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Research Trends in Assessment Instrument Development in Vocational High Schools: a Literature Review

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ABSTRACT

Research on evaluation instruments in Vocational High Schools (SMK) indicates a varied pattern. Nevertheless, there has been limited study and evaluation of the information provided in the research. This study seeks to examine research trends on the development of assessment instruments in SMK, based on published articles from 2019 to 2024, with a primary emphasis on the development of these instruments. The methodology employed is a literature review. This study involved a literature evaluation of 25 publications regarding developing assessment tools from various Indonesian journals, utilizing Publish or Perish and Google Scholar for data collection. The research indicated a decline in the number of studies addressing the creation of evaluation tools in vocational schools from 2019 to 2024. The R&D model is the predominant development model. Instruments for assessing knowledge are predominantly created. The creation of HOTS-based assessment tools exhibits a nearly equitable distribution. Moreover, the creation of evaluation tools predominantly lacks technological platforms.

Keywords
Trends, Assessment, Instrument, Development.

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INTRODUCTION

Vocational education in vocational high schools (SMK) is crucial for equipping students for employment, fostering national economic development, and cultivating practical skills aligned with industry requirements (Aryawan, 2023). Vocational education enhances Indonesia's competitiveness in the global economy by cultivating a competent workforce, decreasing unemployment, fostering entrepreneurial development, and advancing innovation (Subiyantoro et al., 2023). Vocational education is essential for equipping individuals with skills and flexibility to respond to labor market changes through collaboration with industry experts and the integration of new technology (Wei et al., 2024).

An essential component of the vocational education procedure is the assessment instrument. Assessment instruments are used to gather and

diagnose data regarding students' affective, psychomotor, and cognitive competencies for decision-making (Hidayat & Aulia, 2024). In vocational education, assessment instruments stimulate students' reflective evaluation of their classroom activities and assist them in assembling learning pathways to attain essential skills (Abramovskikh et al., 2021). In vocational education, assessment functions as a thorough evaluative instrument to gauge students' competencies and assist them in cultivating pertinent learning trajectories. Assessment also encourages the cultivation of skills aligned with the demands of the workforce.

Recent research over the past five years indicates a varied trend in creating assessment tools in SMK. (Ariyanto et al., 2019) created practical, authentic assessment tools. Creation of genuine evaluation tools for evaluating attitudes, knowledge, and skills by (Sugiyono et al., 2018). Creation of technology-driven assessment tools for critical thinking competencies by (Cahyaningrum et al., 2022). Creation of Tools for Evaluating Student Collaboration by (Firdausa & Istiyono, 2019). Creation of character evaluation tools for vocational high school students by (Dewi et al., 2020). Notwithstanding the extensive study on the creation of evaluation instruments, there remains a paucity of studies that attempt to review the material presented in prior investigations.

This literature study seeks to address three primary inquiries concerning the creation of evaluation tools in vocational schools precisely: (1) What are the research trends on assessment instrument development in Vocational High Schools in the last five years?; (2) What development model is predominantly used in making assessment instruments in Vocational High Schools?; (3) What aspects are measured by the assessment instruments developed for Vocational High Schools?; (4) What is HOTS-based assessment instrument development distribution compared to non-HOTS instruments in the last five years?; (5) What is the distribution of the development of Technology-based assessment instruments compared to non-technology instruments in the last five years?

The evolution of evaluation instruments in vocational education must consistently align with contemporary expectations, including the necessity for higher-order thinking skills (HOTS) and technological integration. This literature review emphasizes the significance of comprehending the patterns, models, and metrics involved in instrument development alongside examining the distribution of higher-order thinking skills and technology-driven instrument development. The focus on enhancing assessment in SMK via specific instruments would aid in elevating graduates' quality and guarantee their competitiveness in a progressively intricate labor market. Consequently,

the findings of this study are anticipated to establish a robust basis for enhanced and competitive innovation in vocational education.

RESEARCH METHOD

This research employs a literature review utilizing a content analysis methodology executed by (Fauzi & Pradipta, 2018). The study data was gathered by searching for papers utilizing the keywords "Development," "Instrument," "Assessment," AND "SMK." The article search was performed utilizing the Publish or Perish software. The chosen items were published between 2019 and 2024. The chosen articles addressed the creation of assessment tools in Vocational High Schools. A total of 530 items were identified in the search results. Upon further examination, 30 articles were identified that detailed the development of evaluation instruments. There are 25 papers addressing the development of evaluation instruments in Vocational High Schools. The article selection procedure adheres to the steps outlined by (Safrul, 2022), as depicted in Figure 1.

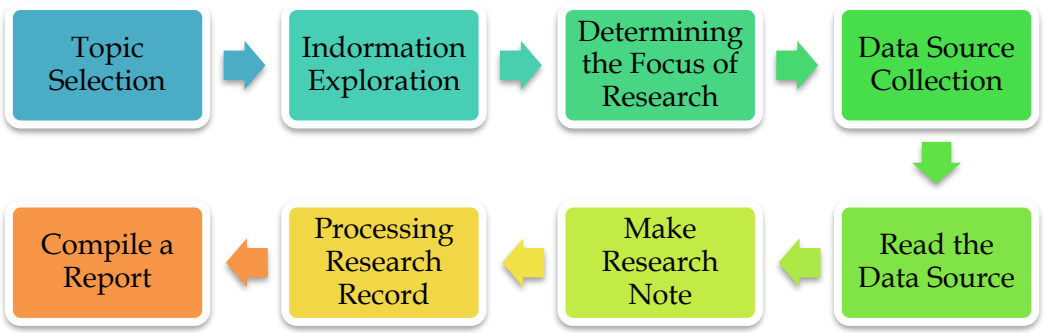

Figure 1.
Literature Study Procedure

RESULT AND DISCUSSION

RQ1: What are the research trends on assessment instrument development in Vocational High Schools in the last five years?

Analysis of research trends in Figure 2 shows fluctuations in the number of publications during the 2019-2024 period. The peak of publications occurred in 2020, with eight publications, followed by 2019, with six publications, and in 2021, with five publications. There was a significant decrease in 2022 and 2023, with two publications each, and in 2024, with one publication.

The significant increase in publications in 2020 can be attributed to the COVID-19 pandemic, which encourages accelerating technology adoption in education. This is in line with research (Herlambang et al., 2022) that teachers carried out online cognitive and affective assessments during the COVID-19

period. Research (Prasetyaningtyas & Wening, 2022) has also shown that the COVID-19 pandemic has driven the need to develop practical assessment instruments in the learning process, considering that existing instruments are often not equipped with adequate rubrics and have not gone through thorough validity testing.

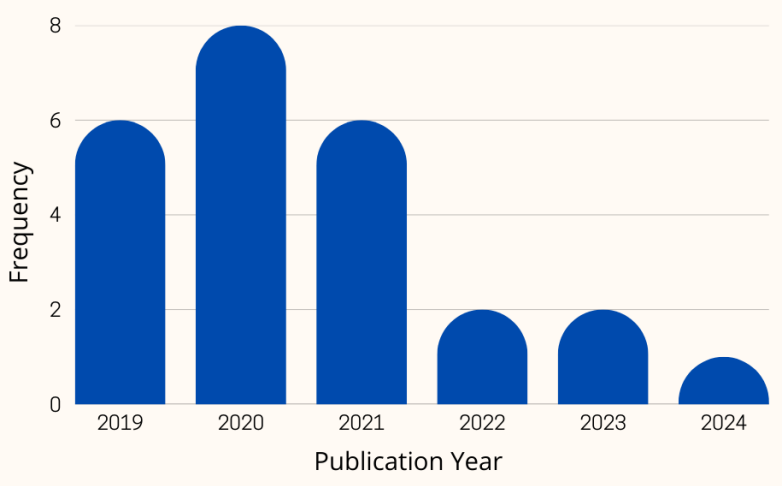

Figure 2.
Research Trends per Year

RQ2: What development model is predominantly used in making assessment instruments in Vocational High Schools?

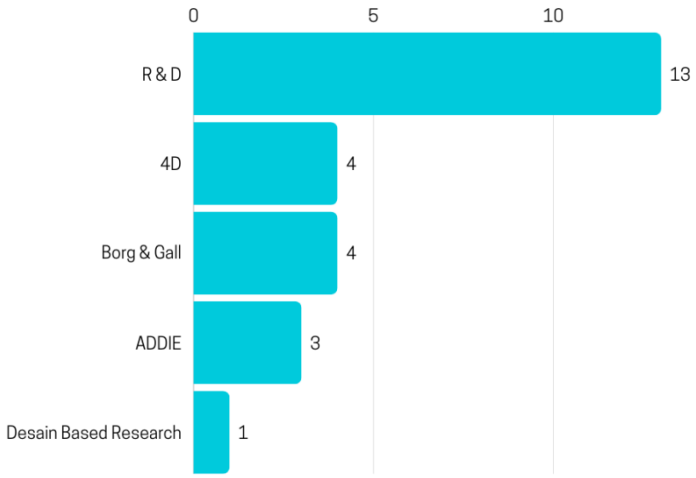

Figure 3.
Development Model Distribution

Figure 3 illustrates the development model utilization pattern in studies on evaluation tools in Vocational High Schools. The R&D (Research and Development) model was employed in the majority of research, with 13 adopting it. Other models, including 4D and Borg & Gall, were utilized in four studies each. Simultaneously, the ADDIE model was employed in three investigations, but the DSB model appeared in only one study.

RQ3: What aspects are measured by the assessment instruments developed for Vocational High Schools?

The analysis of the dimensions assessed by the research instruments in Figure 4 indicates that the knowledge dimension predominates with 15 studies, while the skills dimension follows with five studies. Each of the other facets of discipline, critical thinking skills, creativity, self-assessment, and technopreneurship intention aim was analyzed in a single study.

The prevalence of knowledge components in creating research instruments indicates a significant emphasis on cognitive evaluation in SMK. This aligns with studies (Ngadi, 2023) indicating that knowledge assessment is crucial for enhancing comprehension, reasoning, and the execution of sensible actions in practice.

he skills component ranked second with five studies, highlights the significance of evaluating the practical competencies of vocational students. (Yusop et al., 2023), assert that skills measurement in vocational education is crucial for assessing students' attainment of anticipated learning outcomes and establishing coherence between vocational competencies and educational objectives. The limited number of research underscores the necessity for enhanced emphasis on creating skill assessment tools.

The equitable allocation of elements such as discipline, critical thinking abilities, creativity, self-evaluation, and technopreneurial aim indicates an increasing recognition of the significance of soft skills and entrepreneurial traits in vocational education. (Kuregyan & Khusainova, 2022; Putra, 2021) underscored the growing significance of these characteristics in equipping SMK graduates for the requirements of Industry 4.0.

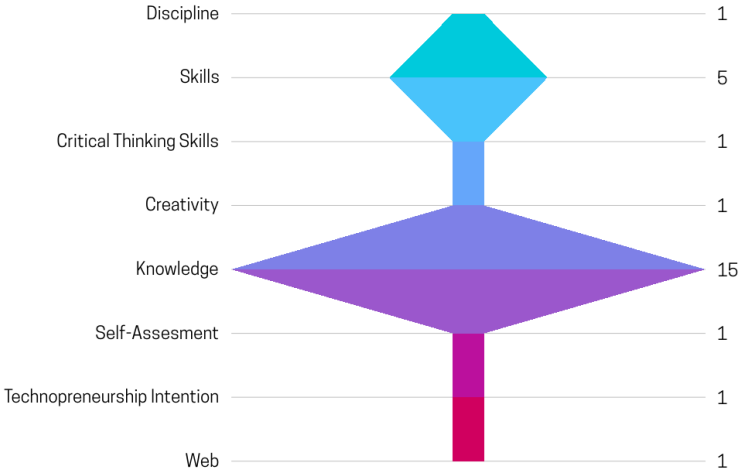

Figure 4.
Aspects Measured by The Instrument

RQ4: What is HOTS-based assessment instrument development distribution compared to non-HOTS instruments in the last five years?

According to Figure 5, the evolution of research instruments in Vocational High Schools (SMK) indicates that 13 instruments (52%) are not grounded in Higher Order Thinking Skills (HOTS), whereas 12 instruments (48%) are HOTS-based. These findings indicate a nearly balanced distribution, with a slight predominance of instruments that are not HOTS-based.

Instruments based on higher-order thinking Skills (HOTS) are intended to assess students' cognitive abilities while facilitating their attainment of competencies aligned with the curriculum or learning objectives (Arthur et al., 2023). The 48% ratio signifies that instrument creation in SMK has deficiencies in implementing HOTS principles, as most instruments are not grounded in HOTS methodology. Consequently, there is a necessity for enhanced emphasis on HOTS-based instrument design to facilitate learning that is more inventive and pertinent to the demands of the contemporary workforce.

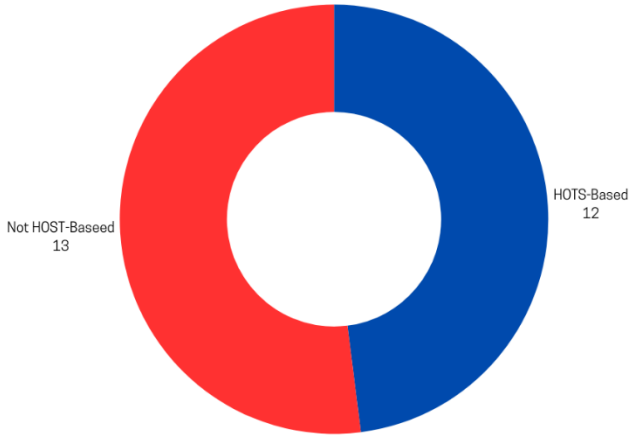

Figure 5.
HOTS-based Instrument Development

RQ5: What is the distribution of the development of Technology-based assessment instruments compared to non-technology instruments in the last five years?

The data analysis presented in Figure 6 indicates that among the total studies on technology-based instrument development in SMK, most researchers (14 studies) did not employ specific technology platforms in their instrument development. Simultaneously, the Android and Quizizz platforms were utilized in three studies each. Classpoint, Edmodo, Kahoot, Smartrubric, and Web were utilized in one study each.

The prevalence of studies lacking specialized technological platforms suggests a persistent gap in adopting technology for research instrument development in SMK. This aligns with studies (Basuki et al., 2024) indicating

that technology implementation in vocational schools encounters significant hurdles, including time limitations, insufficient training, and inadequate technical support. Integrating digital technology in vocational education necessitates substantial investment in infrastructure and continuous assistance to guarantee the sustainability and efficacy of learning (Kossova-Silina, 2024). This signifies the necessity for more assistance in deploying technology to advance research tools in vocational institutions.

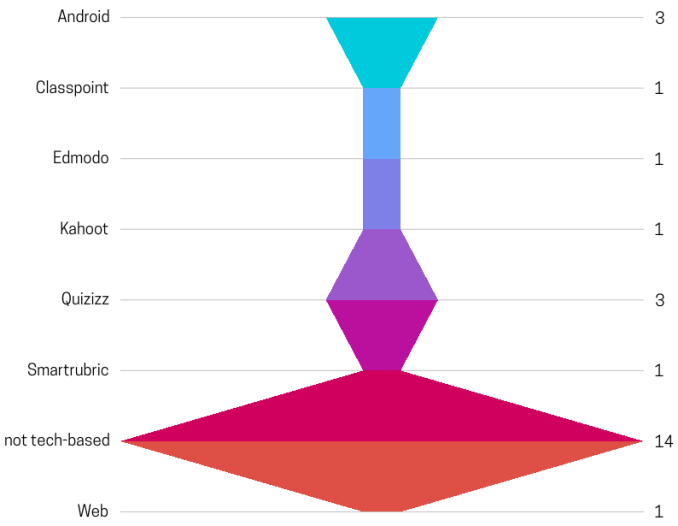

Figure 6.
Technology-based Instrument Development

CONCLUSION

Research on the development of evaluation instruments in vocational schools, as reported in various academic journals, has declined during the past five years. The predominant development paradigm in the research on assessment instrument development in vocational schools during that period was the R&D model. In the past five years, the knowledge dimension has emerged as the focal point in research concerning constructing evaluation instruments. Moreover, when analyzed through the lens of HOTS-based assessment, it reveals a nearly equitable distribution. The prevalence of research lacking specialized technological platforms suggests a continued deficiency in technology adoption for creating research instruments in SMK.

As demonstrated by this study's findings, research trends regarding the development of assessment instruments in vocational schools present a significant opportunity for future researchers to explore alternative development models, focusing on measurement aspects beyond knowledge and

creating higher-order thinking skills (HOTS) assessment instruments that incorporate technology.

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