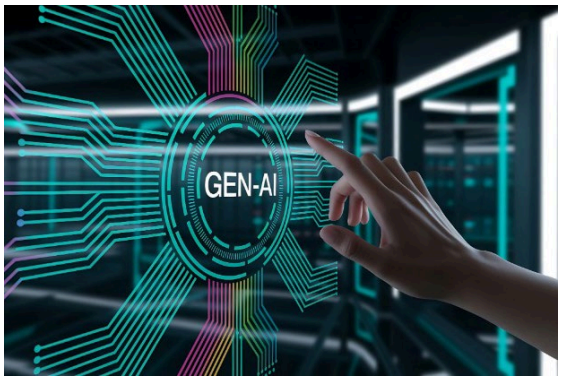
2026 ICM

Problem F: To Gen-AI, or Not To Gen-AI (or how to Gen-AI)? That is the Question!



In just a few years, Generative Artificial Intelligence (Gen-AI) has gone from a tool of limited capacity, only used by a few early-adopters to a powerful and inescapable resource embedded in our daily lives. Over time, research suggests that Gen-AI could impact the future of work. For example, in some fields, Gen-AI may replace humans (or heavily reduce the human workload), while other fields might not be heavily impacted or might even grow.

In this question, you will explore how post-secondary educational institutions, of various types, should best prepare their future graduates in light of this new technology. Specifically, you are asking do to the following.

- Choose three careers, one from each of the following categories:
  - STEM career: people in this career often have at least a four year university degree in the sciences, engineering, or mathematics;
  - Trade career: people in this career often have training from a trade school and/or an apprenticeship program, such as chef, plumber, and electrician;
  - Arts career: people in this career often have studied at an arts school, conservatory, or cultural center, such as musician, dancer, or painter.
- Design a data-informed model to explore the future of each of your three chosen professions, given the current trajectory and expected impacts of Gen-AI. Be sure to identify your data sources as well as your reasoning behind any drivers that you expect to change this profession as a result of Gen-AI. Note: you may leverage existing research on the future of work, but be sure to cite your sources and explain how you are using the established research to inform your analysis.
- Identify a specific post-secondary institution and program of study for each career you are analyzing (one at a university, one at a trade school, one at an arts school), and focus your recommendations accordingly. In other words, you should have three sets of recommendations that address the following question: Based on your analysis, how would you advise the leaders of each of these institutions to address Gen-AI in the programs specific to the careers you are analyzing?
  Below are just some thoughts you may wish to consider; teams should not attempt to address all of these ideas, but should use these as inspiration that will lead to a cogent and thorough analysis that should vary team to team.

- Should the program of study grow or shrink (graduate more or fewer people) as a result of changes in the career due to Gen-AI? If the field should grow, how might the institution recruit more people; and if the field should shrink, are there other programs in the school that should grow to absorb the people who used to study in this program?
- What should these three different programs of study teach about Gen-AI? Many post-secondary institutions of learning have asked this question and are still developing their response. While some institutions have outright banned the use of AI on any assignments, others have brought the use of AI to the forefront of their curriculum. Some schools aim to produce experts who can contribute to the leading edge of the technological field, while some focus on graduating students in non-technical fields who are fluent users of the technology. Some institutions encourage their students to think about all the ways they can apply this new technology, and some schools challenge students to carefully weigh the benefits and costs of using AI, given the requisite energy usage, water demands, and risk of insufficient (often missing or incorrect) attribution to the original creators of ideas or content. For the three programs of study at the three institutions you've selected, what do you recommend to best support the employability of their graduates? Be sure to support your recommendations with the results of a mathematical model.
- While this problem poses the question through the context of employability of graduates in a world where Gen-AI is ubiquitous, perhaps employment demands are not the only way to measure the success of the institutional policies you are proposing. What other factors do you believe should be considered, and how do your models and recommendations change when you consider these other factors?
- If you believe your specific recommendations can be generalized beyond one institution and/or beyond one program, be sure to explain the extent of the generalization and justify this.

Your PDF solution of no more than 25 total pages should include:

- One-page Summary Sheet.
- Table of Contents.
- Your complete solution.
- References list.
- AI Use Report (If used does not count toward the 25-page limit.)

Note: There is no specific required minimum page length for a complete ICM submission. You may use up to 25 total pages for all your solution work and any additional information you want to include (for example: drawings, diagrams, calculations, tables). Partial solutions are accepted. We permit the careful use of AI such as ChatGPT, although it is not necessary to create a solution to this problem. If you choose to utilize a generative AI, you must follow the COMAP AI use policy. This will result in an additional AI use report that you must add to the end of your PDF solution file and does not count toward the 25 total page limit for your solution.