



Competence Based Training and Skill Acquisition of Automotive Students in Technical Training Institutes in the Eastern Region of Uganda

Okung Samson ^{a*}, Peter Okemwa ^{a++}
and Doreen A. Orawo ^{b#}

^a Department of Technology Education, University of Eldoret, Kenya.

^b Department of Communication and Media Studies, University of Eldoret, Kenya.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The aim of this study was to examine the effectiveness of Competence-Based Training (CBT) in enhancing skill acquisition among automotive students in technical training institutes in eastern Uganda. Specifically, it investigated the influence of instructional resources, infrastructure relevance, human resource capacity, and financial adequacy on students' practical skill development. A mixed-methods research design was employed, integrating both quantitative and qualitative approaches to provide a comprehensive understanding of the factors affecting CBT implementation and outcomes. The study was conducted in Technical Training Institutes located in

⁺⁺ Senior Lecturer;

[#] Lecturer;

^{*}Corresponding author: Email: okungsamson@gmail.com;

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Eastern Uganda. Data collection and analysis spanned a defined period aligned with the academic calendar and institutional availability, though the exact duration was not specified.

A total of three hundred forty-one (341) individuals participated, including 288 students, 40 instructors, and 13 administrators, selected through stratified sampling. Questionnaires, interviews, focus group discussions (FGDs), and document analysis were used for data collection. Quantitative data was analyzed using descriptive and inferential statistics with the aid of Mini-Tab 2022 software while qualitative data was thematically analyzed. Validity and reliability was ensured through pilot testing.

On the influence of instructional resources towards CBT, results showed moderately effective (mean = 2.89, SD = 1.28); 75.7% of students used them weekly, but 80.9% faced access challenges. FGDs and interviews confirmed shortages (47% of students, 80% of instructors).

For infrastructure, it was observed that; slightly adequate (mean = 3.24, SD = 1.24); 90.6% of students found it conducive, yet 80% of instructors cited outdated equipment, supported by maintenance logs (60%).

It was also observed that of human resource capacity generally offer support to CBT with (mean = 3.56, SD = 1.10); 77.8% of students noting methodological alignment, but 70% of instructors reported staffing shortages, confirmed by training records.

Finally, financial adequacy was found to be inadequate with mean = 2.84 and SD = 1.32 and 87.5% of students acknowledged its impact on practical training, while 38.5% of administrators lacked funding mechanisms, as revealed through interviews and budget reviews.

The study identified critical gaps in instructional resources, infrastructure, staffing, and financial support that hinder effective skill acquisition under the CBT framework. These findings offer valuable insights for policymakers and educators aiming to strengthen technical education and vocational training in Uganda.

Keywords: Competence based training; automotive students; skill acquisition; vocational training.

1. INTRODUCTION

1.1 Background

Technical training institutes are central in preparing automotive students for a competitive industry, as observed by Tayam & Doncillo, (2024), with global research emphasizing effective training for a skilled workforce Saleh & Ainiah, (2024). Studies, including (Fischer Martinand Jungmann, 2014).

noted diverse approaches. Germany and Japan's dual education system integrates classroom learning with apprenticeships, enhancing skills Baethge & Wolter, (2015), while U.S. programs like GM's ASEP align curricula with industry needs through internships Bambang Sudarsono et al., (2021). In Africa, South Africa's National Artisan Development Strategy boosts artisan training via industry partnerships Siwela & Van Der Bank, (2021), Nigeria updates curricula with modern equipment Bambang Sudarsono et al., (2021), and Kenya's Competency-Based Training (CBT) under the KNQF and CDACC focuses on practical, outcome-based skills Jwan, (2023). In Uganda, the growing automotive sector faces challenges like limited access, quality issues, curriculum misalignment, and stigma,

despite efforts to expand TVET (ILO PROSPECTS (2022), necessitating investments in infrastructure, training, and partnerships. This study targets these gaps in Eastern Uganda to enhance CBT effectiveness and align training with industry needs Justin, (2020).

This research examines the effectiveness of competence-based training (CBT) for automotive students in Uganda's Eastern Region, with 37 districts and a high demand for automotive services due to agricultural and commercial activities, supported by institutions like St. Kizito and Iganga Technical Institutes. Affected by past civil unrest (1986-1995) from groups like the Lord's Resistance Army, the region's education system suffered, and a 2021/2022 UBTEB report highlighted strained resources and overcrowded classrooms (73.0% with over 45 students) despite rising enrolment, prompting an investigation into practical competency gaps, development strategies, and alignment with emerging automotive technology trends.

The automotive sector's significant contribution to Uganda's economy calls for the need for a skilled workforce, making this research more relevant to the socioeconomic perspective, while its alignment with the academic and practical

goals of technical training institutions shows its role in preparing students for employment. The study findings hold potential for positive impact by directing evidence-based decisions and transformative actions to address skills gaps, enhance workforce development, and boost the automotive sector's performance, thereby accelerating economic growth.

1.2 Objectives of Research

The main objective of this research was to examine the effectiveness of competence-based training and skill acquisition of automotive students in technical training institutes in the eastern region of Uganda. It was guided by four specific objectives; to determine the influence of instructional resources, to evaluate infrastructure relevance, to establish the influence of human resource capacity and to assess the financial adequacy on competence-based training of Automotive students in Uganda.

1.3 Research Questions

This study was guided by four research questions; how does the availability and quality of instructional resources in automotive education institutions in Uganda impact the competence-based training of students?, in what ways does the adequacy and appropriateness of infrastructure affect the competency-based training of automotive students in Uganda?, what is the role of automotive instructors' qualifications and experience in facilitating competence-based training of automotive students in Uganda?, and how does the level of financial investment and budget allocation impact competence-based training of automotive students Uganda?

2. LITERATURE REVIEW

Competence-Based Training (CBT) has emerged as a central strategy in Uganda's Technical and Vocational Education and Training (TVET) system, aiming to equip graduates with practical skills aligned with labor market demands, particularly in automotive training, where the availability, adequacy, and quality of instructional resources (engines, diagnostic tools, workshop manuals, vehicle lifts, and digital platforms) are crucial for hands-on learning and competency development. According to Herbert & Michael Etoru, (2024), resource-rich environments with industry standard tools are key for effective CBT, enabling skill acquisition, adaptation to technological advancements like electric vehicles

and digital diagnostics, enhanced teaching through practical demonstrations, and industrial training aids in alignment with industry requirements as seen in the German Dual Training System Chauhan et al., (2023), and increased student motivation and retention, though studies in Uganda's Eastern region show significant gaps, including outdated equipment and financial challenges in public technical institutes that compromise practical training outcomes. Globally, instructional resources are vital, with educational videos and library resources gaining traction videos enhance understanding of automotive concepts and are increasingly adopted in Europe and Uganda despite infrastructure challenges, while libraries in North America, Europe, and Africa, including Uganda, provide extensive physical and digital materials to support learning, though limited funding and access remain concerns. The (Herbert & Michael Etoru, 2024) emphasizes that outdated tools reduce employability, underscoring the need for investment in infrastructure, capacity building, and equitable resource allocation to bridge the gap between training and industry expectations, especially in Uganda where efforts to integrate technology and improve library access are poised to shape the future of education.

The relevance of infrastructure in competence-based training for automotive students in Uganda is critical, as training facilities equipped with modern labs and workshops, as evidenced by (Tayam & Doncillo, 2024), significantly enhance student engagement, skill acquisition, and problem-solving abilities by providing realistic, hands-on learning experiences that mirror real-world scenarios, a principle supported globally by the Kosia Mokoro, (2020).

The need for smart automotive technologies and electric vehicles, as noted by (Garuzooka et al. (2023).), emphasizes the need for digital infrastructure like simulation tools and diagnostic software, requiring continuous investment to ensure market-relevant competencies, however, in Africa, including Nigeria, Ghana, Kenya, Tanzania, and Uganda, inadequate and outdated facilities such as overcrowded workshops and lack of diagnostic tools hinder training effectiveness, as reported by Louis Odaro & Esosa, (2024.). In Uganda, despite recognition by the Uganda Business and Technical Examinations Board (UBTEB) and Directorate of Industrial Training (DIT) of the need for improved infrastructure, several technical institutes suffer

from insufficient facilities, leading to mismatch with industry demands, though Rwanda's progress with model TVET centers and donor-supported projects elsewhere suggest potential solutions through strategic investments, industry partnerships, and maintenance support Abdisa & Hawitibo, (2021) to bridge the gap and prepare automotive students for the workforce.

The influence of human resource capacity, educational quality, and financial resources on competence-based training (CBT) for automotive students in Uganda is profound, with global best practices from countries like Germany, Australia, and Canada highlighting the need for well-trained instructors with industry experience, continuous professional development (CPD), and dual qualifications to align teaching with labor market demands Kisige & Neema-Abooki, (2017). Africa, including Uganda, faces challenges with unqualified trainers, limited industry exposure, and inadequate CPD (Beniga, (2022).

In Uganda, technical institutes struggle with staff shortages, low salaries, and limited career goals, impacting student skill acquisition and employability, calling for improved recruitment, training, and industry collaboration Wellbrock et al., (2020), while variations in instructor expertise across Eastern Africa further affect program consistency. Financially, global success in CBT, as seen in Germany's dual system and supported by the ILO PROSPECTS (2022), relies on substantial investment in infrastructure, tools, and instructor support, yet Uganda's Skilling Uganda initiative is affected by inadequate funding, outdated facilities, and high costs of automotive training equipment (Abdisa & Hawitibo, 2021) limiting the need for public-private partnerships and targeted subsidies to enhance CBT effectiveness.

3. METHODOLOGY

3.1 Research Design and Sample

The used a mixed-methods research design assess the training and competencies of automotive students in Uganda, combining quantitative and qualitative data for a holistic analysis. The sample size was determined using a formula, $n = \frac{1.96^2 * 0.5(1-0.5)}{0.05^2}$ where $z = 1.96$ for a 95% confidence level, $p = 0.5$ for maximum variability, and $E = 0.05$ margin of error, yielding a required sample size of 384. The actual sample included 324 students, 40

instructors, and 20 administrators, adjusted to 288 students, 40 instructors, and 13 administrators based on availability, representing 88% of the targeted population from various technical institutions. This approach ensured sufficient representation and saturation, balancing quantitative precision with qualitative depth across respondent categories.

3.2 Data Collection Instruments

Data collection for the study was carried out using a variety of instruments to ensure a comprehensive understanding of the study. Structured questionnaires were developed and administered to gather quantitative data from automotive trainees, instructors, and administrators allowing for a broad assessment of perspectives. In addition, focused group discussions were conducted with students to obtain qualitative data, providing deeper understanding of their experiences and opinions. Furthermore, an observation checklist was utilized during practical training sessions to supplement data from other sources, offering a direct evaluation of hands-on activities and behaviors in real-time.

3.3 Data Analysis

The research on competence-based training of automotive students in Eastern Uganda utilized Minitab 2022 for a thorough analysis of both qualitative and quantitative data. Quantitative data, obtained through questionnaires and interviews, was cleaned for accuracy in Minitab, where descriptive statistics (mean, median, standard deviation) and inferential statistics was applied to summarize findings and explore relationships. Qualitative data, collected through interviews, focus groups, and questionnaires, was organized Minitab for thematic analysis, with content analysis quantifying themes, and reliability ensured through triangulation with quantitative data. The datasets were merged using common identifiers in Minitab for mixed-methods analysis, using joint displays like graphs that integrated findings. These findings were then interpreted to provide clear view of student competencies, supported by narrative presentations.

4. RESULTS AND DISCUSSION

4.1 Background Characteristics

The study involved 341 respondents from 10 technical training institutes in Eastern Uganda

out of which were 288 students, 40 instructors, and 13 administrators slightly less the expected sample of 384 (324 students, 40 instructors, 20 administrators) by 43, achieving an 88.8% response rate, which was above the 75% threshold, ensuring a solid basis and foundation for analysis. The student group comprised 288 participants, representing 88.9% of the targeted 324, with 87.5% (252) aged 20 – 25, 1.4% (4) below 20, 0.7% (2) aged 26 – 30, and none over 30, indicating a young group typical of technical programs. The gender distribution was heavily skewed, with 99.3% (286) male and 0.7% (2) female students, highlighting a significant gender disparity, while all students (100%) were enrolled in certificate-level programs, aligning with the institutes' entry level focus.

4.2 Influence of Instructional Resources on Competence-based Training of Automotive Students in Uganda

The data on the influence of instructional resources and infrastructure relevance for competence-based training (CBT) of automotive students in Uganda, was obtained through questionnaires, interviews, and focused group discussions. It shows that students use instructional resources frequently (textbooks and instructional materials, with 75.7% using them at least weekly), this is reflected by a mean score of 3.73 (1 – 5 scale) and a standard deviation of 1.09, indicating moderate though inconsistent usage due to access barriers. Practical training was observed at 68.4% participation weekly, though only 18.4% daily (mean 3.46, SD 0.93), showing limited hands-on exposure that may limit skill development. Access to specialized tools is high at 81.6% (mean 0.816, SD 0.39), yet resource effectiveness ratings are mixed, with a mean of 2.89 and a high standard deviation of 1.28, reflecting variable quality. Conceptual understanding benefits from resources, with 88.2% reporting at least moderate impact (mean 3.52, SD 1.01), but practical skill influence is less consistent, with 75% indicating moderate impact (mean 3.11, SD 1.17) and 20.8% minimal benefit, shown by 80.9% facing access challenges (mean 0.809, SD 0.36). Instructors reinforce this, with 85% frequently using materials (mean 4.13, SD 0.64) and 87.5% accessing tools, rating conceptual support highly (mean 4.50, SD 0.49), though 25% see limited practical impact. Interviews reveal 80% of instructors cite resource shortages, 75% link

them to competence gaps, and 65% tie staffing issues to access, while focus groups show 47% find resources insufficient and 30% note negative skill effects, though 53% value good tools.

4.3 Infrastructure Relevance on Competence-based Training of Automotive Students

On infrastructure, students rate adequacy at 3.24 (SD 1.24), with 42.3% positive and 27.4% negative, yet 90.6% find it conducive (mean 0.906, SD 0.29). Instructors score it at 3.35 (SD 1.39), with 45% positive and all agreeing it supports practical learning (mean 3.30, SD 0.46). However administrators rely solely on maintenance. Interviews highlight 80% citing insufficient infrastructure (mean 20, SD 6.63), and 60% noting outdated equipment and 50% limited space, though some report adequacy. This suggests a supportive yet uneven environment, with resource and infrastructure gaps limiting optimal CBT, requiring targeted enhancements.

4.4 Establishing the Influence of Human Resource Capacity on Competence-based Training of Automotive Students in Uganda

The assessment of the influence of teaching methodologies on competence-based training (CBT) of automotive students in Uganda, was obtained from questionnaires, interviews, and focused group discussions, showing a generally positive impact. Student responses indicate a moderate effectiveness of teaching methodologies in skill development, with a mean of 3.56 on a 1 – 5 scale (1 = Not effective, 5 = Very effective) based on 95 rating them neutral, 82 as effective, and 68 as very effective, totaling 52.1% positive ratings, though 14.9% (14 as 1, 29 as ineffective) find them ineffective, with a standard deviation of 1.10 reflecting diverse experiences. A majority, 77.8% (224 students), affirm alignment with CBT (mean 0.778, SD 0.41), though 22.2% (64 students) disagree, suggesting some gaps in practical focus. Instructors report frequent use of innovative methods, with a mean of 3.80 (15 as effective, 10 as very effective), totaling 62.5% frequent use) and a standard deviation of 0.90, alongside high confidence in delivering CBT, with all 40 agreeing or strongly agreeing (mean 3.45, SD 0.50), indicating a skilled teaching force. Administrators note that 76.9% (10 out of 13) provide training programs for

methodologies, though 23.1% (moderate) do not. Interviews with 40 instructors reveal 70% citing insufficient staffing and human resource limitations as major barriers (mean 20, SD 7.07), with 65% noting limited professional development and its impact on training quality, though 30 – 35% report adequate resources.

4.5 Assessing the Financial Adequacy on Competence-based Training of Automotive Students in Uganda

The evaluation of the impact of financial support on competence-based training (CBT) of automotive students in Uganda, also based on questionnaires and interviews. It reveals significant limitations. Student responses indicate a mean adequacy rating of 2.84 on a 1 – 5 scale (1 = Not adequate, 5 = Very adequate), with 41.6% rating it negatively (58 as very inadequate, 62 as inadequate) and 31.9% positively (52 as adequate, 40 as very adequate), with a standard deviation of 1.32, indicating uneven financial support across institutes, though 87.5% (252 students) affirm its influence on practical training (mean 0.875, SD 0.33), indicating its value when available. Instructors perceive financial support as moderately influential on teaching quality, with a mean of 3.35 (SD 1.28), 45% rating it positively (4 – 5) and 25% negatively (1 – 2), while 80% (32 instructors) agree it improves resource availability (mean 0.800, SD 0.40), however 20% note inefficiencies, reflecting variable benefits. Interviews with 40 instructors show 80% citing insufficient infrastructure due to funding shortages as the primary challenge, with 60% highlighting budget constraints and 48% noting spending prioritization issues, though 20 – 52% report adequate resources, indicating a mixed financial landscape (mean 20, SD 7.32) . Administrators report 61.5% (8/13) have funding mechanisms like grants, but 38.5% (5/13) do not, contributing to variations.

Various factors affecting competence-based training (CBT) of automotive students in Uganda show a variation in strengths, weaknesses, and variations that shape training effectiveness. The influence of instructional resources shows that students' frequent engagement with textbooks and materials (75.7% weekly, mean 3.73, SD 1.09) supports theoretical learning, with 88.2% reporting at least moderate conceptual understanding (mean 3.52, SD 1.01) , yet the moderate but inconsistent practical training

(68.4% weekly, 18.4% daily, mean 3.46, SD 0.93) and mixed resource effectiveness (mean 2.89, SD 1.28) suggest gaps in hands-on skill development. The high tool access (81.6%, mean 0.816, SD 0.39) is offset by 80.9% facing access challenges (mean 0.809, SD 0.36) and 20.8% experiencing minimal practical impact (mean 3.11, SD 1.17), a concern raised by instructors who, despite frequent material use (85%, mean 4.13, SD 0.64) and high tool access (87.5%) , note 25% limited practical influence. Interviews and focus groups reinforce this, with 80% of instructors citing resource shortages and 47% of students finding them insufficient, though 53% value good tools, indicating uneven resource quality across institutes. This suggests that while resources increase theoretical knowledge, their inconsistent availability and practical application hinder full CBT potential, calling for improved access and training frequency.

The relevance of infrastructure presents a supportive view, with students rating adequacy at 3.24 (SD 1.24), 42.3% positive and 27.4% negative, and 90.6% finding it conducive (mean 0.906, SD 0.29), suggesting functional but variable facilities. Instructors' slightly higher adequacy score of 3.35 (SD 1.39) and offer support for practical learning (mean 3.30, SD 0.46) align with this, though interviews reveal 80% citing insufficient infrastructure (mean 20, SD 6.63) , with 60% noting outdated equipment and 50% limited space. Administrators' sole reliance on maintenance fails to address these disparities, indicating that while infrastructure supports a learning environment, its inconsistent quality and outdated resources limit optimal practical training, calling for targeted upgrades and strategic planning.

Human resource capacity, reflected through teaching methodologies, shows a positive impact, with students rating effectiveness at 3.56 (SD 1.10), 52.1% positive and 14.9% negative, and 77.8% affirming CBT alignment (mean 0.778, SD 0.41) , and 22.2% disagree, indicating a practical focus gap. Instructors' frequent innovative methods (62.5%, mean 3.80, SD 0.90) and high confidence (100%, mean 3.45, SD 0.50) are strengths, supported by 76.9% of administrators providing training, 23.1% lack such programs, and interviews show 70% citing staffing shortages (mean 20, SD 7.07) and 65% limited development

as barriers. This suggests a skilled teaching force limited by human resource inconsistencies, requiring enhanced training and staffing to ensure equitable skill delivery.

Financial adequacy reveals significant constraints, with students rating support at 2.84 (SD 1.32), 41.6% negative and 31.9% positive, while 87.5% noting its practical training influence (mean 0.875, SD 0.33), indicating its potential when available. Instructors' moderate influence on teaching quality (mean 3.35, SD 1.28) and 80% resource improvement (mean 0.800, SD 0.40) reflects variable benefits, while interviews highlight 80% citing funding shortages (mean 20, SD 7.32) and 60% budget constraints, though 20 – 52% report adequacy. Administrators' 61.5% funding mechanisms versus 38.5% gaps show inconsistent support, indicating that financial inadequacies and uneven distribution limit equitable CBT, necessitating standardized funding to bridge resource gaps.

5. CONCLUSION

The analysis reveals that instructional resources significantly enhance conceptual understanding, with 75.7% of students engaging weekly and 88.2% reporting moderate to extreme benefits, though practical skill development lags due to limited daily training (18.4%) and widespread access challenges (80.9%), raised by instructors. Infrastructure supports a conducive learning environment, with 90.6% of students and 100% of instructors in agreement, though its adequacy (means 3.24 and 3.35) and challenges like outdated equipment and limited space, indicated by 70% of instructors, show uneven quality that limits optimal training. Human resource capacity shines through instructors' innovative methodologies (62.5% frequent use) and confidence (100%), supported by 77.8% student alignment with CBT, but staffing shortages (70%) and training gaps (23.1% of administrators) reveal inconsistencies affecting 14.9% of students negatively. Financial support, while influential for 87.5% of students in practical training, remains inadequate (mean 2.84) with 41.6% rating it negatively, and funding shortages (80% of instructors) and uneven distribution (SDs 1.32, 1.28) further show disparities. Collectively, these findings show a foundation for CBT that is hindered by inconsistent resource availability, infrastructure quality, human resource capacity, and financial support across institutes. To fully realize CBT's potential,

Uganda should prioritize enhanced resource access, infrastructure modernization, comprehensive staff training, and standardized funding mechanisms to ensure equitable skill development for all automotive students.

ETHICAL APPROVAL AND CONSENT

Ethical approval was granted by the Uganda National Council for Science and Technology (UNCST), Gulu University Research Ethics Committee (GUREC), and a letter of introduction was obtained from the University of Eldoret, with permissions secured from the Ministry of Education and Sports, Chief Administrative Officers, District Education Officers, City Clerks, Principal Education Officers, and Technical Institute Principals. These measures reflect a commitment to high ethical standards and respect for all participants.

Respect for persons was upheld by securing informed consent, ensuring participants understood the study's purpose, procedures, risks, and benefits, and could withdraw without repercussions.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of this manuscript.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

Abdisa, L. T., & Hawitibo, A. L. (2021). Firm performance under financial constraints: Evidence from sub-Saharan African countries. *Journal of Innovation and*

- Entrepreneurship*, 10(1), 38.
<https://doi.org/10.1186/s13731-021-00177-1>
- Baethge, M., & Wolter, A. (2015). Das deutsche Ausbildungsmodell im Umbruch: Zwischen dualen Berufsbildungssystem und Hochschulstudium. *Journal for Labour Market Research*, 48(2), 97–112.
<https://doi.org/10.1007/s12651-015-0181-x>
- Bambang Sudarsono, Santosa, B., & Sofyan, H. (2021). Improving the competency of automotive vocational teachers with partnership-based training model (PBK). *JTP - Jurnal Teknologi Pendidikan*, 22(3), 200–208.
<https://doi.org/10.21009/jtp.v22i3.18690>
- Beniga, D. D. (n.d.). Effectiveness of TVET-trained instructors at Oroquieta Agro-Industrial School (OAS): Its relationship to students' skills acquisition. *International Journal of Innovative Research in Multidisciplinary and Professional Studies (IJIRMP)*. www.ijirmps.org
- Chauhan, S., Bakshi, I., & Khatkar, P. (2023). An assessment of influence of industrial training learning outcomes on the decision of students to leave or stay in hotel management courses. *Current Journal of Applied Science and Technology*, 42(47), 136–147.
<https://doi.org/10.9734/cjast/2023/v42i474324>
- Fischer, M., Jungmann, W., S. A., & Z. M. (2014). Research methods in technical vocational education and training. In Z. Z. Zhao & F. Rauner (Eds.), *Areas of vocational education research* (pp. 215–259). Springer Berlin Heidelberg.
https://doi.org/10.1007/978-3-642-54224-4_11
- Garuzooka, F. J., Nuwagaba, E. L., Mudondo, C., & Ngaka, W. (n.d.). Competences acquired in garages by TVET graduates of motor vehicle mechanics in Uganda: A mixed bag of promises and frustrations. <https://doi.org/10.30918/AERJ.131.24.062>
- Herbert, W., & Michael Etoru, J. (2024). Effects of accessibility and adequacy of technical vocational education and training equipment on acquisition of employable skills in Uganda: A case of Uganda Technical College-Elgon. *KURJ*, 2(3), 51–60.
- International Labour Organization. (2022). *PROSPECTS: Occupations and skills assessment for youth in selected refugee settlements of Isingiro, Arua and Madi Okollo districts in Uganda*. www.ilo.org/publns
- Justin, W. (2020). *Improving hands-on training for skill acquisition of engineering students at the Department of Mechanical and Production Engineering: A research dissertation submitted in as partial fulfilment of the requirements for the award of a master's degree in vocational pedagogy of Kyambogo University*.
- Jwan, S. (2023). Competency-based education and training. *Alternation Interdisciplinary Journal for the Study of the Arts and Humanities in Southern Africa*, 39(1).
<https://doi.org/10.29086/2519-5476/2022/sp39a13>
- Kisige, A., & Neema-Abooki, P. (2017). Financial resource mobilization projects and their relationship to academic staff commitment in Uganda Martyrs University, Uganda. *PM World Journal*, VI. www.pmworldlibrary.net
- Kosia Mokoro, D. (2020). Adequacy of laboratory facilities for effective implementation of competence-based curriculum in public secondary schools in Arumeru District, Tanzania. *East African Journal of Education and Social Sciences*, 1(2), 141–149.
<https://doi.org/10.46606/eajess2020v01i02.0029>
- Louis Odaro, O., & Esosa, I. P. (n.d.). Analysis of the effect of inadequate facilities and equipment in universities on technology and vocational education and training (TVET) in South-South Nigeria. *Takshila Journal of Research*, 2(1).
- Saleh, H., & Ainiyah, S. (2024). Critical factors in employee training for the automotive industry: A systematic review of performance-driven training strategies. *International Journal of Academic Research in Business and Social Sciences*, 14(12).
<https://doi.org/10.6007/ijarbss/v14-i12/23622>
- Siwela, S., & Van Der Bank, F. (2021). Understanding intention to quit amongst artisans and engineers: The facilitating role of commitment. *SA Journal of Human Resource Management*, 19.
<https://doi.org/10.4102/sajhrm.v19i0.1409>
- Tayam, E. B., & Doncillo, O. D. (2024). Performance level and competency of the automotive students in preventive maintenance servicing.
- Wellbrock, W., Ludin, D., Röhrle, L., & Gerstlberger, W. (2020). Sustainability in

the automotive industry, importance of and impact on automobile interior – Insights from an empirical survey. *International*

Journal of Corporate Social Responsibility, 5(1), 10. <https://doi.org/10.1186/s40991-020-00057-z>

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