SEE LIKE AN ECONOMIST:
PHOTO ASSIGNMENTS IN ECONOMICS COURSES

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Abstract

This paper explains the design and purpose of a photo assignment for economics courses. To make vital connections between their own world or lived experience and economic theory, students take pictures in familiar surroundings and explain them through concepts learned in economics courses. The students choose the subject of their photographs and process information from their familiar world through economic theory, communicating their ideas both visually and in writing. The goal of the assignment is to develop long-lasting skills and to ensure that each student is given a creative outlet, which is often not present in our quantitative assignments. The paper discusses the design of effective assignment instructions and selected student work is used to illustrate the benefits of using the photo assignment as a learning tool to enhance student understanding of economic concepts and theories.

Key Words: undergraduate economics teaching; students' learning; assignment; photography

JEL Classification: A22, I23

Introduction

Allgood and Bayer (2017) identify a framework of five essential competencies for undergraduate education in economics, one of which is "the ability to analyze and evaluate behavior and outcomes using economic concepts and models" (p. 661). We propose and explain an assignment that asks students to photograph a location of their choice and to analyze their image through the economic concepts and theories studied in the course, an assignment that can be used as a step towards the development of this competency. We discuss our experience implementing this assignment in three courses: principles of microeconomics, intermediate microeconomic theory, and introductory econometrics. We also include the work submitted for this assignment by our four student co-authors, along with their brief analysis of the assignment.

The technical skills and the explicit marginal cost required to capture good-quality images have been reduced drastically by the current pervasiveness of cellphone digital cameras. Snapshots have become ubiquitous and most students have access to a cellphone camera or can borrow a camera from a library, so the assignment has a light marginal resource requirement.

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Photography provides a way for students to capture an idea in a visual form. Ansel Adams, a landscape photographer who carefully composed his images, talked about "making" a photograph, which goes beyond merely "taking" a photograph. (Adams and Street Alinder, 1985, p. 79). Even though we just ask our students to take photographs, we require them to "make" mental images of situations that could be explained through economic concepts and eventually "take" the photograph. As students progress through the course, they work with a higher degree of interaction between elements to understand the concepts. Leahy and Sweller (2008) showed that the imagination effect, where students mentally practice a task, has stronger benefits when there is a higher degree of interaction compared to when there is a lower degree of interaction, as students absorb abstract concepts successfully through deeper understanding and transfer to long-term memory. We encourage the students to think carefully when they compose and analyze their image. The goal of our photo assignment is to train students to focus their attention on aspects of their everyday lives that can be explained through their knowledge of economics, thus developing the skill and habit of connecting economic theory to practical situations.

Problem-based learning is a method of learning and instruction with a long intellectual history that uses real-world problems as a starting point, as encouraged by Dewey (1929). Schmidt (1993) explains that problem-based learning enables epistemic curiosity or intrinsic interest and it helps students to (re)organize their knowledge in a way that makes it accessible for future professional problem-solving challenges. Schmidt (1993) exemplifies several principles of cognitive learning, one of which is the idea that the way knowledge is structured in memory affects how accessible it is for use. Our photo assignment challenges students to find a problem/situation that is meaningful to them and to use the concepts and principles acquired in the course to explain it, which structures their knowledge such that it becomes accessible for future authentic problem solving.

The assignment is open ended, and it carves an avenue for the students to be creative in the way they apply economic theory to an authentic problem of their choice. Krathwohl (2002) revised Bloom's taxonomy of educational objectives with contributions from cognitive psychology, shifting the language from nouns to verbs and placing "create" at the highest level of thinking. At the bottom of the cognitive hierarchy we find "remember" and "understand," which are prerequisites for the higher levels. Creating unique connections ensures that the students truly understand how to apply the theory, or it can point out gaps in their understanding, which can be corrected by the instructor.

Economics is traditionally taught with words complemented by mathematical and graphical analysis. Students are being evaluated through assignments and tests largely based on their understanding of the quantitative analysis and its implications. The graphs used as visual tools in economics teaching, however, do not always make it easy for students to connect economic theory with their reality. The literature on economics teaching has long been emphasizing the need to engage students and to make abstract economic concepts applicable. Picault (2019) offers an informative review of the economics teaching innovations developed in the previous decade, classifying them into illustration tools, instructor-crafted methods, and student-crafted methods. Vasquez and Chiang (2015) emphasize the role of visuals in economics education to improve student retention of knowledge based on evidence from cognitive science. They point out that visuals have only been loosely embraced in teaching economics. Aside from the traditional

graphical analysis, PowerPoint presentations to deliver course material are the predominantly visual tool used in economics teaching. This implies that few other visual aids have been used in teaching and assessment. Yet, the effective use of visual tools can promote students' functional understanding of economic theories and concepts. In this paper our goal is to introduce a photo assignment as a visual assessment tool that can help students to connect economic theories to everyday life.

Literature Review

The economics teaching literature offers numerous examples of creative approaches to teaching economics. As consumers of art, students can engage in active and creative learning through literature, music, paintings, movies, theatre and Broadway shows, etc. (Ben Abdesslem, 2022; Bohanon and Vachris, 2011; Davis, 2015; Mateer, O'Roark, and Holder, 2016). Research in the education literature has shown the effectiveness of visual images in facilitating learning (Davis, 2011; Van Amelsvoort, 2013).

The benefits of visual aids applied to economics teaching have been discussed in the literature. Leung and Nakagawa (2021) explored the role of visual aids in the context of collaborative learning to engage students and to encourage critical thinking. Using research in cognitive science as the base, Vazquez and Chiang (2015) showed that visuals can be better complements to spoken lectures than words and advocated for the use of images in the teaching of economics. Sexton (2006) reported that the effectiveness of visual stimulation used in economics teaching can promote more efficient learning, better understanding, and fortified long-term memory among students. Various movies and shows have been suggested as visual aids for the teaching of economics. For example, Mateer, O'Roark, and Holder (2016) provided a list of the ten greatest films for teaching economics based on a survey of economics educators. Ben Abdesslem et al. (2025) introduced Econetflix, a website with diverse clips from Netflix media, accompanied by teaching materials.

In addition to recognizing the productive use of visual images in delivering course materials, suggestions have also been made to incorporate visual components in student assignments for economics courses. In his Economics Instructor's Toolbox, Picault (2019) lists music videos, ECONselfies, and video scrapbooking as media creation under the heading of student projects. According to Picault, these assignments facilitate a deeper understanding by allowing students to connect their own experience to economic concepts.

Photography can be used as a learning and evaluation mechanism for economics field trips. Shostya (2024) discussed an economics course focused on five broad economics topics and built around experiential learning through photography. After the students had been introduced to a topic, they went on field trips in their city, produced images, wrote economics essays, and organized a public photo exhibit featuring photographs from their field trips. The paper explains how the course assignments and activities covered all the stages of the experiential learning cycle. For the instructors interested in organizing a field trip, Ong and Wong (2023) provided a carefully crafted guide for a successful economics field trip, which could be complemented by our assignment.

Al-Bahrani et al. (2016b) provided examples on how to incorporate various forms of arts into active learning assignments to enhance the understanding and learning of principles of

economics. A specific example suggested by Al-Bahrani et al. (2016a) is the idea of an ECONSelfie assignment, for which the students must take a photo of themselves and write an economic explanation for their image based on personal connections. The authors emphasized that the students must be able to demonstrate that they took the picture by requiring students to place themselves, or at least their hands or feet, in the image. The purpose of the assignment is for students to analyze their own experience from an economic perspective. The photo assignment described below is similar to the idea of ECONselfies introduced by Al-Bahrani et al. (2016a), but the emphasis of our photo assignment is on engaging students as photographers with an economics lens, without requiring them to appear in their images.

In short, the literature has shown the benefits of using visual images in economics teaching. The incorporation of a visual component in student assignments can foster deeper understanding of the economics knowledge learned. This paper discusses the use of photo assignments to facilitate and assess students' learning.

Photo Assignment

Pedagogical motivation

The photo assignment engages students in place-based learning by having them photograph a situation of interest and write about the economics captured in the image. The purpose is for students to demonstrate that they understand the course material and are able to apply economic theories to location-specific situations. Within the Universal Design for Learning (UDL) framework, which has become increasingly prominent in higher education recently (Leung et al., 2023), the assignment exemplifies learning through visual perception. Under these two frameworks, the assignment adds value to student learning in the following areas:

1. **Connections**: Create opportunities for students to make connections between the course material and their own world
2. **Engagement**: Encourage students to engage with the course material in their everyday experience outside of the classroom
3. **Communication**: Develop communication skills by clearly articulating the economic meaning of an image
4. **Inclusiveness**: Allow students to choose the subject of their images and analysis
5. **Retention of knowledge**: Foster long-run retention of the knowledge learned by relating theories to personal interests and experience

Can economics students recognize the theoretical concepts discussed in their principles of economics course when they step outside of the structured environment of their university? This question relates to the concept of transfer of learning and knowledge discussed extensively in the psychology literature. Far transfer, defined as "transfer to a dissimilar context," contrasts with near transfer, which is "transfer to a more similar context" (Barnett and Ceci, 2002, p. 615). The goal of this assignment is to promote the far transfer of economic thinking from the classroom context of abstract models to the students' lived experiences. Our photo assignment creates a structured

environment in which this transfer can be encouraged, and we provide guidelines for the successful implementation of the assignment in economics courses.

Implementation

Our experience, based on 10 semesters of implementing a photo assignment in our courses, shows that for students to engage earnestly, and to plan and write their submissions with care, the assignment must be integrated into the formal course evaluation, with dedicated marks.

Our initial experiment started in the winter of 2019 with a photo competition organized in a principles of microeconomics course taught by one of the authors (4 course sections of 35 students each). Participation was voluntary, performance did not have an impact on course grades, but monetary prizes of 50-100 Canadian dollars were offered. Of the 140 students invited to participate, only 8 students submitted an entry to the competition. The low number of submissions demonstrated that the students understood and applied the concept of opportunity cost, with their perceived benefit potentially being lower than the marginal cost of preparing an entry for most students. The students did, however, enjoy evaluating the work of their classmates, as the submissions were creative and the economic analysis was executed well. Another explanation for the low number of submissions is that only those students who were very confident that they had a chance to win the competition decided to participate.

At a different time, the other teaching author offered students in introductory economics courses the photo assignment within the last two weeks of the term as a small bonus to potentially raise their grade. Most submissions were prepared hastily, which led to low quality.

We used this assignment in 13-week courses with 39 instructional hours, taught either in the classroom or synchronously online. The majority of iterations were implemented in principles of microeconomics courses, followed by intermediate microeconomic theory I and II. The assignment is flexible and, with imagination, it can be tailored to almost any economics course, with the analysis being graded at the appropriate level of sophistication.

We used two types of photo assignments:

1. **freestyle**: students choose both the image and the concepts, as long as they had been discussed in the course; this might be better suited for an initial photo assignment.
2. **concept-specific**: students create and explain photographs that illustrate one or several concepts from a list, such as opportunity cost, demand, supply, elasticity, externalities, types of goods, costs, utility etc. This approach may be more difficult than the freestyle one, as most concepts are abstract and it might be easier to identify them in an existing image than to specifically search for and find a new situation to illustrate a required concept.

In addition to allocating marks, instructions and rubrics must be clearly explained. We list our core requirements and rubric below, and we include a detailed example in the appendix.

Assignment requirements:
- include image in template (for consistency and ease of grading)
- list keywords (for structure and focus)
- write an explanation of up to 300 words (the lower the limit, the more challenging it is to generate quality work)

- 2-4 photographs with economic explanation per term, worth up to a total of 20% of the course grade, to provide time to internalize feedback and to refine observational skills
- use the "see, think, wonder" thinking routine (Project Zero, Harvard) [5]
- students save their work in pdf format and to upload it on the class learning management system (LMS), where grading can be structured around a rubric

Under the "see, think, wonder" framework, the students start their analysis with a brief non-economic explanation of what the reader should see and look at in the image. The "think" part is the core economic analysis. The "wonder" component is the most puzzling for students, but it is valuable as it fits the "growth mindset" included in the economics pedagogical literature by Bayer at al. (2020). The students can benefit from discussing examples of well-executed work, but instructors must clearly highlight the need for creativity and discourage close imitation of these examples.

Grading rubric, out of 10 marks:
- Image quality and creativity, from an economics perspective: 2 marks
- Keywords correctly identified: 1 mark
- Economic explanation, assessed on the correct use of economic theory, the quality of economic writing, and the depth of knowledge displayed: 5 marks
- Template used correctly: 1 mark
- Spelling and grammar: 1 mark

Our general suggestion is to use our setup and requirements as a starting point and then tailor the written and verbal instructions to your context and to the specific needs of your students.

Student work

This section includes examples of course work submitted by our student co-authors, along with their reflections about the assignment written for this paper.

Student work sample #1

Course: principles of microeconomics, Winter 2024
This was the second photo assignment in the course. The first assignment was freestyle, and the second assignment was concept-specific, focusing on public goods and common resources.
Student name: Gurvir Sangha
Student major: Open Studies
Image title: North-East Gurdwara

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[5] https://pz.harvard.edu/sites/default/files/See%20Think%20Wonder.pdf

Key microeconomic concepts and theories: public goods, common resources, free-rider problem, excludability, rivalry, externalities, tragedy of the commons

Image credit: Gurvir Sangha

The image above depicts a Gurdwara, a place of significance and worship for the Sikh community of Calgary. This institution and other institutions alike stand on the pillars of inclusivity, encouraging openness to all individuals from different backgrounds. The most crucial factor of a Gurdwara is the "Langar," which is a practice and vow signifying a feast. This vow delivers on providing any individual with a warm meal regardless of circumstance.

Viewed through the lens of microeconomics, I would argue the Gurdwara adheres to the characteristics of a public good, while there is a case arguing the excludability faced when the dining hall may be at its capacity in terms of space and resources. Despite this, the Gurdwara's non-excludable nature means that once built, anyone can access its services without restriction. This poses a challenge concerning its finances, as there is no direct way to charge users for the benefits they obtain, other than the social norm of donating $1 to $2 when visiting. As a consequence, there could be a potential manifestation of the free-rider theory, where individuals may enjoy the benefits of the Gurdwara without sustaining its upkeep. One avenue to evade the free-rider problem may be the introduction of corrective subsidies offered to these institutions. By providing support or discussing potential tax incentives, the government acknowledges the positive externalities occurring as a result of keeping the Gurdwara running.

What role do government subsidies play in optimizing the provision of public goods like Gurdwaras, and what trade-offs should be considered in implementing such policies? How do cultural and social factors influence individual contributions and the overall facilitation of public goods like Gurdwaras, and how can microeconomic theories account for these nuances?

Student work sample #2

Course: principles of microeconomics, Fall 2021
This was the second photo assignment in the course. The first assignment was freestyle, and the second assignment was concept-specific, focusing on public goods and common resources.
Student name: Anna Johnson
Student major: Policy Studies
Image title: 17th Avenue Mural, *Akin* by Fluke
Key microeconomic concepts and theories: public good, economically inefficient, external benefit, private equilibrium, market solutions, rivalrous, excludable, social benefit, free rider

Image credit: Anna Johnson

What do I see?

The Beltline area of Calgary, adjacent to the downtown core, is a vibrant and busy area, lined with small independent shops, restaurants, and some larger retail stores with a smaller footprint. The apartment building shown is one of many in this densely populated area. On this un-seasonally warm fall day, the sidewalks were bustling with shoppers or those out for a stroll, and cars, attempting to find parking, crept along the busy streets. Green spaces are infrequent and small, and single-family homes are set back from the area.

The eye-catching brick mural, entitled Akin, by Montreal artist Fluke, is a striking and massive, 75' high and 60' wide image, located on 17th Avenue in the Beltline area (Ylitalo, 2020). The mural is a composition of images, dissected by flowing, curvilinear lines. The collage includes a multitude of bright, contrasting colors that are visually dramatic, and appear to come forward against the dark, muted background. The selection of people painted indicates some cultural diversity and the Calgary skyline, including the iconic Calgary tower, is visible in the fading background. With the central character looking up to the sky, the artist may be trying to convey a feeling of hope and positivity. A portion on the bottom left of the image includes the artist signature.

Look through an economics lens: what do I think about when I look at this image?

When I look at this image, I am aware of the use of market solutions used to internalize positive externalities. Public art is a public good, because there is no rivalry in consumption - it is available for all citizens to consume equally - and is not excludable. As private industry may not economically benefit from an investment in public art (costs exceed benefit), the external social benefit is achieved by government investment (a shift in the demand curve that increases social optimization). Free-riders lack the incentive to contribute to non-excludable goods. Therefore, with public art, governments must utilize grants to invest in public goods. In doing so, there are both the short-term and long-term economic and social benefits.

Although the price paid by society is greater than the economically inefficient private equilibrium price, the external benefits are far-reaching. In this mural example, the artist receives direct benefit as they are paid for their work, but there are many positive externalities. Economic benefits would include increases in: tourism, interest in the art community for additional commissioned works, visibility for the community attracting consumers to businesses, and real estate value to building owners who have improved curb-appeal as well as surrounding land and buildings. Social benefits would include: adding vibrance and beauty to the community, creating a landmark, cultural enrichment, and community connection. Public art, as social commentary, may also encourage discussion, challenge views and perspectives, and increase awareness on contemporary issues.

What does the image make me wonder about, from a microeconomic perspective?

This image makes me aware of the complexity of public goods and how it becomes impossible to quantify the social and economic benefits to all those influenced by it. Oftentimes, people (tax-payers) do not see the value in art and approve when government austerity measures reduce funding to these critical sectors. The benefit and value expand beyond the initial, direct monetary support of the artist, as it is a critical advantage to surrounding businesses, adds richness to contemporary culture, and indicates a level of care and pride in one's community. One must consider that an investment in public art benefits many and we need to be supportive when our governments provide grants to pay for these initiatives that contribute to society.

Student reflections

The use of photo assignments for economics educational assessments allowed me to connect class material, concepts, and economic theories with my daily life through a visual photographic image and narrative text. Much of what enhanced my understanding of definitions and concepts was derived from the process of completing the assignment. Once aware of the assignment, I viewed my world through an economic lens, keen to connect my environment to a concept I had learned. As cameras on smartphones are ubiquitous and accessible, this gave me the means to creatively capture an interesting or unique visual in the moment. Photos required additional research for subject matter background into how government policies or market processes connected to economics. The assignment process encouraged me to observe and recognize the market structures and initiatives of private and public sectors, and how they relate to my own decision-making as a consumer or public-goods user. The personalized experience, and sharing of my observations, deepened my understanding and has led to my long-run retention of economic concepts. The departure from typical economics assignment formats was refreshing and provided the opportunity to illustrate my economic theory competency through a creative avenue that was novel and engaging.

Student work sample #3

Course: introduction to applied econometrics, Fall 2023
The assignment was used at the beginning of the term, after discussing dependent and independent variables, before the introduction of the assumptions of the OLS model. The requirement was to provide and discuss examples of dependent and independent variables.
Student name: Carter Davidson
Student major: Finance
Image/econometric model title: Crop Yield in the Canadian Prairies

Image credit: Carter Davidson

This analysis looks at the relationship between crop yields and explanatory variables, rainfall, fertilizer, and pesticide usage. Firstly, rainfall is one of the most important aspects of crop growth: having little rainfall can cause drought and too much can cause nutrient depletion. Therefore, the relationship between crop yield and rainfall has a positive sloping linear relationship up until a certain level; at that point, it will become negative. Secondly, fertilizer application provides essential nutrients to crops, but excessive or insufficient amounts can adversely affect crop yield. The relationship between crop yield and fertilizer is similar to rainfall as it has a positive linear relationship up until a certain point, then becomes negative. Pesticide usage has a very similar relationship with rain and fertilizer, overuse and underuse can harm crop yields, resulting in a positive linear relationship to a certain point. Each explanatory variable should be well-balanced to achieve higher yields.

Student reflections

Reflecting on the photo assignments I have completed has helped increase my understanding of key economic and econometric concepts. The assignment completed for the econometrics course analyses crop yields and the effects of explanatory variables such as rainfall, fertilizer, and pesticide usage. When diving deep into crop yield analysis, it was understood that you need to have a balanced resource allocation due to the non-linear relationships these variables have with crop yields. This analysis exemplified explanatory variables and the tradeoffs that come

with it. Overall, the photo assignments helped to deepen my understanding and connect theory to real-world applications. This series of assignments advanced my learning and understanding of concepts taught in the classroom, allowing me to think critically about theoretical models and how they apply to my day-to-day life.

Student work sample #4

Course: intermediate microeconomic theory II, Fall 2023
The assignment was used after topics on labor market economics had been covered in the course. Students were instructed to complete the assignment by analyzing a photo with any economic concepts and theories related to the labor market. A strict limit of 150 words was imposed.
Student name: Bradley Sommerfeld
Student major: Psychology
Image title: Investment in Human Capital
Key microeconomic concepts and theories: human capital investment, marginal product of labor, productivity, profits, willingness to work.

Image credit: Brady Sommerfeld

Firms often provide free coffee and tea to employees in the break room. This is considered an investment in human capital, which is a set of worker characteristics that contribute to increases in the marginal product of labor. Caffeine increases wakefulness and energy levels, which in turn increase the productivity of those employees, expanding the overall production capacity of the

firm. Firms are willing to invest in this way in order to achieve higher profits as the marginal product of labor increases. This is a mutually beneficial scenario; free coffee in exchange for increased productivity. It is important to recognize the underlying incentive behind firms' decisions, which is profit maximization. This example of investment in human capital can be expanded to providing exercise spaces to improve worker health and thus productivity, as well as things that boost willingness to work, or morale, like pizza parties and casual Fridays.

Student reflections

Testing knowledge using only exams and quizzes often leads to a superficial comprehension of course concepts that will likely be forgotten shortly after testing. In contrast, assignments that encourage out-of-the-box thinking and elaboration on basic concepts tend to result in genuine learning rather than memorization alone. The photo assignments discussed here offer an opportunity to view course material from a different perspective, connect it to the real world, and increase the depth of understanding of various economic concepts. As a result of this series of assignments, I began to view the world in a different light, noticing economic concepts just about everywhere I looked. From a psychological standpoint, connecting concepts to your day-to-day life makes the material personally meaningful, increasing the likelihood of retaining more of that information for longer. As these assignments force students to connect individual concepts to additional, tangible examples in the real world, novel neuronal pathways are generated, resulting in a greater number of available retrieval cues and the integration of that learned course information into existing, stable neuronal networks, increasing the likelihood of remembering and utilizing course knowledge in the long-term.

Conclusion

Photography is a way to distill the world, and a photography assignment can teach the students how to further extract and highlight the economic dimensions of a situation by carefully "making" instead of simply "taking" photographs. The goal of the photo assignment is to cultivate a spirit of economic inquiry at every step and to initiate theoretical economic analysis starting from familiar situations. The photo assignment enhances student learning by fostering connections, engagement, communication, inclusiveness, and the retention of knowledge.

Connections: Student reflections on their completed photo assignments show that they clearly recognize the establishment of links between theories and real-world phenomena as a central objective of the photo assignment. The instructor can encourage such connections by providing clear instructions and emphasizing that, while image quality and creativity are important, the primary focus should be on using economics to analyze the image.

Engagement: The proposed photo assignment engages students in a sustained visual investigation of their world through an economic lens. This point is illustrated by the variety of topics from the sample of student assignments included in this paper. The assignment encourages students to engage with the course material outside of the classroom, connecting economic concepts to various aspects of their lives.

Communication: The depth of analysis put forward by different students varies, and the instructor can intervene through feedback to re-focus students' attention and to enhance their visual interpretation with an economics dimension. Along with its intended subject, an image also reflects

the perspective from which the student observed the scene, which can provide valuable insights for instructors. This interactive communication between students and instructors fosters deeper learning over time.

Inclusiveness: The sample of student work presented in this paper shows not only the diversity of chosen images, but also the flexibility offered to students in explaining the economics behind the images chosen. Inclusiveness also means that students from different academic and cultural backgrounds are all capable of producing quality analyses as shown in the sample of student work.

Retention of knowledge: Feedback from our students on the photo assignment often shows that the assignment encourages them to think creatively and critically of concepts and theories learned from the course. Through such exercises, students develop an appreciation and understanding of the material, fostering the long-term retention of the acquired knowledge.

One potential challenge faced by instructors with the photo assignment is increased workload in terms of grading. Instructors implementing the photo assignment might initially find an increase in their grading load, as they develop an efficient approach to evaluate this type of work, but the benefit is that it is a way to make students feel valued through an act of inclusion, it reveals students' interests not only through the lens of economics but also through the lens of their heritage/background, so that better examples can be used to explain concepts in the future, and it also highlights the parts of the course that were understood well and those that need attention. Given the opportunity cost, it is helpful to think carefully about the potential benefits.

For someone teaching large classes it might be easier to adopt an ECONSelfie assignment (Al-Bahrani et al. 2016a) to ensure the authenticity of the images, but this is rarely an issue in smaller classes, as long as the instructions emphasize that the students must be able to demonstrate image generation and ownership, if questioned. With the development of artificial intelligence, instructors may choose to allow students to generate images using AI, while being mindful that this eliminates the "place-based" learning component of the assignment.

There are numerous other potential benefits associated with the photo assignments. With the photo assignment, for example, we are asking students to work with a high intrinsic cognitive load that can encourage deeper understanding of the material. When practiced consistently over time, this type of visual thinking can enhance competencies and employability. Student-generated images can also be used during lectures, to explain or review certain concepts. Assignment variations and their long-run benefits can be explored in future research.

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Appendix

Photo assignment instructions

Photo assignment: (City name) through a microeconomic lens (freestyle)
Deadline: TBA by the instructor

Images by George Manta, Centro Cultural Recoleta, Buenos Aires

The goal of this assignment is for you to make vital connections between your own world/lived experience and microeconomic theory.

You will have to process reality through microeconomic theory and communicate your ideas both visually and in writing. Most of our course relies on communication through graphs and mathematical language but, in this assignment, you will demonstrate that you can make connections between the ideas you are learning in class and everyday scenarios.

Step 1

Review your class notes and make a list of the economic concepts we worked with so far.

Step 2

Go for a walk, while ensuring that you dress for the weather. Look around yourself carefully and think about which economic concepts and theories would apply to your current situation. Economics is everywhere, so you might want to take a few pictures and then choose one for your assignment. Your work should demonstrate that you understand the course material and are able to apply it to familiar situations.

Rules:
1. You must take the photos yourself in (city name) or nearby.
Screenshots, pictures of computer screens, or any internet images are not acceptable and will lead to zero marks for the entire assignment.

You must be able to prove the authenticity of your images.

2. Think from the perspective of an audience who might not be familiar with the location or subject of the image. Frame your picture in a way that attracts the reader's attention to the subject or element you want to highlight.

3. You must include at least one original photo in the assignment, but you may include more than one image if you wish.

4. You are not expected to be professional photographers, but your images must be aligned and well-focused.

Step 3

Download the assignment template from D2L (class LMS) and fill it in.

Write your explanation using the following thinking routine:

1. What do I see?
This is a brief non-economic explanation of what the reader should see and look at in the image.

2. Look through an economics lens: what do I think about when I look at this image?
This is the core of your economic analysis of the image.

3. What does it make me wonder about? Brief conclusion which should include a few questions that you, the economic analyst, are wondering about. These are questions for future economic analysis and you should not answer them. Writing them will help you understand that exposure to more economic concepts and models will help you add depth and nuance to your analysis.

Step 4

Check your work, save the file as a pdf and upload it on D2L (class LMS).

Grading rubric out of 10 marks:

1. Image quality and creativity: 2 marks
2. Economic keywords correctly identified: 1 mark
3. Economic explanation: 5 marks
   - elaborate and well-written: 1 mark
   - correctly identifying, explaining, and matching economic concepts and theories within the image: 2 marks
   - demonstrating depth of knowledge and ability to make connections between microeconomic theory and everyday situations: 2 marks
4. Using the given template correctly: 1 mark
5. Spelling: 1 mark (entirely lost for more than two spelling errors, so please turn your spell check on and read your work carefully before submitting it)

I am truly looking forward to seeing your work, and I hope you will be as creative as possible while demonstrating your understanding of microeconomics!

Photo assignment template

Photo assignment: (City name) through a microeconomic lens

Image title: write the title of your image here and delete everything written in light grey once you complete all sections

Student name:

Key microeconomic concepts and theories: list the key concepts reflected in your image here; you do not have to explain them here, just LIST them

Replace the image below with **your own original photograph** and, of course, delete these instructions.

Image credit: Lavinia Moldovan

Write your microeconomic explanation of your image here
   1. What do I see?
   2. Look through an <u>economics lens</u>: what do I think about when I look at this image?
   3. What does the image make me wonder about, from a microeconomic perspective? (a few brief questions)
Please check your spelling and grammar (marks will be deducted for errors).

Remember to save this file as a pdf and then submit it on D2L (course LMS). Of course, delete these instructions before you save your file.