

Teachers' perceptions on the revised curriculum assessment requirements for mechanical technology subject in South Africa

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ABSTRACT

Although competency-based vocational education emphasizes practical skills development, limited attention has been paid to how assessment requirements are perceived to influence the implementation of skills-oriented subjects at the secondary-school level. This study addresses this gap by exploring teachers' perceptions of the balance between theoretical and practical assessment within the promotion requirements for Mechanical Technology in South Africa. Specifically, it examines teachers' views of the 75:25 weighting between theory-based assessment and the Practical Assessment Task (PAT) and its implications for practical skills development. The study employed a qualitative phenomenological design involving 18 purposively selected mechanical technology teachers from eight districts in Gauteng Province. Data were collected through open-ended questionnaires and face-to-face interviews and analysed through a systematic coding and theme-development process. The findings showed that all participants expressed concern about the balance between theoretical knowledge and practical skills and supported reconsideration of the current assessment arrangement. Most participants also perceived students who had completed the previous curriculum as having better employment prospects. Interview findings further highlighted concerns related to the weighting of practical assessment, opportunities for practical learning, workshop capacity, and resource availability. Overall, the participating teachers perceived the current promotion requirements as placing insufficient emphasis on the practical component of Mechanical Technology. The findings suggest a need to examine whether the current balance between theory and practical assessment adequately reflects the competency-oriented aims of the subject while maintaining the integration of theoretical understanding and practical competence. This study contributes to vocational education research by providing context-specific evidence of how teachers perceive assessment weighting in relation to curriculum implementation and practical skills development in secondary technical education.

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INTRODUCTION

Vocational education plays an important role in preparing individuals with the practical competencies required to participate effectively in contemporary labor markets. As industries respond to technological change and evolving occupational demands, vocational education and training (TVET) is increasingly expected to develop graduates who can combine theoretical knowledge with practical competence, problem-solving ability, and occupational skills. This expectation has encouraged curriculum reforms that place greater emphasis on competency-based education and the alignment of learning outcomes with workplace requirements. Within this context, assessment is particularly important because it determines not only what students are expected to learn but also the competencies they are required to demonstrate before progressing or completing a program.

Unlike predominantly academic subjects, vocational subjects require students to demonstrate their knowledge through practical application in authentic or work-related contexts. Practical assessment therefore represents an integral component of vocational education, providing opportunities for students to apply technical knowledge, solve problems, and develop occupational competencies. The balance between theoretical and practical assessment consequently has implications for how vocational curricula are implemented and how students develop the skills expected by industry. This concern has become particularly relevant in education systems seeking to strengthen the relationship between school-based vocational learning and labor-market needs.

In South Africa, curriculum reforms have similarly sought to improve the quality and relevance of vocational education. Mechanical technology is one of the vocational subjects intended to equip students with practical skills in automotive, fitting and machining, and welding (Mhlanga et al., 2023). The subject therefore requires students not only to understand technical principles but also to demonstrate practical competence. During the COVID-19 pandemic, however, the Department of Basic Education (DBE) introduced curriculum adjustments that included trimming the content of mechanical technology in Grades 10 and 11 and reducing the contribution of the practical component to students' promotion requirements from 25% to 20%. Although this adjustment was introduced in response to pandemic-related disruptions, questions remain about its implications for practical skills development and the implementation of mechanical technology after the immediate disruption had passed.

As part of its response to the learning time and content lost during the pandemic, the DBE introduced a Revised Annual Teaching Plan (RATP). The students who were directly affected by the initial pandemic-related curriculum disruption have since progressed through or left the school system. Nevertheless, the period may have had implications for subsequent teaching practices, particularly because some teachers entered the profession during or around the period of curriculum adjustment and may have had varying levels of practical preparation (T. I. Mtshali & Singh-Pillay, 2023). This raises a broader question about how teachers currently understand and implement the balance between theoretical and practical assessment in mechanical technology.

Under the current assessment structure, the promotion requirements for mechanical technology allocate 25% to School-Based Assessment (SBA), 50% to the November examination, and 25% to the Practical Assessment Task (PAT). Thus, written or theory-based assessment contributes 75% of the overall assessment, while the practical component contributes 25%, as presented in Table 1.

Table 1. Assessment Criteria for Mechanical Technology

Program of Assessment for Mechanical Technology		
School-Based Assessment (SBA)	November Examination	Practical Assessment Task (PAT)
25%	50%	25%
75% Both written tasks (theory)		

Source: Department of Basic Education (2014)

The weighting is particularly important because the Curriculum and Assessment Policy Statement (CAPS) prescribes four hours of contact time per week for mechanical technology, with two hours allocated to theory and two hours to practical learning (Department of Basic Education, 2014). The relatively balanced allocation of instructional time contrasts with an assessment structure in which the practical component contributes only 25% to the final assessment. This raises an important question about whether the assessment weighting adequately reflects the practical orientation of the subject and its objective of developing occupational competence in automotive, fitting and machining, and welding. The issue is also relevant to broader national concerns regarding skills development and youth employment in South Africa (Obi & Ojo, 2025; Omojemite & Cisse, 2025).

The importance of practical competence in mechanical technology is reinforced by the demands placed on both teachers and students. Effective teaching of technical subjects requires teachers to possess not only disciplinary knowledge but also the practical ability to develop and demonstrate technical models and projects (Patricia et al., 2023). Similarly, sufficient instructional time and opportunities for Practical Assessment Tasks are important for developing students'

technical skills (Mhlongo et al., 2023). Nevertheless, technical subjects have sometimes been perceived as alternatives for students who struggle academically or are at risk of dropping out of school (Tshabalala & Ncube, 2014). Such perceptions can obscure their broader educational and economic role in developing competencies required by industry and creating pathways into employment.

This issue extends beyond the South African context. Evidence from other African countries has identified persistent challenges in technical and vocational education. Studies in Zimbabwe and Tanzania, for example, have highlighted inadequate training equipment and limitations in workshop facilities (Magidi & Mahiya, 2021; Muneja et al., 2024). Munishi (2025) similarly reported that graduates of technical education in Tanzania often lacked the knowledge, hands-on competence, communication skills, computer skills, and other capabilities required for employment. Related concerns about graduate preparedness and skills development have also been reported by T. Mtshali et al. (2023). These challenges are significant because strong technical secondary education and TVET systems can provide important pathways for skills development and labor-market participation (Lee & Lim, 2021; Tshabalala & Ncube, 2014).

Employability, however, depends not simply on participation in technical education but on whether students have sufficient opportunities to develop and demonstrate relevant competencies. Omar et al. (2020) emphasize the importance of employability skills in preparing graduates for industry and argues that educators should expose students to skills and experiences that reflect workplace expectations. Similarly, Dambudzo (2015) argues that learning becomes more relevant when it is organized around practical activities, projects, and problem-solving connected to students' environments. These perspectives reinforce the importance of practical learning in vocational education and support the view that mechanical technology should provide meaningful opportunities for students to develop occupational competence through hands-on activities (Mhlanga et al., 2023).

Despite this growing literature, an important gap remains. Previous research has largely examined curriculum implementation, teacher preparedness, resource availability, competency-based education, and assessment practices in Mathematics, Science, general Technology Education, and TVET colleges. Studies in technical education have also documented shortages of equipment, inadequate workshop facilities, and graduate skills deficits. However, considerably less attention has been given to the weighting of practical assessment within promotion requirements for mechanical technology at the South African secondary-school level, particularly from the perspective of teachers responsible for implementing the curriculum. Existing studies therefore provide valuable evidence about the challenges facing vocational education but offer limited insight into how teachers perceive the current balance between theoretical and practical assessment and its implications for students' practical skills development.

Addressing this gap is important because assessment weighting can influence the emphasis placed on different forms of learning and the competencies students are expected to demonstrate. In a subject explicitly oriented toward practical occupational skills, examining whether promotion requirements adequately reflect this orientation can provide useful evidence for curriculum implementation and future policy discussion. The issue is especially pertinent in mechanical technology, where students are expected to develop competencies relevant to automotive, fitting and machining, and welding, while the current assessment structure allocates substantially greater weight to theory-based assessment than to the Practical Assessment Task.

Accordingly, this study explores teachers' perceptions of the current 75:25 theory-to-practical assessment weighting in the promotion requirements for mechanical technology in South African secondary schools and its implications for students' practical skills development. By focusing specifically on teachers' experiences and perceptions of the assessment structure, the study extends existing research beyond commonly examined issues of resources, teacher preparedness, and general curriculum implementation. In doing so, it provides context-specific evidence on the relationship between curriculum assessment requirements and the practical, competency-oriented aims of mechanical technology education.

METHOD

This study employed a qualitative research approach to explore teachers' perceptions and experiences of the revised promotion requirements for mechanical technology. A qualitative approach was considered appropriate because it allows researchers to examine how individuals interpret and assign meaning to their experiences (Creswell, 2022; Tuffour, 2017). Qualitative inquiry is also concerned with understanding phenomena within their natural contexts and interpreting them through the meanings attributed by those directly involved (Aspers & Corte, 2021). Given the focus on teachers' experiences of implementing the revised curriculum and assessment requirements, the study adopted a phenomenological design. This design enabled an in-depth exploration of how mechanical technology teachers perceived and experienced the revised promotion requirements in their professional practice.

The study involved 18 mechanical technology teachers from eight districts in Gauteng Province, South Africa. Participants were selected purposively because they had direct experience with the curriculum and assessment requirements under investigation and were therefore able to provide information relevant to the research problem. Purposive sampling is appropriate in qualitative research when participants are selected on the basis of their knowledge and experience of the phenomenon being studied (Kelly, 2010). Although a sample represents a subset of a broader population (Mujere, 2016), the purpose of sampling in this study was not statistical representativeness but to obtain detailed, context-specific accounts from teachers directly involved in implementing mechanical technology. All 18 teachers who met the study criteria within the selected districts were included. To protect their identities and maintain confidentiality, participants were assigned pseudonyms ranging from Teacher A to Teacher R.

Data were collected using an open-ended questionnaire and face-to-face interviews. The questionnaire consisted of four open-ended questions designed to elicit teachers' perceptions of the revised Curriculum and Assessment Policy Statement (CAPS) promotion requirements for mechanical technology. The questions were developed with reference to the study objectives, relevant literature, and the revised CAPS policy documents to ensure that they addressed the central issues under investigation. Although the questionnaire contained only four questions, each was intentionally broad to allow participants to elaborate on their experiences and perspectives rather than restricting their responses to predetermined categories. The questionnaire was reviewed by experts in Technology Education and educational research to assess the clarity, relevance, and alignment of the questions with the study objectives. Their recommendations were incorporated before data collection commenced. The open-ended questionnaire responses were complemented by face-to-face interviews, during which probing questions were used where necessary to clarify participants' responses and obtain a deeper understanding of their experiences.

The qualitative data were analysed through a systematic coding and theme-development process. Interview data were transcribed verbatim to preserve participants' original accounts, and the transcripts, together with the open-ended questionnaire responses, were read repeatedly to develop familiarity with the data. Responses relevant to the research questions were then identified and coded, after which codes reflecting similar ideas or experiences were grouped into broader categories. These categories were subsequently examined and organized into themes aligned with the study objectives and research questions.

The themes were interpreted in relation to the participants' accounts and the relevant literature, while verbatim quotations were used to illustrate key patterns and preserve participants' voices. This systematic movement from repeated reading to coding, categorization, and theme development provided a transparent basis for interpreting the qualitative data. The use of multiple qualitative data sources, including open-ended questionnaire responses and face-to-face interviews, also enabled the researchers to compare patterns across participants' accounts. Credibility was further supported by the use of probing questions during the interviews to clarify participants' intended meanings and by retaining verbatim quotations to ensure that the interpretation remained grounded in their reported experiences. Together, these procedures strengthened the credibility and trustworthiness of the findings by maintaining a clear connection between the original data, the developed themes, and the interpretations presented in the study.

RESULTS AND DISCUSSION

Results

This study examined mechanical technology teachers' perceptions of the revised promotion requirements using data from open-ended questionnaires and face-to-face interviews. The questionnaire responses were categorized according to the four issues addressed in the instrument, while the interview data provided more detailed accounts of participants' experiences and views. Figure 1 summarizes the distribution of questionnaire responses from the 18 participating teachers.

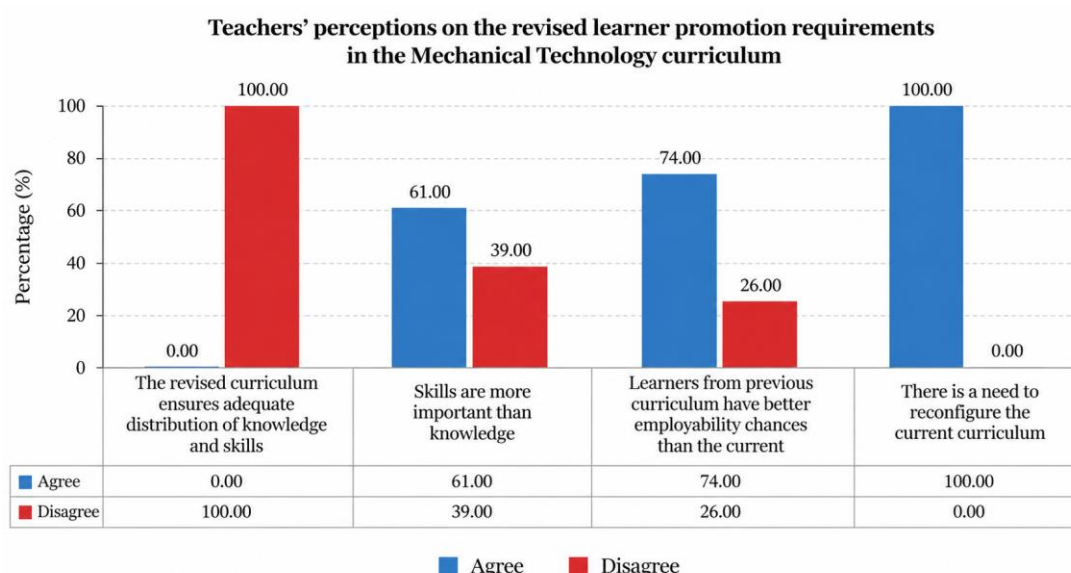


Figure 1. Percentage distribution of responses from mechanical technology teachers ($n = 18$) to four open-ended questionnaire items concerning the revised promotion requirements. Percentages indicate the proportion of participants whose responses were categorized as Agree or Disagree for each item

Revised Promotion Requirements for Mechanical technology

According to Circular S7 of 2020 issued by the South African Department of Basic Education, the promotion requirements for Grades 10–11 were revised. For mechanical technology, the assessment weighting changed from 25% for the Practical Assessment Task (PAT), 25% for School-Based Assessment (SBA), and 50% for the examination to 20% for PAT, 60% for SBA, and 20% for the examination. Under the revised arrangement, the practical assessment component therefore accounted for 20% of the overall promotion requirement.

Teachers' Responses to the Revised Requirements

As shown in Figure 1, all 18 teachers (100%) disagreed that the revised curriculum provided an adequate balance between theoretical knowledge and practical skills. When asked about the relative importance of skills and knowledge, 61% agreed that skills were more important than knowledge, while 39% disagreed. In addition, 74% believed that students who had completed the previous curriculum had better employment prospects than those following the revised curriculum, whereas 26% disagreed. All participants (100%) also agreed that the current curriculum needed to be reconfigured. These responses show a consistent pattern of concern among the participating teachers regarding the balance between theoretical and practical components within the revised requirements.

Teachers' Experiences of Practical Skills Development

The interview data provided further detail on the concerns identified in the questionnaire responses. A recurring issue was the amount of curriculum time and assessment weight allocated to

practical skills development. Teacher F described the perceived effect of reducing the practical component from 25% to 20%:

"The current curriculum setup does not give students the necessary time that will help them develop the necessary skills. The reduction of 25% to 20% underscored the efforts to create skillful students."

A related concern was raised by Teacher D, who had more than 20 years of teaching experience. The participant compared the current curriculum with earlier arrangements and also referred to workshop capacity and resource constraints:

"Back in the years before Curriculum 2000, the technical subjects had 50% theory and 50% PAT, unlike this curriculum of CAPS, which drove our subject more towards theory than practice. We had limited resources, but also, we had a manageable number of students in our workshops. Now you get more than 30 students in a workshop that should cater for 15, while you have limited resources."

Teacher H similarly related the balance between theory and practical assessment to the perceived purpose of mechanical technology as a skills-oriented subject:

"I believe that the purpose of having MT as a subject was mainly to lift up the skills challenges in our societies, so as a result the curriculum developers need to take that into cognizance as paramount important, I mean what's the use of having MT if students are only going to be progressed through theory over skills in this case PAT."

Across these accounts, participants consistently raised concerns about the emphasis placed on theoretical assessment relative to practical learning. The interview responses also identified curriculum time, assessment weighting, workshop capacity, and resource availability as issues associated with the implementation of practical learning in mechanical technology.

Synthesis of Questionnaire and Interview Findings

Taken together, the questionnaire and interview data showed a consistent pattern in teachers' perceptions of the revised promotion requirements. All participants expressed concern about the balance between theoretical knowledge and practical skills, and all indicated that the current curriculum should be reconfigured. Most participants (74%) also perceived students who had completed the previous curriculum as having better employment prospects, while 61% placed greater importance on skills than on knowledge. The interview responses provided further context for these patterns, particularly in relation to the reduced weighting of PAT, the time available for practical learning, workshop capacity, and resource constraints. Overall, the findings indicate that the participating teachers perceived the current promotion requirements as placing insufficient emphasis on the practical component of mechanical technology.

Discussion

The findings indicate that mechanical technology teachers perceived the revised promotion requirements as insufficiently aligned with the practical and competency-based orientation of the subject. Participants were particularly concerned about the limited weighting assigned to the Practical Assessment Task (PAT), arguing that this arrangement places greater emphasis on theoretical achievement than on the demonstration of practical competence. This concern is noteworthy because mechanical technology is intended to develop occupational skills through both conceptual understanding and hands-on learning. From the teachers' perspective, therefore, the issue is not simply the percentage assigned to an assessment component, but whether the assessment structure adequately reflects the competencies that the subject is intended to develop.

This interpretation is consistent with Mathabatha et al. (2023), who observed that technical education can place considerable emphasis on theoretical assessment at the expense of psychomotor skill development. It also resonates with Dambudzo (2015), who emphasizes the value of practical, problem-oriented learning in developing skills that can be applied beyond the classroom. Taken together, these perspectives suggest that assessment in a competency-oriented vocational subject

should provide meaningful opportunities for students to demonstrate what they can do, rather than relying predominantly on what they can reproduce through written or theoretical assessment. The present findings extend this argument by showing that teachers themselves perceive assessment weighting as an important factor in maintaining—or potentially weakening—the practical orientation of mechanical technology.

A second important finding concerns the perceived relationship between assessment requirements and employability. Most participants believed that students who completed the previous curriculum had better employment prospects than those following the revised curriculum. This finding should be interpreted as a teacher perception rather than direct evidence of graduate employment outcomes. Nevertheless, it highlights teachers' concern that fewer opportunities to develop and demonstrate practical competence may affect students' preparation for occupational settings. [Isaac and Manto \(2019\)](#) similarly emphasize that effective practical learning depends on appropriate workshop facilities, equipment, and learning resources, while [McGuinness et al. \(2025\)](#) draw attention to the continuing challenge of aligning educational outcomes with labor-market requirements. In this sense, assessment policy operates alongside other conditions—including resources, facilities, and opportunities for practical engagement—that shape vocational learning.

The interview findings further suggest that assessment weighting may influence how teachers organize teaching and learning. Participants described a curriculum environment in which greater emphasis on theory could encourage more classroom-based instruction and reduce the relative attention given to workshop activities. This interpretation is consistent with [Asplund et al. \(2022\)](#), who demonstrate the importance of practical engagement in vocational workshop learning, and with [Wells and Hainline \(2021\)](#), who emphasize the role of practical learning opportunities in developing occupational competence. The issue is therefore broader than assessment itself. When a particular form of achievement carries greater weight in student progression, teachers may reasonably devote greater instructional attention to the knowledge and skills most strongly represented in that assessment.

Viewed from a competency-based education perspective, this creates a potential tension between the intended outcomes of mechanical technology and the way those outcomes are assessed. Vocational competence involves not only knowing technical principles but also being able to apply them appropriately in practical situations. An assessment system that does not sufficiently represent both dimensions may therefore create a mismatch between curriculum intentions, classroom practice, and the competencies students are expected to demonstrate. The contribution of the present study lies in drawing attention to assessment weighting as part of curriculum implementation, rather than treating it as a purely administrative arrangement. Previous studies have examined curriculum implementation, employability, resources, and skills development; the present findings add teachers' perspectives on how the relative weighting of theoretical and practical assessment may shape the implementation of competency-based teaching at the secondary-school level.

The findings also have implications for teachers and curriculum developers. [Jurgens et al. \(2023\)](#) argue emphasize the importance of creating safe and supportive workshop environments for effective teaching and learning in mechanical technology. Within mechanical technology, such an environment includes adequate opportunities to engage with practical tasks and demonstrate technical competence. The strong support among participants for reconsidering the current assessment arrangement therefore suggests a need to examine whether the weighting assigned to theory and practical assessment adequately represents the intended learning outcomes of the subject. This does not necessarily mean that theoretical knowledge should be diminished; rather, theory and practice need to be sufficiently integrated so that assessment reflects both conceptual understanding and the ability to apply knowledge in authentic technical contexts.

These considerations are also relevant to the Schools of Specialisation in Gauteng Province. Investments in equipment, industry partnerships, and work-integrated learning can broaden students' exposure to authentic technical environments, but their educational value also depends on how practical competence is recognized within the curriculum and assessment system. [Nkosi and Mtshali \(2024\)](#) similarly emphasize the role of innovation, problem-solving, and industry relevance in developing technological creativity. From this perspective, stronger connections among curriculum content, practical learning, assessment, and workplace expectations could help ensure that

investments in vocational education translate into meaningful opportunities for students to develop and demonstrate occupational competence.

At the same time, the findings should be interpreted within the boundaries of the study. The research involved 18 mechanical technology teachers from eight districts in Gauteng Province and focused specifically on their perceptions and experiences. The findings therefore do not establish that the current assessment weighting directly causes lower levels of practical competence, employability, or workplace readiness among students. Nor did the study directly assess students' practical performance, compare learning outcomes under different assessment structures, or collect evidence from employers, curriculum policymakers, or other stakeholders. In addition, participants' views may have been shaped by differences in teaching experience, school resources, workshop capacity, and local implementation conditions. These limitations are important when considering the transferability of the findings beyond the participating teachers and schools.

Future research could build on these findings by examining the issue across other provinces, technical subjects, and school contexts, particularly where access to equipment and workshop facilities differs. Studies incorporating students, employers, curriculum developers, and industry representatives would also provide a broader understanding of whether assessment requirements align with the competencies expected in further training and employment. Quantitative or mixed-methods studies could examine the relationship between different theory–practice assessment weightings and students' demonstrated practical competence, while longitudinal research could investigate whether these assessment arrangements are associated with later educational and employment outcomes. Such evidence would provide a stronger empirical basis for determining whether changes to assessment weighting are warranted and how theory and practical competence can be balanced within mechanical technology.

CONCLUSION

This study explored mechanical technology teachers' perceptions of the balance between theoretical and practical assessment within the current promotion requirements in South African secondary schools. The findings indicate that the participating teachers perceived the existing assessment structure as insufficiently aligned with the practical and competency-based orientation of mechanical technology. All participants expressed concern about the balance between theoretical knowledge and practical skills and supported reconsideration of the current assessment arrangement, while most perceived the previous curriculum as providing better prospects for employability. The study contributes to the vocational education literature by highlighting assessment weighting as an important dimension of curriculum implementation and by showing how teachers perceive its relationship with opportunities for practical skills development. Rather than suggesting that theoretical knowledge should be reduced, the findings point to the need for a closer alignment between assessment requirements and the dual purpose of mechanical technology: developing conceptual understanding while enabling students to demonstrate practical competence. In this regard, the findings provide an evidence-based rationale for the Department of Basic Education and other relevant stakeholders to examine whether the current balance between theory and practical assessment adequately reflects the competency-oriented aims of the subject. Such a review could also consider stronger collaboration with teachers and industry stakeholders, the role of work-integrated learning, and the availability of appropriate workshop facilities, equipment, and materials across the three mechanical technology specializations.

These conclusions should be interpreted within the scope of the study. The research involved 18 mechanical technology teachers from eight districts in Gauteng Province and examined their perceptions rather than directly measuring students' practical competence, employability, or workplace readiness. The findings therefore should not be interpreted as evidence that the current assessment weighting directly causes particular student or employment outcomes. Future research could extend the study to other provinces, technical subjects, and school contexts and incorporate the perspectives of students, employers, curriculum developers, and industry representatives. Quantitative and mixed-methods studies could also examine whether different theory–practice assessment weightings are associated with measurable differences in students' practical competence,

while longitudinal research could investigate longer-term outcomes related to skills development, further training, employment, and entrepreneurship. Such evidence would provide a stronger empirical basis for future decisions concerning the balance between theoretical understanding and practical competence in mechanical technology assessment.

AUTHOR CONTRIBUTIONS STATEMENT

This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

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Samuel Dumazi Khoza	✓	✓		✓	✓					✓		✓		

C : Conceptualization

M : Methodology

So : Software

Va : Validation

Fo : Formal analysis

I : Investigation

R : Resources

D : Data Curation

O : Writing - Original Draft

E : Writing - Review & Editing

Vi : Visualization

Su : Supervision

P : Project administration

Fu : Funding acquisition

CONFLICT OF INTEREST STATEMENT

The authors declare that they have no known competing financial or non-financial interests that could have appeared to influence the work reported in this paper.

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