



A Case Study on the Impact of GenAI-based Virtual Assistants on Education in Greece (course: Network Management in NTUA)

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Introduction

Overview:

- The rapid advancement of AI technologies in education, particularly Generative AI, offers unprecedented opportunities for enhancing learning experiences
- Network management, a field that requires a strong foundation in both technical skills and soft skills, stands to benefit significantly from AI-driven educational tools

Objective of the Study:

- To evaluate the impact of a GenAI-based virtual assistant within a university-level network management course

Methodology

Study Design

- Intervention: Use of a GenAI virtual assistant during the course
- Duration: Six weeks

Participants

- Sample: Students participating in the "Network Management – Intelligent Networks"
- Data Collection: Pre - and post-intervention surveys to evaluate soft skills improvements

Implementation of the GenAI Virtual Assistant

Core Principles

- Interactive Learning
- Adaptive Responses

Implementation Details

- Role of the Assistant: Acts as an academic tutor aiding in problem-solving and critical thinking exercises
- Engagement Model: Structured interactions through prompts to elicit specific educational outcomes
- Technology Used: Designed as a prompt for ChatGPT version 3.5, leveraging its capabilities for generating dynamic, context-aware responses

Technical Setup

- Accessibility: Made available to all students enrolled in the course throughout the semester
- Usage in Course
- Application: Used in assignments to enhance understanding and application of network management concepts
- Feedback Mechanism: Enabled continuous feedback from students to refine and improve interaction quality

Data Collection and Demographics

Data Collection:

- Method: Utilized pre and post-intervention surveys focused on self-assessment of critical thinking and problem-solving skills

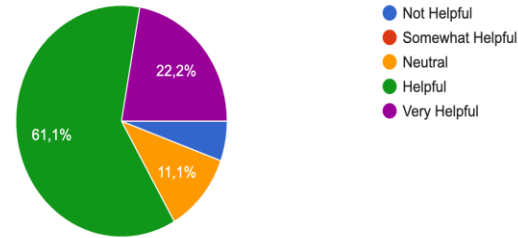
Sample:

- Participants: 18 students from the National Technical University of Athens network management course
- Demographics:
 - Age Range: Predominantly 20-25 years old
 - Gender Distribution: Fourteen males and four females
 - Experience with Digital Tools: Mixed levels, including some, moderate, and extensive experience

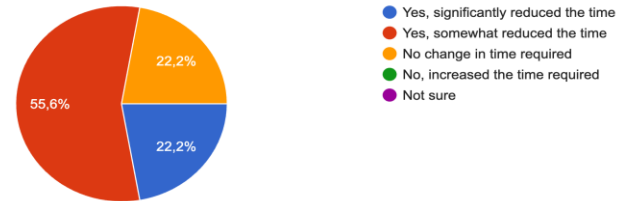
Key Findings: Student Engagement and Usability

- **Usability Ratings**
 - **High Usability:** The virtual assistant received an average usability score of 4.44 out of 5
- **Engagement with the Tool**
 - **Active Usage:** Majority of students utilized the virtual assistant throughout the course for various learning activities.
 - **Engagement Feedback:** Positive feedback on the interactive and responsive nature of the assistant

How helpful was the ChatGPT assistant in solving problems related to your coursework?



Did using the ChatGPT assistant save you time when solving problems for your coursework compared to not using it?



Key Findings - Perceptions and Attitudes Toward AI

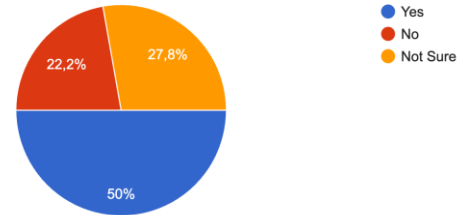
Changes in Attitudes:

- **Positive Shift:** Post-intervention, students showed a more favorable outlook towards using AI tools in education
- **Attitude Ratings:** There was a slight decrease in overall openness to AI use from 4.28 pre-intervention to 4.06 post-intervention, indicating nuanced responses

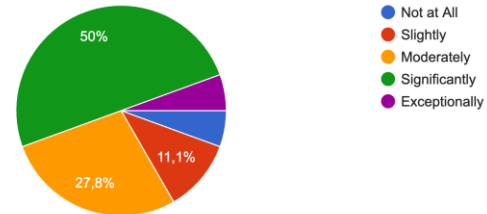
Insights:

- **Appreciation for AI:** 8 out of 18 respondents reported a more positive view of AI's potential post-intervention
- **Varied Impact:** While most saw positive changes, a few remained unchanged, highlighting diverse individual experiences

Did the ChatGPT assistant help you access a broader range of information for your coursework?



Did the ChatGPT assistant contribute to a deeper understanding of your coursework?



Discussion of Results

Interpretation of Findings:

- High Usability and Engagement: Positive feedback on the assistant's usability and interactive nature suggests that the tool was effective and well-received

Educational Implications:

- Role of AI in Education: These results underscore the potential of AI tools like ChatGPT to significantly enhance learning outcomes, particularly in developing essential soft skills
- Curriculum Integration: Supports the integration of GenAI tools into educational curriculums to provide personalized and interactive learning experiences

Limitations and Future Research

Study Limitations:

- Sample Size
- Control Group
- Duration of Study

Future Research Directions:

- Larger, Diverse Samples
- Longitudinal Studies
- Comparative Studies
- Broader Application

Advancing Methodology:

- Enhanced Data Collection
- Technological Improvements

Conclusion

Key Findings:

- **High Usability and Engagement:** Students rated the virtual assistant highly in usability and engagement, reflecting its effectiveness as a learning tool

Implications:

- **Enhancing Education:** The study demonstrates the potential of AI tools to significantly improve essential soft skills in educational settings
- **Technology Integration:** Supports the broader integration of AI technologies in education, suggesting that such tools can provide personalized and engaging learning experiences

AI-Ready Training: How can we include AI to our training?

- **How does AI impact our training?**
 - Transforms online courses from static content into interactive learning experiences
 - Supports personalised learning paths for different roles and knowledge levels
 - Provides immediate feedback, explanations and practice opportunities during training
 - Shifts the role of trainers from content delivery to guidance, evaluation and critical thinking support
- **How can we take advantage of AI?**
 - Use AI as a tutor, reviewer, scenario generator and feedback engine; not as a shortcut to final answers
 - Build structured prompts into assignments: ask, compare, verify, improve
- **How should learning units adapt?**
 - Design shorter, problem-based modules with AI checkpoints and reflection tasks
 - Assess reasoning, source verification and critical judgement, not only the final output



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