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# Alignment between Selected University Teacher Education Curricula and Secondary School Syllabi in Tanzania

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**Abstract**
This study investigated the alignment between university teacher education curricula and the secondary school syllabi that graduates are expected to teach in Tanzania. Using a qualitative multiple embedded case study design, data were collected from four universities and six secondary schools through semi-structured interviews, focus group discussions and documents. Respondents included 18 university academics, six heads of schools and two School Quality Assurers. Comparative document analysis examined science (Physics, Chemistry, Biology) and arts (Geography, History) course outlines in relation to national syllabi. Findings indicate partial alignment in the sciences, with overlap in foundational topics but significant gaps where university content is either too advanced or irrelevant to the needs of schools. Arts subjects exhibited stronger alignment, although some content extends beyond the secondary requirements. Pedagogical components are included in university curricula but are often taught separately from subject content, limiting the integration of pedagogical content knowledge (PCK) and constraining readiness for Tanzania's competence-based curriculum (CBC). The study concludes that weak alignment in science, partial misalignment in arts, and fragmented pedagogy undermine teacher preparedness. It recommends closer collaboration between universities and the Tanzania Institute of Education, embedding subject-specific pedagogy, integrating PCK into disciplinary courses, expanding practicum opportunities, and strengthening continuous pedagogical training to enhance classroom applicability and support CBC implementation.

**Keywords:** Teacher education; university curriculum; secondary school; syllabi.

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## Introduction

In today's rapidly evolving world, education must move beyond rote memorization to equip learners with practical skills and competencies necessary to navigate complex real-life challenges. Central to achieving this goal is the alignment of teacher education curricula with school syllabi, ensuring that future teachers are not only well-versed in subject content but also proficient in delivering competency-based instruction that fosters critical thinking, creativity and problem-solving (Stanikzai, 2023). Countries, such as Finland, Canada, Singapore, and Rwanda have undertaken significant curriculum reforms, emphasizing 21st-century skills, such as collaboration, communication,

adaptability and problem-solving. A study by Lavonen (2020) highlights Finland's 2016 National Core Curriculum, which integrates these skills through phenomenon-based learning, enabling students to engage with real-world issues across disciplines. Similarly, Tan et al. (2017) noted that Singapore's curriculum incorporates 21st-century competencies to equip learners for a rapidly evolving global environment. These reforms promote active learning strategies, such as projects, case studies and experiential activities, where teachers act as facilitators, guiding student-centred learning.

Nsengimana et al. (2023) examined Rwanda's Competence-Based Curriculum (CBC), introduced in 2015, finding that although teachers generally understood the curriculum's goals, many lacked detailed knowledge of specific competencies and pedagogical approaches. Likewise, Tanzania's education sector has experienced profound reforms since the 1995 Education and Training Policy, transitioning from a content-driven to a competence-based curriculum between 2004 and 2008. This shift prioritizes practical skills and active learning methods, such as problem-solving, study visits, and role-playing to better prepare students for real-world challenges (Agbaje, 2023; Issa et al., 2024; Mugo, 2024; Msuya & Abdala, 2025). The revised curriculum also emphasizes formative assessments aligned with competency development, including oral presentations, peer evaluations and portfolios, underscoring the need for a participatory and learner-centred teaching approach.

Despite ongoing reforms, a significant challenge persists in the practical implementation of curricula, particularly in aligning school syllabi with teacher education programs (Mbilinyi & Wandela, 2024; Tarmo & Kimaro, 2021). Tanzanian teacher education institutions are frequently required to revise their curricula to meet the evolving demands of economic, political, social and technological advancement (Hamidu & Peter, 2025; Otieno et al., 2025). However, studies indicate that student teachers in Tanzania are often inadequately prepared to apply pedagogical strategies in real classroom settings (Mwakyobwe & Shawa, 2023). Likewise, Sanga (2020) blamed university graduates, including student teachers, for graduating successfully, even with excellent grades, but still failing to effectively discharge their anticipated teaching responsibilities. Compounding this issue, Omollo et al. (2024) highlight that even academically high-performing graduates frequently fail to meet professional teaching expectations, particularly in preparing lesson plans that align with performance-based assessments. As a result, many student teachers resort to drawing on personal schooling experiences to guide their practice. Johnson et al. (2020) observed that in such instances, teachers tend to revert to outdated, teacher-centred methods. This phenomenon observably brings to the fore questions about the alignment of teacher education syllabi and secondary school syllabi in Tanzania. To bridge the gap between policy and practice, it is therefore essential that university courses integrate subject content, pedagogy, and hands-on teaching experience cohesively, ensuring that graduates are well-equipped to meet the demands of secondary school teaching.

To bridge the gap between educational policy and classroom practice, university teacher education programs must integrate subject content, pedagogy and practical teaching experience in a coherent and mutually reinforcing manner. However, there remains limited empirical evidence on the extent to which these programs align with the secondary school syllabi that graduates are expected to implement. This misalignment raises critical concerns about the preparedness and instructional competence of new teachers entering Tanzanian classrooms. Addressing this gap is vital not only for improving the quality and relevance of teacher education but also for enhancing student learning outcomes. Accordingly, this study investigated the degree of alignment between university teacher education curricula and secondary school syllabi in Tanzania, offering insights to support curriculum improvement and policy reform.

## Literature Review

This section synthesizes relevant theoretical concepts and empirical studies that underpin the investigation. It critically examines existing research on key themes related to curriculum design, teacher education programs in Tanzania, curriculum alignment and PCK.

## Curriculum and Syllabus

Although the term 'curriculum' lacks a universal definition, it broadly refers to the full range of a student's educational experiences, including structured content, teaching methods and assessments aligned with learning goals. It may appear explicitly in formal instruction, implicitly in cultural values, be omitted or take extracurricular forms (Matorevhu & Madzamba, 2022). In higher education, curriculum design ranges from flexible to rigid models. Angelo (2023) highlights that the curriculum is collaboratively shaped by society, the state and educators, who collectively decide what, how, why and to whom to to be leant. Kim and Jung (2019) define curriculum primarily as formal academic programs organized through instructional schedules and tools whereas a syllabus is subject-specific, detailing content, objectives, assessments and expectations. Gauthier et al. (2025) describes the syllabus as both a contract and a roadmap for instruction. In Tanzania, secondary school syllabi include national education goals and guidance, alongside topic-specific competencies, teaching methods, materials, assessments and time allocations (Mohamed & Karuku, 2017). Thus curriculum specifies the courses of study that students must complete to graduate from a certain level of education, such as primary or secondary school.

## University Teacher Education Programs in Tanzania

In Tanzania, teacher education is primarily offered through universities and university colleges, which provide pre-service and in-service training at bachelor's, master's, and doctoral levels. Admission to undergraduate teacher education programs generally requires the Advanced Certificate of Secondary Education Examination (ACSEE) or its equivalent, as recognized by the National Council for Technical, Vocational Education and Training (NACTVET) and Tanzania Commission for Universities (Anangisye, 2010). These programs typically span three years and prepare graduates to teach in secondary schools or colleges. Degree holders in programs, such as B.A. (Ed), B.Sc. (Ed) or B.Com. (Ed) are trained to teach two subjects while those completing a B.Ed. degree focuses on one teaching subject alongside educational theory, often qualifying them for teacher training institutions. Graduates in adult education typically work in adult learning centres (Mgaiwa & Ishengoma, 2017). Compared to college-based models, university-based programs emphasize a broader mandate that includes teaching, research and community service.

However, despite these program structures, a persistent gap remains in ensuring alignment between what graduates are trained to teach at university and the requirements of secondary school syllabi. This study addressed this gap by examining how well the different degree pathways, whether dual-subject programs like B.A. (Ed) and B.Sc. (Ed) or single-subject-focused programs like B.Ed. equip graduates with the subject-specific pedagogy and professional skills needed to implement the competence-based CBC in secondary schools.

Concerns persist over the effectiveness of university-based teacher education programs in Tanzania, with numerous studies indicating that many graduates lack the practical competencies required for effective classroom instruction (Mgaiwa & Ishengoma, 2017). This shortfall reflects a broader disconnect between teacher education policies and classroom practices. For instance, Salema (2017) observes that despite curriculum reforms advocating for learner-centred approaches, teacher-centred assessment methods continue to dominate, thereby undermining the intended pedagogical shift. Similarly, Swai and Glanfield (2018) highlighted that although teacher-led professional learning initiatives promote collaboration, they often lack institutional support to effectively align with curricular goals. Additionally, Kafyulilo and Fisser (2019) reported that the integration of technology in teaching is constrained by inadequate teacher preparation, reinforcing the need for continuous professional development rooted in frameworks such as Technological Pedagogical Content Knowledge.

The gap between theoretical training and classroom application has been linked to poor student outcomes in secondary schools (Fantinelli et al., 2024). A key contributor to this challenge is the misalignment between teacher education curricula and the pedagogical and content demands of secondary school syllabi (Fantinelli et al., 2024; Kafyulilo & Fisser, 2019; Omollo et al., 2024). While much research has examined the overall education quality, few

studies have explored explicitly whether teacher preparation adequately addresses the realities of classroom teaching (Fantinelli et al., 2024; Omollo et al., 2024) explains, effective curriculum alignment requires coherence between what is taught in training and what is expected in schools, encompassing conceptual understanding, instructional methods, and procedural knowledge.

Despite ongoing reforms, this misalignment persists as a significant challenge. Komba and Mwakabenga (2020) highlighted a lack of coordination among teacher training institutions, resulting in fragmented and inconsistent approaches to teacher preparation. Scholars, such as Mgaiwa (2018) and Matete (2022) further emphasized the enduring theory-practice gap, with graduates often ill-equipped to manage the complexities of modern classrooms. Nkya and Huang (2021) added that although the CBC is positively received, its implementation is severely constrained by limited training, overcrowded classrooms and inadequate resources. Strengthening the alignment between university curricula and secondary school needs through integrated pedagogical strategies, constructivist approaches and school-university partnerships (Abri et al., 2024) is therefore crucial to enhance the quality and impact of teacher education in Tanzania. Together, these studies highlight the importance of aligning university curricula with the practical needs of secondary education. This study addressed that gap by providing evidence-based insights to support targeted reforms and improve the quality of teacher education in Tanzania.

## Conceptual Framework

This study employed the Shulman's (1987) concept of Pedagogical Content Knowledge (PCK) as its guiding framework. PCK represents the specialized knowledge educators use to translate subject matter into formats comprehensible to learners. It integrates general pedagogical strategies with subject-specific expertise, making content more accessible and engaging. It also includes understanding how specific subject matter topics, problems and issues can be arranged, represented and modified to suit the various learning styles and aptitudes of students before being taught. Figure 1 illustrates the PCK framework, highlighting the integration of pedagogical knowledge and subject matter knowledge as the foundation for effective teaching.

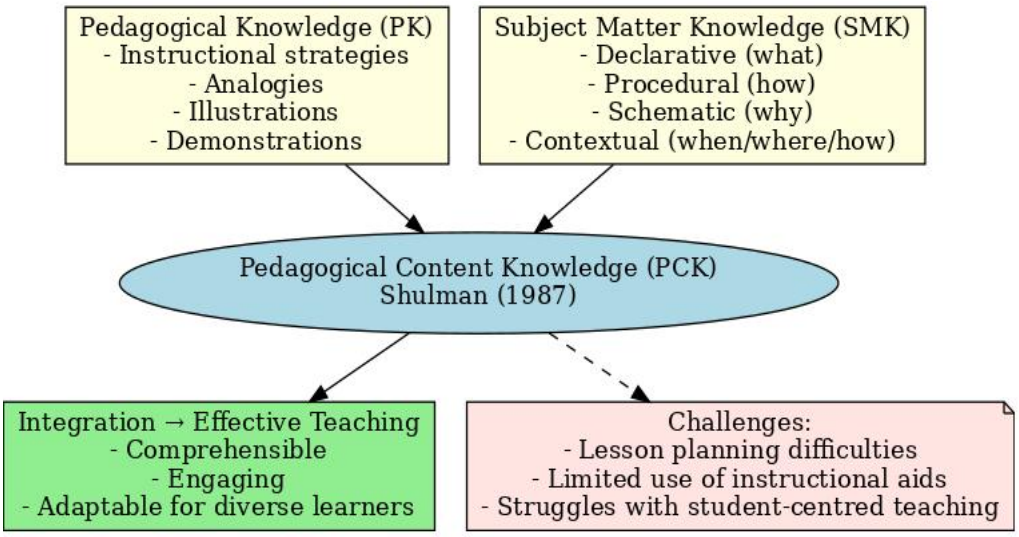


**Figure 1: Shulman's (1987) Pedagogical Content Knowledge (PCK) framework**

According to Sarkar et al. (2024), the first component of PCK is pedagogical knowledge, which involves instructional strategies, such as analogies, illustrations and demonstrations that help simplify complex ideas for learners. It constitutes the most useful examples, demonstrations, illustrations, analogies and ways of formulating a subject so that it is more comprehensible and understandable to others (Bangir-Alpan & Koç-Erdamar, 2019). The second component of PCK is subject matter knowledge (SMK), which includes an understanding of factual content, conceptual relationships and the disciplinary structures that underpin knowledge. Teachers are expected to demonstrate four types of knowledge:

declarative (what), procedural (how), schematic (why) and contextual (when, where, and how to apply) (Sarkar et al., 2024; Schiering et al., 2021). Teachers must continually adapt and restructure content to address the diverse needs of the learners by employing multiple representations, such as visual, symbolic, and contextual forms. This can enhance students' conceptual understanding and support comprehension (Post & Prediger, 2022; Schiering et al., 2021).

On the other hand, teachers face challenges in applying both content and pedagogical knowledge effectively. Kihwele and Mtandi (2020) noted that while trainees may know what to teach, they often lack clarity on the why, when, how and where to implement this knowledge. Further studies indicate inadequacies in lesson planning and the use of instructional aids, such as examples and visualisations (Du Plessis, 2020; Krepf & König, 2022). Moreover, Du Plessis (2020) and Silva et al. (2021) observed that many pre-service teachers struggle to design student-centred lessons and engage learners meaningfully. These findings underscore the need to anchor teacher preparation in robust content and pedagogical knowledge frameworks to support effective classroom practice.

## Methodology

This study employed a qualitative research methodology to investigate the alignment between university teacher education curricula and secondary school syllabi. Within this methodological orientation, a multiple embedded case study design was adopted to capture variations across institutions and participants, thereby providing a comprehensive understanding from different contexts and perspectives.

### Population and Sampling

The target population included graduate teachers (GTs), university academic staff (including Deans and Heads of Departments), Heads of Schools (HoSs) and School Quality Assurers (SQAs). From the population, a total of 55 participants were involved in the study, comprising 29 graduate teachers, 18 university academics, six heads of schools and two SQAs. All were directly engaged because of their knowledge of teacher education and secondary school instruction.

A purposive sampling technique was employed to select the academic staff, deans, heads of school (HoS) and SQAs, ensuring that participants possessed relevant expertise and experience. Furthermore, Snowball sampling was employed to recruit graduate teachers, particularly those holding degrees, such as Bachelor of Education with Arts (B.Ed. Arts), Bachelor of Education with Science (B.Ed. Science), Bachelor of Arts with Education (B.A. Ed.) and Bachelor of Science with Education (B.Sc. Ed.). This technique was appropriate given the scattered and difficult-to-locate nature of these graduates. The final sample size consisted of 55 participants, comprising Graduate Teachers (GTs), University Academics (including Faculty Deans and Heads of Departments), Heads of Schools (HoS) and senior quality assurance advisors (SQAs).

### Instruments

The study employed semi-structured interviews, Focus Group Discussions (FGDs) and document reviews as its primary data collection instruments. Interviews were conducted with GTs, university academic staff, HoS and SQAs in their respective offices, lasting 45 to 60 minutes. FGDs were conducted with GTs when more than two were available in a single location. Both interviews and FGDs were audio-recorded with the participants' consent. Document analysis was carried out on course outlines, university prospectuses and secondary school syllabi. This approach enabled data triangulation, to enhance comprehensiveness and credibility of the findings (Cohen et al., 2007; Tracy, 2013).

### Validity and Reliability

To ensure validity, subject-matter experts reviewed the interview and FGD guides to establish content validity. Additionally, member checks were conducted with selected participants to confirm the accuracy of interpretations. Reliability was strengthened through methodological triangulation of data collection methods and participant perspectives. A double-coding process was employed, where two independent observers reviewed and cross-verified the coding and thematic interpretations. These procedures helped minimize researcher bias and enhanced the consistency of the findings. Anonymity was maintained by assigning codes (A, B, C, D) to

institutions and omitting the real names of participants.

### Data Analysis

Data analysis utilized a thematic approach, employing both deductive and inductive coding methods. Initial themes were based on research questions and literature, supplemented by themes that emerged from the data. Each transcript was closely examined, with relevant elements coded and organized into nodes. A cross-case analysis grouped similar themes across institutions. The coding process involved iterative refinement to ensure coherence. While the study primarily employed qualitative methods, brief descriptive summaries were used only to provide comparisons and contextual clarity when presenting patterns of alignment and pedagogical coverage, rather than as a primary mode of analysis.

### Ethical Considerations

This study acquired permissions from relevant institutional and school authorities. Oral consent was obtained from all participants after they were briefed on the study's objectives, voluntary participation, confidentiality, and their right to withdraw at any point. The data was anonymized and securely stored to maintain participant privacy.

## Findings and Discussion

This section presents findings on the alignment between university teacher education curricula and secondary school syllabi in Tanzania. The analysis is organized around three major areas: (1) science subject content, (2) arts subject content and (3) pedagogical knowledge and instructional preparedness. The analysis is structured around three pivotal questions that drive our inquiry forward.

**Research Question 1:** How well do university science subject course outlines align with secondary school science syllabi?

To provide a clearer picture of the alignment, a document review of the sampled universities' course outlines was compared with the national secondary school science syllabi. Table 1 presents selected examples of overlapping and non-overlapping topics in Physics, Chemistry, and Biology.

**Table 1: Comparison of University Science Course Outlines and Secondary School Syllabi**

| Subject | University Course Outlines | Secondary School Syllabi | Alignment Observed |
|---|---|---|---|
| **Physics** | Classical mechanics, thermodynamics, waves, optics, electronics, and atmospheric physics | Newtonian mechanics, basic optics, simple machines, and introductory electricity | Partial: overlap in mechanics, optics, electricity; advanced topics absent |
| **Chemistry** | Organic chemistry, inorganic chemistry, chemical thermodynamics, and coordination chemistry | Basic organic reactions, acids & bases, bonding, periodic table | Limited: overlap in organic & inorganic; thermodynamics/coordination chemistry absent |
| **Biology** | Cell biology, genetics, evolutionary biology, taxonomy of higher plants, molecular biology | Introductory cell biology, genetics, taxonomy, human physiology | Stronger: overlap in cell biology, genetics, taxonomy; advanced molecular/evolutionary content absent |

As Table 1 indicates, while certain foundational topics (e.g., Newtonian mechanics, introductory genetics and basic organic chemistry) appear in both university curricula and secondary syllabi, a significant portion of university content is either too advanced or unrelated to school-level requirements. While certain topics, such as introductory cell biology, genetics, evolutionary biology and the taxonomy of higher plants were covered in both the university course outlines and the secondary school syllabi, the majority of university-level topics were not represented in the secondary school curriculum. In chemistry, only limited overlap was found in areas such as chemical thermodynamics and coordination chemistry. The majority of content taught at the university level was found to be too advanced or unrelated to what is required at the secondary level. This content mismatch suggests a disconnect between the knowledge and skills university graduates acquire and what is expected of them as secondary school

teachers. Similar concerns have been raised by Fantinelli et al. (2024) and Omollo et al. (2024), who reported that teacher education programs often fail to align with school-level expectations, particularly in science subjects. Mgaiwa and Ishengoma (2017) further argue that Tanzanian university curricula often prioritize theoretical knowledge over practical classroom relevance. The disconnection between curricular content and practical teaching limits the applicability of university training in secondary school settings.

This disconnect was further substantiated by evidence obtained from interviews with academic staff and FGDs with graduate teachers. Participants expressed concern over the lack of coherence between university training and the demands of secondary teaching. One graduate physics teacher from University C reflected:

*Most of the physics topics we were taught at university level are not found in secondary science syllabi. For example, we learned about classical mechanics, vibration waves, optics, electronics, and the Earth's atmospheric systems, which are not included in the secondary school science syllabus. Hence, we have this knowledge but cannot use it here, and we are teaching something we did not learn at the university level. I am using my secondary school experience to teach them.*

This sentiment highlights a broader concern identified by Swai and Glanfield (2018) and Komba and Mwakabenga (2020) that university programs often fail to adequately prepare student teachers for the pedagogical and content-specific realities they encounter in classrooms. The lack of direct applicability of advanced science topics undermines the effectiveness of new teachers and perpetuates reliance on outdated personal schooling experiences, as also noted by Mwakyobwe and Shawa (2023). One graduate teacher echoed this concern during an interview, stating: "Every teacher complains about practicals since we lack the prerequisite skills and knowledge for conducting practicals in the chemistry subject. Though we conducted many practicals at university, they are not applicable in secondary school."

These experiences underscore a significant and growing concern regarding the sufficiency of teacher preparation programs. The findings align with earlier concerns raised by Mwakyobwe and Shawa (2023) and Fantinelli et al. (2024), who noted that university teacher education programs often fail to equip graduates with the pedagogical competencies necessary for effective classroom instruction. This lack of practical readiness affects not only curriculum delivery but also the ability of teachers to adapt to the varied and dynamic needs of students in diverse learning environments. Moreover, a member of the academic staff at University A recognized the existing gap in the curriculum, highlighting a pressing need for improvement. This staff member, who had extensive teaching experience in secondary schools, shared insights drawn from their firsthand observations. The academic staff emphasized the disconnect between the skills taught in higher education and those required in real-world applications, suggesting that a more integrated approach could better prepare students for their future careers. The respondent said,

*I taught in secondary schools before coming to this university; There is a noticeable difference between the content taught in secondary schools and what we teach here, particularly in physics and biology. The university course outlines are broader because they are designed not only for prospective teachers but also for students training to become scientists or professionals in other fields.*

This observation highlights a structural limitation in teacher education curricula, particularly the dual-purpose design of university science courses, which are intended for both future scientists and teachers. This often results in limited focus on PCK relevant to secondary education. While subject mastery is essential, effective teaching also requires the ability to simplify and contextualize content for learners. As noted by Sarkar et al. (2024) and Schiering et al. (2021), PCK integrates subject expertise with instructional strategies to enhance learning. Shulman (1987) further asserted that knowledge becomes pedagogically valuable only when transformed into teachable forms. Without adjustments to reflect the structure and delivery suited for secondary school, graduate teachers may struggle to translate theory into practice. This supports the findings of Fantinelli et al. (2024) and Omollo et al. (2024), who argued that

curriculum misalignment hampers teacher preparedness. Thus, there is a need to either differentiate training tracks or embed subject-specific pedagogy within science programs to meet school-level demands.

As one Subject Quality Assurer (SQA) noted, the disconnect is rooted in systemic issues:

*In our country, universities develop and implement their curriculum. At the same time, for secondary schools, the Ministry of Education, Science and Technology is responsible for curriculum development through the Tanzania Institute of Education. I think this is the problem. There is no effort to harmonize these two curricula.*

Expanding on this, another respondent, a university academic, described how faculty-level priorities within universities further complicate alignment efforts:

*Each university faculty has its mission and goals. For instance, science departments aim not only to prepare secondary school teachers but also to train scientists, such as physicians. So, they prepare their curriculum without considering the secondary school syllabi, which they often do not even know.*

Expanding on this, another respondent, a university academic, described how faculty-level priorities within universities further complicate alignment efforts:

*Each university faculty has its mission and goals. For instance, science departments aim not only to prepare secondary school teachers but also to train scientists, such as physicians. So, they prepare their curriculum without considering the secondary school syllabi, which they often do not even know.*

This isolated approach results in graduates who are scientifically knowledgeable but ill-equipped to translate complex concepts into simplified, age-appropriate lessons suitable for the classroom. These institutional practices reflect a broader lack of coordination between university faculties and school curriculum authorities, leading to fragmented teacher preparation (Mbilinyi & Wandela, 2024; Komba & Mwakabenga, 2020). As Komba and Mwakabenga (2020) argue, such fragmentation between teacher education institutions and curriculum developers often results in incoherent instructional practices across educational levels. This underscores the urgent need for stronger collaboration between universities and bodies like the TIE as well as for embedding school-level curriculum analysis into pre-service teacher training, particularly in science education. Emphasizing the issue even further, a faculty member from University B observed:

*To be honest, the School of Education does not decide what the College of Natural and Applied Sciences includes in its course outline. They have their experts who prepare course outlines and teach the courses. They are not preparing only teachers but experts.*

This highlights a structural disconnect between faculties responsible for content delivery and those responsible for pedagogy. The lack of joint curriculum planning results in teacher trainees receiving instruction that is often misaligned with what they are expected to teach in secondary schools (Omollo et al., 2024; Mwakyobwe & Shawa, 2023; Mgaiwa & Ishengoma, 2017). Similarly, a biology academic from University C stated, "Yes, I am aware of the topics students are expected to teach in schools, but what they study here is more advanced. It is still useful because some of them may work in industries after graduation."

This dual-purpose curriculum approach, intended to prepare both science professionals and teachers, may be justified from an academic standpoint. However, it risks overlooking the specific pedagogical needs of future science teachers. As Sarkar et al. (2024) emphasized, content knowledge for teaching must integrate both subject matter expertise and pedagogical strategies, ensuring that teachers are equipped to translate complex concepts into accessible learning experiences that meet the demands of secondary school instruction.

**Research Question 2:** Do university arts subject course outlines in Geography and History align with secondary school arts syllabi?

To illustrate the extent of alignment, the study compared the course outlines of Geography and History at the university level with the corresponding secondary school syllabi. Table 2 presents examples of overlapping and non-overlapping topics across the two levels of education.

**Table 2: Comparison of University Arts Course Outlines and Secondary School Syllabi**

| Subject | University Course Outlines | Secondary School Syllabi | Alignment Observed |
|---|---|---|---|
| **Geography** | Physical geography, soil resources, climatology, geomorphology, economic geography | Physical geography, soil science, climatology, map reading, regional geography | Strong overlap in physical geography, soils, climatology; advanced geomorphology/economic geography absent |
| **History** | History of Africa, imperialism, capitalism, nationalism, world history perspectives | African history, colonialism, capitalism, independence movements, global history (simplified) | Strong overlap in Africa, colonialism, capitalism; broader world history only partly included |

As Table 2 shows, the arts subjects demonstrated stronger alignment between university and secondary syllabi than science subjects. Foundational topics, such as African history, capitalism, imperialism, physical geography, soils and climatology appeared consistently in both contexts, albeit taught at different levels of depth and complexity. However, advanced topics like geomorphology, economic geography and extended perspectives in world history were not reflected in secondary syllabi. This indicates that while arts graduates are relatively well-prepared to teach at the school level, the dual-purpose nature of university curricula (preparing both teachers and wider specialists) still creates pockets of misalignment.

This findings are similar to responses from both academic staff (e.g., HoDs) and graduate teachers, who confirmed that most of the topics taught at the university level, such as imperialism, capitalism, history of Africa, physical geography, soil resources and climatology are also covered in secondary education, albeit at different levels of complexity. One of the interesting statements was from a participant who showed that the university geography and history course outlines aligned with secondary school syllabi. During data collection, one of the interviewed HoDs said,

*From my experience, because I am also a graduate teacher, many arts subjects in secondary school syllabi are also found in most of the university curriculum. For example, in history, we studied topics, such as the history of Africa, capitalism and imperialism in world history. In geography, we studied topics, such as physical geography, climatology and soil resources at the university level. They are also found in secondary school syllabi; the only difference is the difficulty level.*

Additionally, the FGDs with graduate teachers supported the interview findings. They said that much of the material covered in the university arts subjects' course outlines was also found in the secondary school arts subjects' syllabi. The following statement was frequently repeated by most of the participants during the FGDs:

*I can confirm that much of the history and geography subject content I learned at the university is also found in secondary school syllabi. For example, physical geography topics that are taught in secondary schools are also found in geography subject course outlines in the first and second years. This shows that graduate teachers are prepared to teach secondary school" (FGDs from school A).*

Despite the overall alignment, the document review revealed that some university-level topics were not found in secondary school syllabi. This was acknowledged by one of the respondents who said that when asked: What are the causes of the misalignment between some university-level topics and the secondary school syllabi? "The university arts course outlines are not only aimed at preparing secondary school teachers but also other experts who could also work in the history and geography fields."

This finding reflect the studies that highlight the conflicting roles of teacher education curricula in Sub-Saharan Africa. Tarmo and Kimaro (2021) noted that programs struggle to balance preparing effective practitioners with addressing broader specializations. Agbaje (2023) pointed out that curriculum reforms often prioritize societal agendas over essential pedagogical focus, potentially compromising

teaching competencies. Additionally, Mwakyobwe and Shawa (2023) argued that Tanzanian teacher colleges are still evolving in competency-based education, lacking sufficient emphasis on practical teaching skills. These issues indicate a need for better alignment between curriculum goals and teacher preparedness.

**Research Question 3:** To what extent do universities' curricula equip graduate teachers with pedagogical content knowledge and professional skills?

This question sought to evaluate the extent to which university curricula equip graduate teachers with PCK and professional skills, as illustrated in Table 3. The data presented were derived from a systematic document review of course outlines from the sampled universities.

Data in Table 3 reveals that all four sampled universities (UN A, UN B, UN C, and UN D) incorporated core pedagogical competencies into their education course outlines, including knowledge of classroom management, the learning process, classroom assessment and understanding individual students while acknowledging group dynamics in the classroom appears in only two (UN A and UN B).

**Table 3: Pedagogical Knowledge Covered in Universities' Curricula**

| Competencies Covered | UN A | UN B | UN C | UN D |
|---|---|---|---|---|
| Knowledge of classroom management | √ | √ | √ | √ |
| Knowledge of the learning process | √ | √ | √ | √ |
| Knowledge of teaching methods | √ | √ | √ | v |
| Knowledge of classroom assessment | √ | √ | √ | √ |
| Knowledge of individual students | √ | √ | √ | √ |
| Knowledge of learning structure | √ | √ | | |
| Knowledge of group dynamics in the classroom | √ | √ | | |

Additionally, knowledge related to the structure of learning and group dynamics in the classroom appears to be included only in UN A and UN B, suggesting some variation in the depth and breadth of pedagogical training across institutions. This indicates a firm baseline in foundational teaching knowledge but also highlights areas where curricular harmonization and enhancement may be beneficial. This finding is consistent with those of Kafyulilo and Fisser (2019) and Fantinelli et al. (2024), who emphasized that while pedagogical components are often included in teacher education programs, their effective integration with subject-specific content remains limited. Interviews with university academics supported the findings of the document review. In an interview with a faculty dean, it was noted that their curriculum deliberately incorporates essential teaching competencies. The respondent said:

*We offer education courses related to curriculum development. Graduate teachers acquire knowledge of the syllabus, schemes of work, lesson plans, and lesson notes. The focus is on preparing lessons and teaching materials, as this is the foundation of effective teaching. We also teach them how to structure learning objectives and lesson processes" (Dean, University B).*

Nevertheless, the Dean admitted that the real challenge lies in linking these competencies with subject matter knowledge in ways that reflect classroom realities, an issue also highlighted by Omollo et al. (2024) and Salema (2017). Expanding upon this viewpoint, a Teacher Professional Counsellor provided valuable insights into the intricacies of how pedagogical training is effectively implemented within the classroom setting. *TPC Responded:*

*We help student teachers learn to manage classroom events, use instructional time effectively, and maintain clear lesson direction. We equip them with various learning strategies to support individual learning progress and foster a respect for learner diversity. Above all, they are trained to love and tolerate students. These are professional, methodological, or pedagogical courses (TPC, University D).*

Graduate teachers confirmed that these courses enhanced their understanding of human development and learning theories, enabling them to prepare teaching materials tailored to learners' developmental characteristics. One graduate teacher noted,

"*We learned about human development, which helped us understand different development characteristics of students and how to prepare teaching and learning materials accordingly. This knowledge also helped us understand how environmental and biological factors affect students' learning*" (FGD, Graduate Teacher, University B).

The cited insights suggest that the general pedagogical and psychological foundations, including classroom management, instructional planning and student psychology, are adequately addressed. These align with the "pedagogical knowledge" component of PCK as noted by Sarkar et al. (2024) and Schiering et al. (2021), particularly in the development of empathy, learner diversity and inclusive education. Furthermore, these findings align with Mugo (2024) and Issa et al. (2024), who have emphasized the inclusion of learner-centred and formative assessment approaches in Tanzania's CBC. The focus on human development theory aligns well with formative instructional design aimed at developing 21st-century skills (Lavonen, 2020). Despite these strengths, the study found that pedagogical courses were often taught separately from subject content. This separation created challenges in applying pedagogical strategies within specific disciplines. Graduate teachers and TPCs alike emphasized the lack of training in subject-specific pedagogy, which makes it challenging to translate subject matter knowledge into effective teaching materials. A graduate teacher reflected:

*I know various teaching strategies, but applying them in specific subjects is still challenging because we taught them in isolation, not integrated with particular topics. Transforming what I know into teaching materials is difficult. At university, we learned concepts but not how to teach them (FGD, Graduate Teacher, University C).*

As the graduate teachers echoed concerns about the gap between theoretical knowledge and its practical application in the classroom, it became evident that the curricula, while comprehensive on paper, often fell short in fostering practical mastery. An A TPC highlighted another concern on the difficulty of connecting pedagogical theory to subject-specific content. The TPC expressed,

*Graduate teachers did not learn how to teach specific topics in their subjects. This makes it difficult to prepare and transform subject knowledge into teaching materials. Concepts like atoms and thermodynamics appear in both physics and chemistry but require different teaching methods due to their disciplinary differences.*

These findings imply that negligence in pedagogical skills to transfer knowledge to students echoes the concern that many university graduates revert to outdated, teacher-centred methods (Johnson et al., 2020) due to their limited exposure to subject-integrated pedagogy during training. This structural disconnect between content and pedagogy reflects a recurring theme in Tanzanian teacher education. According to Kihwele and Mtandi (2020) and Du Plessis (2020), trainees often know what to teach but struggle with the how, when and why of applying that knowledge in subject-specific contexts. The findings confirm that pedagogical strategies are frequently taught in abstraction without integration into real subject matter applications, a direct contradiction to the PCK model, which emphasizes the blending of pedagogy and content (Shulman, 1987). Furthermore, a mismatch was observed between the teaching and assessment methods promoted in university curricula and those required by the CBC in secondary schools. Graduate teachers reported that their training focused primarily on traditional lectures and written exams. In contrast, the CBC advocates for learner-centred approaches and diverse assessments, including peer reviews, portfolios, quizzes, and observations. One graduate teacher explained, "Much of the teaching and assessment methods we learned at university, like lectures and written tests, are not used in secondary schools anymore. The CBC requires learner-centred methods, which we were not trained in."

Following up on this, the Heads of Schools and School Quality Assurers consistently confirmed the existence of this curriculum mismatch, highlighting its impact on teacher preparedness and student learning outcomes. One HoS explicitly acknowledged the challenges posed by the disconnect between university training and secondary school requirements, emphasising the urgent need for alignment.

One HoS reported, “University curricula are knowledge-based and prepare student teachers for knowledge transmission methods. However, our secondary school curricula have shifted to competence-based models demanding learner-centred methods. This mismatch causes methodological dilemmas for graduate teachers.”

Similarly, an SQA remarked: "University teacher education remains traditional, emphasizing knowledge transmission. Since the government adopted the competence-based curriculum in 2005, secondary education now focuses on helping learners learn how to learn through participatory methods. Graduate teachers are unprepared for these demands." This finding highlights a significant gap between theory and practice. While foundational knowledge is covered, the conversion of abstract theory into practical instructional materials remains a significant hurdle. This aligns with challenges reported by Fantinelli et al. (2024) and Komba and Mwakabenga (2020), who highlight that teacher training in Tanzania is often fragmented, characterized by weak integration between theory and practicum, limited exposure to learner-centred methodologies, inadequate supervision during teaching practice, and poor alignment between university curricula and the competence-based requirements of secondary school education. Moreover, this concern points to a misalignment between the university curriculum and the specific demands of secondary school syllabi.

## Conclusions and Recommendations

The study concludes that the limited alignment between university science curricula and secondary school syllabi weakens the classroom readiness of graduate teachers. In contrast, the relatively stronger alignment in arts subjects indicates that graduates are better positioned to meet school-level teaching demands, though refinement is still needed. Finally, the separation of pedagogy from subject content in teacher education undermines the development of pedagogical content knowledge, constraining the effective implementation of competence-based teaching in schools.

Based on the findings and corresponding conclusions, the study recommends closer collaboration between universities and the Tanzania Institute of Education to align science course content with secondary school syllabi, thereby ensuring that teacher training balances disciplinary knowledge with classroom applicability. For arts subjects, universities should build on the existing alignment by deliberately embedding subject-specific pedagogy so that graduates are better equipped to adapt content to school-level teaching. In addition, teacher education curricula should be restructured to integrate pedagogical content knowledge within subject courses, expand opportunities for practical training in schools, and strengthen continuous pedagogical development for academic staff to enhance the effective implementation of competence-based teaching.

## References


Abri, M. H. A., Aamri, A. Y. A. and Elhaj, A. M. A. (2024). Enhancing student learning experiences through integrated constructivist pedagogical models. *European Journal of Contemporary Education and E-Learning, 2*(1), 130–149. https://doi.org/10.59324/ejceel.2024.2(1).11.

Agbaje, O. (2023). Curriculum reform in African higher education: solving society’s problems and meeting its needs. *Curriculum Perspectives*, *43*(S1), 141–149. https://doi.org/10.1007/s41297-023-00206-x.

Angelo, P. a. F. (2023). Curriculum theory and practice: A comparative literature review. *HO CHI MINH CITY OPEN UNIVERSITY JOURNAL OF SCIENCE - SOCIAL SCIENCES*, *13*(2), 1–12. https://doi.org/10.46223/hcmcoujs.soci.en.13.2.2793.2023.

Bangir-Alpan, G. B. and Koç-Erdamar, G. (2019). Professional knowledge courses in teacher education: Lecturer and student views (the case of Gazi Education Faculty). International Journal of Progressive Education, 15(2), 140–156. https://doi.org/10.29329/ijpe.2019.189.10.

Cohen, L., Manion, L. and Morrison, K. (2007). Research Methods in Education (6th ed.). Routledge. https://doi.org/10.4324/9780203029053.

Du Plessis, E. (2020). Student teachers’ perceptions, experiences, and challenges regarding learner-centred teaching. *South African Journal of Education*, 40(1), 1–10. https://doi.org/10.15700/saje.v40n1a1631.

Fantinelli, S., Cortini, M., Di Fiore, T., Iervese, S. and Galanti, T. (2024). Bridging the Gap between Theoretical Learning and Practical Application: A Qualitative Study in the Italian EducationalContext. *Education Sciences, 14*(2), 198. https://doi.org/10.3390/educsci14020198.

Gauthier, G., Banner, J. and Winer, L. (2025). What is the syllabus for? Revealing tensions through a scoping review of syllabus uses. *The International Journal for Academic Development*, 1–20. https://doi.org/10.1080/1360144x.2025.2465363.

Hamidu, H. K. and Peter, I. R. (2025). The Alignment/Linkage of students' academic competence experienced in Secondary schools and Universities. A case study of Competence-Based Curriculum Implementation in Tanzania. *International Journal of Social Science and Human Research*, *08*(02). https://doi.org/10.47191/ijsshr/v8-i2-58.

Issa, Z., Mwakapina, J. and Nyinondi, O. (2024). Implementation of English Language Competence –Based curriculum in Tanzanian secondary schools: A case Mtama district. *Education Journal*, *13*(4), 211–221. https://doi.org/10.11648/j.edu.20241304.18.

Johnson, C. E., Boon, H. J. and Thompson, M. D. (2020). Curriculum Alignment After Reforms: A Systematic Review with Considerations for Queensland Pre- and In-service Teachers. *˜the œAustralian Journal of Teacher Education*, *45*(11), 34–55. https://doi.org/10.14221/ajte.202v45n11.3.

Kafyulilo, A. and Fisser, P. (2019). Developing TPACK in Science and Mathematics Teacher Education in Tanzania: A Proof of Concept study. In *Springer eBooks* (pp. 139–155). https://doi.org/10.1007/978-3-030-20062-6_8.

Kihwele, J. E. and Mtandi, R. (2020). Impact of teaching practice on Pre-Service teachers' pedagogical competencies in Tanzania. *EAST AFRICAN JOURNAL OF EDUCATION AND SOCIAL SCIENCES, 1*(1), 101–111. https://doi.org/10.46606/eajess2020v01i01.0011.

Kim, Y. C. and Jung, J. (2019). Conceptualizing shadow curriculum: definition, features and the changing landscapes of learning cultures. *Journal of Curriculum Studies*, *51*(2), 141–161. https://doi.org/10.1080/00220272.2019.1568583.

Komba, S. C. and Mwakabenga, R. J. (2020). Teacher professional development in Tanzania: challenges and opportunities. In *Educational leadership*. https://doi.org/10.5772/intechopen.90564.

Krepf, M. and König, J. (2022). Structuring lessons as an aspect of pre-service teachers' planning competence: A scaling-up analysis. *Zeitschrift Für Erziehungswissenschaft, 25*(4), 917–946. https://doi.org/10.1007/s11618-022-01125-9.

Lavonen, J. (2020). Curriculum and teacher education reforms in Finland that support the development of competences for the Twenty-First Century. In *Springer eBooks* (pp. 65–80). https://doi.org/10.1007/978-3-030-41882-3_3.

Matete, R. E. (2022). Forms of decentralization and their implications for educational accountability in Tanzania. Heliyon, 8(5), e09436. https://doi.org/10.1016/j.heliyon.2022.e09436.

Matorevhu, A. and Madzamba, H. (2022). The Hidden Curriculum and Its Role in Curriculum Innovation Implementation. *Journal of Research in Instructional*, *2*(2), 163–174. https://doi.org/10.30862/jri.v2i2.96.

Mbilinyi, R. and Wandela, E. L. (2024). The Influence of Teacher Professionalism on the Alignment between Syllabus Content and Classroom Instruction: A Case Study of Selected Secondary Schools in Mvomero District, Tanzania. *Asian Journal of Education and Social Studies*, *50*(10), 91–101. https://doi.org/10.9734/ajess/2024/v50i101603.

Mgaiwa, S. J. (2018). Emerging Fundamental Issues of teacher education in Tanzania: A Reflection of Practices. *Educational Process International Journal*, *7*(4), 246–264. https://doi.org/10.22521/edupij.2018.74.3.

Mgaiwa, S. J. and Ishengoma, J. M. (2017). Institutional constraints affecting quality assurance processes in Tanzania's private universities. Journal of Higher Education in Africa /Revue de l'enseignement supérieur en Afrique, 15(1), 57–67. https://doi.org/10.57054/jhea.v15i1.1491.

Mohamed, M. and Karuku, S. (2017). Implementing a Competency-Based curriculum

in science education. In *SensePublishers eBooks* (pp. 101–118). https://doi.org/10.1007/978-94-6351-089-9_7.

Msuya, D. and Abdala, J. (2025). Exploring teaching practices for developing paragraph writing skills in English as a foreign language through a competence-based approach in Tanzania's secondary schools. *Discover Education*, *4*(1). https://doi.org/10.1007/s44217-025-00478-7.

Mugo, J. K. (2024). Implications of ALIVE process and evidence for policy and practice in East Africa. In *The œenabling power of assessment* (pp. 195–211). https://doi.org/10.1007/978-3-031-51490-6_12.

Mwakyobwe, V. E. and Shawa, M. C. K. (2023). Pedagogical and Assessment Practices towards Competency-based Education in Tanzania Teacher Colleges. *Asian Journal of Education and Social Studies*, *40*(2), 1–12. https://doi.org/10.9734/ajess/2023/v40i2867.

Nkya, H. E. and Huang, F. (2021). Implementation of competence based curriculum in Tanzania: Perceptions, challenges and prospects. A case of secondary school teachers in Arusha region. *Journal of Education and Practice*. https://doi.org/10.7176/jep/12-19-04.

Nsengimana, T., Mugabo, L. R., Ozawa, H. and Nkundabakura, P. (2023). Science Teachers' Knowledge, Understanding and Perceptions of Competence-Based Curriculum in three secondary Schools in Rwanda. *European Journal of Educational Research*, *volume–12–2023*(volume–12–issue–1–january–2023), 317–327. https://doi.org/10.12973/eu-jer.12.1.317.

Omollo, A., Matete, R. and Loisulie, P. (2024). Components in lesson planning for secondary school teachers in Tanzania: implications for supervision and teachers' training. *Educational Challenges*, *29*(2). https://doi.org/10.34142/2709-7986.2024.29.2.20.

Otieno, L., Swai, C. and Bwagilo, H. O. (2025). Determinants of instructors' attitudes toward competency-based curriculum in Tanzanian technical education and training: a correlational study. *Educational Dimension*. https://doi.org/10.55056/ed.932.

Post, M. and Prediger, S. (2022). Teaching practices for unfolding information and connecting multiple representations: the case of conditional probability information. *Mathematics Education Research Journal, 36*(1), 97–129. https://doi.org/10.1007/s13394-022-00431-z.

Salema, V. (2017). Assessment practices in secondary schools in Kilimanjaro region, Tanzania; a gap between theory and practice. *European Journal of Education Studies*. https://doi.org/10.46827/ejes.v0i0.465.

Sanga, P. L. (2020). Deterrents to collaboration in the provision and regulation of cross-border higher education in East Africa. Papers in Education and Development, 37(1). Retrieved from https://journals.udsm.ac.tz/index.php/ped/article/view/3125.

Sarkar, M., Gutierrez-Bucheli, L., Yip, S. Y., Lazarus, M., Wright, C., White, P. J., Ilic, D., Hiscox, T. J. and Berry, A. (2024). Pedagogical content knowledge (PCK) in higher education: A systematic scoping review. *Teaching and Teacher Education*, 144, 104608. https://doi.org/10.1016/j.tate.2024.104608.

Schiering, D., Sorge, S. and Neumann, K. (2021). Promoting progression in higher education teacher training: how does cognitive support enhance student physics teachers' content knowledge development? *Studies in Higher Education, 46*(10), 2022–2034. https://doi.org/10.1080/03075079.2021.1953337.

Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. Harvard Educational Review, 57**(**1), 1–23. https://doi.org/10.17763/haer.57.1.j463w79r56455411.

Silva, R., Farias, C. and Mesquita, I. (2021). Challenges faced by preservice and novice teachersin implementing student-centred models: A systematic review. *European Physical Education Review, 27*(4), 798–816. https://doi.org/10.1177/1356336x21995216.

Stanikzai, M. I. (2023). Critical Thinking, Collaboration, Creativity and Communication Skills among School Students: A Review Paper. *European Journal of Theoretical and Applied Sciences*, *1*(5), 441–453. https://doi.org/10.59324/ejtas.2023.1(5).34.

Swai, C. Z. and Glanfield, F. (2018). Teacher-led professional learning in Tanzania: perspectives of mathematics teacher leaders. *Global Education Review*, *5*(3), 183–195. http://files.eric.ed.gov/fulltext/EJ1193968.pdf.

Tan, J. P., Choo, S. S., Kang, T. and Liem, G. a. D. (2017). Educating for twenty-first-century competencies and future-ready learners: Research perspectives from Singapore. *Asia Pacific Journal of Education*, *37*(4), 425–436. https://doi.org/10.1080/02188791.2017.1405475.

Tarmo, A. and Kimaro, A. (2021). The teacher education curriculum and its competency-based education attributes. *The Journal of Competency-Based Education*, *6*(3). https://doi.org/10.1002/cbe2.1255.

Tracy, S. J. (2013). Qualitative Research Methods: Collecting Evidence, Crafting Analysis, Communicating Impact [Book review]. Croatian Sociological Review, 43(1), 99–101. https://doi.org/10.5613/rzs.43.1.6