LEVERAGING AI IN DESIGNING A CURRICULUM FOR A PROFESSIONAL COMMUNICATION COURSE

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Abstract: This research explores the integration of Artificial Intelligence (AI) in the design of a Professional Communication course tailored for agricultural students. Spanning 14 weeks, the course combines theoretical lectures with practical seminars to enhance skills in verbal and nonverbal communication, professional writing, argumentation, and public speaking. AI is utilized to create interactive learning environments, personalize learning pathways, and improve assessment methods. The course also emphasizes digital communication, social media, and online professionalism, ensuring students acquire the necessary communication competencies to thrive in the agricultural professional world.

Keywords: Professional Communication, Artificial Intelligence (AI), Curriculum Design, Agricultural Education, Digital Communication

1. Introduction

Professional Communication courses are widely available in both online and in-person formats, with curricula typically adapted to the specific needs of their target audience. These courses aim to develop key communication competencies through a balanced integration of theoretical knowledge and practical application. The structure and content of such courses are frequently analysed in academic literature, offering diverse perspectives on curriculum design and pedagogical approaches.

This study examines the integration of Artificial Intelligence (AI) in the design of a Professional Communication course specifically tailored for agricultural students. Structured over 14 weeks, the course combines traditional lectures and interactive seminars (1 hour of lecture and 2 hours of seminar per week, 42 hours in total) to develop competencies in verbal and nonverbal communication, professional writing, argumentation, and public speaking. AI technologies are employed to create dynamic and interactive learning environments, personalize learning pathways, and enhance assessment methods. Furthermore, the course emphasizes digital communication, social media engagement, and online professionalism, ensuring that students acquire the essential communication skills necessary to succeed in the evolving agricultural industry.

2. Context and challenges

The Professional Communication course was designed for students in agricultural studies who are pursuing their education in English, often as a second language. A critical challenge that influenced the design process was the limited time available for curriculum development, due to the author's serious medical condition. This constraint

necessitated the adoption of innovative tools and methodologies to ensure the timely creation of a high-quality, comprehensive course.

Artificial Intelligence (AI) was employed as a strategic solution to address this challenge. By leveraging AI technologies, the course design process was significantly accelerated, enabling the development of interactive learning environments, personalized learning pathways, and enhanced assessment methods. Furthermore, the integration of AI facilitated a stronger focus on digital communication, social media engagement, and online professionalism - key competencies for students preparing to enter the modern agricultural workforce as engineers.

2.1. Course duration context

Professional Communication courses are offered in a variety of formats, with their duration varying according to the target audience, learning objectives, and mode of delivery. In academic settings, these courses typically align with standard semester structures, lasting 12 to 16 weeks, with weekly sessions combining lectures and practical components. This format ensures comprehensive coverage of both theoretical concepts and applied communication skills.

Online and professional development courses, by contrast, often have more flexible timeframes. Short-term online courses generally span 4 to 10 weeks, requiring a moderate weekly time commitment. Certificate and diploma programs may extend over several months, with total learning hours ranging from 15 to 180 hours. Corporate training programs are typically more condensed, lasting 1 to 3 days, and focus on specific communication skills relevant to the workplace.

The 14-week duration of the Professional Communication course described in this study aligns with standard academic practice, allowing for in-depth development of communication competencies while integrating AI to enhance learning efficiency and personalization.

3. Methodology

The methodology employed in this study combines curriculum design principles with the integration of Artificial Intelligence (AI) tools to develop a 14-week Professional Communication course for agricultural students. The process involved several key stages: needs analysis, curriculum planning, AI-assisted content development, and, subsequently, evaluation planning.

3.1. Needs analysis

To tailor the course to the specific communication needs of agricultural students, a preliminary needs analysis was conducted. This involved reviewing existing literature on professional communication. The analysis identified core competencies, including verbal and nonverbal communication, professional writing, public speaking, argumentation, digital communication, and online professionalism.

3.2. Curriculum planning

The course was structured into weekly modules, each consisting of a 1-hour lecture and a 2-hour seminar. Topics were sequenced to progressively develop communication

skills, starting with foundational concepts and advancing to applied tasks such as public speaking and digital content creation. Learning outcomes were aligned with Bloom's Taxonomy to ensure cognitive skill development from understanding to creation.

3.3. AI-assisted content development

AI tools were employed to streamline the course development process. AI-assisted writing tools such as ChatGPT were utilized to draft lecture materials, generate illustrative examples, and create detailed case studies. Moreover, AI platforms enabled the creation of interactive quizzes, simulations, and role-playing scenarios, all tailored to accommodate individual learning styles. AI was also instrumental in designing both formative and summative assessments, providing timely and personalized feedback. Finally, adaptive learning technologies were integrated to establish personalized learning pathways, allowing students to concentrate on areas that required additional improvement.

In this study, ChatGPT (Version 4) was used as a generative AI tool to draft content outlines and assist in developing assessment items. All AI-generated outputs were critically reviewed and refined by the researcher to ensure they met the study's scholarly standards and aligned with its objectives, in accordance with best practices for transparency in AI use.

4. Literature review

The integration of Artificial Intelligence (AI) in curriculum design, particularly for Professional Communication courses, has become a focal point of contemporary educational research. This section reviews key developments in AI-powered educational technologies, explores innovative strategies for course design, analyzes the intersection of AI and professional communication pedagogy, and examines global trends in AI education to contextualize the implications for curriculum development.

4.1. AI-powered educational technologies in curriculum design

AI has revolutionized various domains, including education, by facilitating personalized learning, automating administrative tasks, and supporting adaptive curriculum frameworks. The integration of AI in education enhances student engagement, provides real-time analytics, and allows for curriculum adaptability (Yunus, Nordin, and Halili 2023). Additionally, AI aids in identifying learning gaps and offers targeted interventions, thereby improving learning outcomes (Western Governors University 2024). However, challenges such as data privacy concerns, ethical implications, and the digital divide remain critical barriers to effective implementation (Youngstown State University 2023).

4.2. Strategies for designing professional communication courses

Designing effective professional communication courses requires a blend of design thinking, rhetorical strategies, and a global perspective. Andrews and Tham (2022) propose a comprehensive framework that integrates these elements to help students succeed as technical and professional communicators in today's multimodal, mobile, and global community. Their approach emphasizes empathy, human values, and the ability to address complex problems through collaborative engagement. Practical

applications of their framework include project-based learning, the use of real-world scenarios, and incorporating cross-cultural communication challenges.

4.3. Integration of AI in Professional Communication curriculum

The convergence of AI technologies and professional communication education presents opportunities to enhance curriculum design. AI can be utilized to create interactive learning environments, personalize learning pathways, and improve assessment methods (University of North Texas 2025). The use of AI tools such as language models and automated feedback systems supports students in developing writing and presentation skills. However, the integration of AI necessitates addressing challenges related to data privacy, ethical considerations, and ensuring equitable access to technology (University of South Florida 2025). Effective implementation also requires training educators to utilize AI tools competently and ethically.

4.4. Global trends in AI Education

Globally, there is a growing emphasis on integrating AI education across various educational levels. For instance, Beijing has mandated AI education, requiring schools to offer at least eight hours of AI instruction per academic year. This initiative reflects a broader trend of incorporating AI literacy into curricula to prepare students for an AI-driven future. Similar efforts are observed in higher education institutions, where AI literacy is increasingly integrated into diverse fields, including professional communication (WGU 2024; YSU 2023). The emphasis on AI literacy underscores the need for curricula that not only teach technical skills but also critical thinking and ethical reasoning in AI usage.

5. Curriculum design - core competencies

The Professional Communication course is designed to equip agricultural students with essential communication skills necessary for academic, professional, and industry-related interactions. The curriculum focuses on developing both foundational and advanced competencies, categorized into the following key areas:

1. Verbal and Nonverbal Communication

- Mastering tone, intonation, and clarity in professional speech
- Understanding and using body language, gestures, and facial expressions effectively
- Enhancing active listening skills for better engagement in discussions and negotiations

2. Professional Writing and Documentation

- Structuring and drafting professional emails, reports, and administrative documents
- Understanding formal and technical writing conventions in an agricultural context
- Writing persuasive and well-organized business proposals, requests, and official letters

3. Public Speaking and Argumentation

- Developing confidence in public speaking through structured exercises and presentations
- Utilizing rhetorical strategies for persuasive communication
- Practicing debate and structured argumentation on agricultural topics

4. Digital Communication and Online Professionalism
- Applying professional etiquette in digital communication (emails, social media, virtual meetings)
- Creating and managing professional online profiles (e.g., LinkedIn)
- Understanding digital literacy and cybersecurity in professional contexts

5. Team Communication and Leadership
- Collaborating effectively in teams and managing group communication dynamics
- Understanding different leadership styles and their impact on workplace communication
- Practicing conflict resolution and negotiation techniques

6. Intercultural and Intergenerational Communication
- Adapting communication styles to diverse audiences in global and rural agricultural contexts
- Developing cultural awareness and sensitivity in professional interactions
- Engaging in case studies and role-playing scenarios for effective cross-cultural communication

7. Ethics and Professional Conduct in Communication
- Understanding ethical principles in professional communication
- Practicing transparency, accountability, and respect in workplace interactions
- Analysing real-world cases of ethical dilemmas and professional misconduct.

These core competencies were identified through a needs analysis and literature review and were incorporated into the course structure using an AI-assisted curriculum design tool - ChatGPT. The curriculum ensures that students develop practical and applicable communication skills relevant to the modern agricultural industry.

6. Curriculum planning

Based on the identified needs, the course was structured into weekly modules over a 14-week period, with each module comprising a 1-hour lecture and a 2-hour seminar. The sequencing of topics was designed to build progressively on foundational skills, transitioning from introductory concepts to more advanced applications. Learning outcomes were meticulously aligned with Bloom's Taxonomy to ensure that students developed cognitive skills ranging from basic comprehension to creative application.

The curriculum was designed using the ChatGPT AI tool, which generated initial drafts and proposals based on the findings from the literature review and the needs analysis.

The weekly plan includes:

- **Week 1: Introduction to Professional Communication**

  - Lecture: What is professional communication? Importance in the agricultural field
  - Seminar: Self-awareness exercises and communication style testing
- **Week 2: Verbal and Nonverbal Communication**
  - Lecture: Essential elements (intonation, gestures, facial expressions)
  - Seminar: Body language analysis and practical exercises
- **Week 3: Professional Written Communication I**
  - Lecture: Types of documents (emails, reports, requests, official letters)
  - Seminar: Writing a formal email and an official request
- **Week 4: Professional Written Communication II**
  - Lecture: Writing reports and administrative documents
  - Seminar: Practical exercise – drafting a report
- **Week 5: Argumentation and Persuasion Techniques**
  - Lecture: Effective strategies for persuasion and influence
  - Seminar: Debates on agricultural topics
- **Week 6: Team Communication and Leadership**
  - Lecture: Team dynamics, leadership styles, and conflict management
  - Seminar: Group decision-making simulations
- **Week 7: Public Speaking and Effective Presentations I**
  - Lecture: Structure of a presentation and managing emotions
  - Seminar: Presentation exercises on agricultural topics
- **Week 8: Public Speaking and Effective Presentations II**
  - Lecture: Advanced presentation techniques and storytelling
  - Seminar: Simulated presentation in front of colleagues
- **Week 9: Intercultural and Intergenerational Communication**
  - Lecture: Adapting messages to different audiences
  - Seminar: Case studies and intercultural communication scenarios
- **Week 10: Digital Communication and Social Media**
  - Lecture: Professional online etiquette rules
  - Seminar: Creating a LinkedIn profile and drafting a professional post
- **Week 11: Project Writing and Presentation**
  - Lecture: Project structure and writing techniques
  - Seminar: Practical exercise – drafting a simple project
- **Week 12: Negotiation Techniques and Conflict Management**
  - Lecture: Negotiation strategies and assertive communication
  - Seminar: Role-playing – negotiation simulations
- **Week 13: Ethics and Professional Communication Deontology**
  - Lecture: Ethical principles and best communication practices
  - Seminar: Analysis of good and bad practice cases
- **Week 14: Final Evaluation and Conclusions**
  - Lecture: Review and conclusions
  - Seminar: Final project presentation and feedback.

7. AI-assisted content development

AI tools were employed to streamline the course development process. In particular, the curriculum was designed using the ChatGPT AI tool, which generated content that served as the foundation for each presentation module. The AI-produced files were

formatted as PowerPoint presentations, offering clear outlines that established the structure and key points for each session rather than full detailed explanations.

7.1. Content generation

ChatGPT was instrumental in drafting the presentation outlines for each module. For example, the Introduction to Professional Communication module's outline clearly defined the concept and importance of professional communication in agriculture. Similarly, the outlines for Verbal and Nonverbal Communication and Professional Written Communication provided structured key points on elements such as intonation, body language, email formats, and report drafting. These outlines served as the skeleton for the lecture presentations, ensuring that each session addressed the essential topics in a concise, organized manner.

7.2. Assessment design

AI was also pivotal in developing assessment tools that align with the structured outlines. Formative and summative assessments were crafted to reflect the learning objectives identified in the presentation outlines.

For instance, the assessments in the Professional Written Communication module included quiz questions and practical exercises designed to reinforce the key points of drafting formal emails and official documents. In the Argumentation and Persuasion Techniques module, assessment items were formulated to evaluate understanding of ethical persuasion and logical argument structuring. Automated feedback mechanisms were incorporated to provide timely, personalized insights into student performance.

7.3. Personalization

Adaptive learning technologies integrated through AI enabled the creation of personalized learning pathways. Based on ongoing performance data and feedback, the system recommended additional resources and targeted exercises to support areas where students required further improvement. This approach was particularly effective in modules such as Digital Communication and Social Media, where tailored content and practice opportunities helped students navigate professional online etiquette and digital tool usage. By focusing on individual learning needs, the personalized pathways ensured that students could build on the foundational outlines with additional depth as required.

This AI-assisted approach significantly expedited the course development process by providing structured presentation outlines that formed the basis of each module. These outlines, combined with tailored assessments and personalized learning pathways, ensured that the curriculum effectively addressed the core competencies required for professional communication in the agricultural sector.

8. Challenges in Professional Communication curriculum development

The development of this Professional Communication course for agricultural students involved navigating several significant challenges:

- **Time constraints:** A primary challenge was the limited time available for curriculum design. This constraint necessitated a rapid yet comprehensive development

process, ultimately leading to the adoption of AI tools to accelerate content creation and streamline the overall design.

- **Language and audience specificity:** The course was tailored for agricultural students, many of whom are non-native English speakers. This required careful consideration to ensure that the language used in lectures, seminars, and assessments was clear, accessible, and relevant to the agricultural context without compromising academic rigor.
- **Integration of AI technologies:** Employing AI to support curriculum development introduced its own set of challenges. Ensuring that AI-generated content met high academic standards while aligning with pedagogical goals required meticulous oversight. Additionally, balancing innovative AI-driven tools with traditional teaching methods was critical in designing interactive assessments and personalized learning pathways.
- **Maintaining content quality and relevance:** While AI-enabled rapid content generation, the initial presentation outlines were very schematic and provided only a minimal framework. This proved insufficient to support a full 3-hour session that combined both lecture and seminar components, necessitating further development to enrich the depth and comprehensiveness of the content.
- **Insufficient free online resources available for students:** Another significant challenge was the lack of adequate free online resources tailored to professional communication, particularly for students in the agricultural sector. This scarcity necessitated the creation of additional bespoke materials and content to ensure that students had access to comprehensive, high-quality learning resources without incurring extra costs.
- **Bibliography verification:** Ensuring that bibliographic sources were accurate, relevant, and current up to February 2025 was challenging. Provided links were not always correct, necessitating further review and correction.
- **Ethical challenges:** Integrating AI into curriculum development raised ethical concerns that needed to be addressed. These include ensuring the transparency of AI-generated content, mitigating potential biases, safeguarding data privacy, and maintaining academic integrity. It was crucial to **critically review AI outputs and ensure that the use of AI did not compromise fairness or diminish the role of human expertise in the educational process.**

These challenges collectively shaped the course design process, driving the strategic integration of AI tools and prompting the development of supplementary content to deliver a robust and responsive curriculum tailored to the unique needs of agricultural students.

9. Evaluation

A robust evaluation framework was designed to measure the effectiveness of the AI-integrated Professional Communication course. A mixed-methods approach was adopted, combining both quantitative and qualitative measures to provide a comprehensive understanding of student performance and curriculum impact.

- **Formative assessments:** Regular quizzes, interactive seminar activities, and role-playing exercises are conducted throughout the course. These ongoing assessments offer real-time insights into students' progress and identify areas for improvement.

- **Summative assessments:** At the conclusion of the course, a comprehensive evaluation is carried out, which includes a project presentation and a written reflection. This final evaluation is designed to assess the overall acquisition of communication skills and the practical application of the course content.
- **Feedback mechanisms:** The evaluation process incorporates both AI-driven automated feedback and instructor-led assessments. This dual feedback approach ensures that students receive detailed, personalized feedback, enabling them to understand their strengths and address any weaknesses.
- **Quantitative analysis:** Pre- and post-course assessments are administered to quantitatively measure the improvement in student skills over the duration of the course. These metrics help in evaluating the overall efficacy of the curriculum design and delivery.
- **Qualitative feedback:** Student surveys and focus groups are used to collect qualitative data on perceptions of course content, teaching methods, and the role of AI in enhancing learning. This feedback is critical for identifying areas of success as well as potential areas for further refinement.
- **Instructor reflection:** Ongoing instructor reflection and systematic documentation of the curriculum development process provide additional insights into the benefits and limitations of using AI in the course. This reflective practice informs continuous improvements and future curriculum iterations.

This comprehensive evaluation framework ensures that both learning outcomes and instructional effectiveness are rigorously assessed, facilitating continuous improvement of the AI-integrated curriculum for professional communication in the agricultural context.

10. Conclusion

This study demonstrates that integrating AI into the design of a Professional Communication curriculum can transform the learning experience for agricultural students. By leveraging AI tools, the course development process was significantly accelerated, allowing for the rapid generation of content outlines, interactive assessments, and personalized learning pathways. As a result, students are better equipped with the essential communication skills needed to navigate modern professional environments, especially in an industry where digital communication and online professionalism are increasingly vital.

At the same time, the study highlights several challenges. Time constraints, the limited depth of AI-generated outlines, and a scarcity of freely accessible online resources have all underscored the need for ongoing refinement and human oversight. Furthermore, ensuring the accuracy of supplementary materials remains crucial to maintaining content quality and relevance.

Looking ahead, future work should focus on scaling AI-integrated curriculum models without compromising on content quality and further exploring the long-term impacts of such models on student learning outcomes and professional readiness.

With careful management and continuous improvement, AI holds the potential to not only streamline curriculum design, but also to enrich the overall educational experience, ultimately better preparing students for the evolving demands of the work market.

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