias in the instrument and these findings do not substantially affect the overall psychometric integrity of the instrument.

However, there is a subset of items (e.g., I13–I16 and I45–I46 that are more positive for males; I43, I50, and I54 that are more positive for females; and I7, I9, and I17 that are more positive for specific age groups) that have significant bias. This is in agreement with Krumboltz's Learning Theory of Career Counselling which believes that learning experiences and environmental conditions influence individuals' perceptions of career tasks (Saunders, 2021). Hence, the DIF found may represent real differences in access to learning experiences among groups rather than just the technical imperfections of the (Baker & Hawn, 2022; Skinner et al., 2020). Therefore, items with significant DIF are not only due for a technical overhaul but also

may be conceived as openings to investigate the socio-cultural milieus that influence students' career readiness.

PRISMA has similar psychometric properties in terms of reliability and construct clarity when compared to previous tools like CAAS, CCA, or PLAN. However, these tools mainly use confirmatory factor analysis, whereas PRISMA uses Rasch modelling supplemented by Differential Item Functioning (DIF) analysis to test for measurement fairness. The current study takes the existing concepts of equity based and psychometric assessment at a local level one step further by unveiling PRISMA which is a fairness-driven instrument created in a Global South, non-Western educational setting. This difference highlights PRISMA's role in helping equity focussed educational assessments for inclusive secondary school settings.

These are significant contributions to the world-wide research base on the assessment of careers. As an illustration, the Career Crafting Assessment (CCA) validation in Turkey has been reported to be based on a stable four-factor structure linked to protean career attitudes and career attainment, thus, supporting cross-cultural reliability (Kilic & Kitapci, 2025). In the case of Thailand, while creating the Career Adapt-Abilities Scale (CAAS), the researchers found the CFA model fit to be satisfactory, but they did not fully investigate DIF issues, which point to the necessity of even more thorough analytical methods (Khampirat, 2024). The recent study also suggests next-generation career crafting instruments that put emphasis on the active reflection and career construction as life-long behaviours and have high internal consistency but have limited validation of fairness across demographic groups (Lee et al., 2021). Moreover, cultural differences in the CAAS model have led to the suggestion that a cooperation dimension be added to the five-factor model, thus, extending the concept of career adaptability to different countries, though the majority of this work is still based on CFA (Nye et al., 2018).

In comparison to these tools, PRISMA has distinctive advantages in that it focuses on sustainability (lifelong orientation) and inclusiveness and uses Rasch analysis to check for unidimensionality and item consistency, at the same time, measurement fairness across gender and age is also ensured (Alnahdi et al., 2025). The inclusive nature of PRISMA is in line with the Multicultural Education framework, which mainly concerns the equitable access to educational and guidance services. Therefore, guidance and counselling teachers may use PRISMA to not only implement inclusive and fair career guidance programmes but also to make certain that all students have equal opportunities to prepare for their futures (Banks & Banks, 2019).

This research, from a theoretical point of view, is a valuable addition to the career field as it has come up with an instrument that combines lifelong career planning with inclusivity. It provides an example of how Rasch-based instrument development can result in measures that are fairer and more sensitive to demographic diversity and that

this can be a step forward from the traditional CFA-centric approaches. To put it simply, PRISMA is a very helpful and practical tool for guidance and counselling professionals as well as education practitioners to assess and map the career readiness of the students on a one-to-one as well as group basis. Therefore, the provision of career guidance that is based on equality of access and thus making it possible for every student to prepare for the future under fair conditions is supported by the inclusive nature of the programme.

From a practical perspective, PRISMA can be implemented as an assessment tool to support career guidance in secondary schools, particularly within inclusive education settings. The instrument can be used at different times, e.g., once a year, to keep track of the students' gaining of skills for lifelong career planning. The results should be seen as a degree of readiness rather than qualities that are fixed attributes, so that counsellors and teachers can determine the levels of support needed in various cases. The use of PRISMA can guide the selection of career guidance interventions of different intensities, starting with general career education for all students and going to special counselling services for those who require additional support and need more help.

It may be beneficial for subsequent studies to examine PRISMA's effectiveness across various cultures and also include longitudinal designs to assess whether it remains stable over time. Moreover, studies can expand the item pool for extremely high career competence students and carry out qualitative research to gain a deeper understanding of social and cultural factors influencing the respondents' reaction to specific items. Such paths will enhance PRISMA's potential as a globally relevant tool and a means to a sustainable and inclusive career education.

CONCLUSION

This study reveals that PRISMA is a just, dependable, and valid instrument that could be used to measure students' lifelong career planning skills in inclusive educational settings. According to Rasch analysis, the instrument exhibited high person and item reliability, was one-dimensional, and was impartial across demographic groups. This strengthened its psychometric robustness even further.

The study's main emphasis is on the necessity of fair career assessment tools for all groups of people. PRISMA fulfils this necessity by integrating theoretical models of career development with contemporary measurement methods. This work becomes part of the body of work on inclusive and lifelong career planning.

PRISMA offers school counsellors and teachers a medium to understand what students are good at and what aspects they need to work on in the field of career readiness. This information can help them plan targeted and fair interventions. Apart from the school, this instrument can be a valuable resource for policymakers and researchers as it is evidence-based and culturally appropriate. It also has the

potential to be implemented in diverse educational settings.

Overall, PRISMA contributes to theory and practice by offering a consistent means through which inclusive career guidance can be enhanced, and thus, all students regardless of their background, can be better equipped for the career challenges that will span their whole lives.

Implications of the Study

This research study has a wide range of theoretical and practical implications. PRISMA is a major tool for career assessment as it essentially changes the idea of career planning by merging two concepts of lifelong career planning and inclusivity into one single instrument. The Rasch analysis that comprises reliability, unidimensionality, and Differential Item Functioning (DIF) demonstrates that modern psychometric methods may lead to more equitable tests for different student groups. Consequently, the study transcends the usual CFA-based validation to raise possibilities for measurement development.

PRISMA has played a significant role in equipping school counsellors and educators with a credible and reliable instrument to assess students' competencies in lifelong career planning in the context of inclusive education. It is the robust psychometric features of the instrument that make it possible for counsellors to both discern the career readiness levels of their students and pinpoint the areas in which students have deficiencies. This, in turn, equips the counsellors with the necessary tools to design targeted, fair, and culturally sensitive interventions. One example is that counsellors may give PRISMA to students at the start of the school year, in order to find out which students have a lower level of career readiness and hence, can be given the necessary career guidance support on time and in the right way.

Additionally, policy makers may integrate PRISMA into education systems as a solid, evidence-based instrument that paves the way for the implementation of inclusivity-based career guidance frameworks at the national education level. This will pave the way for a fair and equal society where every student, irrespective of their gender, age, or background, will have access to the same opportunities.

Contrary to these benefits, the study has certain limitations. The sample was restricted to high school students in Indonesia, and as such, the results of the study might not be applicable in different cultural or educational settings. The cross-sectional design, moreover, doesn't allow the examination of time-related changes in students' career planning skills, thus, understanding of developmental changes over time remains limited. While most of the items were unbiased in terms of gender and age groups, a few still showed DIF, hence, there is a need for refinement in subsequent editions.

Accordingly, the subsequent research work should verify PRISMA on larger and more diverse populations, including students from various countries and cultural backgrounds to determine the universality

of the instrument. The authors also advise longitudinal research to establish the instrument's reliability over time and to monitor the gradual acquisition of lifelong career planning skills. Qualitative methods can serve to complement psychometric evaluations by providing an in-depth understanding of the contexts and cultures that influence students' answers. In brief, if PRISMA were made accessible in a digital version, it would be a great help to school counsellors. Moreover, it would allow a more significant spreading and thus, more educational institutions would be able to implement it.

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