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Design of a Teachers Resource Platform for Teachers of Applied Secretarial Principles in the Higher Technical Teachers' Training Colleges of the English-Speaking Regions in Cameroon

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Abstract
The study aimed to design a Teachers' Resource Platform (TRP) for lecturers of Applied Secretarial Principles in the Higher Technical Teachers' Training Colleges (HTTTCs) of the English-speaking regions of Cameroon. Using a mixed-methods approach, data were collected from 249 student-teachers and 26 lecturers across HTTTC Bambili and HTTTC Kumba. Questionnaires captured students' perspectives on teaching challenges, while semi-structured interviews with lecturers provided in-depth insights into resource needs and platform expectations. Quantitative data were analysed using descriptive statistics, while qualitative responses were subjected to thematic analysis. Findings revealed significant gaps in instructional resources, limited ICT integration, and the absence of collaborative teaching platforms, which hindered effective pedagogy. Based on these insights, a model TRP was developed, offering shared instructional materials, pedagogical guidance, and assessment tools. The study demonstrates that a digital platform can enhance teaching efficiency, standardization, and professional development, ultimately improving student-teachers' learning outcomes.
Keywords: Applied Secretarial Principles, Design, HTTTCs, Teachers' Resource Platform

1. Introduction

Today technology is fast-evolving in all spheres of life and the educational fields are not left out (Brandenberger et al., 2018). The teachers teaching Applied Secretarial Principles require technological skills and comprehensive resources to enhance their teaching methodologies, improve student engagement, and stay updated with administrative and industrial trends (Chuchan, 2018). However, access to well-structured and readily available teaching materials remains a challenge for many teachers in this field.

This project aims to design and implement a Teacher Resource Platform specifically for instructors of Applied Secretarial Principles. Applied Secretarial Principles is a course taught at the Higher Technical Teachers Training Colleges in the Department of Administrative Techniques and it is aimed at giving the required training to student-teachers on Applied Secretarial Principles' theories and practices. It provides the student-teachers with knowledge of formulating and designing cases that leads to problem solving and to face real office situations (Glister, 1997). The course is an interconnected discipline which integrates all other subjects in the option with a professional nature from secondary high school to the university (Gil, 2022). Both the teachers and the learners require an in-depth knowledge of

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technology to accomplish given tasks (Armstead & Chapel, 2022). The objective of integrating ICT into teaching and learning of Applied Secretarial Principles is paramount to the objective of the course content and its application enhances the teaching and learning activities, facilitates technology-based teaching and learning pedagogy in the classroom, creates new innovative methods of learning and teaching, transmits educational materials and practice systematically in the HTTTCs and universities faster with higher quality and allows student-teachers to create professional-looking documents with ease (Chuchan, 2018).

Therefore, the platform will serve as a centralized hub where teachers can access curriculum-aligned teaching materials, lesson plans, case studies, multimedia resources, and assessment tools. Additionally, it will foster collaboration among teachers by enabling them to share best practices, discuss challenges, and exchange innovative teaching strategies (Hero, 2019). The platform will leverage modern web technologies to ensure accessibility, ease of use, and scalability. It will integrate interactive features such as discussion forums, downloadable content, and real-time updates on industry trends related to secretarial studies (Kahn, 1982). The ultimate goal is to enhance the quality of teaching and learning in Applied Secretarial Principles by equipping teachers with the necessary tools and support. This document outlines the design and implementation process, including the platform's features, technology stack, user experience considerations, and potential implications on teaching and learning outcomes.

Background knowledge of the major concepts indicates that the teaching of Applied Secretarial Principles encompasses a range of competencies, including office administration, communication skills, confidentiality protocols, and technological proficiency (Legris et al., 2003). Teachers in this field often face challenges in accessing up-to-date and comprehensive teaching materials that align with industry standards and effectively engage students (Haage, 2022; Kirondo, 2014; Knamiller, 1999). The integration of technology into education has led to the development of various online teaching resource platforms (Monserate, 2018). For instance, a study detailed the design of an online teaching resource platform utilizing Large Language Models and Retrieval-Augmented Generation to enhance resource accessibility and interactivity (Holvio, 2022). Similarly, the Learning Activity Management System (LAMS) offers a visual authoring environment for creating sequences of learning activities, facilitating collaborative learning experiences (Munna & Kalam, 2021).

In the context of secretarial education, resources such as the "Secretarial Science Administrative Assisting III" curriculum provide structured guidelines for teachers, emphasizing the infusion of technical skills with employability and academic competencies (Negassa & Engdasew, 2017; Sudharka, 2017). Additionally, the "Secretarial and Office Administration Level III" module outlines essential skills and knowledge required for effective office management, highlighting the importance of confidentiality and security procedures (Haage, 2022; Suh, 2018). Despite these available resources, there remains a gap

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in a centralized platform tailored specifically for teachers teaching Applied Secretarial Principles. Addressing this gap through the development of a dedicated teacher resource platform could significantly enhance the quality of education in this field, providing teachers with the tools necessary to prepare students effectively for the evolving demands of secretarial roles. This teacher resource platform is a digital environment that provides resources for teachers and students to use in the classroom (Pino-Juste, 2022). These platforms will include lesson plans, curriculum guides, training opportunities, and research. They can also be used to share resources, interact, and track learning progress.

Initial efforts to establish Teacher Resource Platforms can be traced in former British colonies known at the time as Teacher Resource Centres in the 1960s (Tenya et al., 2023). By the early '70's the teachers' centre concept was becoming a major export abroad (Thornbury, 1973). They provided professional services to teachers to enable them to perform effectively in their schools and classrooms (Craig, 1998). They did this by transferring resources, curriculum and pedagogical ideas from central agencies to teachers and schools; and/or by providing an environment for teachers to come together to discuss, to create teaching and learning materials, to attempt to solve their teaching problems (Knamiller, 1999). The teacher resource centres were physical rooms and were manually equipped. In the dynamic and ever-changing world of education, technology ushered in a transformative shift the teacher resource centres to digital dynamics (Thornbury, 1973). At the forefront of this digital revolution were teachers' platforms – potent resources that empowered teachers to cultivate vibrant and impactful learning environments online. Teacher Resource Platforms have since then been recognized as valuable instrument for teaching, learning and research in the universities (Tenya et al., 2023). They allow for broad access, sharing and dissemination of information resulting from the advancements of Information and Communication Technologies, ICTs (Tenya et al., 2023; Whitten & Bentley, 2019). Since classroom materials for teachers are at the centre of every successful learning experience, the TRPs supports the teachers, teacher teachers, curriculum developers and practitioners in general, by giving them access to a curated repository of materials that will inspire and support them in their practice and professional development process (either pre-service or in-service) (UNESCO-UNEVOC, 2019). It is in this light that our Teacher Resource Platform is conceived and implemented for the HTTTCs in the English-Speaking Regions of Cameroon.

The Department of Administrative Techniques is one that is designed to use specialized software and devices rendering teaching customizable. The teachers of this Department by its nature are expected to possess knowledge and skills that aligns with the objectives of the training program. Among others, Applied Secretarial Principles (ASPs) is a course that has in the past been taught manually. With technological evolutions, the course content is now automated and requires the use of assistive technology.

Based on observation, it was noticed that teachers teaching Applied Secretarial Principles face significant challenges in accessing and developing effective teaching resources. These

challenges include a lack of up-to-date materials, inadequate technological infrastructure, and limited professional development opportunities. They struggle with sourcing current and relevant teaching materials that align with industry standards. This issue is often exacerbated by insufficient funding and support from educational institutions, leading to a reliance on outdated resources. Secondly, the integration of technology into the curriculum presents its own set of challenges. This issue is compounded by inadequate training and technical support, as well as limited access to necessary equipment. Additionally, teachers often face difficulties in developing their own learning resources due to constraints such as limited time, lack of knowledge in material creation, and insufficient planning. These challenges can lead to a reliance on generic materials that may not fully address the specific needs of their students. Addressing these challenges is essential to enhance the teaching and learning experience in this field.

This explains the objective of the study which aims at (1) examining the impact of MS Word abilities developed by student-teachers on their performance in Applied Secretarial Principles in the Higher Technical Teachers' Training Colleges in the English-Speaking Regions of Cameroon and (2) designing a Teachers' Resource Platform tailor made to suit the needs of the course outline/content for Applied Secretarial Principles in the HTTTCs of the English-Speaking Regions of Cameroon. Accordingly, the study seeks to answer the question on whether a Teachers' Resource Platform can be design to facilitate the teaching of Applied Secretarial Principles. By situating this question within the broader discourse on ICT integration in teacher education, this study contributes to developing innovative, context-specific solutions for enhancing the quality of technical teacher training in Cameroon.

2. Literature - The Concept of a Teachers' Resource Platform

Applied Secretarial Principles is a course taught using a plethora of Microsoft hardware and software tools. Some of them include Windows Personal Computers, laptops and compatible mobile devices and Microsoft Office suites to aid in delivering subject contents. For the purpose of our study, MS Word is the program under investigation. With a Teachers' Resource Platform, the teachers of the department will be equipped with instructional resources that will enable them to shape a future-ready generation of learners, embracing innovation and unlocking the full potential of modern education (Knamiller, 1999). The platform will offer a vast repository of ASPs' resources, contents of the different files including lesson plans, steps to conceive diagrams, videos, audios, text, multimedia content, interactive tools, and solutions to problems as well as assessments. These resources will be accessed and shared among the teachers promoting the exchange of innovative teaching practices and facilitating professional development. These wide range of high-quality resources at the disposal of the teachers will empower them to create engaging and diverse learning experiences. The Teacher Resource Platform will enable users to tailor their teaching methods and content to meet the individual needs and learning styles of each student-teacher (Haage, 2022). This will encourage personalized learning and it will enhance

student-teacher engagement and understanding, leading to better academic outcomes. The utilization of Microsoft conceived study tools in the Teacher Resource Platform would help the teachers to design their lesson plans in an effective, innovative and creative approach and it would help the student-teachers' to be active and sustainable learners. As the teachers would harness the power of these platforms, they would create more engaging, effective, and inclusive learning environments, ultimately nurturing the academic growth and success of the student-teachers in the Department of Administrative Techniques.

Theoretical underpinning of the study

This study anchors on the Davis' Technology Acceptance Model (TAM) and Marcella & Baxter's theory of Information Interchange. The Technology Acceptance Theory is based on the idea that users' beliefs, attitudes and intentions determine their adoption of new technologies on their performances (Davis & Warshaw, 1989). Therefore, the model's basic principle stipulates that the users are more likely to adopt a technology if they believe it will improve their performance and is easy to use. On its part, the framework for information interchange describes how information users and providers can improve the information communication process (Marcella & Baxter, 2005). With this theory, data is exchanged between the actors, the services and the platform using predefined rules, standards and software protocols. These theories suite our context in the sense that once the teachers perceive the usefulness of the TRP and can effectively use the system, the resources and information uploaded will be perfectly used to achieve specified goals with effectiveness, efficiency and satisfaction in their transmission of knowledge in Applied Secretarial Principles.

3. Methodology

This study adopted a concurrent mixed methods research design, integrating both qualitative and quantitative approaches to ensure a comprehensive understanding of the needs, design, implementation, and effectiveness of the proposed Teachers' Resource Platform. The concurrent mixed design was appropriate given the study's dual aim of identifying pedagogical and technological gaps in the teaching of Applied Secretarial Principles (ASP), and of co-creating a solution with direct input from end-users. The study was conducted across two Higher Technical Teachers' Training Colleges (HTTTCs) located in the English-Speaking Regions of Cameroon – Bambili and Kumba. The population comprised lecturers of Applied Secretarial Principles across the two HTTTCs in the English-Speaking Regions of Cameroon - HTTTC Bambili and HTTTC Kumba. The purposive sampling techniques was employed since all the students and all the lecturers in the Departments of administrative Techniques in the two HTTTCs were considered. The sample size of the study was 26 teachers and 249 student-teachers. The major instruments for data collection used were questionnaire, observation check list, interview grill and document review. Two hundred and forty nine (249) questionnaires were purposively administered to student-teachers of the HTTTCs of the English-Speaking Regions. The quantitative data collected was analysed with SPSS version 25.0 and presented using descriptive and inferential statistics. Sets of instruments were drawn up to guide the gathering and analysis

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of information from relevant documents, interviews and onsite observations. Two main institutions were targeted namely the HTTTCs of Bambili and Kumba.

The Higher Technical Teacher Training Colleges (HTTTCs) are specialized institutions under the University of Bamenda and the University of Buea, created by the Government of Cameroon to provide professional training for future technical and vocational education teachers. Currently, there are two HTTTCs in the English-Speaking Regions: HTTTC Bambili in the North West Region (under the University of Bamenda), and HTTTC Kumba in the South West Region (under the University of Buea).

The establishment of these institutions responds to the national need for qualified teachers in technical and vocational education, which is considered essential for economic growth and skills development in Cameroon (UNESCO-UNEVOC, 2015). Each HTTTC offers both undergraduate and postgraduate programs, preparing student-teachers in diverse technical and professional fields such as engineering, computer science, tourism and hospitality management, agriculture, management sciences, and educational sciences.

Structurally, the HTTTCs are organized into departments, each specializing in a particular technical or professional discipline. They combine pedagogical training (courses in educational sciences, pedagogy, didactics, and teaching practice) with professional/technical training (specialized courses in students' major fields). This dual approach ensures that graduates are both competent in their technical specializations and skilled in modern teaching methods. The student population has grown steadily since their creation, reflecting the increasing demand for technical teachers nationwide. However, the HTTTCs face challenges such as limited infrastructure, inadequate teaching resources, and administrative constraints, which affect both lecturers' pedagogic supervision and student-teachers' learning outcomes (UNESCO-UNEVOC, 2019)Despite these challenges, the HTTTCs remain central to Cameroon's vision of producing highly skilled technical educators who can foster innovation, industrialization, and sustainable development in the country.

For the system, the Rapid Application Development (RAD) approach to System Development Life Cycle (SDLC) was used in this study. For the system's design, the method used here is MERISE method. According to Quang (1991) MERISE is a method based on the Conceptual Data Model (CDM) for designing databases. In this method, all objects dealt with in the application were entities and were linked by Associations. Both entities and associations have attributes. Relations have cardinalities (min and max). MERISE method was adopted for this project because of its simplicity, closeness to human thinking and its compatibility with the normal System Development Life Cycle (SDLC).
Quantitative data from the questionnaires were analysed using descriptive statistics such as frequencies, percentages, and mean scores to determine patterns in teachers' needs and ICT usage levels. Qualitative data from FGDs and interviews were transcribed and analysed

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using thematic analysis, identifying recurring patterns and key recommendations from participants that informed both platform design and content alignment.

4. Findings and Discussion

Based on the first objective which investigated the impact of MS Word abilities developed by student-teachers on their performance in Applied Secretarial Principles, we found out the following;

Participants Responses on the impact of MS Word abilities developed on their performances in Applied Secretarial Principles

Table 1:

Frequency and Percentage of Student-teachers' Responses on the impact of MS Word abilities developed on their performance in Applied Secretarial Principles

S/N	Statement	Response Option			
		Strongly disagree (%)	Disagree (%)	Agree (%)	Strongly agree (%)
1.	You can adequately conceive a linking printed matter using MS word features.	90 (38.1)	98 (41.5)	35 (14.5)	13 (5.5)
2.	Your skills in MS WORD enables you to conceive, type and print position printed matter perfectly	94 (39.8)	113 (47.9)	18 (7.6)	11 (4.7)
3.	Filing documents using different filing methods in MS word is not a problem for you.	86 (36.4)	86 (36.4)	44 (18.6)	20 (8.5)
4.	You can elaborate and draw a classical organizational chart (band) with the use of MSWORD	86 (36.4)	104 (44.1)	35 (14.8)	11 (4.7)
5.	The skills you have acquired in MS Word enable you to establish and use absent markers and folders.	83 (35.2)	102 (43.2)	39 (16.5)	12 (5.1)
6.	You can read and interpret a post-document diagram as well as merge files with the use of MS WORD.	67 (28.4)	106 (44.9)	46 (19.5)	17 (7.2)
7.	You can conceive, elaborate and draw Decision tables and Logical or processing flow charts with the use of MS Word.	99 (41.9)	101 (42.8)	24 (10.2)	12 (5.1)
8.	You can adequately represent the structure of an enterprise on a classical Organizational chart (band) with the use of MS Word.	112 (47.5)	85 (36.0)	29 (12.3)	10 (4.2)
9.	MS Word skills acquired enable you to conceive attribution cards and elaborate T-card planning.	118 (50.0)	89 (37.7)	18 (7.6)	11 (4.7)
10.	You can conveniently conceive a post-document diagram and graphs with the use of MS Word.	80 (33.9)	102 (43.2)	59 (25.0)	14 (5.9)

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11.	Your MS Word abilities enable you to conceive a post profile, compare the real profile of candidates and identify the best profile.	64 (27.1)	96 (40.7)	59 (25.0)	17 (7.2)
12.	Your knowledge and skill of MS Word permits you to perfectly sort out articles from a file in increasing and decreasing order.	66 (28.0)	108 (45.8)	48 (20.3)	14 (5.9)
13.	Your abilities and skills in MS Word influence your performances in ASP	103 (43.6)	97 (41.1)	24 (10.2)	12 (5.1)

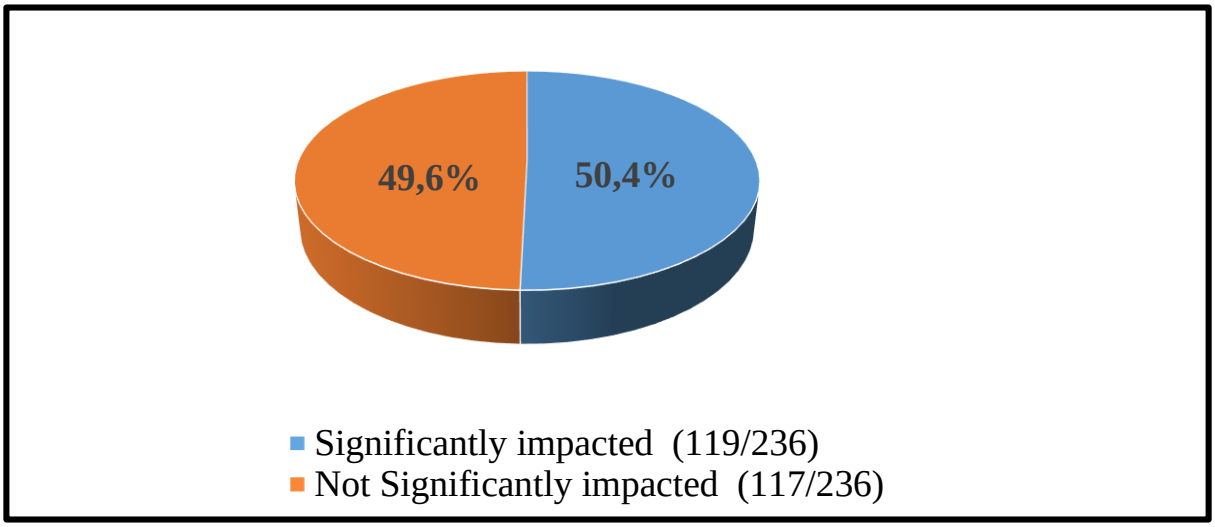
Source: conceived from Fieldwork, 2024.

Overall impact of MS Word abilities developed by students-teachers on their performance in Applied Secretarial Principles

The impact of MS Word abilities developed by student-teachers was determined based on the scores given for their answers to the questionnaire. The responses strongly agree, agree, disagree, and strongly disagree were scored 4, 3, 2, and 1 respectively. The mean score on the impact was 40.46 (± 2.978 SD), respondents who scored the mean score and above were said to have felt a significant impact on development of abilities while those who scored below were said to have felt no significant impact on the development of abilities. The results revealed that 119 (50.4%) of the respondents admitted to have been positively impacted by MS Word training, while 117 (49.6%) of the respondents admitted to have been negatively impacted by MS Word training. The results were as shown in the figure 1 below:

Figure 1:

Overall impact and MS Word abilities on student-teachers performances in Applied Secretarial Principles.



Source: conceived from Fieldwork, 2024.

Summary of results of the interview with the teachers of the Department of Administrative Techniques of the Higher Technical Teachers' Training Colleges of the English-Speaking Regions of Cameroon.

Research objective One: The impact of MS Word abilities developed by student-teachers on their performance in Applied Secretarial Principles in the Higher Technical Teachers' Training Colleges in the English-Speaking Regions of Cameroon.

The research question tested the impact of MS Word abilities developed by student-teachers on their performance in Applied Secretarial Principles in the Higher Technical Teachers' Training Colleges in the English-Speaking Regions of Cameroon was made up of items 1 – 7. The findings showed that only the teachers who taught ASPs had knowledge and skills in Microsoft Word, while many of them do not teach Applied Secretariat Principles, consequently, they do not have up-to-dated knowledge of the subject content and they cannot conceive cases according to the recommended files for students to solve using Microsoft word. Because of these deficiencies, many student-teachers cannot effectively use Microsoft word skills to solve the problems conceived. Many teachers confirmed that they have many challenges associated with understanding the practical content using MS Word because the course content is constantly updated.

Need for a Teacher Resource Platform

Responses from both lecturers and student-teachers indicated a strong demand for a centralized teacher resource platform. Lecturers reported that teaching resources were fragmented, outdated, or difficult to access, while student-teachers expressed the need for standardized lesson notes, templates, and structured instructional guides. Interviews further revealed that a digital platform could enhance collaboration, resource sharing, and the integration of modern pedagogical practices in ASP.

Observation Checklist Results on ICT Availability and Usage

The observation checklist revealed serious gaps in ICT resource availability and usage in the HTTTCs. The results showed that ICT tools such as computers, projectors, and updated office applications were largely obsolete. It also revealed that even where tools were present, they were rarely used in ASP instruction. In several cases, ICT tools were completely unavailable, forcing lecturers to depend on personal devices or non-digital methods of teaching.

These findings highlighted a mismatch between the recognized importance of ICT in ASPs and the reality of institutional provision.

Discussion of findings

The findings revealed that Microsoft Word proficiency has a positive influence on student-teachers' performance in Applied Secretarial Principles (ASP). Student-teachers who mastered word processing skills demonstrated better academic outcomes by producing professional, error-free, and well-formatted documents. This is consistent with previous studies (Thakur, 2015; Haage, 2022; & Suh, 2018) which emphasize that mastery of productivity tools like Microsoft Word strengthens both academic and workplace readiness. The implication is that Microsoft Word remains an indispensable tool in the training of secretarial professionals, as it equips learners with transferable competencies required in modern administrative work.

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The survey and interview findings showed a strong demand for a centralized teacher resource platform that would make teaching and learning resources more accessible, standardized, and up to date. Lecturers reported fragmented and outdated teaching materials, while student-teachers lamented inconsistencies in instructional delivery. This situation resonates with Armstead and Chapel, (2022) who emphasized that effective resource availability enhances learner engagement and performance. A teacher resource platform would thus reduce disparities in content delivery, encourage collaborative resource sharing among lecturers, and provide structured support for learners. According to the Technology Acceptance Model (TAM) (Davis, 1989), ease of access and perceived usefulness are critical to technology adoption; hence, the proposed platform would be more readily embraced if it clearly improves instructional efficiency.
The observation results indicated that ICT tools in HTTTCs were either obsolete, rarely used, or unavailable, thereby limiting the effective teaching of ASP. This finding highlights a major institutional challenge: while ICT is widely acknowledged as essential for technical education, inadequate provision undermines its potential benefits. Holvio, (2022) similarly noted that resource inadequacies negatively affect teaching and learning outcomes in teacher training institutions. The poor state of ICT infrastructure explains why lecturers depend on traditional methods, which reduces opportunities for hands-on practice. This reality further strengthens the case for a teacher resource platform that does not depend heavily on hardware availability but can still provide lecturers with digital teaching content accessible via minimal ICT infrastructure.

Interview data revealed that only lecturers teaching ASP possessed up-to-date Microsoft Word skills**,** while many others lacked both subject content knowledge and current ICT competencies. This skill gap creates inconsistencies in how ASP is taught and undermines uniform quality in instructional delivery. Moreover, lecturers reported numerous challenges, including lack of ICT training opportunities, outdated resources, and limited institutional support. These findings are consistent with Monserate, (2018) who observed that teachers' limited capacity in ICT usage often impedes effective curriculum implementation. The implication is that lecturer training and ongoing professional development are critical if ICT is to be fully integrated into ASP teaching. A teacher resource platform would serve as a professional development tool by exposing lecturers to standardized, updated content and teaching approaches.

Taken together, the findings reveal a paradox - Microsoft Word is proven to enhance student performance, yet systemic challenges such as obsolete ICT tools, lack of updated teaching resources, and inadequate lecturer capacity limit its optimal integration into ASP teaching. The strong call for a teacher resource platform underscores its relevance as a solution to bridge the gap between the potential of ICT and the current constraints of HTTTCs. The findings align with the principles of Resource Dependence Theory (Pfeffer & Salancik, 1978), which suggest that organizations must seek innovative ways to manage scarce resources. In

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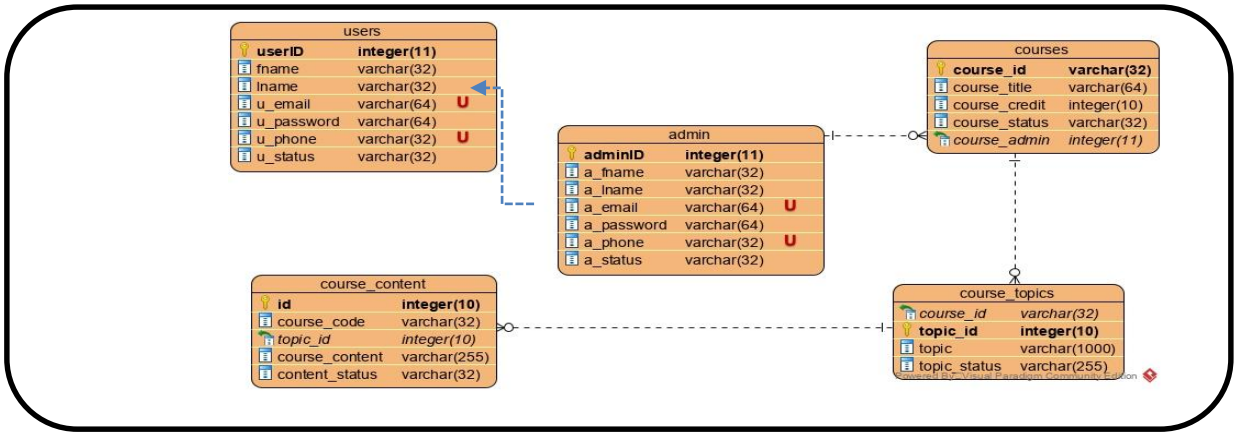
this context, the platform becomes an adaptive strategy to overcome infrastructural and capacity limitations, ensuring effective delivery of ASP.

The Entity Relationship Diagram (ERD) Model for the Teacher Resource Platform

An Entity Relationship Diagram (ERD) is a graphical representation of the data entities, attributes, and relationships in a system or domain. It helps to visualize the structure, logic, and constraints of the data, and to communicate them to different stakeholders. The ERD was used for various purposes, such as database design, system analysis, information modelling, and documentation. We identified the entities, attributes, relationships, and constraints which were used to conceive the ERD for the platform. Entities are objects or concepts that store data, such as teachers, courses, course contents, and course topics represented by the rectangles with names as can be seen below. The diagram analyses and enhances understanding of the data requirements and specifications, the design and implementation of the data model and database schema, validating and verifying data quality and integrity, communicating and collaborating with various stakeholders, and documenting and maintaining the data structure and logic of the system or domain.

Figure 2:

Entity Relationship Diagram (ERD) Model for the Teacher Resource Platform



Source: Conceived from field work, 2024

Use case Diagrams for the Teachers Resource Platform

For the TRP, two use case diagrams were conceived. A use case diagram is a visual representation of how users interact with a system, and is a key tool in the early stages of system design and development. The use cases below describes the functions and scope of the TRP. These diagrams also identify the interactions between the system and its actors – that is the admin and the users. The use cases and actors in this use-case diagrams describes what the system does and how the actors use it, but not how the system operates internally.

Figure 3

Admin's Use Case

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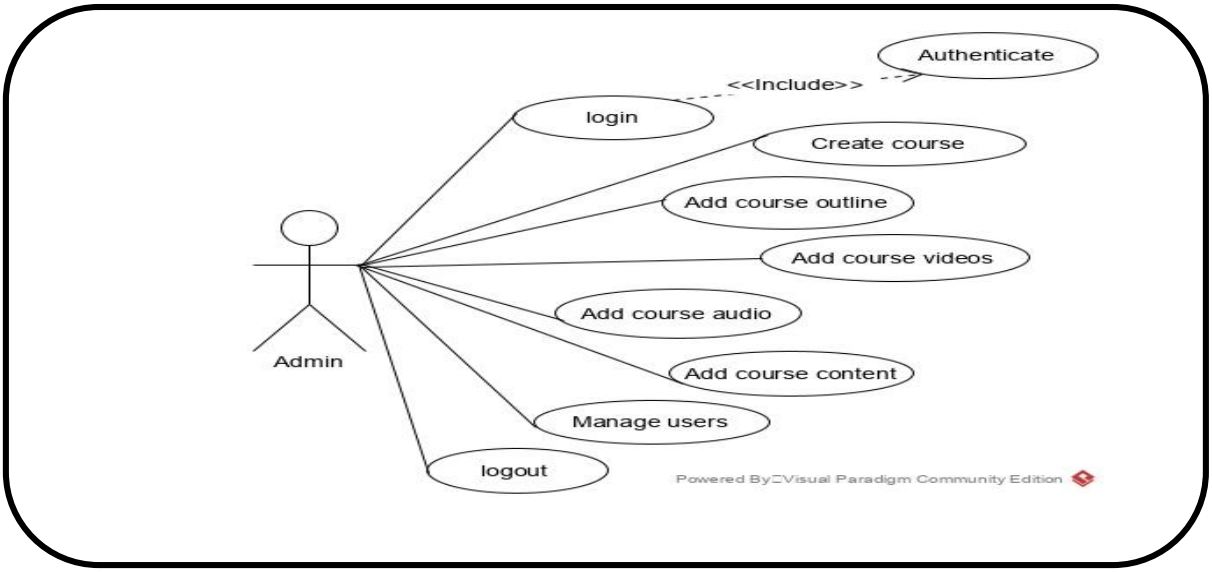
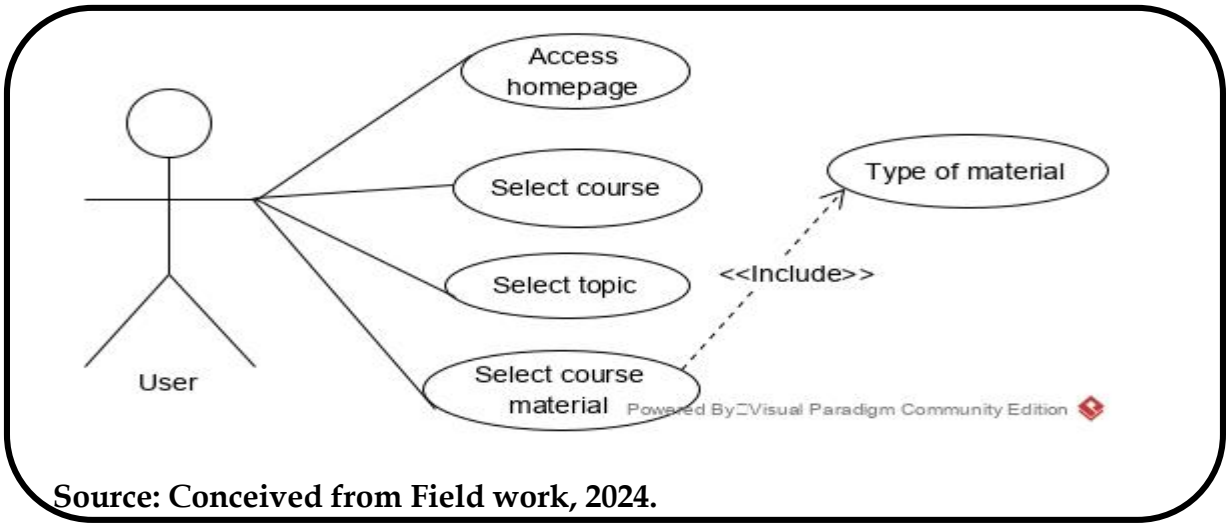


Source: Conceived from Field work, 2024.

Figure *4*
Users Use Case



Source: Conceived from Field work, 2024.

Systems' design (conceptual data Model)

The System Development Life Cycle (SDLC) was adopted to design this system. This is similar to the conceptual Data Model of the MERISE method. The conceptual data model is the abstract representation of the TRP's data and relationships between them. It is a visual and textual model that captures the big picture of Teacher Resource Platform's data

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requirements without getting into technical details. This consists of setting the data dictionary, the entities, identifiers, properties, associations and occurrences. The dictionary shows the different tables, field names, codes and data types used in the system. The data dictionary helps the developer to know the different fields which are required in the system. It gives the developer a preview of the database in which records will be stored

Design and Development Procedure

Data from the needs assessment phase directly informed the conceptualization and wire framing of the platform. Using a user-centred iterative design model**,** the platform was developed to include four main modules:

1. **Digital Repository –** for storing lesson plans, teaching materials, and schemes of work.
2. **Collaborative Forum –** enabling peer interaction, mentoring, and experience sharing among ASP teachers.
3. **Professional Development Hub –** offering curated courses and training resources tailored to the ASP curriculum.
4. **Real-Time Feedback System –** allowing users to provide immediate input on usability and content relevance.

A functional prototype was developed and subjected to pilot testing with a selected group of 10 ASP teachers over a one-month period. Their feedback was used to refine interface design, improve content accessibility, and enhance user experience.

Procedure for Implementation

The implementation of the Teachers' Resource Platform for instructors of Applied Secretarial Principles (ASP) in the Higher Technical Teachers' Training Colleges (HTTTCs) of the English-speaking regions of Cameroon followed a structured, four-phase approach: planning, development, pilot testing, and rollout**.**

1. Planning Phase

This phase focused on consolidating stakeholder input and defining technical requirements for the platform. A collaborative needs assessment involving ASP teachers. The key pedagogical challenges included determining the types of teaching resources most needed, specify user interface preferences, and outline infrastructural and policy considerations. The findings from this phase formed the blueprint for the platform's architecture and content strategy.

2. Development Phase

Guided by the user-centred design model, the platform was developed in stages. The process involved:

1. Designing an interactive interface using open-source web technologies for compatibility and sustainability,
2. Creating the core modules - Digital Repository, Collaborative Forum, Professional Development Hub, and Feedback System,

3. Populating the platform with initial teaching materials, including lesson plans, schemes of work, digital manuals, and video and textual tutorials based on the ASP curriculum.

Continuous consultation with ASP teachers and ICT developers was maintained to ensure alignment with pedagogical expectations and user-friendliness.

3. Pilot Testing Phase
A functional prototype was deployed and tested by a select group of 10 ASP teachers from HTTTC Bambili and Kumba. Over a four-week period, the users engaged with all platform features and were guided to:

1. Upload and download teaching materials,
2. Participate in discussion forums,
3. Complete short professional development tasks, and
4. Provide structured feedback via embedded forms and follow-up interviews.

Data from this phase was analysed to assess usability, relevance, and accessibility. Identified issues, including navigation flow, loading speed, and content organization, were resolved in preparation for wider deployment.

4. Rollout and Support Phase
Upon successful pilot testing and refinement, the platform was launched for use across the English-speaking HTTTCs. Implementation included:

1. Formal introduction during pedagogic seminars and departmental meetings,
2. Onboarding and training sessions for all ASP teachers,
3. Provision of digital user guides and in-platform tutorials,
4. Establishment of a technical support system and feedback loops to handle user concerns and updates.

Ongoing engagement is ensured through periodic content updates, user training, and monitoring of usage analytics. The platform is designed for scalability, with potential integration into the wider teacher education digital ecosystem in Cameroon.

Presentation of the Realised Product
Based on the explained challenges faced by the teachers of the Department of Administrative Techniques, and their inability to effectively transmit knowledge of Applied Secretarial Principle using MS Word and other ICT gadgets, this system was designed and implemented as a solution to provide teachers and other teachers with tools, information, and resources to support teaching/learning. The Platform will provide readily available learning resources that will enhance collaboration, professional development and easy access to information. It will help the teachers to develop skills and concepts and to teach in

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a variety of ways. The resources will be constantly updated to maintain current trends. For the project, we realized the following;

A Teacher Resource Platform for the Departments of Administrative Techniques in the HTTTCs of the English-Speaking Region.

A Teachers' Resource Platform was conceived, designed and implemented to assist the teachers of the Department of Administrative Techniques to have access to techniques, procedures and teaching/learning materials with ease. The system can assist in doing the following; a**ccess to course Contents – the system will make available all course contents; access to resources** such as hand-outs, audio and video course materials. The teachers will discuss, share ideas and comment on available materials with one another. Each user of the system logs into the system using a password. On the homepage of this Teachers' Resource Platform, we find the different menu items giving a user access into the system. There is a home menu, the sign-up menu, courses menu, get resource and lots more. Each item on the menu list gives the user access into the system. Upon login in the system, the home menu will always be activated and from there the user will have access to the course needed.

Table 2

Select a Course

Course Listing

SN	COURSE CODE / TITLE	CREDIT VALUE	LEVEL
1	ADC601 Applied Secretarial Principles	3	600-I
2	ADC618 Advanced Word Processing II	4	600-I
3	ADC631 Advanced Database Management	3	600-II
4	ADC641 Advanced	3	600-II
5	ADC405 Means and Techniques of Communication (MTC)	3	400
6	ADC415 Web Management	4	400
7	ADC307 Word Processing III	4	300
8	ADC309 Case Study I	4	300
9	ADC201 Business Communication I	2	200
10	ADC211 Introduction to Network Technology	3	200

Source: Conceived and developed by Researcher based on field work, 2024

Select course is the next page that leads the user into the system. When you click on select course, a drop-down menu of the course listing for the Departmental courses available online will pop out and the user will select the course he/she wants. You click to the course you intend to access its material. The courses are according to the levels. When the user clicks on a course, the course listing will unfold.

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Table 3
Course Listing

Course Listing			
SN	COURSE CODE / TITLE	CREDIT VALUE	LEVEL
1	ADC601 Applied Secretarial Principles	3	600-I
2	ADC618 Advanced Word Processing II	4	600-I
3	ADC631 Advanced Database Management	3	600-II
4	ADC641 Advanced	3	600-II
5	ADC405 Means and Techniques of Communication (MTC)	3	400
6	ADC415 Web Management	4	400
7	ADC307 Word Processing III	4	300
8	ADC309 Case Study I	4	300
9	ADC201 Business Communication I	2	200
10	ADC211 Introduction to Network Technology	3	200

Source: Conceived and developed by Researcher based on field work, 2024
Source: Conceived and developed by Researcher based on field work, 2024

This is the third page that carries the user into the system. In the course listing, the user can select a course he/she wishes to source material for. From the above course listing, ADC601 – Applied Secretarial Principles is selected. A click on the course leads you to the course outline for that course. This gives the user access to the course content he/she is soliciting.

Table 4
Select Topic

Applied Secretarial Principles - Course Outline Level 600-I			
TOPICS	SUB-TOPICS	COMPETENCES	DURATION
File 1	• Communication • Alphabetical Filing • Codification	• Analyze a situation of communication • Identify the elements of communication from a given situation • File documents Alphabetically • Codify information and calculate the control key • Interpret (decode) coded information	06H
File 2	• Communication • Numerical filing • Post of Work	• Analyze a situation of communication • Identify the elements of communication from a given situation • File documents Alphabetically • Codify information and calculate the control key • Interpret (decode) coded information	06H
File 3	• Ideological filing • Indexing • Signaling	• File documents Ideologically (Subject) • Constitute files, index and place signals on certain characteristics • Criticize a communication process	06H

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Source: Conceived and developed by Researcher based on field work, 2024

Table 5
Select Course Content

Applied Secretarial Principles - Course Outline

Level 600-I

TOPICS	SUB-TOPICS	COMPETENCES	DURATION
File 1	• Communication • Alphabetical Filing • Codification	• Analyze a situation of communication • Identify the elements of communication from a given situation • File documents Alphabetically • Codify information and calculate the control key • Interpret (decode) coded information	06H
File 2	• Communication • Numerical filing • Post of Work	• Analyze a situation of communication • Identify the elements of communication from a given situation • File documents Alphabetically • Codify information and calculate the control key • Interpret (decode) coded information	06H
File 3	• Ideological filing • Indexing • Signaling	• File documents Ideologically (Subject) • Constitute files, index and place signals on certain characteristics • Criticize a communication process	06H

Source: Conceived and developed by Researcher based on field work, 2024

After selecting the topic that the teachers wants to source for the material, the Get Resource location will immediately unfold to lead the user to choose a type of resource.

As the user continues to navigate, a click on select course content will lead the user to the course outline for the particular course. Here the user will proceed to select a topic he or she wants to source teaching/learning material.

Figure 5
Get Resources

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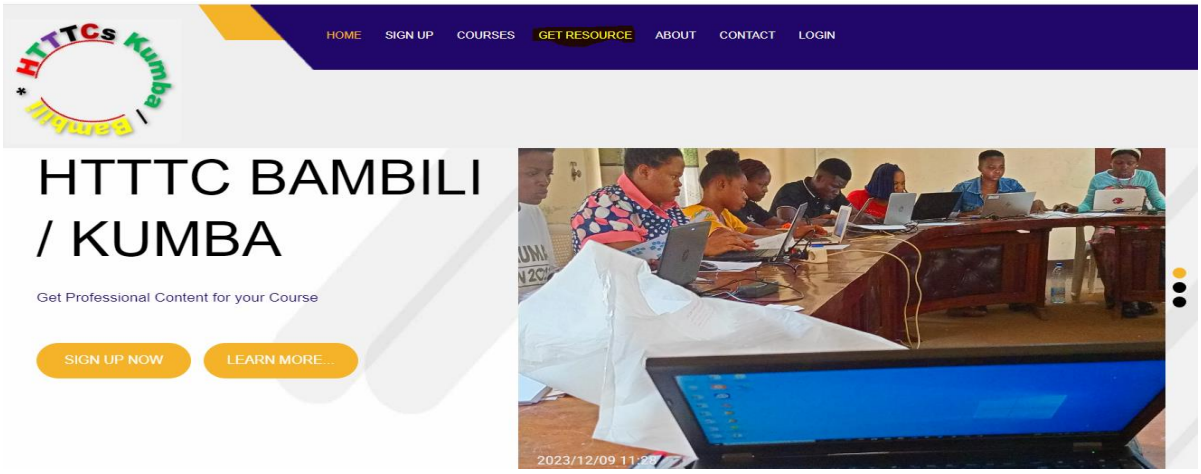
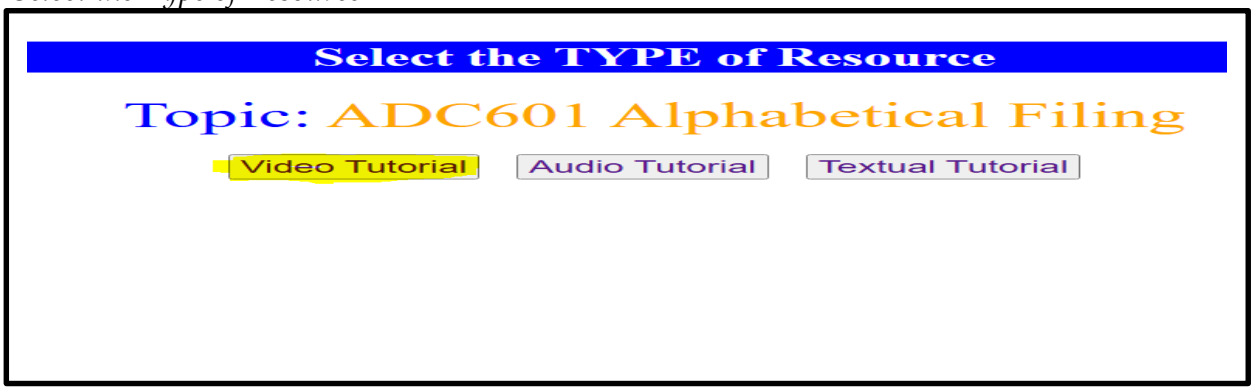


Source: Conceived and developed by Researcher based on field work, 2024

From the Get Resource menu, the user will get the resources for the selected topic. The Resources are available in audio, videos and tutorial formats.

Figure 6

Select the Type of Resource



Source: Conceived and developed by Researcher based on field work, 2024

From here, the user selects the type of resource he/she wants and exploits accordingly.

Mobile Application of the Platform

To ensure accessibility, flexibility, and convenience for teachers of Applied Secretarial Principles, a mobile application was developed as an extension of the Teachers' Resource Platform. The mobile app version is designed with a responsive interface compatible with both Android and iOS devices, allowing teachers to engage with pedagogic content on-the-go, even in low-connectivity areas. Key features of the mobile application include:

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1. **Offline Access to Resources:** Teachers can download teaching materials, lesson plans, instructional videos, and guides for offline use, reducing dependency on constant internet access.
2. **Interactive Forum:** A chat-enabled forum supports peer-to-peer engagement, collaborative lesson planning, and Q&A sessions with subject experts.
3. **Push Notifications:** Users receive timely updates on new resources, training schedules, and curriculum changes via push alerts.
4. **Content Upload & Feedback:** Teachers can share best practices, classroom innovations, and lesson templates directly from their mobile devices. The app also allows for real-time feedback on platform usability and teaching resources.
5. **Secure Login and Personal Dashboard:** Each user has a protected account and a customizable dashboard to track resource usage, downloads, and bookmarked content.

The mobile application complements the web-based platform by promoting ubiquitous learning and ensuring that teachers in remote or under-resourced areas remain connected to pedagogic support systems. Its user-friendly design and data-light configuration make it suitable for the technological context of the English-speaking regions of Cameroon.

5. Conclusion

The development and implementation of the Teachers' Resource Platform mark a significant step toward addressing the pedagogic and professional development needs of teachers in Applied Secretarial Principles across the Higher Technical Teachers' Training Colleges (HTTTCs) in Cameroon's English-Speaking Regions. By integrating both web and mobile interfaces, the platform bridges gaps in access to instructional materials, promotes collaborative engagement, and fosters innovative teaching practices. Through a participatory and context-sensitive design approach, the platform responds to the realities of resource limitations, evolving curriculum demands, and the need for continuous professional development. Its mobile application further enhances accessibility, particularly for educators in remote areas, ensuring inclusive and equitable participation in the digital transformation of teacher education.

Ultimately, this initiative sets a practical precedent for the use of digital platforms in strengthening pedagogic effectiveness, professional accountability, and systemic support within Cameroon's technical teacher training landscape.

b. Pedagogical, Practical & Social Implications of study

Pedagogical implications

It will provide teachers with access to digital teaching materials, lesson plans, and collaboration tools and the Teachers will have access to high quality vetted and ready to use materials reducing preparation time and improving lesson effectiveness. Teachers'

professional growth and development will be enhanced and it will provide access to self-paced training and best practices.

Practical implications

It was realised that the Teachers' Resource Platform will increased collaboration and knowledge sharing between the teachers of the two departments, there will be improved student engagement and learning outcomes as well as enhanced accessibility and inclusivity – (text-to-speech)

Social implications

The deployment of the TRP will promotes teachers collaboration and professional networking, it will enhance educational equity and access, change the role of the lecturer in the society as well as raise ethical, security and privacy concerns.

Institutional Policy: The study informs administrators and policymakers about the benefits of investing in digital infrastructure and training for lecturers. Implementation of a TRP can serve as a model for evidence-based decisions regarding professional development and resource allocation in technical teacher education.

Student Learning Outcomes: By addressing lecturers' challenges and improving resource accessibility, the TRP indirectly contributes to enhanced learning outcomes among student-teachers, equipping them with the competencies necessary for professional success.

Challenges and considerations

The deployment of the TRP will require a digital literacy training for the teachers in this Department to enable them effectively and constantly use the system. The major challenge envisaged is the irregular internet access, incessant power failure and device unavailability among many teachers today and the ones in these departments are not an exception. Another major challenge was noted on the fact the content quality must always align with the curriculum standards and the TRP will require constant updating since the course outlines are also regularly updated by the GCE Board and the Ministry of Secondary Education. The TRP's integration into the College's system and educational policies of the HTTTCs of the English-Speaking Regions will require administrative approval for deployment. Consequently, it is hoped that the administrations both Colleges will approve its deployment for use.

Contributions to Science

1. **Advancement in Educational Technology Integration**
   The study contributes to the understanding of how digital platforms can be systematically designed and implemented to support specialized professional courses like Applied Secretarial Principles. It offers empirical insights into the

interplay between ICT tools and the instructional needs of teacher educators, enriching the literature on technology-enhanced pedagogy in higher technical education.

2. **Innovation in Teacher Resource Management**
   By proposing a teacher resource platform, the article advances knowledge on effective organization, storage, and dissemination of instructional materials. This innovation bridges gaps in resource accessibility, enabling educators to efficiently retrieve lesson plans, teaching guides, and multimedia content, which addresses the often-cited challenge of inadequate teaching resources in technical colleges.
3. **Empirical Evidence for Context-Specific Solutions**
   The study provides context-specific empirical data from the English-speaking regions of Cameroon, highlighting the unique challenges and requirements of HTTTCs. This enriches the global literature on educational ICT applications by showing how locally tailored solutions can be developed and adopted in resource-constrained environments.
4. **Contribution to Professional Development of Teacher Educators**
   The platform promotes continuous professional development by providing a centralized repository of teaching resources and best practices. This contributes to the science of teacher training by demonstrating how technology can enhance knowledge sharing, instructional efficiency, and pedagogical competency among teacher educators.
5. **Foundation for Future Research in E-Learning Design**
   The findings serve as a baseline for further research on digital learning tools in teacher education, particularly in applied and vocational disciplines. Future studies can build on this work to examine user engagement, learning outcomes, and scalability of similar platforms in other educational contexts.

Recommendations

Recommendations were made to ensure that both training colleges train and update the technological knowledge and skills of staff in the Departments. The study also recommended the adoption and deployment of a Teachers' Resource Platform that has been conceived and designed by the researcher for self-paced learning.

Suggestions for further Studies

Building on the findings of this study, future research could explore the following areas:

1. Investigate the impact of the implemented Teachers' Resource Platform on lecturers' teaching quality and student-teachers' performance over time.

2. Examine the feasibility and effectiveness of similar digital platforms for other technical or vocational courses within HTTTCs and other teacher training institutions.
3. Conduct detailed studies on user satisfaction, engagement, and challenges with the TRP, focusing on usability, accessibility, and pedagogical outcomes.
4. Compare the effectiveness of digital resource platforms across different HTTTC campuses or regions to identify best practices and contextual adaptations.
5. Assess the long-term effects of sustained TRP usage on lecturers' professional growth, teaching methods, and student-teacher competencies.

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