Environment and Climate Change Canada | Environnement et Changement climatique Canada

CHATGPT: A GAME-CHANGER FOR MODERN ONLINE COURSES

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Canada

ONLINE COURSE CREATION

AT THE METEOROLOGICAL SERVICE OF CANADA

Creating, hosting and managing online courses

Hosted on Moodle (~100 online courses)

Different topics: NWP, Radar, Sofware, etc.

Introduction to meteorology

- Mainly for technicians: monitoring and ice observers
- Mandatory for career progression


Let's
Bake!
Lincoln
Apartment
Bakery

COURSE REDESIGN WORKFLOW

1- ANALYSIS

2- DESIGN

3- DEVELOPMENT

4- DELIVERY AND TESTING

DECEMBER 2022

The rise of ChatGPT

CHATGPT 3.5 BASIC CAPABILITIES

ANSWERS TO VARIOUS QUESTIONS

General facts and encyclopedic knowledge

Recipes

Recommendations for purchases and outings

Analysis of works (literary, movies, etc.)

TEXTS

- Reword in plain language
- Generation (e.g. stories, poems, songs, warnings, forecasts)
- Translation
- Summary, analysis

GOOD FIT!

CHATGPT
TEAM TRIAL - PHASE 1

- December 2022 -> February 2023 and beyond
- Version 3.5
- Open account with corporate email
- Experiment with day-to-day aspect of his/her work
- Weekly meeting to share results

CHATGPT 4+
TEAM TRIAL - PHASE 2

- Late fall 2023 (ongoing)
- Version 4 + pretrained with our documentation
- ECCC Innovation Hub, protected environment
- Experiment with prompt engineering
- Three team members

DURING THESE TRIALS, HOW WAS CHATGPT USED WITHIN OUR COURSE DESIGN WORKFLOW?

1 ANALYSIS PHASE

- Initial Assessment
- **Literature review**
  - Helps sift through large amounts of current* information available on given topic
  - Can identify gaps in existing lesson
  - Can help with fact checking

*ChatGPT 3.5 is trained up until 2021.

2 DESIGN PHASE

- Refining learning objectives
- Building course structure
- **Writing technical script**
  - Plain language, adapted to audience
  - Swiftly generates **concise summaries** to make course content more accessible
- **Creating evaluations**
  - Quizzes, tests and knowledge checks
  - Generates **all types of questions**: multiple choices, true and false, open questions, and exercises
  - Produces **feedback** for learners on both correct and incorrect responses

3 DEVELOPMENT PHASE

- Supporting **accessibility:**
  - Alt text, image descriptions
- Other AI tools
  - Narration*
  - Translation**
  - Generating transcriptions***
  - Closed captions***

* Using Google text-to-speech (Wavenet)
** DeepL
*** Descript / Other

4 DELIVERY AND TESTING

- Feedback forms
  - Creating surveys
  - Analyzing results
  - Generating reports and summaries
- Communicating availability of course

FINDINGS

Very motivating and enriching as all team members brought interesting results and insights to the table.

Our team quickly became a reference for colleagues

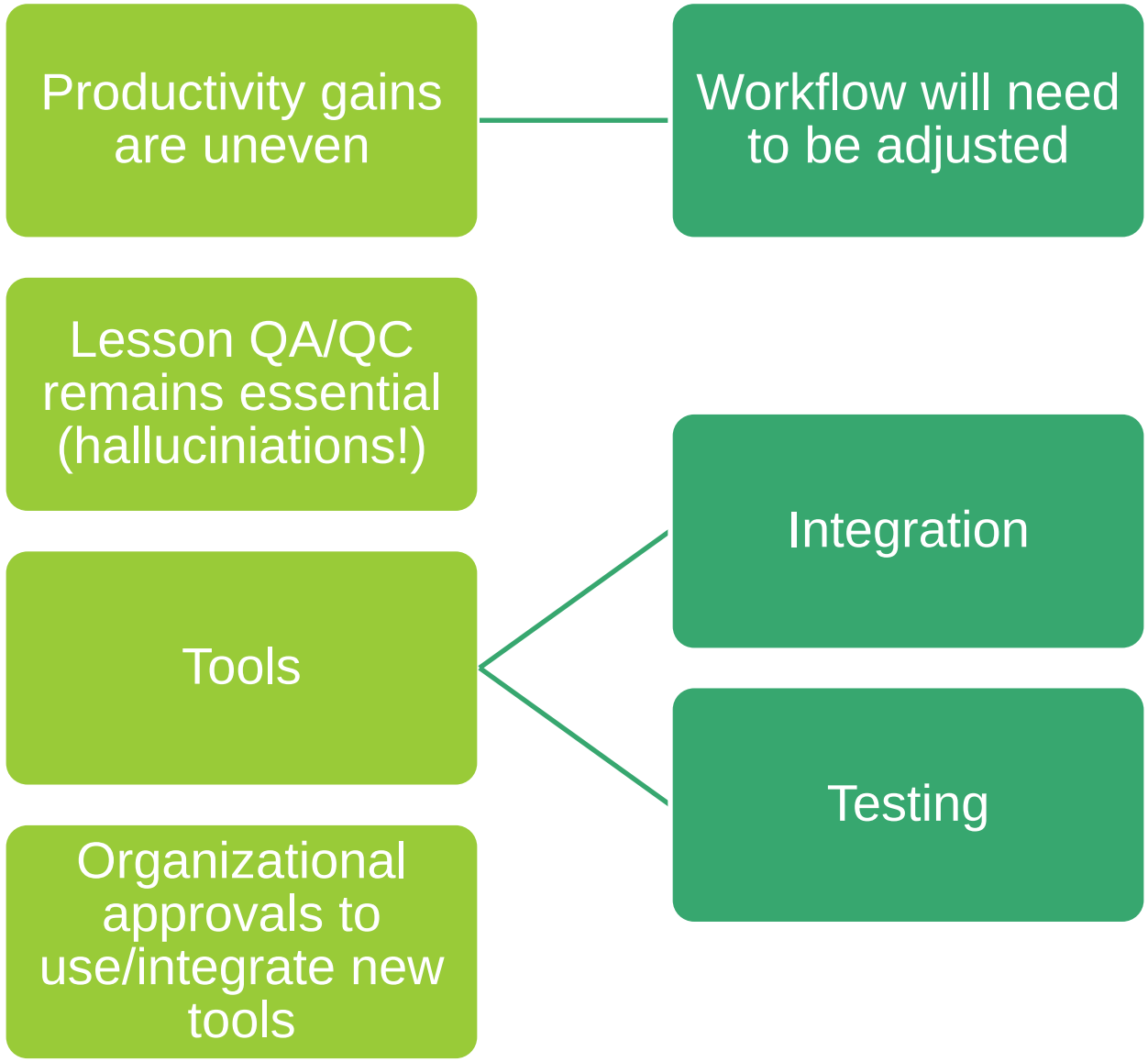
Powerful incentive to adopt AI tools and to continue to explore potential in other tasks.

PERFORMANCE INDICATORS

Topic	Improvement
Litterature review	6-12x
Learning objectives	2x
Summary	3-5x
Technical script writing	1.5x-4x
Evaluations and Feedback (Q&A)	2-30x
Vocabulary level	6-12x
Accessibility (alt text)	5x-7x
Translation	0x*
Survey report	10x

* Translation already AI-optimized with DeepL: 5x + less reliance on translation services

RISKS & CHALLENGES



CONCLUSION

Prompt engineering is an important skill to cultivate and prompt libraries can be built and shared within team to ensure more consistent results.

Ability to Ingest a lot more content than we were able to process before.

Impressive gains in efficiency in every phase of the course creation process.

Merci!

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SUMMARIZING

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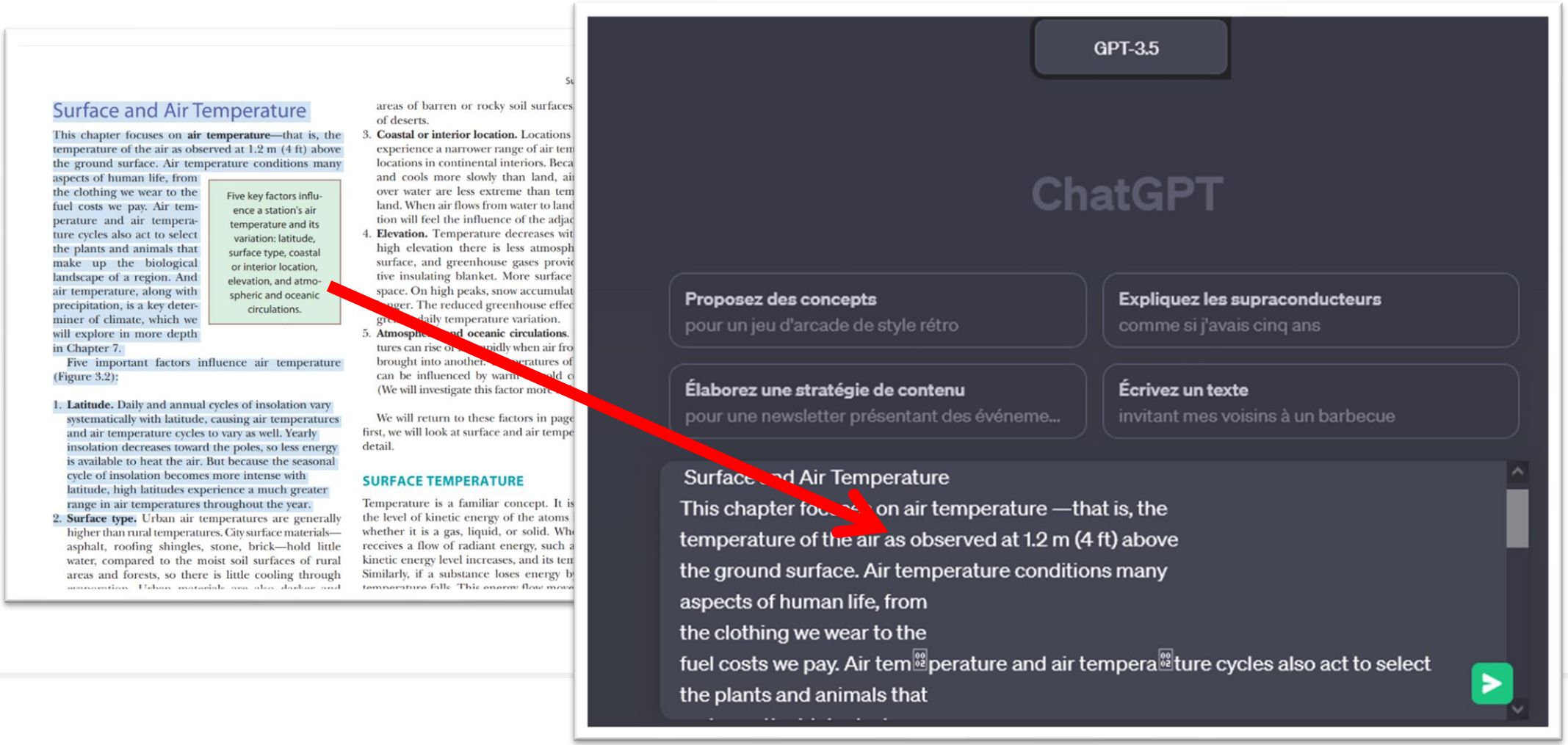
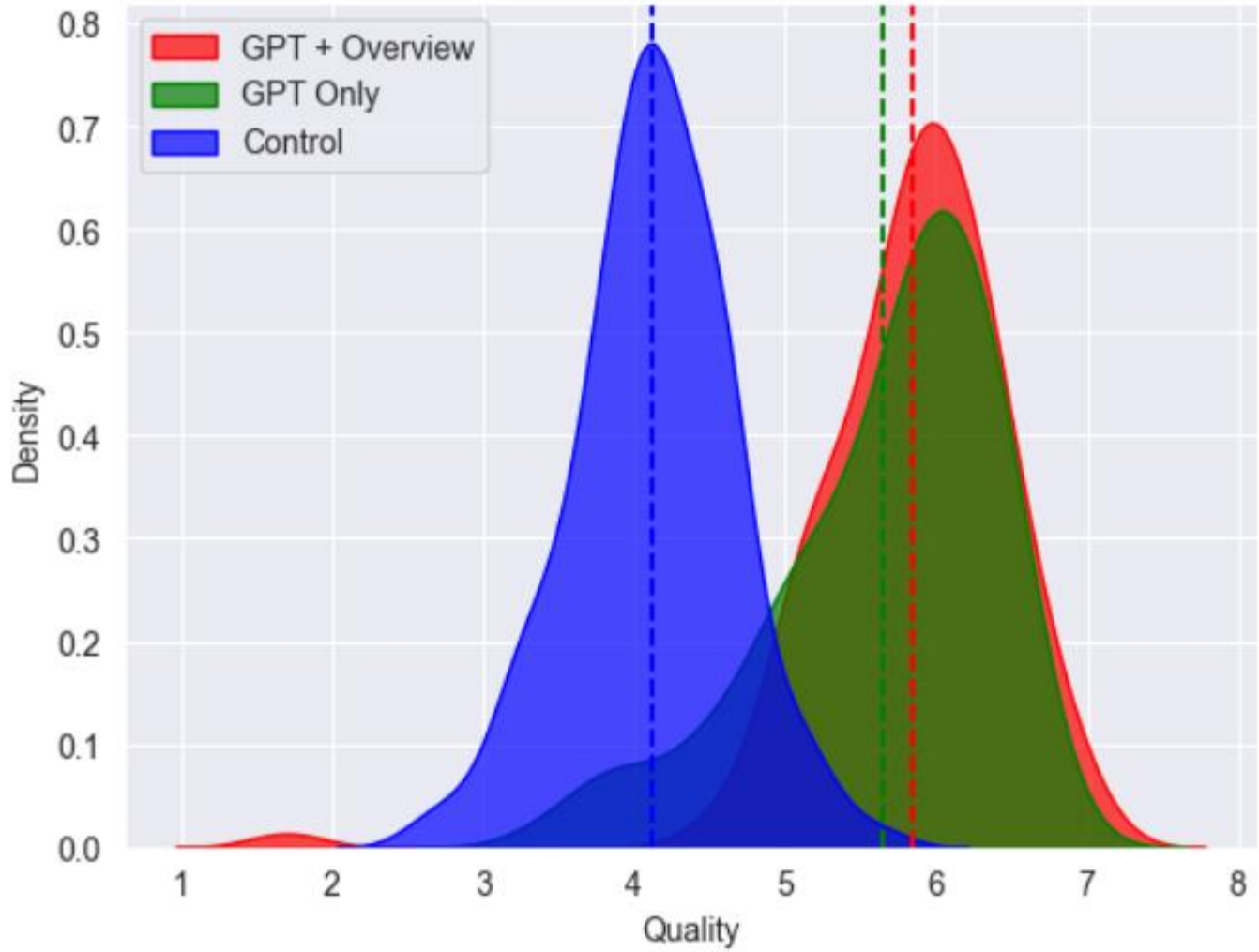


Figure 2: **Performance Distribution - Inside the Frontier**



Notes: This figure displays the full distribution of performance in the experimental task inside the frontier for subjects in the three experimental groups (red for subjects in the GPT+Overview condition; green for subjects in the GPT Only condition; blue for subjects in the control condition).

FUTURE?

- Content-specific chatbots to support students.
- Course generation from simple storyboards (Powerpoint's «designer» tool but better!)
- AI-fueled interactions with learners such as simulations.
- Develop personalized learning plans based on individual training needs.