From Campus to Community: Engaging Zambian University Students and Developing Tools for Sustainable Wikipedia Content Contribution

Lighton Phiri, PhD
University of Zambia
lighton.phiri@unza.zm

Clement Sinyangwe, PhD
ICT Association of Zambia
president@ictaz.org.zm

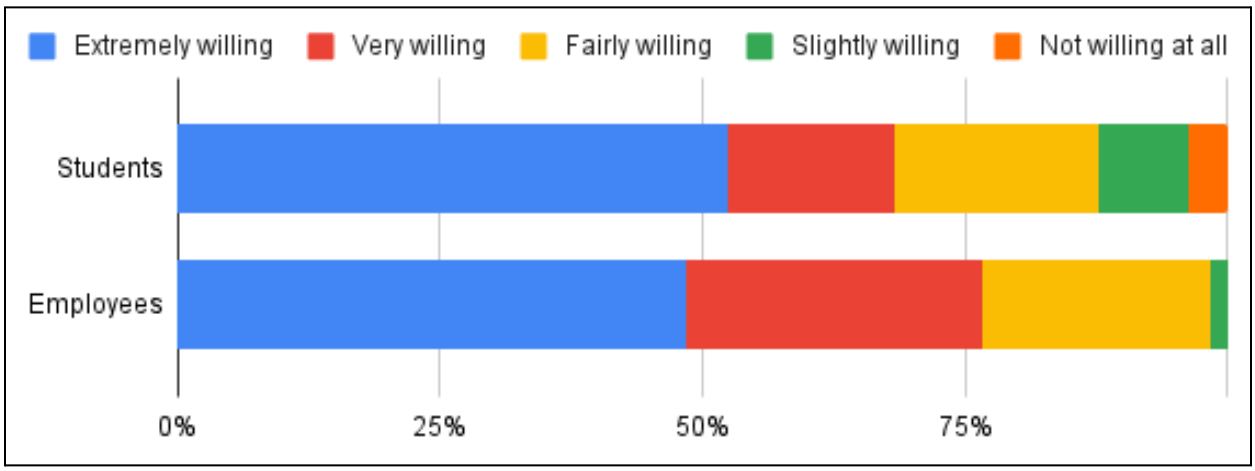

Figure 1: Willingness Levels (Chalwe et al., 2024)

Abstract

Despite widespread consumption of Wikipedia in Zambia, active contribution remains significantly low—a common trait across the Global South. According to the Wikimedia Foundation's "Community Insights 2024 report," the 18-24 age range constitutes the largest segment of Wikipedia editors. Building on this, our recent study in Zambia suggests a significant opportunity for expanding contributions from this demographic, as 96% of students—as shown in Figure 1—indicated a willingness to contribute to Wikipedia (Chalwe et al., 2024). The University of Zambia, in collaboration with the Information and Communications Technology Association of Zambia (ICTAZ) seek a grant of USD 44,610.57 to implement a targeted, mixed-methods study in Higher Education Institutions in Zambia. Guided by Diffusion of Innovation Theory, this study strategically targets this 18-24 year old demographic—Wikipedia's largest editor group globally. We will (i) empower ICTAZ student chapters to deliver structured training, transforming passive users into active contributors; and (ii) deploy targeted software (Wikipedia bots, browser plugins, a repository platform) to pinpoint and populate missing Zambia-related content. A final full factorial experiment will rigorously assess the optimal support levels needed to catalyze sustained student contributions and meaningfully address Zambia's Wikipedia imbalance.

Introduction

Over the last couple of years, Wikipedia has become a ubiquitous source of information globally, including within Zambia, where its consumption is widespread. However, this high level of usage stands in stark contrast to the significantly low rates of active contribution from Zambian individuals. This disparity in consumption and creation of Wikipedia content presents a critical issue for the Wikimedia movement's core mission of providing free and equitable access to the sum of all human knowledge. The Wikimedia Foundation "Community Insights 2024 Report" (Wikimedia Foundation, 2025) indicates that 18-24 year olds are the largest age group among active editors, accounting for 21% of the population. Our recent study on awareness and willingness to contribute content on Wikipedia indicates that 96% of students are willing to contribute content on Wikipedia, provided they are equipped with proper training (Chalwe et al., 2024).

Zambia currently has a total of 160 private and public accredited Higher Education Institutions (HEIs), each offering a broad range of programmes in various fields (Higher Education Authority, 2018). The potential pool of knowledge from these HEIs could potentially increase Wikipedia content contributions on and about Zambia. Furthermore, the Information and Communications Technology Association of Zambia (ICTAZ)—an entity created by at Act of Parliament of the Republic of Zambia (National Assembly of Zambia, 2018)—constitution requires that "Every learning institution shall have an ICTAZ Chapter to which every student member shall be affiliated" (Information and Communications Technology Association of Zambia, 2022).

Despite the existence of global initiatives like the Wikipedia Education Program (Wikimedia Foundation, 2024) aimed at fostering contributions, including from the Global South, there is a significant lack of empirical understanding regarding the specific support mechanisms and interventions required to effectively catalyze sustained contributions from university students in countries like Zambia.

Factors such as access to reliable digital infrastructure, availability of relevant reference materials, culturally appropriate training methodologies, and effective strategies for identifying and addressing local knowledge gaps remain largely unexamined. Moreover, the process of identifying missing Zambia-related content on Wikipedia – including entirely absent articles and incomplete information on existing pages – and pinpointing reliable sources for this information presents a significant hurdle for potential contributors.

Our premise is that by providing targeted and contextually relevant support to university-level students in Zambia – encompassing accessible training on Wikipedia editing principles and markup, resources for reliable referencing, and tools to identify and address local content gaps – we can cultivate a sustainable ecosystem for significantly improved Wikipedia contribution from this currently underrepresented region. This proposed research aims to address the critical need for evidence-based strategies to empower Zambian youth to become active participants in shaping the global knowledge landscape on Wikipedia. Specifically, this study seeks to answer the following key research questions:

- What are the specific challenges and barriers that university students in Zambia face when attempting to contribute content to Wikipedia?
- What are the most effective pedagogical approaches and training methods for equipping Zambian university students with the necessary skills and confidence

to become active Wikipedia contributors?
- What types and levels of support (e.g., access to resources, technical assistance, community engagement) are most effective in fostering sustained Wikipedia content contributions from Zambian university students?
- How can targeted software tools (Wikipedia bots, browser plugins, repository platform) be designed and deployed to effectively identify and facilitate the creation of missing Zambia-related content on Wikipedia?
- What are the optimal strategies for establishing sustainable structures within Zambian Higher Education Institutions (leveraging ICTAZ student chapters) to promote ongoing Wikipedia engagement and contribution among students?

Date: July 1, 2025 – July 1, 2026.

Related work

Prior research has explored the potential of engaging students in Wikipedia content contribution. For instance, the Wikimedia Foundation has initiated the Wikipedia Education Program to promote Global South participation (Wikimedia Foundation, 2024). Subsequent studies associated with the Wikipedia Education Program, such as Davis et al., (Davis et al., 2023), highlight experiences and outcomes from various countries, highlighting the pedagogical benefits and the potential for students to contribute meaningfully to Wikipedia.

The use of tools to improve the quality of Wikipedia articles is a well-explore area of research; for instance, Baigutanova et al. implemented Citation Detective to automatically determine references needed (Baigutanova et al., 2023). Furthermore, the role of bots in the creation of content on Wikipedia is well-documented, with Zheng et al. highlighting how they aid a variety of tasks on Wikipedia (Zheng et al., 2019).

While these existing studies provide valuable insights into student engagement with Wikipedia and the utility of software tools, there remains a significant gap in understanding the specific challenges and enabling factors for Wikipedia contribution within the unique socio-technical context of the Global South, particularly in Zambia. Our research builds upon this existing literature by focusing on the under-explored experiences of university students in Zambia.

Methods

This proposed research will employ a mix-method approach, with Diffusion of Innovation Theory (Rogers et al., 2014) used as the guiding principle to understand how knowledge of Wikipedia content contribution will potentially spread over time. This proposed study will be conducted in purposively sampled HEIs at Lusaka, Zambia. The HEIs will include a private HEI, public HEI, private college and public college. Ethical clearance approval will be obtained from the University of Zambia's Humanities and Social Sciences Research Ethics Committee[1]. In addition, permission will be obtained from the four (4) study sites. Specific methods to be used are outlined in the five (5) work packages below, associated with the proposed research.

Work Package 1. Structured Training for University-Level Students

This work package focuses on preparing student trainers within the ICTAZ student chapters to

[1] https://graduate.unza.zm/research/ethics

deliver effective Wikipedia contribution training.

- **Data Collection**. Qualitative data will be collected through semi-structured workshops conducted with representatives from ICTAZ and the student chapters from the four selected HEIs. These workshops will involve collaborative sessions to:
    - Understand the existing digital literacy levels and prior experiences with Wikipedia (as users and potential contributors) among the student representatives
    - Co-create training materials tailored to the Zambian context, addressing specific challenges and leveraging locally relevant examples. This will involve discussions on Wikipedia's principles, editing guidelines, copyright policies, and effective use of markup language
    - Gather feedback on the training modules and delivery methods to ensure they are engaging and effective for peer-to-peer training
- **Analysis.** Qualitative data from these workshops will be analysed using thematic analysis to identify key themes related to training needs, effective pedagogical approaches for this context, and locally relevant content examples. The co-created training materials will be documented and iteratively refined based on the feedback received.

Work Package 2. Baseline Study: Empirical Analysis of Editing Challenges

This work package aims to experimentally identify the specific challenges faced by students in Zambia when attempting to contribute to Wikipedia.

- **Data Collection**. A series of Editathons will be conducted at the four sampled HEIs, targeting students enrolled in computing and information and communication technology-centric programs.
- **Participant Recruitment.** Participants will be recruited through announcements within the selected departments, leveraging ICTAZ student chapter networks and offering incentives for participation (e.g., certificates of participation). We aim to recruit a diverse sample of students stratified by their year of study to capture potential differences in experience and challenges.
- **Training Sessions**. Each Editathon will begin with a standardised training session on basic Wikipedia editing skills, building upon the materials developed in Work Package 1.
- **Survey Instrument.** Immediately following the editing session, participants will be asked to complete a structured survey. The survey will include both closed-ended and open-ended questions designed to assess:
- **Analysis.**
    - **Quantitative Data.** Closed-ended survey data will be analysed using descriptive statistics to identify the frequency and distribution of reported challenges, and potential correlations between challenges and demographic variables (e.g., year of study, prior Wikipedia experience).
    - **Qualitative Data**. Open-ended survey responses will be

analysed using thematic analysis to identify recurring themes and gain a deeper understanding of the nuances of the challenges experienced by students in the Zambian context.

Work Package 3. Software Tools for Identifying Missing Wikipedia Information and Pages

This work package focuses on developing tools to pinpoint gaps in Zambia-related content on Wikipedia.

- **Development Methods.** Appropriate Agile-centric development methodologies, such as SCRUM, will be used to design and implement the following tools:
    - Browser Plugins for popular web browsers (e.g., Chrome, Firefox), to be used to analyse Wikipedia pages as users browse and identify potential areas where Zambia-related information is missing or underdeveloped
    - Wikipedia Bots leveraging the Wikipedia API to systematically identify missing articles based on predefined lists of notable Zambian entities (e.g., prominent figures, significant historical events, key geographical locations, cultural aspects) that do not have corresponding Wikipedia pages. The bots will also identify existing articles that are tagged as stubs or lacking sufficient information related to Zambia.
- **Evaluation**. Effectiveness of the tools will be evaluated based on their accuracy in identifying relevant gaps, their usability (for the browser plugins), and their efficiency in processing Wikipedia data (for the bots).

Work Package 4. Software Tools for Identifying Input Data for Missing Information

This work package focuses on developing tools to help identify potential sources of information for the identified content gaps.

- **Development Methods**
    - **Knowledge Repository**. A platform for aggregating and archiving potential reference materials about Zambia will be designed and implemented. This could involve collecting links to open-access academic articles, government publications, reputable news sources, cultural archives, and other relevant online resources.
    - **Browser Plugins**. Building upon the plugins developed in Work Package 3, these will be enhanced to, when a user is on a page with identified Zambia-related gaps, suggest potential sources from the developed knowledge repository or through targeted web searches. This could involve contextual recommendations based on the identified missing information.
- **Evaluation**. The utility of the knowledge repository will be assessed based on its comprehensiveness, the relevance of the archived materials, and the effectiveness of its search and browsing features. The source identification capabilities of the browser plugins will be evaluated based on the relevance and accuracy of the suggested sources.

Work Package 5. Large-Scale Study: Level of Support for University-Level Students

This work package will experimentally determine the optimal levels of support needed to foster sustained student contributions.

- **Experimental Design**. A full factorial experiment will be conducted with at least two or three key support factors identified as potentially influential based on the baseline study and existing literature (e.g., access to reliable internet, availability of reference materials, peer support/mentorship, gamified incentives, technical assistance). Each factor will be manipulated at two or more levels (e.g., no support vs. low support vs. high support).
- **Participant Recruitment**. Participants will be randomly sampled from the pool of students who received training through the ICTAZ student chapters (Work Package 1). Participants will be randomly assigned to different experimental conditions, ensuring a balanced distribution across the various support levels.
- **Procedure.** Participants in each condition will be tasked with contributing to Wikipedia on Zambia-related topics, utilizing the knowledge and potentially the tools gained from the earlier phases. The level of support provided will vary according to their assigned experimental group.
- **Data Collection**.Quantitative data will be collected on the Wikipedia contributions of participants over the experiment period.
- **Analysis**.Factorial analysis of variance (ANOVA) will be used to analyse the main and interaction effects of the manipulated support factors on the measured contribution outcomes. This will allow a comprehensive assessment which supports levels.

Expected output

- Scientific publications
    - Design and implementation of generic knowledge portal
    - Baseline study aimed at determining students' perceived challenges associated with editing Wikipedia content
    - Full factorial analysis of student support factors
- Software tools and services
    - Knowledge repository
    - Browser plugins for identifying missing Wikipedia articles and information
    - Wikipedia Bots for identifying missing Wikipedia articles and information
- Formal ICTAZ Student Chapter Wikipedia Working Groups in HEIs in Zambia

Risks

The details of risk management associated with identified risks are as follows

- **Risk 1. Equipment Unavailability for User Studies**. Limited access to computer labs at HEIs could delay data collection, necessitating early booking and securing backup venues with reliable infrastructure.
- **Risk 2. Delays in Formalizing Working Groups.** The formalization of ICTAZ Student Chapter Wikipedia Working Groups might take longer than expected, requiring proactive early engagement with ICTAZ and student chapters.

- **Risk 3. Inadequate Number of Trainers.** A lower than expected number of student trainers could limit training reach, prompting the selection of competent individuals and the provision of strong support materials.
- **Risk 4. Ethical or Privacy Concerns.** Unforeseen ethical dilemmas or data privacy issues might arise, mandating strict adherence to ethical guidelines and robust anonymization procedures.

Community impact plan

This research holds significant potential for positive impact across multiple levels, benefiting the Zambian educational community, the global Wikimedia movement, and the broader open knowledge ecosystem.

Impact 1. Empowering Zambian Higher Education Institutions and Students as Knowledge Contributors.

- Creating Sustainable Local Capacity—By establishing formal Wikipedia Working Groups within ICTAZ Student Chapters in HEIs, this project will create enduring local structures dedicated to Wikipedia engagement. These groups will serve as hubs for ongoing training, content creation, and community building, fostering a culture of contribution within Zambian universities
- Developing Local Expertise—The co-creation of training materials, tailored to the Zambian context and delivered by peer student trainers, will empower a significant number of Zambian students with the skills and confidence to become active and knowledgeable Wikipedia contributors. This localized training approach ensures relevance and addresses the specific challenges faced by students in Zambia.

Impact 2. Enriching Zambia-Related Knowledge on Wikipedia and Beyond

- Addressing Content Gaps—The development and deployment of targeted software tools—Wikipedia bots, browser plugins, and a knowledge repository—will directly contribute to identifying and populating missing information and pages related to Zambia. This will enhance the comprehensiveness, accuracy, and representation of Zambian history, culture, geography, and other relevant topics on Wikipedia, benefiting both local and global audiences.
- Creating a Valuable Resource Hub—The knowledge repository of Zambia-related reference materials will serve as a valuable resource not only for Wikipedia editors but also for students, researchers, and anyone seeking reliable information about Zambia. This resource can potentially be expanded and maintained by the ICTAZ student chapters, ensuring its long-term utility

Impact 3. Contributing to the Global Wikimedia Movement and Open Knowledge Ecosystem

- Fostering South-South Collaboration—The model of leveraging existing student professional organizations (like ICTAZ) for Wikipedia engagement can serve as a blueprint for similar initiatives in other African countries and the wider Global South, fostering increased participation from underrepresented regions
- Informing Global Strategies— The findings from the baseline study and the full factorial experiment will provide empirical evidence on the specific support factors that are most effective in motivating and sustaining contributions from students in a Global South context. This data can inform the Wikimedia

Foundation's global strategies for outreach and community development in similar regions

Impact 4. Engaging Key Stakeholders and Disseminating Findings

- Collaboration with ICTAZ—The strong partnership with ICTAZ ensures that the project's outcomes are directly relevant to the national ICT agenda and builds capacity within a key professional association to promote digital literacy and knowledge contribution among future ICT professionals
- Engagement with Educational Institutions—The involvement of four diverse HEIs in Lusaka provides a strong foundation for potential wider adoption of the successful strategies and training models across other tertiary institutions in Zambia

Evaluation

The success of this proposed project will be evaluated based on the following key measures:

- Growth in active Zambian Wikipedians—Measurable increase in the number of active Wikipedia editors identifying as Zambian or contributing Zambia-related content
- Demonstrable increase in the number of new Zambia-related articles and improvements to existing ones
- Active and self-sustaining ICTAZ Student Chapter Wikipedia Working Groups
- Annual Wikipedia training plans by established ICTAZ Student Chapter Wikipedia Working Groups

Budget

Our proposed research takes an experimental approach, involving two large-scale human-centric studies to be conducted at four (4) Higher Education Institutions and as such, a substantial amount of funds, if awarded the grant, will be directed towards the experimental studies. In addition, due to the nature of the proposed research—dependency of human participants—, we plan to hire a dedicated project manager and four Research Assistants. In addition, we plan to recruit four postgraduate students, who will also play the roles of software developers. The detailed budget is publically available and is segmented in Table 1.

Table 1: Proposed Segment Budget (See Details)

Item	Qty	USD
MSc/PDip CS Students	4	5,293.44
Research Assistants	3	2,822.32
PI & Co-PI Stipend	2	2,822.32
Project Manager	1	1,270.04
Training Sessions	1	2,880.53
User Studies/Experiments	2	10,280.30
Project Equipment	9	8,890.31
SAICIST 2026 Conference	1	1,058.37
Project Management	9	3,534.96
Project Website	1	1,305.32
Institutional Overhead	1	4,452.65
	Total	**44,610.57**

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