A Guide to the Effective Use of Generative Artificial Intelligence (A.I.)

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<u>As the industry evolves, policies and procedures may be subject to change</u>

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Introduction

The purpose of this guide is to set you up for success.Therefore, this guide has been created for students to utilize the benefits of how to improve their work. This is NOT a replacement to do work for you but a tool for understanding and improving efficiency. Remember that you are subject to policies surrounding academic integrity that will be further discussed within the guide.

Generative Artificial Intelligence (A.I.) is a branch of A.I. that focuses on creating new content, be it text, images, music, or other data forms. These systems are trained on vast datasets, allowing them to generate outputs by recognizing and mimicking patterns within the data they've been exposed to. Techniques like Generative Adversarial Networks (GANs) and Variational Autoencoders (VAEs) are at the forefront of this domain, enabling the creation of content that can often rival human-made outputs.

The applications of generative A.I. are diverse. However, with its capabilities come challenges, including controlling the specifics of generated content and addressing ethical concerns related to misinformation. As technology advances, generative A.I. continues to be a promising and rapidly evolving field, blurring the lines between machine-generated and human-created content.

Benefits of Integrating Generative A.I. at the Graduate Level

In the rigorous academic environment of graduate studies, generative A.I. emerges as a valuable assistant for students and researchers. At this advanced level, where the depth and originality of research are crucial, generative A.I. can assist in refining research questions, help with coding, suggesting innovative approaches, refine drafts of research papers, assist native and nonnative speakers of English with their objectives, etc. Its ability to understand and generate content based on vast amounts of literature means that students can receive instant feedback, enhancing the quality, speed, and coherence of their work.

Moreover, when graduate students are tasked with extensive projects, generative A.I. can aid in organizing and structuring their findings, ensuring that the narrative flow of their research remains logical and compelling. This not only streamlines the research process but also allows students to focus on the critical thinking and analysis aspects; ensuring a deeper engagement with their topic.

Lastly, the integration of generative A.I. at the graduate level promotes a culture of collaboration between human intellect and artificial intelligence. As students harness the capabilities of A.I. to assist in their academic endeavors, they are better prepared for a future where such collaborations become the norm, ensuring that they remain at the forefront of research and innovation.

Coding

The Basics of Querying: Producing Code for Cleaning a Dataset

Step 1: Initial Inquiry

- **User:** "I'm analyzing a complex economic dataset for my graduate research. I need assistance with some advanced cleaning and transformation using Python. Can you guide me?"
- **ChatGPT:** "Absolutely! Please detail the challenges you're facing with the dataset."

Step 2: Dataset Complexities

- **User:** "The dataset has missing values in a pattern, potential multicollinearity among predictors, and I suspect some seasonality in a few time-series columns. I'd also like to perform feature engineering for better model performance."
- **ChatGPT:** "Alright, let's tackle these step by step."

Step 3: Patterned Missing Values

- **User:** "I've noticed that missing values in some columns seem to follow a pattern rather than being random. How can I investigate and address this?"
- **ChatGPT:** "You can visualize the missing values to understand their distribution. Then, depending on the pattern, you can use advanced imputation methods or model-based imputation. Here's a way to visualize using the `missingno` library:

python Copy code

```python
import missingno as msno
msno.matrix(df)
```

If there's a pattern, consider using iterative imputation or model-based methods to fill these gaps."

Step 4: Multicollinearity Among Predictors

- **User:** "I want to ensure that multicollinearity doesn't affect my regression models. How can I detect and address this?"
- **ChatGPT:** "You can compute the Variance Inflation Factor (VIF) for each predictor. A VIF above 10 usually indicates high multicollinearity. To address this, you might consider removing the variable with the highest VIF or using dimensionality reduction techniques like PCA."

Step 4: Multicollinearity Among Predictors

- **User:** "I want to ensure that multicollinearity doesn't affect my regression models. How can I detect and address this?"
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Step 5: Time-Series Seasonality

- **User:** "A few columns represent time-series data, and I suspect there's seasonality. How can I decompose and adjust for it?"
- **ChatGPT:** "You can use the `statsmodels` library to decompose the time series and observe the seasonal component. If seasonality is present, techniques like seasonal decomposition or differencing can be applied. Here's a basic decomposition example:

python Copy code

```python
from statsmodels.tsa.seasonal import seasonal_decompose
result = seasonal_decompose(df['time_series_column'], model='additive')
result.plot()
```

Step 6: Feature Engineering

- **User:** "Lastly, I'd like to create some polynomial and interaction features to potentially enhance my model's predictive power."
- **ChatGPT:** "You can use `PolynomialFeatures` from `sklearn` to generate polynomial and interaction terms. Be cautious, as this can significantly increase the number of features. Regularization might be necessary to prevent overfitting with the added features."

Step 7: Conclusion

- **ChatGPT:** "These advanced techniques should provide a more refined dataset for your graduate research. Remember, each transformation should be justified based on the research question and the nature of the data. If you have further questions or need more advanced techniques, I'm here to assist!"

The Basics of Querying: Applying Analytical Methods

Step 1: Initial Inquiry

- **User:** "Now that the dataset is cleaned, I'd like to perform a regression analysis, taking into account the feature engineering we discussed. Can you guide me through a more complex analysis process?"
- **ChatGPT:** "Of course! Let's start by setting up the environment and loading the necessary libraries."

Step 2: Setting Up the Environment

- **ChatGPT:** "First, ensure you have the necessary libraries. We'll use `pandas`, `numpy`, `statsmodels`, and `sklearn`. Here's how you can import them:

python Copy code

```python
import pandas as pd
import numpy as np
import statsmodels.api as sm
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import PolynomialFeatures
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error
```

Step 3: Feature Engineering

- **User:** "Let's proceed with creating polynomial and interaction features for the predictors."
- **ChatGPT:** "Alright. Using `PolynomialFeatures`, you can generate these terms. Here's an example for a second-degree polynomial:

python Copy code

```python
X = df.drop('target_column', axis=1)
poly = PolynomialFeatures(degree=2, interaction_only=False, include_bias=Fa
X_poly = poly.fit_transform(X)
```

Step 6: Model Interpretation

- **User:** "I'd like to understand the significance of each feature. Can we delve into that?"
- **ChatGPT:** "Certainly. For a detailed understanding of each coefficient's significance, we can use `statsmodels`. Here's how you can fit an OLS model and view a summary:

python Copy code

```python
X_train_sm = sm.add_constant(X_train)  # Adding a constant for the intercep
ols_model = sm.OLS(y_train, X_train_sm).fit()
print(ols_model.summary())
```

Step 7: Conclusion

- **ChatGPT:** "With these steps, you've not only set up a regression model but also evaluated its performance and interpreted its coefficients. Remember, model refinement and feature selection might be necessary based on the results. If you need further insights or advanced techniques, I'm here to assist!"

How To: Document Code

Category	Description	Example/Format
Direct Citation in Academic Work	If the student is writing a paper or thesis, they can cite ChatGPT in the references or bibliography section.	`OpenAI. (Year of Interaction). ChatGPT conversation on [Topic/Subject]. Retrieved [Date of Retrieval], from OpenAI. (2023).`
Code Comments	If the student is using the code in a script or a Jupyter notebook, they can add comments directly in the code to indicate the source.	`# The following regression analysis code was generated with assistance from OpenAI's ChatGPT on September 15, 2023.`

Research

The Basics of Querying: Initial Stages of a Project

Scenario: Alex, a graduate student, is working on a project that aims to analyze life expectancy in different countries using machine learning techniques. Alex is in the process of formulating the main objectives, research questions, and identifying dataset features for the project and needs assistance in crafting and refining them.

Step-by-Step Guide for Alex using ChatGPT:

1. **Brainstorming Session**:
   - Alex starts by brainstorming general ideas and areas of focus for the life expectancy project.
2. **Initial Objective Drafting**:
   - Alex drafts an initial set of objectives and prompts ChatGPT for feedback and refinement.
   - **Alex's Query**: "I am working on a life expectancy project using machine learning. My initial objectives are to analyze life expectancy trends, identify factors influencing life expectancy, and predict future life expectancy in different countries. Can you help me refine these objectives?"
3. **Objective Refinement**:
   - **ChatGPT's Response**: "Certainly, Alex! Here are some refined objectives for your study:
     - Analyze the longitudinal trends in life expectancy across different countries from 1980 to 2023.
     - Investigate the primary socio-economic and healthcare factors that have influenced life expectancy variations among these countries.
     - Develop a predictive model using machine learning techniques to forecast life expectancy trends for the next decade based on historical data and influential factors."

4. **Identifying Dataset Features**:
   - Alex shares the features available in the dataset and seeks advice on which ones to focus on for the objectives.
   - **Alex's Query**: "I have a dataset with features such as GDP, education level, employment rate, healthcare expenditure, life expectancy, and average temperature. Which features should I focus on to align with the refined objectives?"
   - **ChatGPT's Response**: "For your objectives, the following features are most relevant:
     - **Life expectancy**: This is your primary target variable.
     - **GDP**: Economic prosperity often correlates with better healthcare and higher life expectancy.
     - **Education level**: Higher education often leads to better health awareness and practices.
     - **Employment rate**: Employment can influence access to healthcare and overall well-being.
     - **Healthcare expenditure**: Directly related to the quality and accessibility of healthcare.

   The feature **average temperature** might not be directly relevant to life expectancy in the context of your objectives. While climate can have some impact on health, its direct correlation with life expectancy might be weak and could introduce noise into your model."
5. **Formulating In-depth Research Questions**:
   - With the refined objectives in mind, Alex seeks assistance from ChatGPT in generating specific research questions that delve deeper into the intricacies of the topic.
   - **Alex's Query**: "Based on the refined objectives, can you suggest some in-depth research questions that explore the nuances of life expectancy and its influencing factors?"
   - **ChatGPT's Response**: "Absolutely, Alex! Here are some in-depth research questions:

   5.1. How do specific socio-economic factors, such as GDP and education level, correlate with life expectancy trends across different income groups of countries?

   5.2. Are there any outlier countries where life expectancy trends do not align with their healthcare expenditure or GDP growth?

   5.3. How accurately can machine learning models, trained on past data, predict life expectancy for countries with emerging economies compared to developed nations?"
6. **Peer Review and Feedback**:
   - To ensure the objectives, research questions, and selected features are well-formulated and research-appropriate, Alex shares the finalized details with a supervisor or peer for additional feedback and approval.

Regenerate

The Basics of Querying: Interpreting Results of a Project

Scenario: Alex, a graduate student, has run a machine learning clustering algorithm on his dataset to analyze life expectancy in different countries. He has obtained a table of results from his code and is unsure about how to interpret the clusters and their characteristics.

Step-by-Step Guide for Alex using ChatGPT:

1. **Understanding the Clustering Results**:
   - Alex starts by examining the table of results to get a general sense of the clusters and their characteristics.

Table of Clustering Results:

Cluster	LifeExp	AdultMort	Alcohol	HDI	Education	Developed	At Risk
0	75.23	116.61	7.25	0.76	14.27	0	0.009
1	53.53	425.66	4.50	0.48	9.88	0	1.0
2	78.43	87.49	9.28	0.84	15.63	1	0
3	71.16	136.82	1.86	0.63	11.76	0	0.002
4	81.78	64.14	9.82	0.89	16.43	0.88	0
5	58.75	197.58	1.64	0.38	8.09	0	0.97

1. **Feeding the Results to ChatGPT**:
   - Alex inputs the clustering results into ChatGPT to get a detailed interpretation.
   - **Alex's Query**: "I have a table of results from my clustering algorithm. Here are the results: [Inserts Table]. Can you help me understand what each cluster represents based on the mean values of the features?"

2. **Cluster Interpretation**:
   - **ChatGPT's Response**: "Certainly, Alex! Let's break down the clusters:
     - **Cluster 0**: Represents countries with a relatively high life expectancy of around 75 years, moderate adult mortality, and a high alcohol consumption. These countries have a good HDI and an average of 14 years of education. They are not classified as 'Developed' in your dataset.
     - **Cluster 1**: This cluster has countries with the lowest life expectancy of around 53 years, very high adult mortality, and low alcohol consumption. The HDI and education years are also on the lower side. All countries in this cluster are at risk.
     - **Cluster 2**: Countries in this cluster have a high life expectancy of around 78 years, low adult mortality, and are classified as 'Developed'. They also have the highest HDI and education years among all clusters.
     - **Cluster 3**: Represents countries with an average life expectancy of 71 years, moderate adult mortality, and very low alcohol consumption. The HDI and education years are average.
     - **Cluster 4**: This cluster includes countries with the highest life expectancy of around 82 years, the lowest adult mortality, and high alcohol consumption. Most of these countries are classified as 'Developed'.
     - **Cluster 5**: Countries in this cluster have a life expectancy of around 59 years, high adult mortality, and the lowest alcohol consumption. The HDI and education years are the lowest among all clusters, and almost all countries in this cluster are at risk."

3. **Deep Dive into Specific Clusters**:
   - Alex may want to understand specific clusters in more detail or know why certain countries fall into specific clusters.
   - **Alex's Query**: "Can you explain why countries in Cluster 1 have such a low life expectancy compared to others?"
   - **ChatGPT's Response**: "Countries in Cluster 1 have very high adult mortality rates, which could be a significant factor contributing to the low life expectancy. The lower HDI and fewer average years of education might indicate socio-economic challenges that can impact health outcomes."
4. **Recommendations for Further Analysis**:
   - **ChatGPT's Response**: "Based on the clustering results, you might want to investigate the underlying reasons for the disparities in life expectancy across clusters. For instance, exploring socio-economic, political, or environmental factors in countries from Cluster 1 might provide insights into the challenges they face. Additionally, understanding the healthcare systems and policies of countries in Cluster 4 could offer best practices that can be adopted by others."
5. **Peer Review and Feedback**:
   - To ensure his interpretations and subsequent analyses are accurate and comprehensive, Alex shares the clustering results and his interpretations with a supervisor or peer for additional feedback and approval.

Writing

Improve Text as a Native Speaker of English

Scenario: Alex, a graduate student, has analyzed life expectancy in different countries using machine learning clustering techniques. He has obtained results and has drafted an abstract for his research paper. However, he feels that the abstract might be lacking in clarity and wants to ensure that it effectively communicates the main findings and implications of his research.

Alex's Drafted Abstract:
"Life expectancy is a crucial indicator of a nation's overall health and well-being. In this study, we utilized machine learning clustering techniques to categorize countries based on various factors influencing life expectancy. Our dataset included features such as GDP, education level, employment rate, healthcare expenditure, and more. Initial results indicate distinct clusters representing varying levels of life expectancy and associated factors. This research aims to provide insights into the determinants of life expectancy and guide policy recommendations."

Step-by-Step Guide for Alex using ChatGPT:

1. **Seeking Initial Feedback**:
   - Alex inputs the drafted abstract into ChatGPT to get feedback and suggestions for improvement.
   - **Alex's Query**: "I've written an abstract for my research paper on life expectancy analysis using clustering. Here's the abstract: [Inserts Abstract]. Can you provide feedback and suggestions to improve it?"
2. **Feedback from ChatGPT**:
   - **ChatGPT's Response**: "Certainly, Alex! Your abstract provides a good overview of your research. However, consider the following suggestions:
     - Begin with a stronger opening statement to immediately capture the reader's interest.
     - Elaborate slightly on the machine learning technique used, as it's a central aspect of your research.
     - Highlight one or two key findings or patterns observed from the clusters.
     - Conclude with the potential implications or applications of your findings in real-world scenarios."

3. **Refining the Abstract**:
   - Based on ChatGPT's feedback, Alex revises the abstract to:
     "Life expectancy serves as a mirror, reflecting a nation's socio-economic health and quality of life. Through the lens of K-Means clustering, this study delves into the intricate web of factors influencing life expectancy across countries. By analyzing features such as GDP, education level, and healthcare expenditure, we identified distinct clusters showcasing countries with similar life expectancy patterns. Notably, countries with higher education levels and healthcare expenditure consistently showcased higher life expectancies. These findings underscore the potential for targeted policy interventions to enhance life quality and longevity."
4. **Ensuring Clarity and Conciseness**:
   - Alex can prompt ChatGPT to help simplify or clarify any specific sentences or sections he's unsure about.
   - **Alex's Query**: "The sentence 'Through the lens of K-Means clustering, this study delves into the intricate web of factors influencing life expectancy across countries.' feels a bit complex. Can you help me simplify it?"
   - **ChatGPT's Response**: "Certainly! How about: 'Using K-Means clustering, this study examines the factors influencing life expectancy in various countries.'"
5. **Peer Review and Feedback**:
   - Alex shares the refined abstract with a supervisor or peer for additional feedback, ensuring that it resonates well with others in the field.

Edit Text as a Non-Native English Speaker

Scenario: Teresa, an international student, has drafted a body paragraph for her research paper titled "Labor Market in Canada: Dynamics and Prospects." Aware of potential errors in her English, she turns to ChatGPT for assistance in refining larger segments of her work.

Body Paragraph with Errors:
"Canadian labor market is unique in many ways. It have a diverse workforce coming from many parts of world. Globalization make Canada's economy more open, but also bring challenges. For example, technology changes mean some jobs disappear, but new ones created. Regional differences in Canada also big factor. In some provinces, unemployment rate higher than others due to local economic conditions. Immigration also play role in shaping labor market, with many immigrants bringing skills that are in demand."

Step-by-Step Guide for Teresa using ChatGPT:

1. **Segment the Paragraph**:
   - Teresa breaks the paragraph into logical segments that group related ideas together.
2. **Address Grammatical Errors**:
   - Before refining the content, Teresa decides to first address any grammatical errors.
     - **Teresa's Query**: "Can you identify and correct grammatical errors in this segment? 'Canadian labor market is unique in many ways. It have a diverse workforce coming from many parts of world.'"
   - ChatGPT responds: "The Canadian labor market is unique in many ways. It has a diverse workforce coming from many parts of the world."

3. **Clarify and Refine Content**:
   - Teresa continues with the next segment about globalization and its effects:
     - **Teresa's Query**: "How can I improve this segment for clarity? 'Globalization make Canada's economy more open, but also bring challenges. For example, technology changes mean some jobs disappear, but new ones created.'"
   - ChatGPT corrects: "Globalization has made Canada's economy more open, but it also brings challenges. For example, technological advancements mean that some jobs disappear, while new ones are created."
4. **Tackle Regional Differences and Immigration**:
   - Teresa inputs the segment on regional differences and immigration:
     - **Teresa's Query**: "Could you help me refine these sentences for better structure? 'Regional differences in Canada also big factor. In some provinces, unemployment rate higher than others due to local economic conditions. Immigration also play role in shaping labor market, with many immigrants bringing skills that are in demand.'"
   - ChatGPT refines: "Regional differences in Canada are also a significant factor. In some provinces, the unemployment rate is higher than in others due to local economic conditions. Immigration also plays a role in shaping the labor market, with many immigrants bringing skills that are in high demand."
5. **Compile and Review**:
   - Teresa compiles the corrected segments to form the refined body paragraph and reviews it for coherence, flow, and grammar.
6. **Seek Peer Review**:
   - To ensure her paragraph is now error-free, well-structured, and grammatically correct, Teresa shares it with an English-speaking colleague who provides positive feedback.

Translate Text from One Language to Another with Nuance

Scenario: A Russian student, Teresa, has written a body paragraph in her native language about labor markets in Canada. She's confident in her research but needs to submit the paper in English for her graduate studies.

Body Paragraph in Russian:
"Канадский рынок труда уникален по многим причинам. Он имеет разнообразный состав рабочей силы, прибывающей из многих частей мира. Глобализация делает экономику Канады более открытой, но также приносит вызовы. Например, изменения в технологиях означают, что некоторые рабочие места исчезают, но создаются новые. Региональные различия в Канаде также играют большую роль. В некоторых провинциях уровень безработицы выше, чем в других из-за местных экономических условий. Иммиграция также играет роль в формировании рынка труда, многие иммигранты приносят навыки, которые востребованы."

Step-by-Step Guide for Teresa using ChatGPT:

1. **Segment the Paragraph**:
   - Teresa breaks the paragraph into individual sentences or segments to ensure focused translations.
2. **Initial Translation**:
   - Teresa prompts ChatGPT in Russian:
     - **Teresa's Query**: "Как бы вы передали суть этой фразы на английском, сохраняя ее научный характер? 'Канадский рынок труда уникален по многим причинам.'"
     - **Translation**: "How would you convey the essence of this phrase in English while maintaining its academic tone? 'The Canadian labor market is unique for many reasons.'"
   - ChatGPT responds with: "The Canadian labor market is distinct in numerous aspects."

3. **Clarify and Refine**:
   - For the next sentence, Teresa wants to ensure the nuances of the diverse workforce are captured. She inputs:
     - **Teresa's Query**: "Как лучше всего выразить эту мысль на английском, чтобы передать значение разнообразия рабочей силы? 'Он имеет разнообразный состав рабочей силы, прибывающей из многих частей мира.'"
     - **Translation**: "What's the best way to express this idea in English to convey the significance of a diverse workforce? 'It has a diverse workforce coming from many parts of the world.'"
   - ChatGPT translates: "It boasts a multifaceted workforce hailing from various global regions."
4. **Address Complex Concepts**:
   - Teresa knows that the last sentence touches on sensitive topics like regional differences and immigration. She inputs:
     - **Teresa's Query**: "Мне нужно передать важность иммиграции для рынка труда Канады. Как бы вы переформулировали эту фразу на английском? 'Иммиграция также играет роль в формировании рынка труда, многие иммигранты приносят навыки, которые востребованы.'"
     - **Translation**: "I need to convey the importance of immigration to Canada's labor market. How would you rephrase this sentence in English? 'Immigration also plays a role in shaping the labor market, many immigrants bring skills that are in demand.'"
   - ChatGPT provides: "Immigration significantly influences the Canadian labor market, with numerous immigrants possessing sought-after skills."
5. **Compile and Review**:
   - Teresa compiles the translated sentences to form the translated body paragraph and reviews it for coherence and flow.
6. **Seek Peer Review**:
   - Teresa shares the translated body paragraph with an English-speaking colleague to ensure it reads naturally and retains the original meaning.

Query in a Foreign Language to Obtain an English Language Output

Scenario: Teresa, an international student from Russia, has drafted a body paragraph in English about labor markets in Canada. While she's confident in her research, she's aware that her English might contain errors. To ensure her work is presented in the best possible light, she decides to use ChatGPT for assistance.

Body Paragraph with Errors:
"Canadian labor market is unique in many ways. It have a diverse workforce coming from many parts of world. Globalization make Canada's economy more open, but also bring challenges. For example, technology changes mean some jobs disappear, but new ones created. Regional differences in Canada also big factor. In some provinces, unemployment rate higher than others due to local economic conditions. Immigration also play role in shaping labor market, with many immigrants bringing skills that are in demand."

Step-by-Step Guide for Teresa using ChatGPT:

1. **Segment the Paragraph**:
   - Teresa breaks the paragraph into logical segments that group related ideas together.
2. **Initial Review**:
   - Teresa prompts ChatGPT in Russian:
     - **Teresa's Query**: "Можете ли вы проверить эти предложения на ошибки по-английски? 'Canadian labor market is unique in many ways. It have a diverse workforce coming from many parts of world.'"
     - **Translation**: "Can you check these sentences for errors in English?"
   - ChatGPT responds with: "The Canadian labor market is unique in many ways. It has a diverse workforce coming from many parts of the world."
3. **Clarify and Refine Content**:
   - Teresa continues with the next segment about globalization and its effects:
     - **Teresa's Query**: "Как я могу улучшить этот отрывок по-английски? 'Globalization make Canada's economy more open, but also bring challenges. For example, technology changes mean some jobs disappear, but new ones created.'"
     - **Translation**: "How can I improve this segment in English?"
   - ChatGPT corrects: "Globalization has made Canada's economy more open, but it also brings challenges. For example, technological advancements mean that some jobs disappear, while new ones are created."

Regenerate

4. **Tackle Regional Differences and Immigration**:
   - Teresa inputs the segment on regional differences and immigration:
     - **Teresa's Query**: "Помогите мне уточнить эти предложения по-английски. 'Regional differences in Canada also big factor. In some provinces, unemployment rate higher than others due to local economic conditions. Immigration also play role in shaping labor market, with many immigrants bringing skills that are in demand.'"
     - **Translation**: "Help me refine these sentences in English."
   - ChatGPT refines: "Regional differences in Canada are also a significant factor. In some provinces, the unemployment rate is higher than in others due to local economic conditions. Immigration also plays a role in shaping the labor market, with many immigrants bringing skills that are in high demand."
5. **Compile and Review**:
   - Teresa compiles the corrected segments to form the refined body paragraph and reviews it for coherence and flow.
6. **Seek Peer Review**:
   - To ensure her paragraph is now error-free and well-structured, Teresa shares it with an English-speaking colleague who provides positive feedback.

Do's and Don'ts for Usage of Generative A.I.

Do's:

#	Guidelines
1	Engage Actively with Models: Use generative A.I. tools to enhance comprehension, especially with complex economic theories. They can provide fresh perspectives.
2	Stay Curious and Critical: Always be critical of the responses from generative A.I.
3	Complement Statistical Tools: Use A.I. alongside statistical software like Python, Stata, R, etc. Rely on robust statistical methods for rigorous research.
4	Stay Updated: Be aware of A.I. limitations, including potential biases or reliance on outdated models.
5	Prioritize Privacy in Research: Avoid sharing sensitive data, especially if it pertains to ongoing research or unpublished findings.
6	Respect Institutional Guidelines: Ensure your use of A.I. aligns with institutional or departmental guidelines.

Don'ts:

#	Guidelines
1	Avoid Over-reliance: A.I. shouldn't replace traditional research methodologies, interactions with advisors, or peer-reviewed literature.
2	Beware of Shortcuts: Ensure insights from A.I. align with established economic research standards to avoid unintentional errors.
3	Stay Cognizant of Biases: A.I. models can have biases. Always be critical and cross-reference with trusted academic sources.
4	Encourage Collaborative Exploration: Engage in discussions with peers, faculty, or interdisciplinary teams, rather than relying solely on A.I.
5	Avoid Misrepresentation: Be transparent if you use A.I. tools in your research. Acknowledge the role of A.I. and ensure its usage maintains the integrity of your work.

References

OpenAI. 2022. ChatGPT conversation on '*A Guide to the Effective Use of Generative Artificial Intelligence (A.I.)'* Retrieved Fall 2023, from OpenAI.