Prof. Mark O. Okongo is currently the Head of Mathematics, Statistics and Actuarial Sciences at Chuka University Kenya. He is an associate professor of Applied Mathematics and Lead Data Scientist at the Center for Data Analytics and Modeling (CDAM) at Chuka University, Kenya. He specializes in Mathematical Modeling (Mathematical Epidemiology and Phytopathology). Prof. Okongo has published a number of research articles in peer reviewed journals and attracted several research grant awards. Recent research grant awards includes the AMMnet Grant award in March 2024 to hold an Applied Malaria Modeling training Workshop on R and Rstudio Software, DAAD Grant award in March, 2024 for Generative Artificial Intelligence Workshop Exploring Potential Impact and Risks in Teaching and Learning in Higher Education and Chuka University support Grant in April, 2024 to develop the Center for Data Analytics and Modeling for training Short courses in data analytics and Modeling. Prof. Okongo has also mentored and supervised several PhD and Msc Students and is a consultant and a member of several professional bodies.

Topic: Incidental language teaching and learning, The role of AI

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Incidental language is language learned informally or naturally, without deliberate study, often by picking up words or phrases from context during everyday interactions, like reading or conversation, rather than through a structured learning process. It is language acquired "by chance" while focusing on understanding the overall meaning rather than specific vocabulary acquisition. Incidental language includes Informal learning which happens in everyday situations and not necessarily in a classroom setting, Context-dependent learning where learners pick up new words or phrases by understanding the surrounding context, rather than through direct explanation, Passive acquisition where learners absorbs new language naturally. Incidental language teaching refers to interactions between the teacher and the student that arise naturally in an unstructured situation and are used systematically by the teacher to transmit new information or give the student practice in developing a communication skill whereas Incidental language learning is the process of acquiring language without the intention to memorize it. It's also known as "picking up" a word or expression through reading or listening without making a conscious effort to remember it. It is often considered to be an unconscious and effortless. It's also thought to happen outside of the classroom and not intentional learning. Artificial Intelligence (AI) significantly enhances incidental language learning by providing a personalized, interactive environment where learners pick up new vocabulary and grammar structures naturally through exposure to authentic language in various contexts, like conversations with AI chatbots or immersive virtual environments, without explicitly focusing on learning new terms, thus facilitating a more organic learning process. AI-assisted language learning applications have demonstrated a significant role in enhancing English language learners' overall language learning achievement and specific language skills and sub-skills

The main problems with incidental language teaching and learning are unpredictable exposure to vocabulary, lack of structured learning, potential for gaps in knowledge, difficulty assessing progress, and the possibility of learners not actively engaging with new language elements as they are not the primary focus of the activity, which can lead to inconsistent language acquisition and comprehension issues, especially for beginner learners.

The objectives of incidental language teaching and learning in AI are varied and involves facilitating the natural, unconscious acquisition of new vocabulary and language skills through exposure to contextually relevant language within an AI interaction, mimicking and picking up new words and expressions without deliberate memorization, ultimately enhancing fluency and comprehension in a more immersive and engaging manner. AI systems can provide a constant stream of authentic language use through conversations, generating situations where learners are exposed to new vocabulary and grammar structures naturally embedded within the interactions. The main objectives of incidental leaning are: Adapt the language based on the conversation topic and learner's level, ensuring that new vocabulary is presented in a meaningful context that aids comprehension, tailor the language used to the individual learner's needs and proficiency level, allowing for gradual exposure to increasingly complex language, create interactive and engaging conversations and motivate learners to actively participate and naturally absorb new language elements.

The methodologies of incidental language teaching and learning in AI involves designing interactive environments where language acquisition happens naturally as a byproduct of engaging in primary tasks, leveraging features like context-aware feedback, rich multimedia input, and adaptive learning algorithms to subtly expose learners to new language elements without explicitly focusing on grammar rules, thereby mimicking real-life language acquisition. The various methods include Contextualized Learning, Immersive scenarios (Creating virtual environments that simulate real-life situations where language is used naturally, like conversations with AI agents or playing games with linguistic challenges embedded within the gameplay), Rich multimedia input (Utilizing images, audio, and video to provide context clues for understanding new vocabulary and grammar structures), Adaptive Learning Algorithms, Dynamic difficulty adjustment (Adjusting the complexity of language based on the learner's proficiency level, gradually introducing new vocabulary and grammatical structures), Personalized feedback, Open-ended dialogue (Encouraging natural conversation with AI agents where learners can freely express themselves and receive feedback on their language use), Highlighting key vocabulary (Subtly highlighting new vocabulary within context through visual cues, definitions, or synonyms), AI-powered language learning games (Games where players need to use language to progress through levels, naturally exposing them to new vocabulary and grammar structures), Conversational chatbots, Personalized language learning apps among others.

Incidental language teaching and learning offers several benefits, including: increased engagement and natural language acquisition, personalized learning experiences, improved fluency through real-world context, reduced anxiety, and the ability to learn from diverse language patterns across various interactions; essentially allowing users to pick up language naturally through everyday interactions with AI, similar to how humans learn languages in reallife situations.